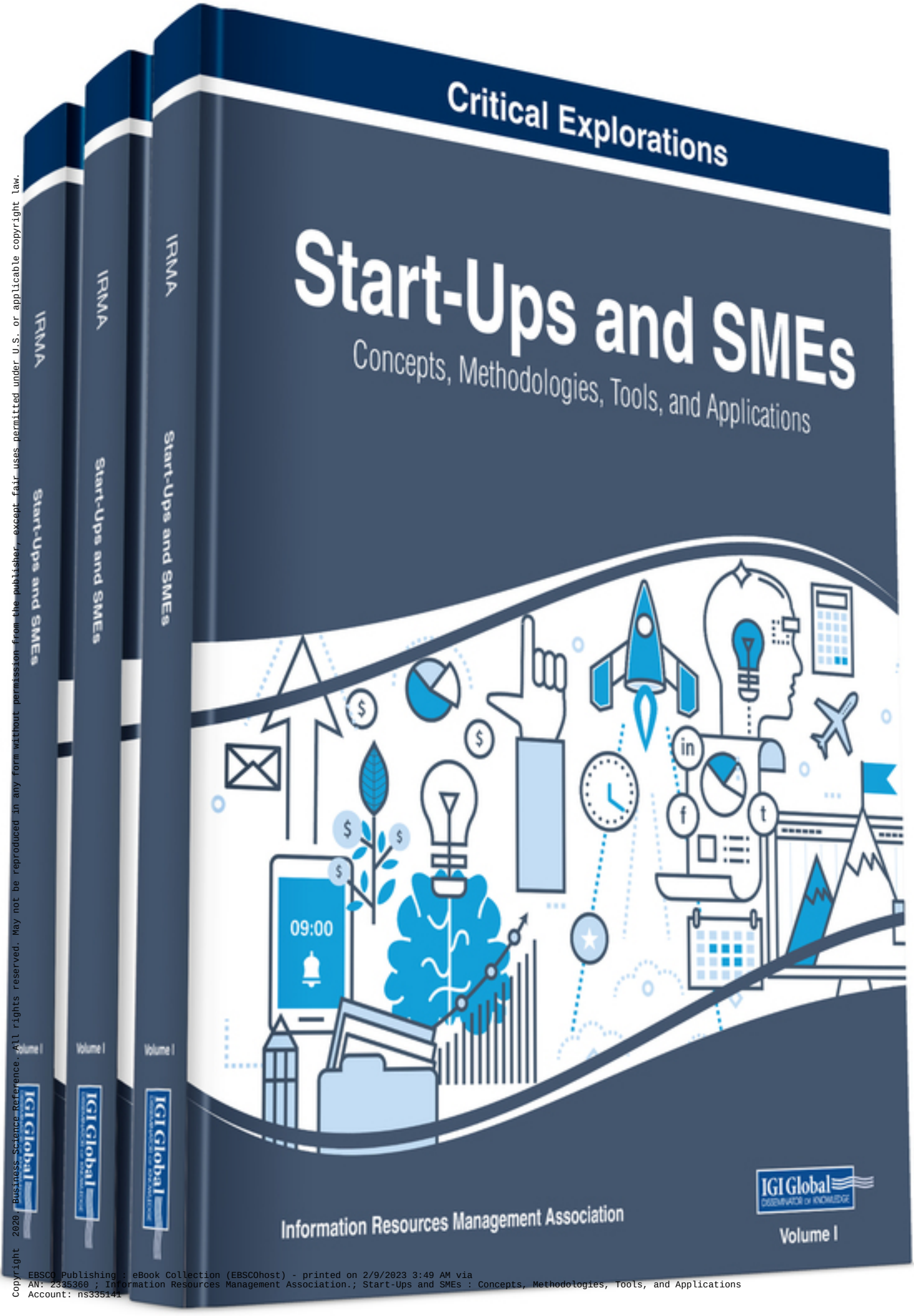


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Preface

Organizations of all types are consistently working on new initiatives, product lines, or implementation of new workflows as a way to remain competitive in the modern business environment. To maintain a competitive edge against other businesses, companies must ensure the most effective strategies and procedures are in place. This is particularly critical in smaller business environments that have fewer resources.

Staying informed of the most up-to-date research trends and findings is of the utmost importance. That is why IGI Global is pleased to offer this three-volume reference collection that will shed light on critical issues related to start-ups and small and medium-sized enterprises by providing both broad and detailed perspectives on cutting-edge theories and developments. This reference is designed to act as a single reference source on conceptual, methodological, technical, and managerial issues, as well as provide insight into emerging trends and future opportunities within the business market.

Start-Ups and SMEs: Concepts, Methodologies, Tools, and Applications is organized into seven distinct sections that provide comprehensive coverage of important topics. The sections are:

1. Fundamental Concepts and Theories;
2. Development and Design Methodologies;
3. Tools and Technologies;
4. Utilization and Applications;
5. Organizational and Social Implications;
6. Managerial Impact; and
7. Critical Issues and Challenges.

The following paragraphs provide a summary of what to expect from this invaluable reference tool.

Section 1, "Fundamental Concepts and Theories," serves as a foundation for this extensive reference tool by addressing crucial theories essential to the understanding of start-ups and SMEs. Introducing the book is "To Lend or Not to Lend: Exploring the Early Days of Peer-to-Peer Lending to Small Businesses," by Profs. Traci L. Mach (Board of Governors of the Federal Reserve System, USA), Courtney M. Carter (Board of Governors of the Federal Reserve System, USA), and Cailin R. Slattery (University of Virginia, USA): a great foundation laying the groundwork for the basic concepts and theories that will be discussed throughout the rest of the book. Section 1 concludes and leads into the following portion of the book with a nice segue chapter, "Business Incubation in Malaysia: An Overview of Multimedia Super Corridor, Small and Medium Enterprises, and Incubators in Malaysia," by Profs. Logaiswari Indiran (University Technology Malaysia, Malaysia), Zainab Khalifah (University Technology Malaysia, Malaysia), Kamariah Ismail (University Technology Malaysia, Malaysia), and Santhi Ramanathan (Multimedia University, Malaysia).

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Section 2, "Development and Design Methodologies," presents in-depth coverage of the conceptual design and architecture of start-ups and SMEs. Opening the section is "A Model to Reduce the Risk of Projects Guided by the Knowledge Management Process: Application on Industrial Services," by Profs. Menaouer Brahami (Department of Computer Science, National Polytechnic School of Oran, Oran, Algeria) and Nada Matta (Laboratory ICD/TechCICO, University of Technology of Troyes, Troyes Cedex, France). Through case studies, this section lays excellent groundwork for later sections that will examine present and future applications for start-ups and SMEs. The section concludes with an excellent work by Profs. Lanndon Ocampo (University the Philippines Cebu, Philippines), Rosalin Merry Berdin Alarde (University of San Jose-Recoletos, Philippines), Dennis Anthony Kilongkilong (University of San Jose-Recoletos, Philippines), and Antonio Esmero (University of San Jose-Recoletos, Philippines), "Adoption of Online Marketing for Service SMEs With Multi-Criteria Decision-Making Approach."

Section 3, "Tools and Technologies," presents extensive coverage of the various emerging tools and technologies used within start-ups and SMEs. The first chapter, "Crowdfunding for Non-Profits: Opportunities and Challenges," by Prof. Amir Manzoor (Bahria University, Pakistan), lays a framework for the types of works that can be found in this section. The section concludes with "E-Commerce in Small and Medium Enterprises in Sri Lanka," by Prof. Kennedy D. Gunawardana (Department of Accounting, University of Sri Jayewardenepura, Nugegoda, Sri Lanka). Where Section 3 described specific tools and technologies at the disposal of practitioners, Section 4 describes the use and applications of the tools and frameworks discussed in previous sections.

Section 4, "Utilization and Applications," describes best practices and strategies utilized in the effective management and operations of start-ups and SMEs as well as insights on important applications. The first chapter in the section is "Addressing Risks in Global Software Development and Outsourcing: A Reflection of Practice," written by Prof. Brian J. Galli (Assistant Professor and Graduate Program Director, Master of Science in Engineering Management Industrial Engineering, Hofstra University, USA). This section includes the widest range of topics because it describes case studies, research, methodologies, frameworks, architectures, theory, analysis, and guides for implementation. The breadth of topics covered in this section is also reflected in the diversity of its authors, from countries all over the globe. The section concludes with "Working Capital Financing by Banks in Small Enterprises: Problems and Challenges for Bangladesh," by Profs. Md. Mosharref Hossain (Bangladesh Institute of Bank Management [BIBM], Bangladesh & Universiti Utara Malaysia, Malaysia) and Yusnidah Ibrahim (Universiti Utara Malaysia, Malaysia), a great transition chapter into the next section.

Section 5, "Organizational and Social Implications," includes chapters discussing the organizational and social impact of start-ups and SMEs. The section opens with "Risk Management Usage and Impact on Information Systems Project Success," by Profs. April H. Reed (Department of Management Information Systems, East Carolina University, Greenville, USA) and Mark Angolia (Department of Technology Systems, East Carolina University, Greenville, USA). This section focuses exclusively on how these technologies affect human lives, either through the way they interact with each other or through how they affect behavioral/workplace situations. The section concludes with "The Importance Role E-Collaboration Capability and Information System Maturity on Knowledge Sharing and SMEs Marketing Performance," by Profs. Elia Ardyan (Sekolah Tinggi Ilmu Ekonomi Surakarta, Central Java, Indonesia), Andri Nurtantiono (Sekolah Tinggi Ilmu Ekonomi Surakarta, Central Java, Indonesia), Budi Istiyanto (Sekolah Tinggi Ilmu Ekonomi Surakarta, Central Java, Indonesia), and Berta Bekti Retnawati (Soegijapranata Catholic University, Central Java, Indonesia).

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Section 6, "Managerial Impact," presents strategies and theories for the management of start-ups and SMEs as well as their impact on the success and performance of the business. The section begins with "IT Strategic Planning Through CSF Approach in Modern Organizations," by Prof. Neeta Baporikar (HP-GSB, Namibia University of Science and Technology, Namibia). This section serves as a vital resource for developers who want to utilize the latest research to bolster the capabilities and functionalities of their processes. The chapters in this section offer unmistakable value to managers looking to implement new strategies that work at larger bureaucratic levels. The section concludes with "Technological Change Perspective for ERP Implementation in Small and Medium Enterprises," by Profs. Jessy Nair (Faculty of Management Studies, PES University, Bangalore, India) and Aarthy Chellasamy (Faculty of Management Studies, PES University, Bangalore, India).

Section 7, "Critical Issues and Challenges," presents coverage of the current challenges start-ups and SMEs face and addresses their limitations in order to present solutions. The section begins with "Using Marketing to Implement a Strategic Plan: Reflection of Practiced Literature," by Prof. Brian J. Galli (Assistant Professor and Graduate Program Director, Master of Science in Engineering Management Industrial Engineering, Hofstra University, USA). Chapters in this section will explore theoretical approaches and offer alternatives to crucial questions on the subject of start-ups and SMEs. The section concludes with "The Role of Culture in IT Governance Five Focus Areas: A Literature Review," by Profs. Parisa Aasi (Stockholm University, Kista, Sweden), Lazar Rusu (Department of Computer Science and Systems Sciences, Stockholm University, Kista, Sweden), and Dragos Vieru (TELUQ University Montreal, Canada).

Although the primary organization of the contents in this multi-volume work is based on its seven sections, offering a progression of coverage of the important concepts, methodologies, technologies, applications, social issues, and emerging trends, the reader can also identify specific contents by utilizing the extensive indexing system listed at the end of each volume. As a comprehensive collection of research on the latest findings related to using technology to providing various services, *Start-Ups and SMEs: Concepts, Methodologies, Tools, and Applications* provides entrepreneurs, managers, executives, business professionals, researchers, administrators, academicians, students, and all audiences with a complete understanding of the development of applications and concepts in start-ups and SMEs. Given the vast number of issues concerning usage, failure, success, policies, strategies, and applications that contribute to the success of these businesses throughout the world, *Start-Ups and SMEs: Concepts, Methodologies, Tools, and Applications* addresses the demand for a resource that encompasses the most pertinent research in technologies being employed to globally bolster the knowledge and applications of small business.

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Section 1

Fundamental Concepts and Theories

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Chapter 1
To Lend or Not to Lend:
Exploring the Early Days of Peer-to-Peer Lending to Small Businesses

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ABSTRACT

The current paper examines loan-level data from Lending Club to look at peer-to-peer borrowing by small businesses. We begin by looking at characteristics of loan applications that were and were not funded and then take a more in-depth look at funded applications. Summary statistics show an increasing number of small business loan applications over time. Beginning in 2010—when consistent measures of loan purpose were recorded for all applications—loan applications for small businesses were on average less likely than loans for other purposes to have been funded. However, logistic regression results that control for the quality of the application show that, holding all else constant, applications for a loan for a small business were almost twice as likely to have been funded as loans for other purposes. Focusing on funded applications, we note that funded business loans were slightly larger on average than loans funded for other purposes but paid similar interest rates. However, relative to small business loans from traditional sources, peer-to-peer small business borrowers paid an interest rate that was about two times higher. Regression results that control for application quality show that peer-to-peer loans for small businesses were charged almost a percentage point interest rate premium over non-business loans. Logistic regression results that look at loan performance indicate that loans for small businesses were much more likely to be delinquent or charged off.

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INTRODUCTION

As distrust and dissatisfaction with commercial banks grew during the recent financial crisis, there was large growth in nonstandard types of borrowing arrangements. One such arrangement that has seen substantial growth in the past five years is crowdfunding —peer-to-peer (P2P) lending, in particular. Crowdfunding arrangements involve groups of individuals, not institutions, providing funding. As the name suggests, P2P loans are generally personal loans. However, small business owners often intermingle their personal and business finances so as overall P2P lending grew, so too did P2P borrowing for small business purposes.

The current paper looks at the individual loan-level data from Lending Club, focusing on those loans that were used by small business owners for their businesses. While there are other players in the market, Lending Club is the largest player in the US peer-to-peer lending space. In addition Lending Club provides a uniquely detailed data set that allows us to look at both the applicants and loans in more detail than is possible for other peer-to-peer sites. We begin by looking at the characteristics of loan applications that did and did not get funded. While loan purpose is not one of the criteria taken into account when evaluating loan applications, we find that loans intended for small business purposes were more likely to be funded than loans for other purposes. We then look at the interest rate paid on those loans that did get funded. Again, while loan purpose is not taken into account in assessing the credit quality of the application, loans for business purposes paid nearly one percentage point higher interest rate than other loans, holding borrower characteristics constant. Finally, we look at the loan performance. Our results indicate that loans for small business purposes were more than two-and-a-half times more likely to perform poorly.

The rest of the paper is organized as follows. We begin with a short discussion of crowdfunding and how P2P lending fits into the general crowdfunding framework. Then we look at the small business credit market and examine where small businesses have traditionally gotten their credit and how that may have been more difficult over the recent period. We next take a closer look at the data from Lending Club. The final three sections present our econometric results and the last section concludes.

Crowdfunding

The term crowdfunding has come to represent a spectrum of activities. The underlying idea is that funding that one would typically have to borrow through a bank or other financial institution is gathered from a group of individuals, or "the crowd." This is not a new concept; rotating savings and credit associations (ROSCAs) operate under a similar premise and have been long used in developing countries and within minority communities in the US.[1] However, the growth of the internet has given the concept a boost, allowing for a much larger and diverse "crowd." There is no longer a need for the individuals in the group to live in close proximity to one another or to actually know each other; crowdfunding sites are proliferating.

Early adopters of the internet for crowdfunding essentially used their websites as fundraisers. In some instances the crowd receives nothing in return, donating the money out of a sense of altruism. This is the model of websites like Kiva and Crowdrise.[2] In other cases, the crowd is essentially pre-buying the good or service being produced. This is the model of websites such as Kickstarter where funders are often given a copy of the book or CD that is being produced.[3] In both models, borrowers do not pay interest to the crowd or specifically repay the funds.

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A second form of crowdfunding is equity crowdfunding as laid out in the JOBS Act of 2012 (White House, 2012). In such cases, rather than receiving interest and principal for their investment, investors receive equity in the business. Prior to the JOBS Act, it was illegal for private companies to publicly solicit investments. It is only recently that the SEC has finalized its ruling making equity crowdfunding legal for accredited borrowers (Rathbond & Mazorol, 2013). In an even more recent occurrence, the SEC has proposed rules to allow entrepreneurs to raise capital online with fewer restrictions on who can invest (Harrison, 2013).

The final piece of the crowdfunding pie is debt-based, so-called peer-to-peer (P2P) lending. In P2P lending, the individuals fund small portions of loans and receive their principal plus interest when the borrower repays the loan. The two largest P2P sites are Prosper and Lending Club. Prosper started in 2006 and Lending Club started about a year later.[4] Both websites use a credit score-based model for evaluating investment options. Applicants allow the evaluation of their credit to be translated into a letter grade and investors can then choose how much risk they wish to take on when funding a loan. As in traditional credit markets, higher risk translates into higher interest rates. P2P lending provides funding that might not be available elsewhere and rates are lower than for alternatives, such as payday loans.

Between 2006 and 2008 peer-to-peer lending grew steadily. It hit a snag in 2008 when the SEC determined that their loans should be classified as securities and, thus, regulated (Craven, 2008). This led both Prosper and Lending Club to put any new loans on hold until they properly registered with the SEC. Both organizations survived the reclassification and moved back onto a path of steady growth.

The steady increase in peer-to-peer lending suggests the potential for much more growth. Due to state laws and regulations, not all states allow investments and loans from Lending Club and Prosper. Currently, Lending Club loans are available to borrowers in all but six states while Prosper is available in all but three states. Investors face greater restrictions. Investors in only 29 states plus the District of Columbia are given access to Prosper. Investors in a slightly different set of 28 states have access to Lending Club.[5] If P2P lending were to become available throughout the rest of the U.S., investment dollars and P2P borrowing could grow substantially.

For a more detailed look at project initiator-contributor relationships and microfinance business models, please refer to the Garcia-Vidal and Assadi chapters in this book.

SMALL BUSINESS CREDIT

Traditionally, small businesses have been thought to face increased difficulties in accessing credit than do larger businesses. Lending to small businesses is generally considered to be riskier and more costly because small firms have higher failure rates and are more vulnerable to downturns in the economy. Lending to small businesses is further complicated by their informational opacity. Most do not have the detailed financial statements and rarely have publicly traded equity so obtaining reliable information on the creditworthiness of small businesses is difficult. Previous research has found that relationship lending provides a way of mitigating the information problem (Petersen & Rajan 1994, 1995; Berger & Udell 1995; Degryse & Cayseele 2000). Because commercial banks typically provide small businesses many products other than loans, commercial banks are able to use information gathered about the business over a longer term to their advantage in assessing the creditworthiness of small businesses. For these reasons, small businesses are thought to be relatively dependent on commercial banks for loans.

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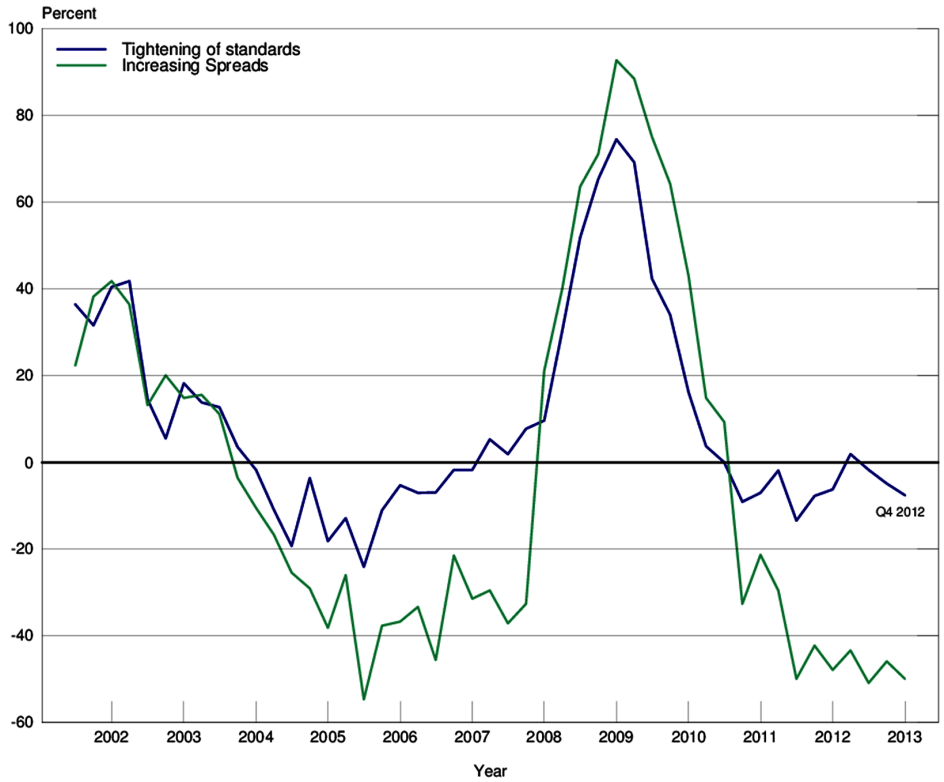
During the recent economic crisis (2007-2009), standards on business lending at commercial banks tightened substantially. These tighter credit conditions for small business lending by banks have eased notably since 2010. Results from the Federal Reserve Board's Senior Loan Officer Opinion Survey on Bank Lending Practices (Figure 1) indicate that lending standards for small borrowers tightened substantially in 2008 and 2009 but loosened in 2010 and 2011 (Federal Reserve Board, 2012). The net percentage of National Federation of Independent Business (NFIB) respondents reporting that credit had become more difficult to obtain, which had remained low by historical standards in the years prior to the financial crisis, rose in 2008 and reached its highest levels on record in 2009 (Figure 2) (Dunkelberg & Wade, 2012). Since then, it has retraced a good portion of its increases during the financial crisis, but still remains well above pre-recessionary levels.

Coincident with the tightening of standards on lending terms, there was also a large drop in commercial lending by banks (Figure 3). Some of the drop is likely a result of the higher standards, but some of it is also likely attributable to diminished demand from small businesses uncertain about their future. In addition, some of the decrease is likely due to deterioration in the financial conditions of many banks during this period.[6]

Figure 1. Net percent of domestic banks reporting a tightening of standards or terms on loans to small businesses

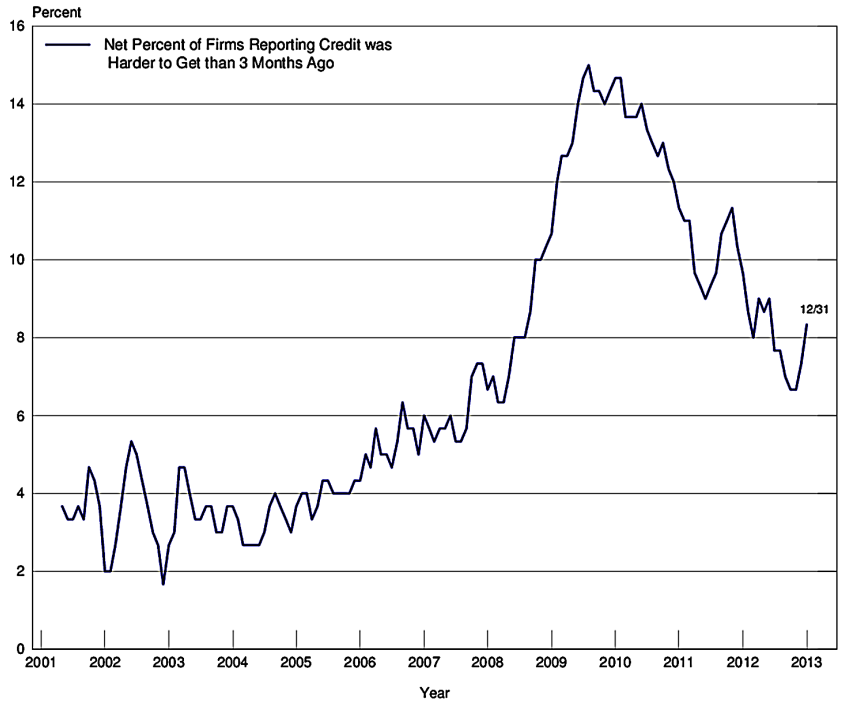
Source: Federal Reserve Board, Senior Loan Officer Opinion Survey on Bank Lending Practices www.federalreserve.gov/boarddocs/SnLoanSurvey/.

Note: Data are quarterly; not seasonally adjusted.



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Figure 2. Net percent of firms reporting that credit was harder to get compared to 3 months ago
Source: National Federation of Independent Businesses (NFIB) Survey, Small Business Economic Trends Data http://www.nfib.com/research-foundation/surveys/small-business-economic-trends.
Note: This question is only asked of firms reporting that they regularly borrow; data are monthly; 3 month moving average is reported; not seasonally adjusted.



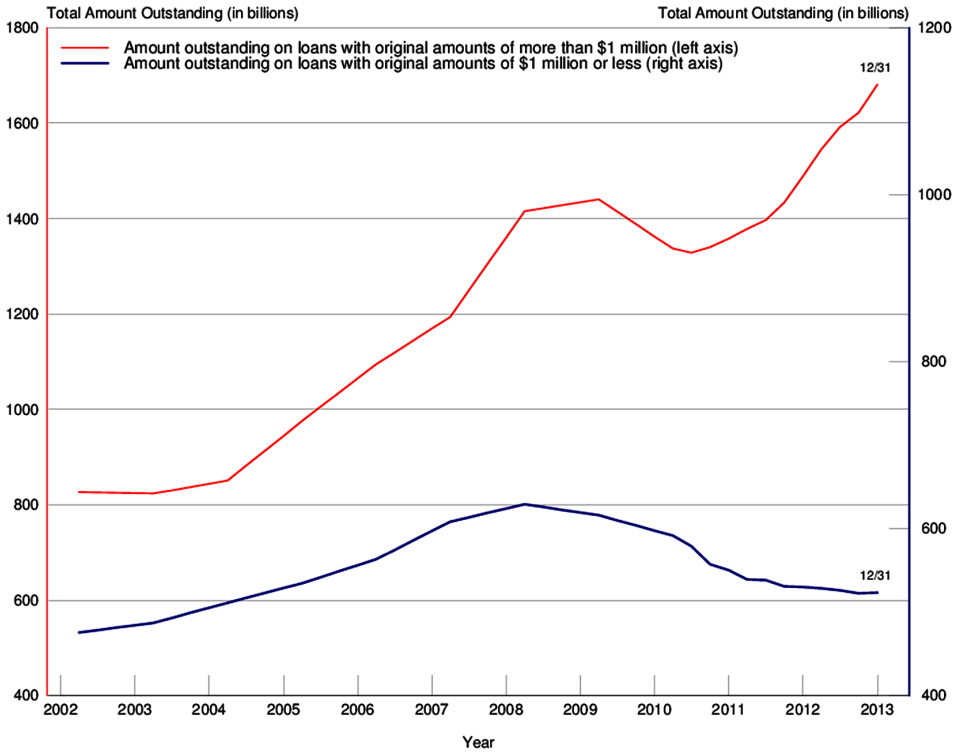
Small businesses get their credit from many different sources. Statistics from the 2003 Survey of Small Business Finances (SSBF) indicate that while commercial banks are an important source of finances for small businesses, they are not the only source (Table 1).[7] Nearly 60 percent of outstanding credit to small businesses in 2003 was provided by commercial banks, but finance companies provided over 15 percent, and other sources provided just under 10 percent. The median loan outstanding was $20,000, but this varied with the type of provider, ranging from the median $90,000 outstanding loan from mortgage companies to the median $8,000 outstanding loan from a brokerage or mutual company.

There are also differences in the amount and types of credit used according to the size of the firm. For example, the median loan for firms with fewer than 10 employees was less than $18,000 compared to $40,000 for larger firms. This was true across all different types of lenders. The share of outstanding credit provided by each type of lender was similar across firm size for most types of lenders. The exceptions to this were mortgage companies and other providers; nearly 11 percent of funds for small firms were from mortgage companies and about 5 percent of funds were from other sources compared to 2 percent and about 11 percent of funds, respectively, for larger firms.[8]

Given the downturn in the real estate market, the availability of home equity loans to finance the business may have become more difficult in the recent period. Table 2 provides additional insights into this question. In 2003, business owners reported using personal real estate to collateralize—at least in part—loans for their businesses a fair amount: 15.6 percent of total dollars outstanding and 11.0 percent of all loans used personal real estate as collateral. Among loans from mortgage companies, the shares

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Figure 3. Amount outstanding on loans to businesses
Source: These data are constructed from special tabulations of the June 30, 2002 to September 30, 2012 Call Reports (Consolidated Reports of Condition and Income for U.S. Banks).
Note: Beginning March 2010, the data reporting frequency changed from annual to quarterly.



were even higher, with more than a quarter of outstanding dollars and nearly 60 percent of outstanding loans secured by personal real estate.

Overall, commercial bank lending to small businesses is down in the recent period; while much of this may be due to lack of demand, there is also evidence that traditional routes may have been difficult, especially for the smallest small businesses (Figure 4). Such firms often require small amounts of credit which may not be profitable for commercial banks to lend and may be turning to more alternative sources such as peer-to-peer lending. The impact of such a choice is not clear. Even though such loans may allow the firm to remain in business in the short term the high cost may not be sustainable in the long run.

DATA

The current paper is, to our knowledge, the first paper to examine the growing peer-to-peer borrowing among small businesses. In this paper we use data on individual loans and applications from the LendingClub.com website to examine more closely the characteristics of loans that get funded as well as the interest rate paid on those loans.[9] Lending Club makes their data available publicly. The data include borrower characteristics, loan status and payment information of loans that are funded, and details about all of the loan applications that were rejected. Our data set consists of more than 670,000 unfunded loan applications that do not meet the Lending Club underwriting criteria and just under 100,000 funded loans.

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Table 1. Balance on loans to small business with any outstanding debt, by number of employees of firm

	All Small Businesses			Fewer than 10 Employees			10 or More Employees		
	Share of Total	Mean per Loan	Median per Loan	Share of Total	Mean per Loan	Median per Loan	Share of Total	Mean per Loan	Median per Loan
All firms	100.0	182,288	20,000	100.0	97,999	17,149	100.0	359,096	40,000
Commercial bank	56.8	221,241	25,000	54.7	116,414	20,000	58.0	430,685	60,000
Savings bank	5.3	212,533	37,000	6.8	139,046	34,000	4.4	393,789	90,000
Savings and loan association	1.0	243,238	35,000	1.0	115,862	9,959	1.0	600,116	130,000
Credit union	0.5	27,720	15,000	1.1	23,978	13,000	0.3	43,918	30,000
Finance company	16.2	114,050	18,000	15.9	62,206	15,000	16.4	213,064	26,079
Insurance company	2.2	694,474	21,000	2.0	268,761	14,000	2.3	2,899,123	38,000
Brokerage or mutual fund company	1.0	246,251	8,000	0.7	96,853	8,000	1.1	550,066	55,000
Leasing company	3.1	126,893	9,200	2.6	60,314	8,500	3.5	238,794	14,839
Mortgage company	5.3	587,029	90,000	10.7	566,467	84,000	2.2	652,478	245,000
Other	8.5	141,832	20,000	4.6	39,503	15,000	10.8	392,207	80,000

Note: Weighted statistics from the 2003 Survey of Small Business Finances. Balances include loans include outstanding balances on lines of credit, capital leases, mortgages, motor vehicle loans, equipment loans, loans from owners, and other loans.

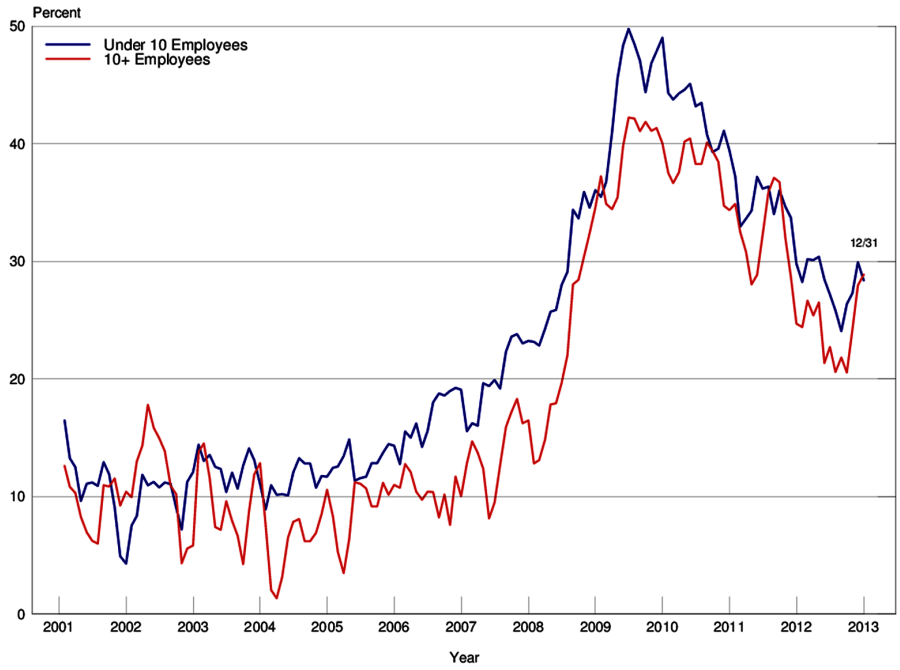
Table 2. Share of loans to small businesses secured by personal real estate, by number of employees of firm

	All Institutions		Fewer than 10 Employees		10 or More Employees	
	Share of Dollars	Share of Loans	Share of Dollars	Share of Loans	Share of Dollars	Share of Loans
All firms	15.6	11.0	18.5	14.7	13.9	8.8
Commercial bank	18.7	17.1	24.0	22.1	15.8	14.0
Savings bank	23.9	29.7	32.9	34.3	16.0	25.5
Savings and loan association	19.5	24.2	53.2	36.8	1.2	7.1
Credit union	27.9	13.4	20.3	10.7	45.8	18.1
Finance company	8.5	1.7	3.8	2.4	11.1	1.3
Insurance company	2.2	5.7	0.8	5.9	2.9	5.6
Brokerage or mutual fund company	4.9	7.5	0.0	0.0	6.6	10.3
Leasing company	0.0	0.0	0.0	0.0	0.0	0.0
Mortgage company	25.5	57.8	11.5	58.1	64.3	57.1
Other	5.9	5.5	11.5	5.1	4.5	5.8

Note: Weighted statistics from the 2003 Survey of Small Business Finances. Balances include loans include outstanding balances on lines of credit, capital leases, mortgages, motor vehicle loans, equipment loans, loans from owners, and other loans.

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Figure 4. Net percent of firms reporting that credit was harder to get compared to 3 months ago, by number of employees
Source: National Federation of Independent Businesses (NFIB) Survey, Small Business Economic Trends Data http://www.nfib.com/research-foundation/surveys/small-business-economic-trends.
Note: This question is only asked of firms reporting that they regularly borrow; data are monthly; 3 month moving average is reported; not seasonally adjusted.



Both the number of loans and the average dollar amount of loans disbursed through Lending Club has grown tremendously since Lending Club's inception in 2007. Table 3 shows the volume of lending from mid-2007 through 2012. Total loans funded for small businesses grew from about $850,000 in 2007 to over $22 million in 2012. Loans for other purposes grew from just under $4 million in 2007 to nearly $700 million in 2012. The average loan size for small business loans started near $15,000 in 2007 and then fell slightly until 2010. In 2012, the average loan for small business was $16,200. On the other hand, non-business loans grew slowly from 2007 to 2012, from $3,600 to $13,400 for. The interest rate was sometimes higher and sometimes lower for small business loans than loans for other purposes, but they were generally within a percentage point of each other.

Over the entire time span, small business was the sixth most frequently cited loan purpose among funded loans, totaling 3.5 percent of all funded loans. Debt consolidation was the most common loan purpose, accounting for just over half of the total, credit card payoffs follow with about 17 percent, "other" was almost 8, home improvement/purchase is just over 6, and "major purchase" was 3.8 percent. The average amount funded for "other" or "major purchase" is not presented in the table because these categories can encompass a variety of things and is less informative.

Comparing small businesses loans to other popular loan purposes, the average amount funded and the interest rates across the groups were comparable, although loans for small businesses were a bit larger on average (Table 4).

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Table 3. Peer-to-peer lending volume and interest rate by Lending Club, by loan purpose and year of issue

	Non-Business Loans				Small Business Loans			
Year	Number of Loans	Dollar Amount Funded	Average Dollar Amount Funded	Average Interest Rate	Number of Loans	Dollar Amount Funded	Average Dollar Amount Funded	Average Interest Rate
2007	547	3,946,350	7,215	11.75	56	845,200	15,093	12.54
2008	2,266	18,291,776	8,072	12.07	127	1,683,250	13,254	11.95
2009	4,913	47,422,624	9,652	12.27	368	4,392,125	11,935	14.63
2010	12,071	120,966,304	10,021	11.97	466	5,384,875	11,556	12.45
2011	20,746	243,501,696	11,737	12.18	975	13,861,950	14,217	13.13
2012	51,981	695,395,520	13,378	13.65	1,386	22,547,076	16,268	13.39
Total	92,524	1,129,524,352	12,208	12.98	3,378	48,714,476	14,421	13.25

Note: Statistics are calculated from LendingClub.com loan issue data through December 31, 2012. Year is based on the year the loan was issued.

Table 4. Peer-to-peer lending volume and interest rate by LendingClub.com, by loan purpose and year of issue

	Loans to Pay Off Credit Card		Loans To Pay Off Debt		Loans for Home Improvement/ Home Purchase		Loans for Small Businesses	
Year	Average $ Amount Funded	Average Interest Rate	Average $ Amount Funded	Average Interest Rate	Average $ Amount Funded	Average Interest Rate	Average $ Amount Funded	Average Interest Rate
2007	8,065	12.05	8,680	12.65	6,358	10.99	15,093	12.54
2008	7,994	12.02	9,198	12.61	8,267	11.63	13,254	11.95
2009	10,155	12.01	11,072	12.74	9,652	11.78	11,935	14.63
2010	11,242	11.63	11,476	12.34	9,356	11.72	11,556	12.45
2011	12,222	11.90	13,268	12.72	11,707	11.69	14,217	13.13
2012	13,067	13.33	14,438	14.11	12,995	12.51	16,268	13.39
Total	12,468	12.82	13,585	13.52	11,671	12.08	14,421	13.25

Note: Statistics are calculated from LendingClub.com loan issue data through December 31, 2012. Year is based on the year the loan was issued.

Small business and non-business loans had roughly the same rate of rejection, with about 8 percent of all small business loans over the period being funded and about 12 percent of all non-business loans being funded (Table 5).[10] The rejection rates for small business loans were understated in 2007 - 2009 because it was not until mid-2009 that the rejected and funded loan data sets started to categorize loan purpose in the same way. In order to attempt to correct for this, every rejected entry with a loan description that included the word “business” was designated as a small business loan. Nonetheless, it is likely that many more small business loans than we are counting were rejected in those earlier years. The percent

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funded in 2012 picked up in both small business and non-business loans, but only by 0.5 percent from 6.8 to 7.3 in terms of small businesses, where it has increased by almost 5 percent for non-businesses, from 9.5 to 14.2.

Figures 5 and 6 break down the number of applications and acceptance rates by state. Not surprisingly, the more populous states had more small business loan applications. However, they did not necessarily have the highest share of small business loan applications that were funded. For example, while Florida was home to more than 4,000 applications for small business loans, fewer than 300 of them were funded. It is interesting to note that funding rates were fairly high in some of the more rural states such as Mississippi and Tennessee, but this may be at least partially explained by the relatively low numbers of applications from these states.

Table 6 provides overall mean and median characteristics of applications according to whether or not the loan was funded. Only 12 percent of all loan applications received by Lending Club over this time period were funded. The applications that were funded were about $1,000 smaller on average than the unfunded requests. The fraction of applicants with less than a year's work experience was quite different in the funded and unfunded applications, with only 10 percent of funded applicants employed for less than a year versus 77 percent of the unfunded applicants. One also saw a sizeable difference in FICO scores, with funded applicants having an average FICO score of 706 versus 636.

NFIB statistics are calculated from monthly membership surveys done by the National Federation of Independent Business through the December 2012 survey.

As less traditional lending vehicles such as peer-to-peer lending are usually associated with higher interest rates, we are interested to see how the rates that small businesses receive through Lending Club loans differ from those that a small business may receive in a more formal lending setting. Figure 7 and Table 7 explore this by comparing the Lending Club small business lending rate with that reported by National Federation of Independent Business (NFIB) members. NFIB firms are split into two categories, the smallest firms – those with fewer than 10 employees – and larger small businesses, those having 10 or more employees. It is possible that small business owners who are seeking financing through an alternative lending vehicle, such as Lending Club, are less creditworthy and therefore unable to receive financing through a traditional lending institution, such as a commercial bank. As mentioned in the

Table 5. Denied and funded applications from Lending Club, by application year

	Non-Business Loans			Small Business Loans*		
Year	**Rejected**	**Funded**	**% Funded**	**Rejected**	**Funded**	**% Funded**
2007	5,298	630	10.63%	8	65	89.04%
2008	25,319	2,254	8.17%	450	124	21.60%
2009	55,805	4,936	8.13%	1,393	370	20.99%
2010	106,602	12,245	10.30%	6,472	468	6.74%
2011	204,571	21,370	9.46%	13,875	1,018	6.84%
2012	319,335	52,955	14.22%	17,366	1,360	7.26%
Total	716,930	94,390	11.63%	39,564	3,405	7.92%

Note: Statistics are calculated from LendingClub.com loan data and declined loan data up to December 31, 2012. Year is based on when the application was received.

* The rejected loan data set does not start identifying "loantitle" with categories that are comparable to the funded loans data set until 2009. Business loan applications are identified as any application containing the word "business" in the "loantitle."

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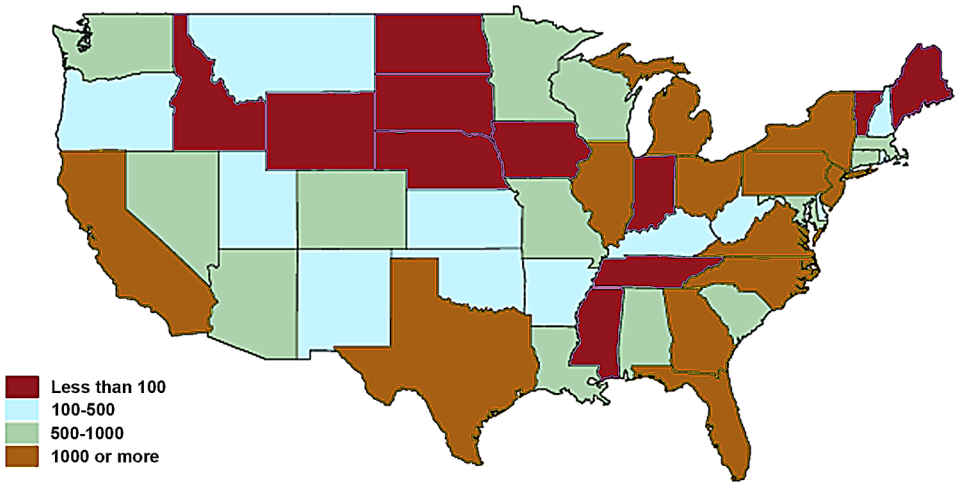
Table 6. Mean characteristics of Lending Club loan applications by whether or not the application was funded[1]

	All Applications		Funded		Not Funded	
	Mean	**Median**	**Mean**	**Median**	**Mean**	**Median**
Funded	0.12	0	1.00	1	0.00	0
Small Business Loan	0.05	0	0.04	0	0.05	0
Amount Requested ($1,000's)	13.16	10.00	12.56	10.40	13.25	10.00
Employed less than 1 year	0.68	1	0.10	0	0.77	1
Mean state house price index[2]	1.42	1.39	1.44	1.43	1.42	1.38
Fico Score (lower range, nonmissing)	644.63	658	706.12	700	635.97	649
<680	0.64	1	0.23	0	0.70	1
680-714	0.21	0	0.41	0	0.18	0
715-749	0.10	0	0.23	0	0.08	0
750-779	0.03	0	0.09	0	0.02	0
780+	0.02	0	0.04	0	0.01	0
Year of Application	2011.07	2011	2011.21	2012	2011.05	2011
Number of Observations	766,761		94,688		672,073	

Notes: 1. Standards for loans have changed over time; the statistics reflect whether or not the loan applications met the standard at the time the application was submitted. 2. Due to the volatility and seasonality of the house price index, we use the moving average of the previous 12 months in the state where the application was submitted.

Figure 5. Number of loan applications for small business

Note: Statistics are calculated from LendingClub.com loan data and declined loan data up to December 31, 2012. Year is based on when the application was received. The declined loan data set does not start identifying "loantitle" with categories that are comparable to the funded loans data set until 2009; business loans are identified as any application containing the word "business" in the "loantitle."



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Figure 6. Share of loan applications for small business that were funded

Note: Statistics are calculated from LendingClub.com loan data and declined loan data up to December 31, 2012. Year is based on when the application was received. The declined loan data set does not start identifying "loantitle" with categories that are comparable to the funded loans data set until 2009; business loans are identified as any application containing the word "business" in the "loantitle."

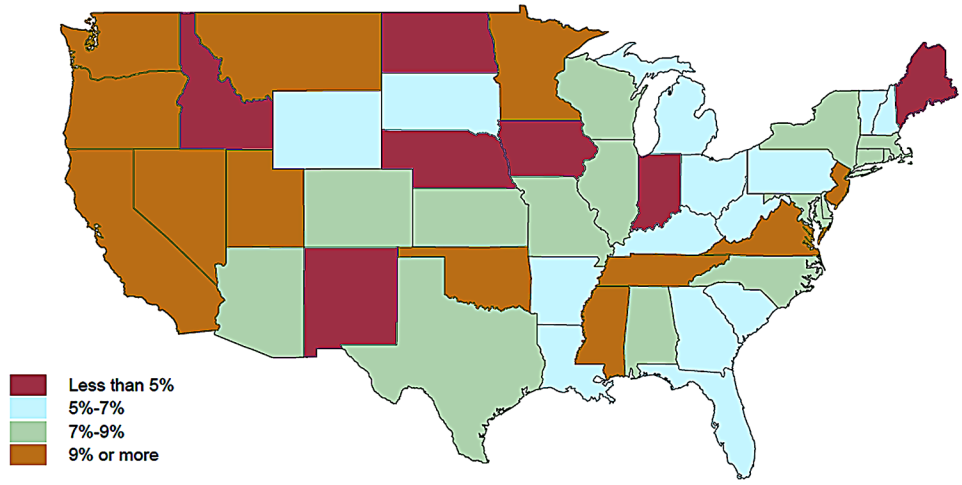
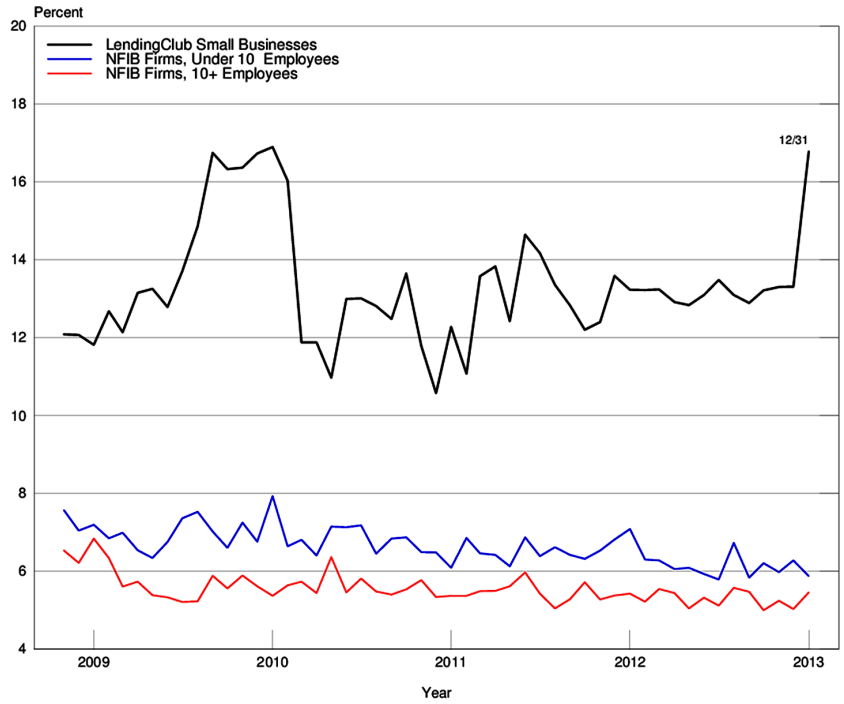


Figure 7. Interest rate paid by small business borrowers from LendingClub.com compared to NFIB borrowers



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Table 7. Interest rate for Lending Club loan compared to other interest rates for NFIB members, by year

Year	LC Non-Business Loans	LC Small Business Loans	NFIB Firms with 10+ Employees	NFIB Firms with <10 Employees
2007	11.75	12.54	8.67	9.23
2008	12.07	11.95	6.92	7.74
2009	12.27	14.63	5.54	6.92
2010	11.97	12.45	5.55	6.77
2011	12.18	13.13	5.47	6.56
2012	13.65	13.39	5.29	6.09
Total	12.98	13.25	6.06	7.03

Note: Lending Club statistics are calculated from LendingClub.com loan issue data through December 31, 2012. Year is based on when the loan was issued.

previous section, assessing the creditworthiness of small businesses is difficult, particularly among the smallest businesses. For this reason we would expect that the rates for the smallest NFIB firms would be more comparable to the Lending Club small business rates. Although it is the case that the NFIB firms with fewer than 10 employees paid about a 0.5 to 1.5 percentage point higher rate than those with 10 or more employees, the NFIB reported rates were much lower than the Lending Club rates, with the smallest NFIB firms averaging about 7 percent over the period, and the Lending Club small businesses averaging over 5 percent more. Also, the NFIB firms did not experience the spike in late 2009 that the Lending Club small businesses did, which is evident in both the table and the figure.

Figure 7 tracks the mean interest rates on a monthly basis, and although there is volatility from month to month, the Lending Club small business rate fluctuated much more than the NFIB rate. This can be partially explained by the fact that there were fewer observations in the Lending Club data. Also, the NFIB rate has trended slightly downward since mid-2007, when the series began, ending with a 2012 mean rate that is about 3 percent lower than the 2007 mean. The Lending Club rate did not experience this decline, and the small business loan rate averaged about 0.9 percent higher in 2012 than 2007, and about 1.9 percent higher in 2012 than 2007 for non-business loans.[11]

FUNDED VS. UNFUNDED LOAN APPLICATIONS

Because some of the variables are analogous between the rejected loan applications and funded loans data sets we are able to do some regression analysis in order to discern some of the determinants of loans being funded, and if small business loan applications were more or less likely to be funded. We estimate a logistic regression, using the following variables:

$$Funded_{i\{0,1\}} = f(SmallBusiness_i, Amount_i, Employment_i, HPI_i, Fico_i, Year_i)$$

where *i* refers to the individual application. SmallBusiness is a dummy which equals 1 if the application was for a small business loan, and 0 if not. Amount is the amount of money requested in the application, in thousands of dollars, and Employment is a dummy indicating that the applicant had been employed less than a year at the time of application. HPI is the mean of the Corelogic house price index in the

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state where the applicant resided, indexed such that 100=1, and averaged over the previous year. Fico is the Fico credit scores of the potential borrower at the time of application. Finally, Year represents the year of application, and we include state fixed effects. We estimate the model initially with all time periods. Because the identification of loan purpose is not consistent until 2010 and we are likely to underestimate the share of loans for small business purposes, we estimate the model again using only applications from 2010 forward. Despite the incomplete information in the early years, the results from both models are quite similar.

Table 8 presents our results from the model described above, displayed as odds ratios. When controlling for quality of the application, loans were about two times as likely to be funded when they were designated for small businesses. As expected, requesting greater amounts of money decreased the likelihood of a loan being funded; each additional $1,000 requested decreased the likelihood of funding by about 4 percent. Having worked less than a year decreased the likelihood by about 97 percent. Having a higher FICO score positively affected the likelihood of acceptance, with each additional point increasing the odds by about 2 percent. We also see a positive relationship between higher home prices and the likelihood of having one's application accepted.

INTEREST RATE PAID

Turning to funded loans, we estimate a linear regression on the interest rate paid on the loans.[12]

$$InterestRate_i = f(SmallBusiness_i, Amount_i, Employment_i, HPI_i, Fico_i, Year_i, Population_i, Income_i, Long_i, Home_i)$$

SmallBusiness, Amount, Employment, Fico, and Year are defined as in the previous model. HPI is the Corelogic house price index, averaged over the previous 12 months in the county where the applicant resided.[13] Long indicates that the loan agreement was for 60 rather than 36 months, and Home indicates that the borrower owned his/her own home at the time of the application.

Population and Income are the population, in thousands of people, and the per capita income, in thousands of dollars in the county where the borrower lived. These county level controls are gathered from data provided by the U.S. Bureau of Economic Analysis.[14] We also control for state level fixed-effects in the regression.

The results of this regression are displayed in Table 9. The results indicate that, all else equal, loans that were for small businesses were charged an interest rate nearly a full percentage point higher than loans for other purposes. Each additional $1,000 requested increased the interest rate by 0.14 percentage points. Having a higher FICO score negatively affected the interest rate paid by borrowers; for each additional FICO score point, the interest rate was 0.09 percentage points lower. The year with the highest interest rates, as seen in the descriptive statistics, was 2009. Relative to the omitted category of 2007, all the years had positive coefficients, or higher interest rates, but at over a 2 percentage point increase, 2009 was the highest. Living in a county with a higher per capita income slightly decreased the interest rate charged. There was no statistically significant relationship between either the county population or the local house price index on the interest rate charged.

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Table 8. Logit estimates of whether or not the loan application gets funded

	Odds Ratios (May 2007 - Dec 2012)	**Odds Ratios (Jan 2010 - Dec 2012)**
Small Business Dummy	1.969***	1.796***
	[27.01]	[20.90]
Amount Requested ($1,000's)	0.955***	0.957***
	[-90.23]	[-82.43]
State House Price Index (1 year lag, 1=100)	1.348***	1.318***
	[17.69]	[14.70]
Fico Score	1.018***	1.017***
	[175.28]	[147.88]
Employed less than 1 year	0.035***	0.028***
	[-276.65]	[-274.02]
Application year (2007 is omitted)		
2008	0.504***	
	[-13.06]	
2009	0.430***	
	[-16.98]	
2010*	0.803***	
	[-4.52]	
2011	1.272***	1.610***
	[4.99]	[32.68]
2012	2.574***	3.249***
	[19.78]	[88.62]
Constant	0.000***	0.000***
	[-149.78]	[-148.08]
Pseudo R2	0.415	0.445
N	766,761	683,599

Note: t-statistics in brackets. *** indicates significance at the 1% level; ** indicates significance at the 5% level; and * indicates significance at the 10% level. Applications from prior to 2010 do not fully identify all business loans.

LOAN PERFORMANCE

Our finding that loans for small businesses were charged a premium over other types of loans despite controlling for the credit quality of the borrower is interesting. In order to explain this finding, we investigate whether such loans perform differently than other types of loans. We estimate the following logistic regression:

$Delinq_i = f(SmallBusiness_i, Amount_i, Employment_i, HPI_i, Fico_i, Year_i, Population_i, Income_i, Long_i, Home_i)$

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Table 9. Regression results for interest rate paid on loan

	Linear Reg
Small Business Dummy	0.893***
	[24.06]
Amount Requested ($1,000's)	0.141***
	[136.43]
Treasury Rate	-0.152***
	[-2.68]
Fico Score	-0.088***
	[-422.52]
Annual Income ($1,000's)	0.000
	[0.60]
County Population (1 year lag, in 1,000's)	-0.000
	[-0.00]
County Per Capita Income (1 year lag, in $1,000's)	-0.000
	[-0.84]
Home Owner	-0.118***
	[-7.86]
County House Price Index (1 year m. avg lag, 1=100)	-0.075*
	[-1.70]
Loan Length (0 is 36 months, 1 is 60 months)	3.630***
	[193.46]
Employed less than 1 year	0.101***
	[4.38]
Application year (2007 is omitted)	
2008	0.552***
	[3.53]
2009	2.110***
	[9.70]
2010	0.417*
	[1.86]
2011	0.292
	[1.27]
2012	0.942***
	[4.10]
Constant	71.795***
	[251.26]
Adjusted R2	0.769
N	84,342

Note: t-statistics in brackets. *** indicates significance at the 1% level; ** indicates significance at the 5% level; and * indicates significance at the 10% level. State fixed effects included in estimation.

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All covariates are as defined in the interest paid regression and the dependent variable is a dummy variable equal to one if the loan was charged off, in default, or 31 to 90 days delinquent.[15] In addition, the model included state fixed effects.

Results from estimation are in Table 10. The results indicate that after controlling for observable differences in the quality of the borrowers, loans for small businesses were more than 250 times more likely to perform poorly than loans for other purposes, which may give some insights into why such loans are charged a higher rate. The other covariates in the model behave as one would expect.

CONCLUSION

Peer-to-peer lending has grown substantially since its inception in 2007 and has shown no signs of slowing. To the contrary, Prosper, the largest competitor in the peer-to-peer space, recently received a $20 million equity injection and may considerably expand its lending in the very near future. In addition Lending Club received $125 million dollar investment led by Google (De la Merced, 2013). Shortly thereafter, Lending Club announced that they had plans to launch a separate platform to make small business loans (Shankland, 2013). Unlike the personal loans to business owners on the traditional Lending Club platform which are underwritten based on the characteristics of the owner, loans on the small business platform would be based on the characteristics of the firm. The other large difference that is likely to occur is an increase in the size of the loans available. While final details are not yet available, there is an expectation that loans as large as $250,000 may be available on the new platform.[16]

While a relatively small fraction of peer-to-peer lending in the US currently goes to businesses, one might expect this to grow rapidly with a platform dedicated to small business lending based on two factors. First, beginning in June 2013, community banks Titan Bank and Congressional Bank began purchasing loans through the Lending Club platform and Titan Bank started to offer personal loans to their customers through Lending Club (Zerucha, 2013). With nearly 7,000 community banks in the US, the potential for additional partnering with Lending Club as it expands into the small business space is substantial. The passage of the SEC crowdfunding rules will certainly expand the pool of individuals eligible to provide funding to small businesses but it is unclear what the overall impact will be on P2P lending.

Second, consider the experience in the UK. UK-based Funding Circle is a peer-to-peer platform dedicated solely to making loans between £5,000 and £1 million to small businesses for 6 months to 5 years. It was founded in August 2010; as of August 2013, it had already made loans to nearly 2,500 businesses totaling more than £135 million.[17] This information is particularly relevant now that Funding Circle has merged with Endurance Lending Network in the US and are providing loans to businesses in the United States (Eavis, 2013).

As small business owners are increasingly turning to this alternative source of money to fund their businesses, policy makers may wish to keep a close eye on both levels and terms of such lending. Because such loans require less paperwork than traditional loans, they may be considered relatively attractive. However, given the relatively higher rate paid on such loans, it may be in the best interest of the business owner to pursue more formal options. More research is required to understand the long-term impact of such loans on the longevity of the firm and more education to potential borrowers is likely in order.

Additional research into the types of businesses that are more likely to turn to peer-to-peer platforms rather than traditional funding sources would also be of interest. For instance, it would seem that peer-to-peer borrowing would be more likely among service firms that have fewer—if any—assets to offer as

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Table 10. Odds ratio from logit estimates of whether or not the loan performs poorly

	(May 2007- Dec 2012)
Small Business Dummy	2.710***
	[19.61]
Amount Requested (In Thousands)	1.017***
	[8.42]
Fico Score	0.988***
	[-27.31]
Annual Income ($1,000)	0.995***
	[-11.58]
County Population (1 yr lag, in 1,000's)	1.000
	[1.40]
County Per Capita Income (1 yr lag, in $1,000's)	0.996***
	[-3.70]
Home Owner	0.956
	[-1.57]
County House Price Index (1 yr m.avg lag, 1=100)	1.173**
	[2.09]
60 month loan	1.621***
	[14.64]
Employed less than 1 year	1.042
	[0.99]
Application year (2007 is omitted)	
2008	0.993
	[-0.06]
2009	0.758**
	[-2.34]
2010	0.583***
	[-4.64]
2011	0.435***
	[-7.13]
2012	0.190***
	[-14.25]
Constant	486.619***
	[12.24]
Pseudo R2	0.076
N*	84,333

Note: Poor performance is defined as having a loan status of "charged off," "default," or "late (31-120 days); t-statistics in brackets. *** indicates significance at the 1% level; ** indicates significance at the 5% level; and * indicates significance at the 10% level. State fixed effects included in estimation

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collateral for traditional loans than manufacturing or construction firms that tend to have more tangible assets. However, the Lending Club data do not allow for the distinction of the types of small businesses obtaining the loans. As the Lending Club small business platform—and others like it—are launched, such data may become available in the future.

NOTE

The views expressed herein are those of the authors. They do not necessarily reflect the opinions of the Federal Reserve Board or its staff.

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KEY TERMS AND DEFINITIONS

Crowdfunding: The practice of funding a project or venture by raising monetary contributions from a large number of people, typically via the Internet.

JOBS Act: The Jumpstart Our Business Startups Act, or JOBS Act, is a law intended to encourage funding of United States small businesses by easing various securities regulations. It was signed into law by President Barack Obama on April 5, 2012.

Peer-to-Peer Lending: Peer-to-peer lending is the practice of lending money to unrelated individuals, or "peers," without going through a traditional financial intermediary such as a bank or other traditional financial institution. This lending takes place online on peer-to-peer lending companies' websites using various different lending platforms and credit checking tools.

Prosper Marketplace: A San Francisco, California-based company in the peer-to-peer lending industry. The company operates Prosper.com, a website where individuals can either invest in personal loans or request to borrow money.

Lending Club: A US peer-to-peer lending company, headquartered in San Francisco, California. Lending Club operates an online lending platform that enables borrowers to obtain a loan, and investors to purchase notes backed by payments made on loans. Lending Club is the world's largest peer-to-peer lending platform.

Alternative Finance: Alternative finance refers to financial channels and instruments that have emerged outside of the traditional finance system such as regulated banks and capital markets. Examples of alternative financing activities through 'online marketplaces' are reward-based crowdfunding, equity crowdfunding, peer-to-peer consumer and business lending, and invoice trading third party payment platforms.

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ENDNOTES

1 A ROSCA is a group of individuals who meet at regular intervals; at each meeting, each member contributes a given sum of money which is then given to a single member at the end of the meeting. Meetings continue until all members have received the lump sum. See Ardener (1964) and Geertz (1962) for a historical perspective on ROSCAs.

2 For more information, see the individual websites of these companies, http://www.kiva.org/ and http://www.crowdrise.com/.

3 See http://www.kickstarter.com/.

4 See https://www.prosper.com/ and https://www.lendingclub.com/ for more information on the individual companies.

5 See http://www.prosper.com/help/investing/
http://www.prosper.com/help/borrowing/
http://blog.lendingclub.com/2011/06/10/is-lending-club-available-in-my-state/

6 Kiser, Prager, & Scott (2012) find that the distribution of banks' supervisory ratings shifted towards worse ratings between 2007 and 2010 and those ratings downgrades were associated with significantly lower rates of growth in small business lending over this period.

7 While somewhat dated, the data from the 2003 SSBF provide the most current enumeration of small business borrowing from all sources with dollar amounts. Mach and Wolken (2006) provide more information on the 2003 SSBF.

8 "Other" providers include: venture capital firms, small business investment companies, other business firms, family or other individuals, government agencies, suppliers, credit card processors, check clearing companies, factors, owners, retirement plans and consolidated institutions.

9 The data are publicly available at https://www.lendingclub.com/info/download-data.action and are continuously updated. The data used for analysis in this paper were downloaded on August 13, 2013; analysis is restricted to loans issued prior to December 31, 2012.

10 The total number of funded small business loans is slightly larger in Table 5 than in Table 3. This is because Table 3 is split by the year or issuance of the loan whereas Table 5 is by year of loan application. There is some lag between application and issuance.

11 There are several months in 2008 when there were no peer-to-peer loans for small business when Lending Club was coming into compliance with SEC regulations.

12 In doing our research, we noticed that interest rate downloaded on different days was not identical for a handful of observations. For the 21 observations that did not have the same value across the two time periods, we compared the rate paid and the credit grade of other loans issued at the same time and used the reported rate that mostly closely fit with other loans from that period. For example, one loan on the data downloaded in August 2013 had an interest rate of 6.00 percent; that same loan had an interest rate of 14.91 on the data downloaded in December 2012. Because the 14.91 rate was more in line with the other loans made at the same time with a D2 rating, we used the 14.91 interest rate in the analysis.

13 The location data for the denied loans is of much lower quality than for the funded loans. For the denied loans, the state is the finest level of geography that we are able to ascertain for most of the applications. For the funded loans, we are able to ascertain the county from the city and state for most loans. Thus, we use state-level controls in the logistic model, but county-level controls in the regression.

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[14] The data used is the "Local Area Personal Income accounts CA1-3" series, downloadable from http://www.bea.gov/regional/downloadzip.cfm.

[15] While we cut off applications at December 31, 2012, we pulled data on all these loans on August 14, 2013 to get updated performance data.

[16] Since the revision of this paper, Lending Club has both launched its small business platform and become a publicly traded company valued at $5 billion.

[17] Statistics were pulled from the Funding Circle page on August 7, 2013.

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Chapter 2
Basic Types of Project Initiators: Contributor Relations in Platform-Based Online Crowdfunding

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ABSTRACT

Crowdfunding has helped many businesses and projects to take off easily and is replacing the traditional methods of fundraising since more platforms are being created. Evaluation of the risk for both the borrower and the donor is important before investing or borrowing to ensure that the project is a success. Crowdfunding is changing the way that projects and startups get funded. Most of crowdfunding money is raised on reward-based platforms, although equity crowdfunding is growing quickly. It can be expected that crowdfunding will become more popular, with many crowdfunding new opportunities available, which will make not easy for potential investors to choose what to support. In this chapter, we introduce the reader to the basic types of project initiators-contributor relations in online crowdfunding. We review the current literature identifying the research questions relevant for our purpose. We subsequently conduct a research method of systematic review to identify the relevant papers that address those research questions.

INTRODUCTION

People have many business ideas and innovations that are usually delayed or crippled due to lack of funds. There are many ways of raising money towards a given venture in order to kick-start a project. If an individual does not have the necessary funds, one of the alternative ways to raise funds is through fund-raising platforms. The money raised through a fundraising may it be through donation or on debt and it should only be used to successfully start the targeted project. The money raised can be through donations, mainly reward-based, equity-based or credit-based, all of which have to give some form of compensation to the contributor (Outlaw, 2013, p. 5).

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It is very difficult to maintain an adequate long and short term financial plan when there is a shortage of funds for any particular business or a new venture. Furthermore, the working capital management will need to have adequate funds in order to cover the short term expenses. It is also possible that the creditors can demand payment at any time for the goods delivered to the business by them and for that is necessary to maintain the working capital or adequacy of the funds. Fundraising can also help the business to maintain the effectiveness of the business on a long term basis and the example could be related to the purchase of a new machine (Steinberg et. al., 2012, p. 35)

A new startup needs some amount of funds in order to get the business started. In order to transform the entrepreneurial project into a reality, then it is necessary to have adequate cash to execute all such plans. Moreover, the fundraising will help the entrepreneur to develop the business model for the growth of the project and a successful business marketing plan (Damus, 2014, p. 32)

The technological advancement and the use of the Internet have raised a new platform for fundraising known as crowdfunding. Crowdfunding involves three parties: the project initiator or owner who needs funding, the contributor who is willing to give their money and the moderating organization that facilitates the engagement between the contributor and the initiator (Young, 2013, p. 33). Moderation can also be done through technology by the project initiator himself, using Web 2.0 and outside of platforms (see for example Gerber & Hui, 2013 for a definition including such practices). The platform involves entrepreneurs or potential business owners asking for funding for their projects from the "crowd" or users from all over the world who may be interested in supporting their cause or business. Crowdfunding allow individuals the possibility to develop into their business ideas, even if it is only with a small amount of money. Governments encourage crowdfunding due to its positive impact on the economy as a whole, as it creates new jobs and fosters the economic growth of countries.

This chapter seeks to introduce the reader to the basic types of project initiators-contributor relations in online crowdfunding. For this, we have reviewed the current literature identifying the research questions relevant for our purpose. We subsequently conduct a research method of systematic review to identify the relevant papers that address our research questions.

BACKGROUND

Although the name of crowdfunding and its use of the Internet are new concepts to the market and the population, it is usually mentioned that the construction of the Statue of Liberty's Pedestal took up the same idea. John Pulitzer, who was then a publisher, used his newspaper to rally up people donate money for the construction of the Pedestal, a project that later raised 100.000 dollars in six months. Pulitzer raised a fund and promised to print the identity of each donor, regardless of the amount of the donation. In August 1885, Pulitzer was finally able to announce that he had raised the final $100.000 for the statue's pedestal. The next year the Statue of Liberty, which had arrived from France packed in crates, was erected on top. (See Young, 2013 for more details). Crowdfunding is becoming hugely popular in many parts of the world and the Internet platforms that are being used for contributions are on the rise.

In 2013, Crowdfunding raised over 5.1 billion dollars to help people in various projects all over the world and the figure is projected to increase in the future with the new platforms becoming more popular (See Crowdfunding Industry Report from Research firm Massolution). The new law of the Jumpstart Our Business Startups (JOBS) by President Obama in 2012 introduced a regulatory framework. Most of it still has to be translated into active regulatory elements to this date, protecting donors to crowdfunding

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projects and enabling businesses to use crowdfunding as a real source of funding. The Act enhanced the credibility of the platforms for crowdfunding while at the same time ensuring that the project owners or entrepreneurs had a viable and a good source of funding for their projects. Kickstarter and Indiegogo are some of the most popular platforms boasting of members in millions of all parts of the world, these websites have enough people to pool huge amounts of resources for the funding of their businesses. See Assadi in this book (In search of business models of crowdfunding) for a complete explanation of the business models of online crowdfunding websites.

The chapter starts describing the different types of crowdfunding and continues explaining the different types of relations between project initiators and contributor in online crowdfunding such as reward-based crowdfunding, equity-based crowdfunding, and credit-based crowdfunding.

MAIN FOCUS OF THE CHAPTER

1. Reward-Based Crowdfunding

The reward-based form of crowdfunding is the most popular type with most contributors and initiators preferring this method due to the security of their funds under this method (See Crowdfunding Industry Report from Research firm Massolution, 2014). In reward-based crowdfunding, the target amount has to be established first for the completion of the project (Steinberg, 2012, p. 97). Then, the person or organization sets up donation amounts with an attached incentive that is proportional to the amount donated for the project. This method is hugely popular for artists, movie directors and other projects that have an aesthetic or prestigious value to the donor. For instance, if an artist was looking for a donation to help with a tour of Europe, he may offer signing autographs to people that will contribute $500 and backstage preparation with the cost to people contributing $1,000. These incentives ensure that the enthusiasts and the music lovers are motivated to donate to the cause (Young, 2013, p. 79). One of the unique characteristics with this method is that if the set platform allows for the project owner to get the amount only after the targeted amount is reached, he/she cannot be awarded the amount collected in case the donors do not raise all amounts. The donors can therefore get their money back and they have the confidence of recovery of the raised amount as a result (Agrawal, Catalini, & Goldfard (2015))

One of the major benefits of reward-based crowdfunding is that it has low risks for the promoter or the company that is behind the campaign to raise funds or donated amounts. Once a company has raised the required amount for the project and they may have had the donations only with a special clause for the specific project they are able to avoid dealing with debts, credit implications or interest that is attached to the loans or government grants. The reward-based crowdfunding method offers the chance to completely avoid all these problems and start their business or project without any possibility of future shortcomings due to any changes in the plans or the success of the project. The reward-based method also runs on low cost with the project owners being offered a chance to showcase their projects for only a small fee of their total collection and there are no high costs of managing the platform. As opposed to raising money through other conventional methods, where a person could end-up incurring a lot of costs for setting up the funds, crowdfunding sets this up at only a small fee and the project is viewed and supported by millions from all over the world (Roebuck, 2011, p. 104). The reward-based method also offers the donors a chance to gain a personal connection with the project they have donated towards and the people they have funded.

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Given the nature of their agreement or the incentives that have accompanied a specific project the donors get a chance to meet with their project initiators and owners in some of the project or are offered a form of memorabilia that offers them a personal connection to the projects. (Roebuck, 2011, p. 108).

One should examine the project and the rewards that they have offered the people in order to ensure that they feel attracted enough to the project to offer their funds. As much as the project owner has to assess the amount of money that they need for their project, it is equally important to draft the best reward that is irresistible for the targeted crowd. The reward is very important to the project since it is the attractive aspect of the project and the main reason why people are interested in investing. The company has also to ensure that the reward selected does not detrimentally affect the project since they may end up spending a lot of time to give their rewards infringing on the results of the targeted project. (Young, 2013, p. 85).

The experiences and rewards that companies set for the people need to be measured and evaluated for their practicality since they may cripple the success of the project in the long-run. It is therefore advisable to limit the premium awards to only few elite and people that have hugely contributed towards the project. Depending on the amount that the project needs to be successful the owner should come up with premium rewards that are set to mirror the amount that he/she wants to raise (Young, 2013, p. 90). This means that the rewards for small projects should not have high premium awards in comparison to the rewards for a huge project that needs a lot of money.

Drafting a good plan to help with selling the project to the people in the right way to attract potential investors is also critical in a reward-based method. The right plan should consist of the ways to market the project and also the right rewards to the donors who have contributed to the project. Prior planning ensures coming up with the best strategy for marketing and representing the project in addition to the project itself (Roebuck, 2011, p. 139). It is also advisable to hire professional marketers in the event that the project is large and requires a lot of resources to ensure that it gets the amount of funding to complete it successfully. Professional crowdfunding marketers are essential in guiding and ensuring that the company has captured the main attributes of their project and that it may be attractive to donors. Giving incisive information on the best rewards for a given project are also some of the factors that may help in directing and giving a project owner. Generating a buzz for the project leads to funding and therefore the project should generate the buzz that is achieved through personally promoting the product across multiple channels and trying to forge personal connections with people to rally them behind the cause (Roebuck, 2011, p. 141). The reward-based method is regularly used, especially due to the fact that the project owner does not have to incur any financial loss in the undertaking, apart from a small amount that they pay to the platform owners once it is fully financed. Table 1 shows the advantages and disadvantages of this type of crowdfunding.

The crowdfunding platforms such as Indiegogo, Kickstarter, RocketHub, and Eppela host many reward-based projects. Moreover, an individual can establish a project that incorporates a text, video, and reward perks that will be accessed by a backer when the money is pledged by them to the initiative. Therefore, it can be said that these platforms are available to fund new innovative projects. Kickstarter is the pioneer in reward-based crowdfunding online platforms, where over $1 billion has been raised to projects. The online platform Kickstarter is the most creative way to provide funding for the creative projects.

The platform Indiegogo is suitable for any kind of project. The most important fact is that it has attained more recognition worldwide and even more than Kickstarter. Initially, it used to fund theatre based projects, but then it expanded its development and made it open to almost any project.

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Rockethub is another similar company that was originally meant for the artists, but later transformed to include the sciences and scientists' projects, especially after the launch of its SciFund Challenge (Roebuck, 2011, p. 32).

Eppela is a platform founded in 2011 in Italy (Tuscany) for projects in the fields of design, art and culture, technology, food, non-profit, sustainability, and social innovation. The platform mainly targets potential artists, writers, film makers, or designers. Eppela charges 5% of the sum raised to cover operating costs. 40% of projects posted on Eppela are successful, it has more than 90,000 registered users, a successful project raises an average of 6,500 euros. Some of the most successful projects of reward-based crowdfunding funded through Kickstarter include Coolest Cooler, a company started in 2014 and located in Portland (Coolest, 2014), which is the largest reward-based crowdfunding campaign to date. The project involves the design of a portable cooler, which include blended drinks and music. This project has received donations from 62,642 investors for a total of 13,285,226 dollars. Another successful project, and currently the most funded, is Pebble, which is a customizable watch, with many downloadable watchfaces and internet-connected applications. The company is headquartered in California, its watches can be purchased online at (Getpebble, 2015). Pebble can connect to iPhone and Android smartphones using Bluetooth, alerting customers with a vibration for incoming calls, emails and messages. The project was funded in 2012 and attracted 68,929 investors, raising a total of 10,266,845 dollars. Ouya is another prosperous project funded in 2012, it is a microconsole with its own version of the Android operating system. The console was released to the general public on June 2013, together with Ouya stores for applications and games designed for the Ouya platform, its products can also be purchased online. A total of 63,146 investors supported the project, which raised a total of 8,596,474 dollars. Another of the most funded project is Pono Music, funded in 2014 in San Francisco, California (Ponomusic, 2014), which is an audio player using high quality recordings sold through the PonoMusicstore. The project gained support from leading record labels such as Warner, Sony, and Universal, and has signed a full agreement with Warner. The company was fully funded in one day after launching its crowdfunding campaign, 18,220 people invested in the company raising 6,225,354 dollars.

2. The Equity-Based Crowdfunding

Equity-based crowdfunding is a form of crowdfunding where the contributors become part-owners of the company raising funds. Equity-based is not a popular form of crowdfunding since the majority of the projects are not huge companies that donors and people funding the projects can get a stake and own part of (Douw, 2012, p. 60). Most of the projects are by entrepreneurs who do not have shares that the investors can invest in. However, since the enactment of the Act in 2012 this form of crowdfunding has gained popularity with most people seeing it as an investment opportunity for the interested investors in lucrative projects that the investors deem to pick up and be beneficial in a near future. This is offered at

Table 1. Reward-based crowdfunding in balance

Advantages	Disadvantages
• Raising money for the project or business without selling off an equity stake in the business. • Getting hundreds or thousands of people committed to the success of the campaign.	• Once an individual has successfully raised money, he has got to ship whatever he is producing. • The dock is ticking and it is no surprise that many of the top crowdfunding projects are very late in getting delivered to donors.

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very low rates as compared to the market rate since the project owners will need to make their proposal and project attractive to the potential investors through their competitive prices and growth potential in the future (Douw, 2012, p. 60).

Equity-based form of crowdfunding is slowly catching up with the other methods of crowdfunding. It is, however, a safe and viable method to raise money for the company and beneficial for the donor if the company makes profits in the future and they gain from the dividends or distribution. Equity-based crowdfunding can also be used to create a venture finance market. Equity crowdfunding does not only involve the shares as the only forms of securities, but also debt notes, convertible notes, and hybrid forms of equity and debt (see Freedman & Nutting, 2015, p. 5). In addition, there are some forms of partnerships that qualify as securities in equity-based crowdfunding. One of the main attributes of equity-based crowdfunding in creating venture-based market is its ability to connect startup business and the medium businesses to the larger investor community. Equity-based crowdfunding offers a platform to reach out to the companies through a single advertisement on the web. It ensures that the information reaches out to interested potential buyers and sells the business to the investors (Mollick (2014)). The venture space is therefore in ensuring that the investors and the business people meet. In addition, the venture space ensures that people with similar businesses and ideas can interact and advise each other on the best practices and the best ways to improve the businesses. The venture space is not only useful in raising the funds, but also ideas and plans on the best ways to improve the business given that there are other members of the crowd with the same ideas. It can also lead to mergers and amalgamation of two or more different venture businesses since the equity-based crowdfunding targets the business people who are interested in increasing their venture capital either through shares or other securities. The equity-based finance structure has a pool of professional small and large businesses that need a regular appraisal either through funding or through further investments (Steinberg, 2012, p. 113). Economic growth is also a factor that is hugely influenced by the success of the equity-based crowdfunding, since the growth of business companies contribute to the economic growth of the country. Most governments all over the world are taking up the new platforms and legislations have already been passed to ensure that crowdfunding for businesses and individual projects help the larger financial community that is the whole country. The venture finance marketplace has therefore transformed the equity-based crowdfunding concept to rally the support of the government and security legislations since it has been viewed as a milestone and a new trend in the financial sector.

These platforms offer companies to obtain extra funding for their product without having to go through the normal bureaucratic procedures that tie up an Initial Public Offer or the sale agreements with the shareholders in a company. It is therefore a platform for buyers and sellers to meet as much it is a fundraising project since the donors stand to gain from their investment decisions (Dresner, 2014, p. 85). The Jumpstart Our Business Startups Act of 2012 has increased the number of people who are interested in investing in the projects as they are assured of getting a return on their investments. The process is similar to the reward-based method since one has to broadcast and market their project to many people in order to ensure that they get enough "crowd" to fully fund their projects. It is therefore essential that the company plans for the ways to sell the project and make it attractive to potential investors that invest in the company in the hope of getting returns on the investments in the form of dividends or distribution. Similar to reward-based crowdfunding sorting help from professionals, on crowdfunding under this method is also necessary since they need to generate enough buzz to ensure that their projects are funded. This implies a low risk as compared to get money through other channels such as debt financing since the shares are the tokens that are offered to the investors of the new project. In addition,

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the costs are also relatively low since instead of going through the usual channels and processes that require a lot of resources the company generates the funds at a very low cost with the only requirement being the small fee (ranging from 7% to 12%) charged by the platform operators. Although the investors are offered a stake in the company, the amount of stocks that are offered for a given amount needs to be proportional to their contribution (Dresner, 2014, p. 57). It is important to note the purpose of the project to the company and the implications of offering new members a part of the company keeping in mind that it should be high enough to attract new investors but should be financially feasible to ensure that the company remains in a competitive position. Offering too many shares for a lower amount may result to problems in the company due to one project and as a result, it is advisable to ensure that the amount given is managed by the company and does not cause any problems in the long-run.

The investors, however, bear the risk of losing if the company does not do well in the projects that it has invested in. As opposed to the reward-based method where the donors do not expect rewards that have a monetary value, although reward-based campaigns offer products as rewards, in equity-based method the donors take the risk of losing the money if the project or the company fails in the market. The opposite is true if the company performs well, investors are likely to get return on their investments from the project. The owners of the project are also able to pool the funds that they could not have accessed due to their financial constraints easily and more efficiently (Lawton & Dan, 2013, p. 86). Table 2 shows the advantages and disadvantages of this type of crowdfunding.

There are several online platforms that facilitate equity-based crowdfunding. They are IPOVillage.com, Seedrs, Crowdcube, Earlyshares.com, and MicroVentures.com. Their details are shared below:

IPO Village is the platform that utilizes equity-based crowdfunding in order to provide retail investors with exclusive IPOs emulated by the allowance of Main Street investors to get an access to the stock that was for Wall Street elites.

Cedars is the FSA regulated platform in the UK. It provides services for investments in the startups that includes equity-based crowdfunding investments as well. This platform lets the individuals to look for rewarding, tangible, places to get their money invested.

Crowdcube is another way to provide money to the startups and expand the business through equity-based crowdfunding while providing the entrepreneurs with a great platform to get connected with the ordinary people and ultimately give a raise to the venture capital.

A sample of recently funded projects funded through Seedrs includes Chapel Down (Chapeldown, 2015), a Premier English sparkling wine and beer producer based in Kent, England, admitted to trading on the ISDX Growth Market. The Company raised £4,350,000 through an equity issue in 2013 when it was funded, supported mainly by large investors and institutions. The company has launched a new equity issue in 2014. The company has been admitted to trading on the ISDX Growth Market and it is the first listed company that has undertaken an equity crowdfunding campaign anywhere in the world. Seedrs is also an example of a leading company funded by equity crowdfunding, the company is an online, cross-border platform for investing in startups (Seedrs, 2015). It aims to provide the infrastructure for private investments in early-stage businesses. They are looking to process and administer angel and group transactions and to create products and structures to provide a range of investor types exposure to startups. The company was launched in 2012 and has raised £2,583,420 since then with an equity offer of 33% of the company. NearDesk is another example of successful equity-funded company, the company lets users rent desk and meeting space by the hour at different locations around the UK, it is based in London and its cards can be purchased through its website (Neardesk, 2015). Thus, customers only pay for the time they use, with a single monthly invoice. Cards are issued by NearDesk and by partners

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Table 2. Equity-based crowdfunding in balance

Advantages	Disadvantages
• By taking angel investing (individuals investing in startups) online, equity crowdfunding has opened up this type of investing to more and more people. There are very accomplished investors using these platforms whose contribution may add to the success of the business long term. • Equity crowdfunding allows raising money in a fast way on websites without the need to agree to fundraising commitments of venture capital companies. • It would also allow entrepreneurs more freedom to set their own commitments compared to selling publicly traded stocks. • Attracting hundreds of investors online also means gaining online popularity for a startup company.	• Not all entrepreneurs are comfortable posting their financial and business plans online for investors to see. Getting comfortable with equity crowdfunding means one must get comfortable with increased transparency into the business. • Equity crowdfunding might not be able to compete with the experience and expertise in business growth that venture capitalists could bring to startups. • As crowdfunding investors might have not much knowledge about the risks of online investment, it may be difficult for entrepreneurs to deal with investors' expectations. • Equity crowdfunding (by non-accredited investors) is not yet legal in the United States as it is prohibited by the Securities Act of 1933

who provide co-branded cards. The company has raised £1.000.012 in 2014 with an equity offering of 22% in its third round. Another company worth mentioning is Shareeight, an application available to download on the iPhone and iPad that aims to bring together all of the major brands and retailers in one place. Shareeight is a unique search method to reach the top 500 retail search terms in just three taps, the interface organizes the results into manageable chunks of 8. Shareeight aims to bring all the major stores together to benefit both customers and shops. So far, more than 80 retailers and over 8.000 brands have joined Shareeight. The company was founded in 2014, it is based in London and its applications can be downloaded from its website (Shareeight, 2015). They have had two rounds of financing, in the first one they raised £605.000, equivalent to the 16% of the company, and a second round raising $1,000,000 in just 24 hours.

3. Credit-Based Crowdfunding

Credit-based crowdfunding is a method where the donors to a specific project loan out money to the person in the hope of future repayment of the amount owed. This is the safest method of crowdfunding for the donors since in case the project owner defaults in payment of the advanced loans the platform is liable for the payment of the loan to the donor (Tomczak & Alexamder, 2013, p. 341). Under this method the borrowers submit an amount that they wish to be loaned and the donors interested in the specific project advance the borrower the amount with a promise of repayment at a future date. The platform acts as the intermediary and or surety for the borrower and the donor to ensure that the donor gets the amount back and facilitate the pooling of funds for the borrower. The borrowers find crowdfunding attractive since it has very low or no interest rates for the borrowers and they only have to incur a fee to process the funds by the platform and agree on a flexible payment plan to refund the amount forwarded. In the event that there is any interest to be charged on the amount of money borrowed the borrower sets the interest to be charged that they are comfortable and can guarantee a refund within the stipulated time period (Mollick, 2014). This makes the method attractive for the borrowers since they are not required to pay a minimum or set interest rate that is predetermined and as a result they can guarantee payment. The lenders on the other hand have to evaluate the project for its risks or benefits and potential and establish if they are willing to lend money at the interest rate set by the borrower. The arrangement is similar to that of a bank loans with the main difference being the predetermined interest rates. Whereas

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in credit-based crowdfunding the borrower sets the interest rates, inviting donors to fund the project in a bank loan the borrower must agree to the terms set by the bank or the authorities involved (Althoff & Leskovec (2015)).

One of the main advantages is that the borrower does not have to give any form of collateral to the lender and they transact only in terms of good faith from the borrower and the donor of the project. The donor funds the borrower in the hope that they will repay the money not because they have a history of repaying or they have presented evidence to suggest that they are capable of repaying the money but only on faith they have on their project. This ensures that the platform eradicates many processes of loan funding and borrowing that would slow the timeline of acquiring a loan. Background checks run by the banks and also the examination of the presented information are a large part of the processing process making it tedious and time consuming. The process also rules out borrowing from poor and new business people that are looking for money to kick start their business and have no collateral or no history to guarantee payment of the amount that they have borrowed. Crowdfunding offers such people a chance to borrow even huge amounts of money without any form of guarantees and guarantors. Credit-based crowdfunding has been immense in eliminating the factors that hinder borrowing and lending since there are none in crowdfunding. The project and presentation of the ideas are the most important aspects of a project if one aims to be funded for a project accordingly. It is therefore advisable for one to lend both their time and resources in the presentation of the project to as many people as possible. Hiring professionals to market the product is necessary for a borrower that looks to get money for their project and within a specific timeline since the professionals are able to market the product to the potential lenders using the best techniques while also offering advice on aspects such as the interest rate that stands to attract investors in the market (Tomczak & Alexander, 2013, p. 350). Proper planning is also important for the borrower if they are to make the intended amount within the set timelines and be able to pay specific installments that they have set. Unlike the other two methods where awards are given to the people who invest in the project, the credit-based method requires an individual to have a well-structured plan on the mechanisms of payment. Table 3 shows the advantages and disadvantages of this type of crowdfunding.

Just like the above two crowdfunding platforms, there are several examples of online credit-based crowdfunding platforms. They are named as Funding Circle, Lending Club, Prosper, Zidisha and Index Ventures.

Funding Circle was developed with a big idea in order to revolutionize the outdated banking system and maintain a better deal for every individual. They have helped the businesses grow with thousands of loans along with the facilitation to let the investors prosper and stabilize the economy. It is the leading lender in the online marketplace which targets small business.

On the other hand, Lending Club got the status of an establishment as an alternative to the conventional banking system in that provides loans to the borrowers at a low interest rate and better returns to the investors. It is America's dominant online credit platform and has been pioneer in transforming the way the lending operates.

Index Ventures is the leading international capital firm with branches located in London, Geneva and San Francisco. They provide support to the companies and founders who look to become the Fortune 500 for the upcoming 50 years.

Credit-based crowdfunding present some interesting statistics, Funding Circle (Fundingcircle, 2015) reports that 34,322 British investors have lent to business through their website and a total of £417,602,420 have been lent to British businesses since 2010. An average investor achieves an average return after fees and bad debts of 7.6%. Lending Club (Lendingclub, 2015) is the world's leading online

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Table 3. Credit-based crowdfunding in balance

Advantages	Disadvantages
• Possibility of raising capital without giving away company's shares of capital. • Funds are disbursed as personal loans through internet without financial intermediation. • The fact that small sums are made to individual loans minimises losses.	• Less important contributor's involvement than in equity-based crowdfunding • No pre-sale/audience building element as in donation-based crowdfunding. • Funds are disbursed without collateral, with high risks involved.

credit marketplace, they have a simple credit marketplace, customers interested in a loan fill an application, the company examines the information, determines an interest rate and presents some offers to borrowers, then investors select loans in which to invest and can earn monthly returns. Lending Club has donated $6,205,366,548 in loans, and has paid $595,817,848 to investors. 83.17% of borrowers report using their loans to refinance existing loans or pay off their credit cards. The company has grown at more than 100% per year over the last few years. Prosper (Prosper, 2015) is America's first peer-to-peer lending marketplace, it has more than 2 million members and has funded more than $2,000,000,000 loans. Borrowers request loans between $2,000 and $35,000 and lenders invest from $25 in each loan listing selected, investors can see credit scores, rating and histories, as well as borrowers' personal loan descriptions, endorsements from friends, and community affiliations. The company reports an average return of 8.89% for investors. Zidisha (Zidisha, 2015) is the first online microlending community that matches lenders and borrowers, the company has raised $2,308,144 so far and has funded 8,127 projects, with a total of 9,504 lenders and 6,141 borrowers from 141 countries. Index ventures (Indexventures, 2015) is the oldest of the companies, founded 1996, they have funded 140 companies in 38 countries. The company has raised several venture funds, from Index Ventures I through VI; Index Growth 1 and 2; and a $200 million life sciences fund with the support of GlaxoSmithKline and Johnson & Johnson.

4. Donation-Based Crowdfunding

Donation-based crowdfunding is the last method available for funding new initiatives. In this method, funds are raised for an initiative of public interest, although there is no economic benefit to the community financing the initiative. One of the greatest challenges of social entrepreneurs today is accessing startup capital, that's why donation-based crowdfunding makes this method an interesting financing solution. One example of donation-based crowdfunding is the 2008 election campaign of President Obama, the campaign team collected more than $137 million by this method.

One of the risks in a crowdfunding initiative is targeting and unrealistic financing initiative, as crowdfunding platforms charge a larger percentage fee if the target is not met, failing to deliver on the project's promise will negatively affect the project's reputation. Thus, it is very important to engage the potential community into the project and design the project according to their interests. That's why advertising the campaign is an important part of the crowdfunding process, always keeping costs in mind, it is important to advertise the campaign through several channels and reaching the largest possible potential supporters. Most donations-based crowdfunding initiatives reward donors with something in exchange for their contribution. Typically this is some kind of perk, this is usually the most expensive part of the crowdfunding campaign. The most challenging part of the crowdfunding process is moving from the zero donation phase, as potential donors usually imitate what other supporters did, then a

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potential donor might be not willing to give funding to a project when no money has been raised yet. Encouraging close friends and contacts to contribute in the initial stages of the campaign will be helpful. The Regional Studies Association (RSA) explains that the most critical zone is when the 10%-50% of the initiative has been funded, as most unsuccessful campaigns fail somewhere in this range. Thus, in order to take the initiative to reality it is essential to push the campaign after the launch with advertising and showing previous donations. In initiatives involving social entrepreneurship like the ones involving this type of crowdfunding it is more important to have the certainty that it is a feasible project, as a poor crowdfunding campaign could harm the reputation of the company and affect future initiatives to get funding. Another important issue to consider is that the amount raised can be affected by declined funds later on coming from credit cards, wrong donations, or fraud.

Not all of the main crowdfunding portals are suitable for social entrepreneurs. For example, Kickstarter is designed only for creative projects and is not aimed for social businesses or nonprofits. GoFundMe is the world's leading personal fundraising website, it is based in San Diego, California, and it was launched in 2010 (Gofundme, 2015). It has become the leading fundraising site for personal causes and life-events. It has raised $550 million from 8 million donors since inception. Some example websites that are usually employed by social business include: Indiegogo, which we already mentioned above, although the company was not created for social entrepreneurs it allows almost all donations-based initiatives. It has become a large network for social businesses and ONGs due to its flexibility and international recognition. Another platform for causes and charities is Crowdrise, which employs a specific system to advertise the charitable impact of social organizations. Rockethub jointly in partnership with A&E Project Start Up also offers donation-based crowdfunding services funding innovative projects for social entrepreneurs. Another portal which operates in a different way of the others listed above is Invested.in, this website offers the opportunity to social ventures to create its own crowdfunding community for donation-based fundraising. The platform argues that its procedure to raise money is simpler than other portals and its transaction fees are lower than the competition. Table 4 presents the advantages and disadvantages of this type of crowdfunding.

The most common examples of donation-based crowdfunding are projects involving some kind of community fundraising: improvement to schools, improvements to churches, financing for children school ground, or financing facilities for sports clubs. The initiatives that raised the largest amounts from the platform GoFundMe include "Saving Eliza" (SavingEliza, 2015), which is a campaign to save a 8 year old girl, who was diagnosed with a rare terminal genetic disease. The campaign has raised $1,758,500 from 32,794 people. Another campaign is "Bucks for Bauman", which helps a man injured in the Boston marathon attacks to pay for his medical bills, the campaign has raised $809,035 from 16,491 people. Also related to the Boston marathon attack is the "Celeste and Sydney Recovery Fund", which is a fund to recover both ladies physically and emotionally from the attack in Boston. The initiative has raised $794,934 from 11,271 people.

CONCLUSION

In conclusion, crowdfunding has helped many businesses and projects to take off easily and is replacing the traditional methods of fundraising since more platforms are being created. Evaluation of the risk for both the borrower and the donor is important before investing or borrowing to ensure that the project is a

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Table 4. Donation-based crowdfunding in balance

Advantages	Disadvantages
• There are usually no tax implications when receiving large sums of money in this kind of initiatives. • No need to give up partial ownership of the company (although in many cases of donation-based crowdfunding there is not a company involved). • Limited regulatory restrictions. • Donors are assured that their money is put to good use. • It provides a platform for many short-term and easy to measure social projects, which are initiated soon.	• The main disadvantage is that social entrepreneurs might be limited by the amount of money they raise, as this kind of initiative usually attract less money than other types of crowdfunding, the amount collected might not be enough for an ambitious initiative. • People are reluctant to support a project if they do not obtain a financial return on their donation, this should be taken into account in the initial plan. • Especially important for social projects is that the number of participants in these initiatives decreases in proportion to the likelihood of fraud. • Reward initiatives can be expensive. • It is difficult to differentiate a social project from others and get attention from the crowd given that barriers to entry are low.

success. The legislation of the Act has enabled the platforms to conduct business better and have a larger crowd since the donors have the backing of the government and the law while engaging in the business.

Crowdfunding is changing the way that projects and startups get funded. Most of crowdfunding money is raised on reward-based platforms, although equity crowdfunding is growing quickly. It can be expected that crowdfunding will become more popular, with many crowdfunding new opportunities available, which will make not easy for potential investors to choose what to support. A new business that seeks funds through the crowdfunding process comes out stronger as for the questions that has to answer and the scrutiny that it is put under, compared to convince a single angel investor. It is worth mentioning that because a startup does not obtain crowdfunding does not necessarily mean that the business is not viable. It might be that investors may not be on that platform or perhaps is not the right time. One of the biggest challenges ahead will be communicating efficiently and engaging with investors after successful funding. Investors will possibly be interested in the big numbers and updates instead of the news from daily operations. Investors will be more likely to reinvest if they are kept engaged and the company is looking after them. Creating a mutual interest might foster that investors act as ongoing mentors in the business.

It is widely believed that crowdfunding will democratize the investment market. The question remains if the sector will continue acting in a fair and trustworthy way in the future, or will make the same mistakes as banks during the financial crisis, in that case the sector can lose its credibility. In this sense, Crowdfunding research website TheCrowdCafe explained that there are no cases of fraud in the six main platforms monitored by them. Fraud means creating fake campaigns or companies. Although the number of fraud cases and scams in the crowdfunding industry has been recently growing, recent cases include: GoBe, Anonabox, Scribble or Holovision. Thus, investors should examine the project thoroughly before investing as the possibilities of fraud will increase in the near future as the industry grows.

Each type of crowdfunding has itws own advantages. Reward-based crowdfunding can raise money for the project or business without selling off an equity stake in the business, as well as getting hundreds or thousands of people committed to the success of the campaign. Equity-based crowdfunding attracts accomplished investors using these platforms whose contribution may add to the success of the business long term. It allows raising money in a fast way on websites without the need to agree to fundraising commitments of venture capital companies, and also allow entrepreneurs more freedom to set their own commitments compared to selling publicly traded stocks. Credit-based crowdfunding offers the possibility of raising capital without giving away company's shares of capital. Funds are disbursed as personal

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loans through internet without financial intermediation, and the fact that small sums are made to individual loans minimises losses. Finally, Donation-based crowdfunding offers no tax implications when receiving large sums of money in this kind of initiatives, with no need to give up partial ownership of the company, limited regulatory restrictions, while donors are assured that their money is put to good use.

While in the US, companies using crowdfunding platforms have to disclose their finances to potential investors and regulators, in European equity crowdfunding platforms are still approaching important concerns like transparency for potential investors. American crowdfunding platforms typically look for financial projections of companies and examine their business plans. The lack of crowdfunding legislation in Europe is an important obstacle in the advancement of this way of financing. In Europe, small and medium companies represent 99% of businesses and 67% of all jobs. According to the European Central Bank, bank loans decreased sharply after 2008 by 29%. Crowdfunding is a possible solution for the problems of financing small and medium-sized companies, but the existing regulations prevent growth in this market. Furthermore, the lack of integration of European regulation limits crowdfunding to national borders, which means that operating in a small market will make more difficult for small companies to satisfy their capital requirement.

In Europe, there are 28 different legal crowdfunding frameworks for one market, this fragmentation is the key problem for crowdfunding growth. Cross-border transactions will face problems with this situation. Thus, many investors are excluded from investing in crowdfunding projects due to their location in the UE. Many countries are pushing the European Commission to create a pan-European regulatory framework to foster growth in the sector. This problem has been clearly recognized in the United States, with the Jumpstart Our Business Startups Act', or the 'JOBS Act', a uniform regulation for crowdfunding has been created. According to Masssolution Market Researcher, Europe will represent 26% of the crowdfunding total market. Only in 2012, the European market handled transaction for 925 million, while the American market for crowdfunding managed 16 billion dollars. Europe will not be able to follow the United States when it comes to crowdfunding until a uniform legislation is created (Bruntje & Gajda 2016).

Finally, it is worth mentioning that many crowdfunding proposals do not go through the crowdfunding platforms, many companies prefer to launch their crowdfunding campaigns through their websites. One example is Lockitron, which was rejected by Kickstarter. The company, which makes electronic door locks, launched a campaign on its website and raised more than $2,000,000 in 30 days.

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KEY TERMS AND DEFINITIONS

Angel Investor: An investor who provides funding for small startups or entrepreneurs.

Credit-Based Crowdfunding: Credit-based crowdfunding is a method where the donors to a specific project loan out money to the person in the hope of future repayment of the amount owed.

Crowdfunding Platform: Internet platforms which enable companies to advertise over the internet and obtain investments from registered users in return.

Donation-Based Crowdfunding: In this method, funds are raised for an initiative of public interest, although there is no economic benefit to the community financing the initiative.

Equity-Based Crowdfunding: Equity-based crowdfunding is a form of crowdfunding where the contributors become part-owners of the company raising funds.

Jumpstart Our Business Startups (JOBS): A regulatory framework, protecting donors to crowdfunding projects and enabling businesses to use crowdfunding as a real source of funding.

Reward-Based Crowdfunding: In reward-based crowdfunding, the target amount has to be established first for the completion of the project. Then, the person or organization sets up donation amounts with an attached incentive that is proportional to the amount donated for the project.

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Chapter 3
Crowdfunding and Slow Money: Challengers or Partners – A Field Perspective

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Sustainable Finance Geneva, Switzerland

ABSTRACT

Investment is always needed for new business or business development, and we are living with the emergence of new kinds of providers. Alongside banks, funds, or capital markets, efficient funding through people is doable on a larger scale than ever before, thanks in part to the Internet. Crowdfunding platforms and Slow Money are part of this bottom-up trend. In this chapter we compare crowdfunding and Slow Money and by analyzing how they attract people, we discuss their similarities and differences to respond to the research questions. The analysis might help identify potential synergies between the two non-conventional models, and heighten crowd-based solutions of fundraising. This article will identify their fundamentals. More importantly, we will investigate the spirit behind direct funding.

INTRODUCTION

The severe decline in finance for business has arguably been the most enduring dimension of the 2008 financial crisis. American and European banks, the conventional channels of funding for businesses, have abruptly decided to lend less, particularly to small and medium enterprises (SMEs), to reduce their exposure to worthless debt and risk. As a consequence, the normal supply of funds for smaller businesses and micro-enterprises has significantly declined even more in both nominal and real terms.

Small firms, unlike large firms, lack access to public institutional debt and equity capital markets, and therefore in crisis periods when credit sources tend to dry up, they are more likely to experience difficulties in obtaining external funding for working capital and investment than large firms. Banks pledge 40% of their resources to multinationals, 20% to derivatives, 13% to interbank loans and only 17% to the local economy (Mortier, 2013),

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Gordon Mills and McCarthy (2014) report that American small enterprises were hit harder than large firms in terms of securing bank credit during the 2008 financial crisis. In the same vein, the European Central Bank (2014) notes that while access to finance is a major challenge for European SMEs in normal times, it was much more so during the financial crisis. Klein (2014) finds that limited access to bank credit in recent years has increased the pressure on SMEs, forcing them to scale back investment plans and production. He finds evidence that countries with a high prevalence of SMEs tended to recover more slowly from the global financial crisis than their peers, implying that the interaction of the economic structure and access to bank financing plays a critical role in episodes of economic recovery (Klein 2014).

The 2006-2008 crisis also revealed that governments, often affected by high levels of public debt, were unable to provide extensive funding. People consequently took initiative for both protesting ("Occupy Wall Street" in the United States, "Indignados" and "Podemos" in Spain, etc.) and leveraging their social ties to be part of the solution in the face of the financial problems.

One of their basic solutions consisted of bypassing the conventional institutions as intermediaries of collecting funds from one and lending them to others. Crowd-based initiatives used the power of people to unlock funds for small entrepreneurial and local projects. The idea was to link people who had extra capital to people who needed capital.

While the emerging community-based solutions had almost always existed, they experienced a renaissance after the financial crisis of 2008. Crowdfunding and Slow Money are from this strand. Both resort to people for supporting project initiators and entrepreneurs. The idea behind these new modes of funding is to offer people to invest in projects they relate to.

This chapter compares the two crowd-based solutions of crowdfunding and Slow Money. Crowdfunding is the process by which capital is raised for a project through pooling numerous and relatively small financial contributions or investments (Belt et al, 2012). The rationale is similar to any entrepreneurial project that is funded through conventional channels: profitability, or at least financial sustainability.

Slow Money is socially and proximity oriented. It encourages consumers to buy from and investors to support local businesses. Woody Tasch, founder and chairman of Slow Money, a nonprofit organization, criticizes the grow-big-and-go-global-fast mode of industrial and capitalist agriculture, and calls for a capitalism that restores biodiversity, soil health and the local economy (Tasch, 2009). Kurland et al. (2012) believe that Slow Money is part of the localisation movement with four priorities: independent ownership, local buying, local sourcing, and pragmatic partnering. They also identified other values such as responsibility to workers and the natural environment (Kurland et al. 2012).

The ultimate objective of this research is to identify similarities and differences between crowdfunding and Slow Money in financing small projects. Do they have the same mission? Are they challengers or partners?

COMPARATIVE ANALYSIS OF CROWDFUNDING AND SLOW MONEY

In this section, we compare crowdfunding and Slow Money in terms of rationale, networks (communities) of initiators and backers, and regulations.

For crowdfunding, the analysis is mainly based on relevant literature. For Slow Money, because of its relative newness, the review will mainly be based on the founding book of the movement, "Inquiries into the nature of Slow Money" (Tasch, 2009), some direct meetings with key people and the related websites through fifteen states in the United States and one in France.

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Vision, Mission, and Foundation

Crowdfunding commonly means an open call for funding a project with small amounts of money from a large number of people via the Internet. Crowdfunding is generally based on credit, donations, equity or rewards and/or voting rights (material and natural recompenses) to support initiatives for specific purposes (Lambert & Schweinbacher 2010). There is no obligation in return for a donation.

Although donations and reward-based crowdfunding might seem close to the foundations of Slow Money, the difference is that the former mainly supports the contributor's favorite artist, product or sport event, while the latter is rather a local and community-based engagement. While crowdfunding can be considered a tool that is neutral by nature, Slow Money demonstrates a deliberate willingness to change the way businesses and investors operate. Slow Money is also limited to food-related projects.

Slow Money originated in Slow Food, which is an alternative to fast food and industrial farming. The movement started in Italy in the 1980s and progressively expanded worldwide, promoting regional producers and local biodiversity. Woody Tasch published (2009) an inspiring book called "Inquiries into the nature of Slow Money: Investing As If Food, Farms and Fertility Mattered". The Slow Money Alliance started in California in 2009 to support sustainable local food systems. Ashta (2014) describes Slow Money as a patient investment in the slow food sector as opposed to the high velocity of money, fast money products such as derivatives and securitization, and profit maximization (Ashta, 2014).

Slow Money seeks to promote a direct link between local entrepreneurs and investors for a wide array of local food actors such as farmers, distributors, processors and specialized Internet platforms instead of complicated securitizations and structured finance.

In Slow Money and reward-based crowdfunding, entrepreneurs offer rewards and products instead of reimbursement in cash. Both also provide technical assistance to collect money as well as legal support and frameworks for handling funds and rewards.

From a project initiator's vantage, the first benefit that comes to mind is that both crowdfunding and Slow Money provide an alternative source of funding and financing to conventional banks and financial institutions.

Consequently—and it can be a second benefit—project leaders can raise funds in a way that is consistent with their values and those of their backers. This community of values generally leads to long-term relationships beyond the moment of the financial transaction (Gerber, et al., 2013, p5).

Crowdfunding also garners attention and feedback (Belleflamme, 2010; Gerber et al., 2013) and logically allows measuring public interest for a product or a service. Slow Money organizations can provide advice and support, with value sharing operating through physical encounters as well as Slow Money supported websites and forums.

A process of crowdfunding can reach potential customers (Paykacheva, 2014) and actively involve them from the very beginning of the project. Interacting with backers and customers at various stages of product development increases chances of commercial success at a very low cost (Gorshkov 2011).

In so doing, project leaders receive validation and public recognition. Pre-marketing or pre-payment permits firms to launch products with a certain amount of revenue. When enthusiastic customers share their experiences, they attract new potential funders (Paykacheva, 2014, p12).

However, one should not forget that a campaign might also fail and damage its reputation with potential customers, crowdfunders and in particular traditional investors like banks or business angels. However, in cases of failure to reach the target funding, entrepreneurs can benefit from remarks and feedback to readapt their products' features to the market within a reasonable timeframe.

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Communities

Crowdfunding and Slow Money resort to communities to raise funds. In both cases, entrepreneurs look for recognition and investors whose values align with their projects. Relationships are often built beyond the financial transaction. However, the affiliated communities are different.

The community of Slow Money already exists, and its members regularly interact. It is not an ad hoc community built around spontaneous projects. Slow Money is "mission money" that chiefly requires a positive impact on the ecosystem, local jobs, and indigenous foods within a pre-existing community.

Investors in Slow Money projects are not all professionals or accredited individuals but most of the time are part of a community that aims to initiate change and discover new solutions for a capitalist system perceived as having lost its fundamental values. Investments' maturities are between 2 to 7 years in most cases, with returns targeted around 3% to 5%. Accordingly, having a project linked to the community is compulsory for resorting to Slow Money. Slow Money induces more meaningful relationships than just interacting about the project.

A crowdfunding community does not exist a priori. Money is collected from individuals for different kinds of project, from supporting a social or communal cause to profit-oriented opportunities. In this perspective, investors might support projects that are useful for a community or the environment, but this is not a *non-sine* condition. In addition, crowdfunding is predominately happening on the Internet. A potential entrepreneur can prepare with a relative ease a message on a computer screen and send it to crowds. In a Slow Money process, physically meeting investors is a must.

Individuals spread the word about campaigns they support. They usually trust the experiences of their peers more than firms' ads (Paykacheva, 2014). The buzz that a crowdfunding platform creates might even attract traditional media such as radio, television and newspapers, which are interested in reporting about original ventures. Influential people within a network can disseminate the message even further and consequently attract more backers. In this vein, there are similarities between the functioning of crowdfunding platforms and e-commerce, which collects data about users and tracks their behaviors. Highly sophisticated algorithms then enable e-merchants not only to understand customers but also to impact their behaviors. Similarly, crowdfunding platforms gather data and generate traffic to lead visitors to different projects rather than any specific one.

Traffic generation in a crowdfunding campaign aims to create ex-ante community on a platform around projects (Beier, and Wagner, 2014, p17). Larralde and Schweinbacher (2010) point out that efficient communication inside a network is an inherent component of any crowdfunding process. Unknown inhabitants of networks on crowdfunding platforms or through Facebook and Twitter pages might back initiators by disseminating the message and engaging more people (Hui, Gerber & Gergle, 2014).

This is not the case with Slow Money, which endorses specific community-related projects and supports face-to-face visits between entrepreneurs and investors. Investors look to support businesses that integrate and develop the related communities.

While crowdfunding platforms mainly use the Internet and online social media to link project leaders and contributors, Slow Money's infrastructure for linking initiators and investors is offline through local communities. Certainly, Slow Money members can also use the Internet and social media; however, their major channel continues to be offline local networks. Slow Money has developed a major internal website on which members can buy "beetcoins" against USD. These "beetcoins" are granted to a Slow Money entrepreneur during national gatherings once a year, but their value is marginal. For example in 2014, beetcoins were bought for $100k, but direct money invested by local communities reached $10 million.

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Entrepreneurs might also be supported further and introduced to politicians and public institutions for developing their projects. For example, Business Alliance for a Living Local Economy (BALLE) in the US is a network of local entrepreneurs that aims to promote its members even more. They are part of the "localist" movement, with connections between entrepreneurs alongside the full value chain. All in all, Slow Money is a way of enacting community links rather than exploiting social ties for testing or selling products.

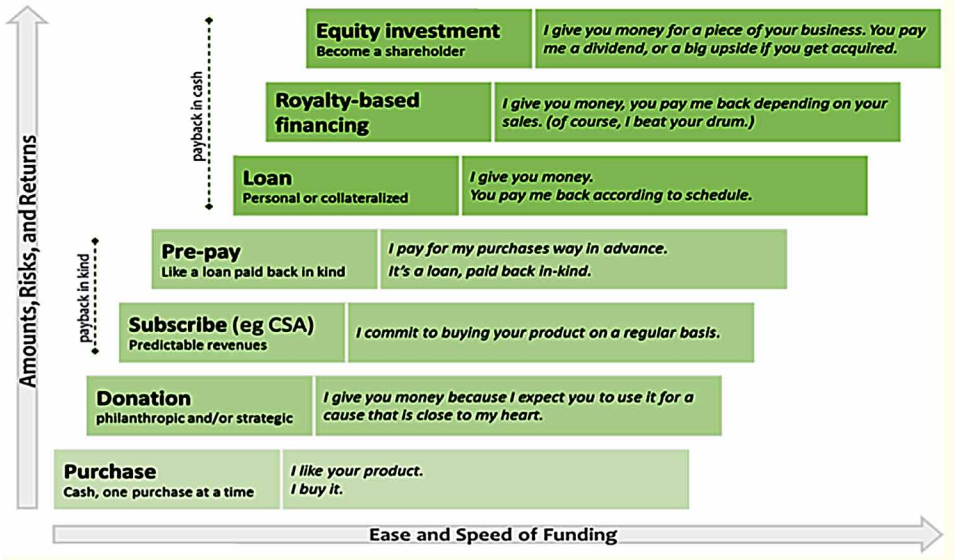
There are now progressively thematic crowdfunding platforms that raise funds for community and environmental projects. However, their orientations are optional rather than essential, as is the case of Slow Money.

Regulations

Regulation for raising funds are different in Slow Money and crowdfunding approaches. In a Slow Money campaign, contributors can invest or give one as much as they want—hundreds, thousands, or even millions dollars. Investors can support a food business with a pre-payment purchase at a time or through a regular commitment, donate, lend money, or directly invest (Hesse, 2012). There is no limitation to the amount that can be raised.

Such is not the case for crowdfunding in many countries. For example, in France, crowdfunding based on investment is limited to €1000 per crowdfunder and €1 million per project. In the same way, crowdfunding is limited by current regulations on the format of funding, most being considered donations, with some legal frameworks, such as in the United States, simply forbidding equity.

Figure 1. Seven modes for investing slow money
(Hesse, 2012).



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DISCUSSING DIFFERENCES AND SIMILARITIES BETWEEN CROWDFUNDING AND SLOW MONEY

According to Tables 1 and 2, which describe similarities and differences, crowdfunding and Slow Money are actually challengers, different and complementary.

They are challengers when they compete for the same investor's wallet to get direct funding outside of the banking system and conventional intermediaries.

They are different in two major areas, the management of relationships with supporting communities and the amount of money authorised by current regulations. While crowdfunding campaigns to build or to grow a community for financing (entrepreneurial) projects, Slow Money operates within an already existing community for developing local (food) production. The community is firstly interested by the impact of the project on the environment, local jobs and quality of food. Tools and legal forms used to bring the money from the community to the project are various and discussed at Slow Money in a second stage during the support process. It is slow because as an investment, the main purpose is to finance over the mid- and long-term. It is also Slow Money because it is a financing linked to the food. The community brings money to an entrepreneur with a project or a product linked to the local food system. His commerce and his product must take care of the ecological system and create local jobs for the community. The entrepreneur has proximity with investors and the investment is about the soil, the food, and the community. Mission related investment in a community that already exists is meaningful and is more than just interacting.

Slow Money by definition is patient capital and gives another chance to the entrepreneur even if he failed in raising the money needed. Indeed, through an internal study, half of the Slow Money investors explained that they will not stop their support even if the investment does not give the return expected or if there is a loss in capital. Patient capital is different from a support motivated by a buzz. Furthermore Slow Money as a brand is part of Slow Movements with Slow Food, but also Slow Media, Slow Science, Slow Travel, Citta Slow using Internet communication tools and social media.

A crowdfunding platform manages communities in another way, much more like social media do. To generate community dynamics, crowdfunding uses philanthropic wording and methods, in order for crowdfunders to at least have the feeling they share the same values and the same priorities as the entrepreneur (Gerber,et al., 2013). As highlighted by Paykacheva "this directly applies to Maslow's hierarchy of needs as one of the esteem needs, fulfilled by being accepted and valued by others" (2014,

Table 1. Similarities between crowdfunding and slow money

	Crowdfunding	Slow Money
Direct Funding	Through Internet, out of the banking system	Bypassing the conventional intermediaries
Empowered People	To link people with extra capital	Supporting projects inside a community
Technical Assistance	Through technology to communicate and get funds	Like business angels for business plans and networking
Donation	No obligation in return	Payments paid back with products
Relationships	Long-term relationships beyond financing	Networking in a community
Marketing and Feedback	Pre-marketing, pre-payment, and customer engagement	Providing advice and support through physical meetings and "tastings"

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p8). This strict separation between the role devoted to the entrepreneur and the position of the community backing projects gives crowdfunders the possibility to follow a creative production or the launch of an innovative initiative, for a community or for the environment, without having to engage or interact at all outside of their pledge. This small scale individual commitment is the basis of crowdfunder engagement. Individual rewards outside of products ranging from ego satisfaction to a potential answer to concerns about the future through solutions they couldn't have developed alone or initiate. As requiring an individual involvement of members of the targeted population, crowdfunding benefits from the use of customer engagement techniques as "enthusiastic customers sharing their experiences attract new potential funders and later on, form a community" (Paykacheva, 2014, p12). In order to do so, crowdfunding platforms must fulfill all the criteria required for customers' engagement. They have to provide a memorable experience; to manage to stay in touch and to engage in regular communication to obtain customers' endorsement. (Paykacheva, 2014).

New technologies and e-commerce have changed customers' fidelity models, it is therefore necessary to create special relationships between prospective consumers and brands. Making people funding new products pertains to this new marketing approach. It gives the customer the feeling to be part of a project, which is better than just being a mere "ambassador" of a brand when using or wearing its products.

With crowdfunding, when it is a loan or an equity investment, it could be indeed in the spirit of local economy or community financing, but it could reveal itself as just an opportunity such as peer-to-peer lending. Crowdfunding could also be like making a long-term investment in a community through a platform such as supporting the creation of a video game. In both cases it could not be considered comparable to a Slow Money project.

They are also different with regard to donations and engagement. Crowdfunding platforms use donations as a way of financing, so it clearly shows the support from the crowdfunder to a project. It could be a donation with or without rewards. The funder likes the pitch, believes in it and supports the project with money. However it does not mean it is an answer to a concern, neither part of a solution, local or global. It could be a donation like a sponsor for a sport event, a travel or any other creation. It is funded by the collaborative and sharing economy but it is not necessary for the community. Without a food and social context, it will not be Slow Money.

They are complementary and can partner, when, for example, Slow Money members use the convenience offered by thematic crowdfunding platforms, promoting values such as sustainability, ecology, or local economy, to support their mission-oriented projects. Crowdfunding in many cases brings back solidarity in a time where we were used to see more and more individualism. It is true that crowdfunding participation or investment is mainly enacted sitting behind a screen through a website, but studies and

Table 2. Differences between crowdfunding and slow money

	Crowdfunding	**Slow Money**
Community	The community is built/ strengthened around the project	The community already exists
Mission	Agnostic projects	Only around food, for the soil and biodiversity
Proximity	No: any project, anywhere	Yes, for the local food system
Regulation	Yes, funding limited by people and by project	No limitation for qualified investors

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the academic literature on crowdfunding show that it is not enough. Relying on an isolated act from an Internet user will not lead to a successful crowdfunding campaign. In a variety of contexts we can see now more and more thematic crowdfunding platform, raising funds, allowing for the "click and invest" action to be based on, and to generate an attention to, values. Such partnership projects with Slow Money are indeed already at work.

For example, the French crowdfunding platform Bluebees is dedicated to agro-ecological projects and already partnering with the French Slow Money organization.

Using Bluebees, French Slow Money members can raise more funds from small investors in a convenient way to the mutual benefit of both parties. However, the partnership is a trade-off for the time being because crowdfunding has some investment limits by investor (€1000) and by project (€1 million).

According to Marco Vangelisti, co-founder of Slow Money California, "With the arrival of crowdfunding, many bureaucratic hurdles for raising funds have been removed. For too long, raising capital in small businesses meant either being at the mercy of bank underwriter or a lengthy process with affluent angel investors, involving lawyers and a lot of paperwork"

CONCLUSION AND AVENUES FOR FURTHER RESEARCH

The objective of this paper was to analytically compare crowdfunding and Slow Money, which people resort to for funding small and local projects. We have found that these two solutions are challengers, different, and complementary.

We believe that crowdfunding and Slow Money can mirror each other's strengths for mutual benefits. Crowdfunding can learn community engagement from Slow Money projects, and the latter can learn scaling from crowdfunding. Benefiting from one another's values, methods and tools, crowdfunding and Slow Money could finally be the start of a new economic paradigm beyond short-term capitalism.

Slow Money brings people together and offers a part of the solution, a "soil economy instead of an oil economy". "The second principle is to slow down the velocity of money by de-complexing the financial transactions. By promoting a direct link between the entrepreneur and the financer, instead of complicated securitizations and structured finance, which clearly were not comprehensible even to bankers using these products in the pre-financial crisis stage.

The third principle questions the profit maximization and wealth maximization assumptions of the individual, leading to opportunism and transaction cost economics, and reaffirms the social nature of people and their nurturing relationship with their habitat." (Ashta 2014).

Indeed, this comparative analysis reveals a new spirit for entrepreneurs and the market economy that is emerging out of the financial crisis of 2008. We believe that crowdfunding and Slow Money have announced a new economic paradigm with new forms of investment. Both have also a human impact by redefining the nature of investment. Invest in what you want to support, in what you want to become a success and interact with the entrepreneurs. It is a human impact that we cannot see any more through electronic capital markets. They support entrepreneurs and provide funds when the banking system does not seem to finance small entrepreneurs sufficiently. They also aim to engage and link different economic agents around projects. With the Web 2.0 a crowdfunder becomes indeed an actor; he can initiate changes and make people aware about what he is doing, about what he supports, about what he likes. Any project will therefore benefit from the crowdfunder's network and influence. It is here where artificial and collective intelligence get combined.

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The people-based solutions for financing entrepreneurial and local purposes might be the starting point of a new model of economy, tentatively described as sharing, circular, or collaborative. Finally, we could see here a redefinition of the "smart money" concept beyond banking and capital markets. The driving force and common denominator of all these endeavors is the search for a balanced economic model.

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KEY TERMS AND DEFINITIONS

Agroecology: An agricultural system having a whole approach to food, feed and production in a sustainable way and as an ecosystem.

Beetcoins: Electronic money used by Slow Money community in reference of the bitcoins.

Capital: Financial resources needed to fund and start an enterprise.

Collaborative Economy: An economy based on people sharing services instead of buying goods, often facilitated by Internet.

Community: A group where members share specific characteristics or values and have a common heritage.

Credit: A contractual agreement where a borrower receives funds engaging him to pay it back with interests.

Financial Crisis: A period where there is a panic and a lack of confidence leading to a drop in value of (financial) assets.

Impact Investing: Investing that aims to generate specific beneficial social or environmental effects in addition to financial gain.

Local Food System: A food system giving priority to local product and looking for autonomy.

Localist: People giving priority to products or people in the same locality, generally with less than 100 miles.

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Chapter 4
High-Growth SMEs: A Specific Research Object

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ABSTRACT

This essay tries to highlight the economic importance of the high-growth SMEs phenomenon. In doing so, an attempt to define and specify this type of firms was conducted. From the authors' literature review it was found that there is no single definition of high-growth. Each researcher adopts a definition according to his research interests. Trying to discuss the economic importance of SMEs gazelles, analysis led to identify three main features of high-growth: high-growth persistence, the novelty and strategic voluntarism. These characteristics make the high-growth SMEs a specific research object.

INTRODUCTION

Since 1990s, a lot of researches are devoted to the study of the growth phenomenon (Birch & Medoff, 1994; Storey, 1994; Storey, 2011; Henrekson & Johansson, 2010; Moreno & Casillas, 2007; Davidsson & Delmar, 2006; Delmar et al., 2006). This tendency can be seen as the direct result of the important contribution of this phenomenon to the generation of new jobs and to the creation of the new value. Although the majority of companies suffer from absence or low rate of growth (Daunfeldt et al., 2012), a minority enjoys high potential of growth, and consequently, participate significantly to the job creation and to the creation of the new value. Indeed, 70% of increase in the rates of employment is allotted to high-growth companies (Birch & Medoff, 1994).

Strong growth, high-growth, gazelles, hyper-growth, etc., are all some terms that are used to describe these fascinating businesses. Despite the diversity of terms, the concept of growth remains ambiguous and poorly defined due to the lack of research and conceptualizations about it, hence the importance of this paper.

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Several studies have emphasized the need to distinguish between the growth taken in its overall dimension and the high-growth as a particular phenomenon (Moreno & Casillas, 2007; Delmar et al., 2006). Companies with high-growth are regarded as particular entities quite different from other firms (Moreno & Casillas, 2007; Storey, 2011; Davidsson & Delmar, 2006). The specificity of the phenomenon requires suitable methodological approaches and new theoretical perspectives.

Various factors explain the craze of researchers to the study and analysis of SMEs growth determinants especially when it is a question of high-growth SMEs. Indeed, many authors admit today that SMEs are not anymore considered as the miniaturized replica of large firms (Shuman & Seeger, 1986). SMEs are particular organizations, very different from large companies. They are seen as true levers for the creation of jobs and wealth in economies. Albeit there is a consensus about the prevalence and the importance of SMEs in the global economies, the weight and the impact of high-growth SMEs compared to the high-growth large companies constitute a point of divergence between researchers.

This essay is inscribed in the course of specificity (Torres, 1997). At first, the specificity of SME compared to large companies, and then, the specificity of high-growth as a particular aspect of the firm growth phenomenon. In this vein, this document tries to discuss the following conceptual question: to what extent does SME constitute a specific and legitimate search object within the phenomenon of high-growth?

The big part of literature on high-growth firms is descriptive (Sheppard, 2010). It tries to draw up a portrait of this phenomenon by describing its characteristics of high-growth firms. The high-growth SMEs occupy a central place in this literature. This essay is divided into two main points. The first one seeks to clarify the concept of high-growth firms. The second try to sit the legitimacy of the high-growth SMEs as a specific and a relevant research subject.

HIGH-GROWTH SMES: DIVERSITY OF DEFINITIONS

Moreno and Casillas (2000) indicate that high-growth is identified through two main features. Firstly, the achievement of high-growth, and secondly, the concentration of this high-growth in a short period of time. This definition raises three central questions:

- From what level are we talking about high-growth?
- How can we measure this growth?
- On what interval of time do we have to make sure of the persistence of the high-growth to indicate a firm as gazelle?

Following a literature review, it was found that there is no single answer to these questions, and therefore no consensus on the definition of high-growth firms (Henrekson & Johansson, 2010; Moreno & Casillas, 2007). Several approaches can be considered to define the concept of high-growth. In this vein, present two methods to identify the high-growth companies. According to Daunfeldt et al. (2012), most of studies take as high-growth firm a proportion Y % having realized the strongest growth on that industry, very often (1%, 5% or 10%). Furthermore, these two authors added that some studies indicate by gazelles any company having realized a growth rate upper to a well determined rate.

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Definitions of high-growth firms are marked by an aversion to biases relative to age and size of the firm. Indeed, it is generally accepted that the young or recently created firms grow faster to reach their critical size (Moreno & Casillas, 2000). It will be thus inappropriate to consider these businesses as gazelles insofar as their growth is natural and logical. In order to neutralize these biases, definitions of high-growth firms recommended variables of control. In this vein, Peterson and Ahmed (2008) specify that the simplest indicator of high-growth that one can easily interpret is the one implementing two criteria. The first criterion is the satisfaction of specific growth rate, then, the second condition is aiming at neutralizing the effects and the biases of some factors as size and age. By referring to Peterson and Ahmed (2008), these conditions are defined by convention based on the specific characteristics of the context of study.

In this sense, Birch and Medoff (1994) define the gazelle as any company having realized at least an annual turnover growth of 20% during an interval of time with a basic annual revenue above 100.000 $. For Storey (2011), gazelles are firms which carry out an annual turnover growth of at least 25% during a period of 4 years with a condition of 5-10 £ million as a turnover of the basic year, or a growth of at least 15% for firms whose turnover of the year under study is 10-100 £ million. The definition adopted by Barbero et al. (2011) says that these companies have an annual growth rate of at least 10% during 4 consecutive years. To circumvent the bias induced by age, Peterson and Ahmed (2008) indicate that the company must have at least 10 employees during the reference year. In the same vein, Eurostat-OECD Manual on Business Demography Statistics (2007) defines high-growth firms as: "All enterprises with average annualized growth greater than 20% per annum, over a three year period, and with ten or more employees at the beginning of the observation period. Growth is thus measured by the number of employees and by turnover" (p.61).

Peterson and Ahmed (2008) specify the contingency of growth firm implied by the disparity of contexts and business sectors under investigation. In fact, each context has its specificities that distinguish it from others. In this sense, definitions advocating a fixed growth rate do not take into account this reality. Trying to remedy this shortcoming, Moreno and Casillas (2007) propose to retain a growth rate of over than 100% of median sector activity.

The Eurostat-OECD definition (2007) and that of Petersen and Ahmad (2008) distinguish between the terms gazelle versus high-growth. In this line, gazelle must be devoted to young firms with less than five years. Besides, Cooney and Malinen (2004) suggest distinguishing between high-growth and fast growth in sparing the fast growth to denote the speed of growth in time while the high-growth depends on the sheer volume of this growth. Nevertheless, the majority of studies use these terms interchangeably.

Several indicators are used to study the firm growth. According to Delmar et al. (2006), assets, employment, part of market, production, profit and sales are the most used indicators of firm growth. They add that employment and turnover remain the most mobilized indicators. Delmar (2006) points out that this trend is mainly due to their ease of access and their uncontroversial utility. The turnover growth is an indicator of the creation of new value while the employment indicator reflects the dynamic of job creation. Moreover, unlike other indicators, turnover and employment are independent objective measurements. Delmar et al. (2006) state that other indicators suffer from deficiencies limiting their applicability to particular contexts.

In the same perspective, Hoy et al. (1992) underline that the turnover is the best indicator of growth. Barkham et al. (1996) add that turnover is the best revealing indicator of firm performance, and consequently, the most preferred by entrepreneurs. For Davidsson and Wiklund (2006), the process of growth is primarily stimulated by demand growth for products and/or services of the firm, employee increase

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only comes last. Indeed, once an increase on the level of the demand for a product is identified, firms initially seek to respond by increasing their production and their turnover. In the second time, firms undertake organizational readjustments in order to adapt by investing in the required resources such as employees, machines, etc.

Following this line of thought, Delmar (2006) specifies that: demand is a proactive variable; turnover is the intermediate variable that highlighting the balance between demand and resources of the firm; finally, the adjustments of resources to adapt the firm to these changes. This author emphasizes the low volatility of this last dimension insofar as the leader often has interest to make sure of the stability and sustainability of the change before undertaking necessary investments. Nevertheless, the relation between turnover indicator and employee indicator is not obvious. Other alternatives are offered to the firm to increase its turnover without addition of new resources, by subcontracting or only by improving its efficiency and productivity (Davidsson & Wiklund, 2006; Delmar, 2006). However, Davidsson and Wiklund (2006) add that it is unlikely that other dimensions of growth can take place without having a growth of turnover. In short, the choice of the adequate indicator is conditioned by the interest of research.

Generally, two fundamental approaches are used to measure the firm growth between two different moments. The absolute growth estimates the brut variation of the indicator while relative growth analyzes the relative variation by dividing the absolute growth by the initial value of the indicator. The choice between the two approaches requires consideration of the size effects on the growth of firms. Indeed, the absolute growth tends to attribute the growth to large firms while relative growth privileges small firms.

Despite the fact that the calculation of the absolute growth did not make a big debate, several formulas are suggested to measure the relative growth of firms. Indeed, the impact of size on firm growth has expanded to the choice of the appropriate formula of calculation. Each formula impacts differently the theoretical development and the ensuing construction of models relative to firm growth (Delmar et al. 2006). Wiklund (1998) underlines that it's better to have all information on the growth in order to be able to study the change of size for every period. However, such information is very rare and incomplete. In most cases, collected information relates to only two distinct moments. So, growth is often studied as a variation between the current size and the size at the beginning of the study.

In the literature, we can identify three principal models to measure firm growth (Wiklund, 1998; Davidsson & Wiklund, 2006). The first model was used by Delmar (1997) in his doctoral work:

$$g = (St_1 - St_0)/St_0$$

with:
g is the rate of total growth of period
St_0 represents the initial size
St_1 represents the size of the company at the end of the period of study

This model is criticized because of its sensitivity to the initial size. As the temporal interval between T_0 and T_1 is often long, this model is able to privilege small companies (Wiklund, 1998; Davidsson & Wiklund, 2006). The second model, called Gibrat's law, admits a constant growth rate:

$$St1 = St_0 (1 + g)t_1\text{-}t_0$$

with:

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g represents the annual growth rate

In spite of its low sensitivity, this formula remains inappropriate to long periods because of its exponential curve. The third model was mobilized by Wiklund (1998) in his doctoral work. He admits that growth is linear and that a volume of growth is made each year:

n=N

$$g = 1/N \sum (St_{n+1} - St_n) / St_N$$

with:

n=1
g represent the growth annual rate
N represents the number of years, n refers to years
St_n represents the size at each year
St_N represents the size at the end of period

This formula is similar to the first one. But, it has the advantage of allowing to neutralizing the size effect, in the sense that the denominator increases each year.

To conclude, the choice of the formula must take into account its form and its sensitivity to the size effect. Having regard to its linear shape and its low sensitivity to the size effect, the third formula seems the most appropriate to the study of high-growth (Wiklund, 1998; Davidsson & Wiklund, 2006).

THE HIGH-GROWTH SMES BETWEEN LEGITIMACY AND SPECIFICITY

Henrekson and Johansson (2010) distinguish two big debates having tried to characterize the firms that contribute significantly to the job creation. The first stream is trying to clarify if it is a set of newly created firms or a minority of high-growth firms that are responsible of the creation of the largest portion of jobs. This is what Davidsson and Delmar (2006) called the debate 'mice vs gazelles' or 'Flyers vs trundlers.' This debate is mainly due to the disparity of contexts studied and the diversity of methodologies adopted by researchers (Davidsson & Delmar, 2006). The second orientation examines the legitimacy of the SME as a real jobs creator.

Henrekson and Johansson (2010) point out that the contribution of newly created firms and high-growth SMEs to job creation is complementary. They add that the effect of high-growth SMEs tends to diminish over time. Thus, to achieve net job creation, industries require continuous entry of new firms. In this line, Delmar et al. (2006) state that high-growth is determined by the firm's age than by its size. According to their study, high-growth firms are younger. In contrast, Acs et al. (2008) indicate that high-growth firms, designated by 'high impact firms,' are not young, their average age is estimated at 25 years. Similarly, Mason and Brown (2010) point out that the majority of high-growth firms in Scotland are older. In this sense, Acs et al. (2008) specify that the impact of new firms on job creation is very significant for the year of entry, and then the growth rate weakens over time. Indeed, Hamilton (2011) note that age does not have considerable impact on firm growth as a result of the quick deterioration over time of the "Newness" effect.

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Moreno and Casillas (2000) explain that the importance of high-growth young firms is essentially due to the process of search for a critical size. In another article, both authors (2007) have tried to explain this impact by referring to two main theories: the organizational learning theory and the entrepreneurial theory. Drawing on the theory of organizational learning, Jovanovic (1982) presents a model that emphasizes the ability of young company to achieve high-growth. The lack of experience gives to this kind of firms the flexibility required to attain high-growth. However, these firms have often a fluctuating rate of growth. On the other hand, older firms have quite precise objectives, well defined processes and a well-established structure. Thus, they know well how to maximize their efficiency and then present a weak variation of growth rate. In the other hand, the young firms are often seen, within entrepreneurship field, as responsible for the exploitation of unexploited opportunities through innovation, proactiveness and risk taking. That's what allows them to achieve a high rate of growth.

Derbyshire (2012) focuses on the emergence of the concept of high-growth firm as a new paradigm. The later that is still in a gestation step seems to be a good alternative to the young firm based paradigm in the orientation of countries' economic policy. Indeed, Shane (2009) has called into question the policy based on encouraging people to be entrepreneurs and on supporting newly established firms. He invites the decision makers to focus more on existing businesses with high-growth potential. It seems that Shane's recommendation finds its credibility in the high correlation between entrepreneurship and failure. This orientation was present in the Europe strategy report 2020 wherein the support of SMEs high-growth constitutes a central objective. This importance is also reflected in the research orientation of OECD that has conducted several studies in order to help governments to promote high-growth firms (OECD, 2010).

Being inspired by the evolutionary theory, Derbyshire (2012) underlines that strong competition, undergone by new firms at its beginning, impacts its future potential and its ability to become a high-growth firms. Derbyshire (2012) added that start-ups are challenging existing firms by encouraging them to strengthen their competitiveness, innovativeness and performance, thereby making them high-growth firms.

Henrekson and Johansson (2010) indicate that net job growth must be analyzed in the wider perspective of creative destruction by including churning and restructuring in a dynamic process of entry, expansion, decline and exit. They add that creative destruction process allows new efficient and expanding firms to reach the resources of the failing ones. Indeed, it appears that the weight of new businesses compared to high-growth firms is conditioned by the life cycle of the affiliate industry. Young industries are distinguished by low barriers to entry and plenty of opportunities to seize. This situation favors the introduction of new businesses. The large number of companies introduced increases the rate of contribution to the job creation.

In this sense, Henrekson and Johansson (2010) argue that the increase of introduction of new business is able to increase the chances to generate future business with sustained high-growth. As explain Hamilton (2011), the effect of 'newness' disappears over time, and therefore, its contribution to job creation deteriorates after the first year of their existence (Acs et al., 2008). As the industry get matured and entry barriers strengthened, the industry attractiveness decreases and therefore, the mortality of established companies increased and only a minority of existing firms show high-growth. In this line, it seems that the growth of young firms is natural in the sense that it is essential to reach the critical size to survive (Barkham et al., 1996).

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As the industry gets matured, the high-growth due to the 'newness' effect disappears. Thus, high-growth is only maintained by the existing and high-performing firms called 'gazelles.' Julien (2002) points out that 50% of new SMEs do not exceed 5 years, and most survivors are growing relatively slowly. In this perspective, the majority of researchers adopt age control variables in order to erase the young firms whose high-growth is natural, transitory and does not reflect an exceptional phenomenon. Indeed, to achieve sustained growth, firms should lead a process marked by a strategic voluntarism.

Although authors consider the trajectory of high-growth as a result of a chance or luck, the number of gazelles in national economies shows the insufficiency of such justification (Chanut-Guieu & Tannery, 2009). In fact, even though the context can play a favorable role, the main engine of this trajectory emanates essentially from firms (Chanut-Guieu & Tannery, 2008; Julien et al., 2006).

Several researches admit that gazelles, which form according to the countries from 2% to 10% of permanent firms and generate from 40% to 60% of jobs created by expansion, are the true creators of jobs (Julien, 2002). However, recent studies indicate that high-growth is not a persistent phenomenon. The question of persistence has been the subject of a great debate that compromise the well-founded the high-growth firms as a new paradigm. In fact, high-growth is often a 'one-hit wonders' and most of firms will not meet again their high-growth rate (Parker, 2010; Hölzl, 2014, 2011; Gabrielsson et al., 2014; Daunfeldt et al., 2012).

A lot of studies (Birch, 1984; Storey, 1994; OECD, 1994, 2002) confirm that a minority of high-growth firms contribute significantly to the economic development. The high-growth firms stood out as key element of the nations' economic development. Thus, in the name of the national, local and regional competitiveness, several governments bustled to multiply these fascinating firms. The non-sustainable nature of high-growth calls into question the usefulness of public support for this phenomenon in the sense that it is able to amplify the turbulence of the economy without increasing sustained dynamic of firms and consequently the whole economy (Hölzl, 2014).

In their recent study, Gabrielsson et al. (2014) specify that in spite of the small proportion of firms whose high-growth rate persists in time (22% of their sample), future research must be focused on studying their characteristics. Furthermore, Hôlzl (2014) underlies a lack of study of the impact of various governmental policies on high-growth firms. Therefore, giving more attention to this kind of firm is able to develop a better understanding of 'sustainable high-growth entrepreneurship' and help to orient public action in this direction. In short, the phenomenon of high-growth finds all its pertinence in its persistence. This concern was reflected clearly in gazelles' definitions that attributing this quality to firms whose growth extends over a specific period of time (3 to 5 years or more). Such a perspective requires longitudinal studies instead of static studies often adopted to study this phenomenon.

The second orientation cited by Henrekson and Johansson (2010) found its roots in the economic debate analyzing the impact of the size on the firm growth. The Gibrat's law (1931), as the most knowing concept of this perspective (Moreno & Casillas, 2007; Delmar et al., 2006), states that the growth of firm is proportional to its size and that the magnitude of this growth is random. This debate has generated much empirical works without reaching consensus. Implicitly, the literature relating to SMEs is part of this great debate. In spite of contradictions in the results of empirical studies, the majority of researchers reject the Gibrat's law conclusions by allocating high-growth to SMEs than large firms (Moreno & Casillas, 2007).

After three decades of research development in SMEs, it seems now that the majority of researchers recognize the predominant role of SMEs in job creation (Davidsson & Delmar, 2006; Birch, 1979; Story, 1994). In this line, several theories have succeeded to explain SMEs growth potential. Thus, for

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Penrose, growth of SMEs is the way to exploit the unexploited resources and capabilities. In fact, the indivisibility of their resources incites SMEs to grow. Other authors point out that SMEs seek to achieve critical mass that improves their competitiveness (Correa et al., 2003).

The review of literature on SMEs makes it possible to distinguish two main trends that have succeeded in time. The first stream tries to sit the legitimacy of SMEs specificity. According to it, the specificity of SMEs consists on its significant contribution to economic development. This specificity can be situated in a macro level often with an economic feature (value creation, new jobs, etc.). This movement took a run-up with the work of Birch (1979). Despite the criticism addressed to this perspective (Haltiwanger & Krizan, 1999), Birch initiative has opened the debate to sit the legitimacy of SMEs as a specific research object. The second stream can be understood as an extension of the first one. From managerial view, the second stream seeks to explain the secret of the SMEs potential by starting to talk about managerial characteristics of SMEs compared to large firms (Julien, 1994; Torres, 1997).

SMEs are now considered as specific organizations, very different from large firms. They are seen as real levers to create jobs and wealth. Although the SME is a more or less homogeneous field of research because of the sharing of some specificities, several currents specialized in the study of SMEs have succeeded to contradict this assumption of homogeneity. As noted Torres (1997), "because of the diversity of the SMEs field (SMEs- field), no generalization is possible and everything is a matter of context" (p. 25) [free translation]. This heterogeneity has made so difficult the development of a unique theory of SMEs. The current of synthesis is the result of reconciliation of specificity and diversity of the SMEs field. Thus, the conceptualization of this field has progressed to become a change of degree in the universe of specificity (Torres, 1997). Conscious of the conceptual and methodological implications of diversity, each research has more focused on a well-defined type of SME. The choice of the type depends largely on the nature of the research objectives.

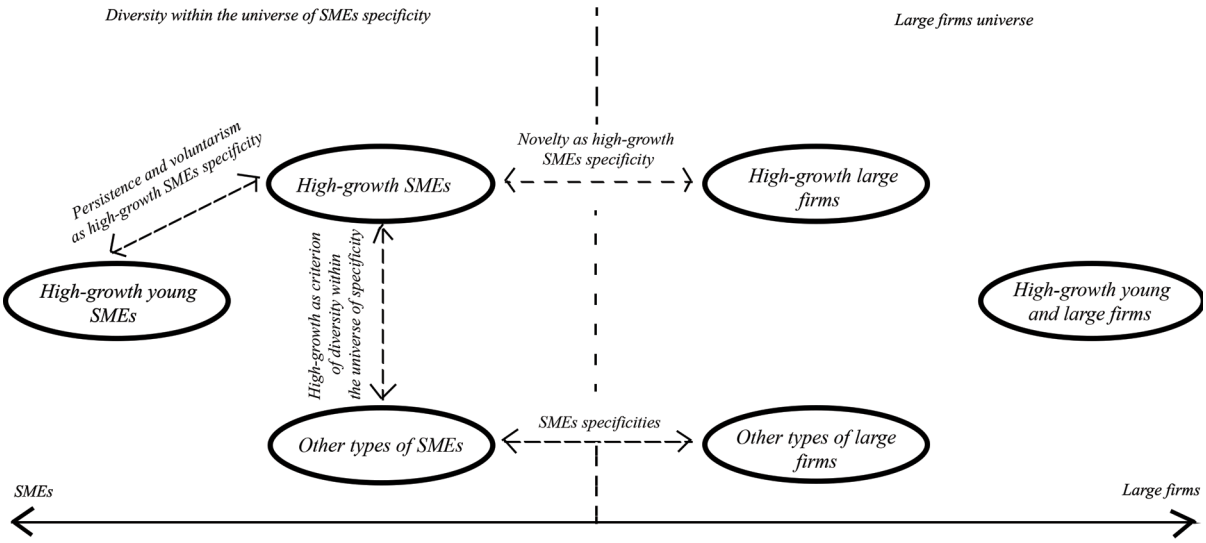
Several researchers have developed operational typologies of SME in order to build groups approving certain homogeneity and where one can find similarities or average behaviors (Julien, 1994). In this perspective, high-growth SMEs constitute a type of the SMEs universe which deserves special attention from researchers (Birch & Medoff, 1994; Julien, 1994, 2002).

If high-growth strengthens the peculiarity of high-growth SMEs in the field of SMEs specificity, looking for its specificity compared to large high-growth firms can improve our understanding of this search object. In this vein, Schreyer (2000) confirms the major role of high-growth firms in net job creation. He specifies that the rate of high-growth SMEs is higher than that of large ones. High-growth large firms create more jobs only in an absolute term. Birch (1979) stressed that despite the importance of contribution of large firms in job creation, they generate few new jobs. According to the results stemming from the study of Davidsson and Delmar (2006), young and small firms, often operating in young and growing industries, are the real creators of new jobs. They often grow accordingly to an organic mode. These authors add that large firms, often in mature industries, experience a great change in total employment with negative net jobs creation. According to these two authors, the majority of jobs created by large firms are not new as a result of the growth by acquisition often adopted by large and old firms.

As shown in the Figure 1, it is clear that high-growth SMEs is positioned at the intersection of two major debates: young firms versus high-growth firms and SMEs versus large firms. The intersection of these two trends allows specifying the high-growth SMEs. It seems that the first characteristic of this type of business is the continuity of high-growth in time, at least three years. Indeed, the persistence of high-growth is an inevitable condition for the emergence of high-growth paradigm (Derbyshire, 2012). This first characteristic distinguishes it from the temporary high-growth trajectory of young firms. The

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Figure 1. The high-growth SMEs between specificity and diversity



second specificity relates to the novelty of the economic contribution of high-growth SMEs. This novelty is manifested by creating new jobs, new value, etc. We believe that deepening these two main features is likely to lead to new promising perspectives.

CONCLUSION

At the end of this review, it appears that high-growth remains a controversial phenomenon. Several definitions have been developed with different measurement units, measurement indicators and formulas. Despite the diversity of researchers' views, the economic importance of high-growth SMEs is now indisputable. These fascinating firms do not cease to attract the attention of all economic actors.

Through this document we tried to sit the legitimacy of SMEs gazelle as specific research subject. At first, its specificity compared to young companies insofar as high-growth SMEs is voluntary and more persistent. Then, based on the current of diversity, high-growth of SMEs gazelles remains the notable specificity which differentiates it from the rest of the SMEs universe. Finally, based on the results of empirical studies on growth, we are able to specify the high-growth SMEs from the large ones. In fact, as a result of organic growth often adopted, high-growth SMEs are distinguished by the novelty of their contribution.

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Chapter 5
Business Incubation in Malaysia: An Overview of Multimedia Super Corridor, Small and Medium Enterprises, and Incubators in Malaysia

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ABSTRACT

The purpose of this chapter is to present the importance and contribution of business incubation programmes to Small and Medium Enterprises in Malaysia. Chapter starts with a brief review of the history and transition of major economic policies in Malaysia as well as the government responses towards achieving the status of fully developed nation by the year 2020. The policy review includes the Laissez-faire Policy, New Economy Policy, National Development Plan, National Vision Policy, and New Economy Model which were set to achieve nation's rapid economic growth. This review leads the paper towards the exploration of the major drivers of current economic growth in Malaysia. This chapter identifies Multimedia Super Corridor as the most important initiative and a key driver to global Information Communications Technology development as well as the major contributor to Small and Medium Enterprises establishment in Malaysia. In addition, it outlines the significant contribution of Small and Medium Enterprises to the economic growth in Malaysia, and finally identifies business incubators as a support mechanism to accelerate the SMEs success, especially the start-up firms. This chapter provides knowledge to the researchers and practitioners on the linkages among Multimedia Super Corridor, Small and Medium Enterprises and incubators that align with the economic policy development. As a conclusion, the chapter discusses the challenges faced by the incubation programmes in Malaysia and thus, highlights the prominence of business incubators as a niche subject to be explored in depth, in terms of their growth and potentials in Malaysia.

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INTRODUCTION

Malaysia has been making notable progress in economic development over the last century as the wave of globalisation expands across the world. Malaysia has achieved the major transformation of economic structure from being exporter of a primary commodity to an industrialized-based country. This transformation and accomplishments seems to be supported and guided by various economic policies implemented over the decades, namely, New Economy Policy (NEP), National Development Plan (NDP), National Vision Policy (NVP) and New Economy Model (NEM) which was introduced in 2010.

Vision 2020 was initiated in 1991 by Malaysia's former Prime Minister, Tun Dato' Seri Dr. Mahathir bin Mohamad, with an overriding objective which is to achieve a fully developed nation and achieve an industrialized level by the year of 2020, encompassing on the economic development, as well as focusing on other angles, including social, political, spiritual, psychological and cultural areas (Islam, 2010; Khan, Liew, & Ghazali, 2014; Vicziany & Puteh, 2004). There are nine strategic challenges outlined in Vision 2020 in order to transform Malaysia into a competitive, robust and dynamic country in the span of 30 years. Based on various strategies and initiatives, Multimedia Super Corridor (MSC) has been one of the prime project which aims Malaysia to get much insight on the development of Information Communications Technology (ICT) industry by providing a test-bed for global ICT landscape (Abdul Khalid, Gilbert, & Huq, 2012). To date, MSC has made a notable progress in ICT sectors and has been seen as a fundamental engine for becoming a fully industrialized nation by 2020.

A part from MSC, significance and development of Small and Medium Enterprises (SMEs) to the economy has been acknowledged (Husin & Ibrahim, 2014; Moorthy et al., 2012; Yeoh, 2014). In line with this, SMEs in Malaysia is recognized as the backbone for the economy development and thus paramount of SMEs business strategies were developed by government. However, the government is facing emerging challenges in shaping the future of SMEs, particularly during the start-up development phase. In order to overcome these challenges, the government has introduced the business incubators programme as an effective support mechanism to accelerate the development of SMEs (SMIDEC, 2007).

Said, Adham, & Abdullah (2012) has recently drawn attention to the paradox in MSC and incubators in Malaysia. However, the chapter will be more comprehensive if a broad range of dimension has taken into account. Therefore, this chapter aims to identify the linkages between MSC, SMEs, and incubators, align with the economic policy development, as well as conclude the importance of business incubators as a field to be explored more in Malaysia. This chapter is divided into four sections as follows. The first section presents the historical background of economy policies in Malaysia, including an overview of MSC Malaysia. The second section elaborates the SMEs contribution to economy followed by the third section that discusses the development of business incubators in Malaysia. Finally, the fourth section presents the challenges face in incubation programme in Malaysia, discussion and implication for future research.

TRANSFORMATION OF ECONOMIC STRUCTURE AND POLICY IN MALAYSIA

During the pre-independence, British colonialism tried to rebuild the export of primary commodity because Malaysia was highly dependent on the earning from exports of primary commodities; rubber, tin, timber and oil (Bekhet, 2013). Malaysia progressed impressively after it gained independence in 1957 in social and economic developments, where laissez-faire policy was pursued, with import-substituting

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industrialization, agricultural diversification, and rural development program (Said et al., 2012). Government strategy was to continue with import substitution strategy in the 1960s under the First Malaysia Plan 1966-1970, as to have economic diversification, which indirectly could eliminate the total dependency on primary commodities (Gunto & Alias, 2013). However, the economic expansion during this period failed to balance the inequalities exist among ethnics, which became the turning point for the introduction of the New Economy Policy (NEP) in 1970, under Second Malaysia Plan 1971-1975 (Zainal Aznam Yusof & Bhattasali, 2008). The key objective of NEP (1971-1990) was to maintain national unity through two strategies; eradication of poverty among the entire population and restructuring the society with a view to eliminate the identification of race by economic function (Menon, 2009). Along with many essential strategies, the manufacturing industry boosting with momentum in global landscape, allowed the government to regulate two programmes, including second phase import-substitution industrialization programme, and followed by export orientation programme (Said et al., 2012; Gunto & Alias, 2013). Fortunately, Malaysia holds a predominant stand, depending mainly on the high price for its primary commodities in a global market, and managed to attract industrial foreign investors, which created opportunities in economic development.

However, in the mid of 1985-86, Malaysia could not avoid the impact of global economy crisis, where the demand for primary commodity decreased dramatically (Menon, 2009; Stafford, 1997), leading Malaysia to embark widely on the privatization policy that was believed to be a remedy for the issue. The introduction of privatization policy in 1983 has proceeded as one of the multipliers to economic prosperity and enabled Malaysia to premise on the notion of new technologies and expertise through various multilevel projects, including construction of North-South Highway, Kuala Lumpur Tower, and LRT. During that period, Malaysia has emphasized a shift away from labour driven economy (assembly type manufacturing) to investment-driven economy (medium-technology manufacturing) which cultivated the growth of new technology-based entrepreneurship culture in Malaysia (Berma, 2012). Together with this paradigm, the National Development Plan (NDP) for the duration of 1990 to 2000 was introduced to replace the NEP in order to put the creation of wealth ahead of redistributing it. It was presented in the perspective of Vision 2020, which was launched in February 1991, outlining the aim of Malaysia attaining a developed-nation status by the year 2020 (The Economic Planning Unit, 2006). Thus, the transition from medium-technology manufacturing to high-technology manufacturing was accorded a vital role during this period with the government commencing on productivity-driven economy as an engine of economic development. In addition to the aim of establishing an united, progressive, prosperous, developing and competitive nation, the NVP was introduced in 2001, as an extension of NDP (1991 – 2000) (Menon, 2008). In line with this, Malaysian government has established the knowledge and technology-based industries as well as regarded Information, Technology and Multimedia (IT) industries as efficient sources of economy prosperity.

As the effect of this curve, Malaysia has begun to focus on ICT industries as an engine to accelerate the competitive advantages in global economy. As such, with the aim to promote the new economy direction, Malaysia has introduced the MSC project, an idea urged by the former Prime Minister, Tun Dr Mahathir Mohammed, in 1996. The linkages between the MSC, export orientation, the roles of multinationals and country's productivity were then spelled out in the Seventh Malaysia Plan 1996-2000.

NEM was introduced in 2010 formulated by the country's National Economic Advisory Council (NEAC) with core principles to direct Malaysia towards a developed nation by the year 2020 with its population enjoying a high quality of life, besides a high level of income resulting from economic growth that is both inclusive and sustainable (National Economic Advisory Council, 2010). NEM consists of four

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pillars, namely, 1Malaysia Plan, Government Transformation Programme (GTP), Economic Transformation Programme (ETP) and Tenth Malaysian Plan 2011–2015 (National Economy Advisory Counsil, 2010). Malaysia progressively continues with the Eleventh Malaysia Plan 2016 -2020 being the vital stage in the drive to achieve Vision 2020, with the theme "anchoring growth on people". In line with all the plans, policies and strategies to achieve the ultimate goal of Vision 2020, and SMEs are recognized as another major trust to economic development. SMEs are seen as an engine that will remodel Malaysia into high-income nation by the year of 2020 through knowledge-based economic approach (Abdullah & Shamsuddin, 2009; Moorthy et al., 2012; Yeoh, 2014).

MULTIMEDIA SUPER CORRIDOR (MSC) MALAYSIA

MSC as the Cluster Concept

Science parks have emerged all over the world as a mechanism to spur economic development and started to gain the impulse in the 1980's. The idea followed the steps of the successful Sillicon Valley in California, Route 128 in Massachusetts, Cambridge in the UK and the Research Park Triangle in North Carolina. Many other countries replicated the Science Park concept, including Russia, Brazil, Kuwait, China, Taiwan, India, and Israel (Ratinho & Henriques, 2010). Malaysia too, adopted science park concept and introduced MSC in 1996 (Ramasamy, Chakrabarty, & Cheah, 2004; Yigitcanla & Sarimin, 2015) that was launched officially on 27th June 1998 as a set forth to drive the county into a fully developed nation by the year of 2020 (The Economic Planning Unit, 2000). The MSC project comprises four main dimensions; (1) the development of IT and technology applications, (2) the development of IT firms, (3) the development of IT industries, and finally (4) the development of MSC region (Said et al., 2012).

MSC as a Transformation Mechanism to Knowledge-Based Economy

MSC was initiated by the Malaysian policy maker with the intention to switch the economic approach towards a knowledge-driven economy. This transformation on economic approach is incorporated in country's Third Outline Perspective Plan (OPP3, 2000-2010). It notably emphasized on the human capital development, research and development, infrastructure; science and technology, financing and equity. The emphasis believed to provide a foundation to achieve a rapid economic growth and sustain global competitiveness. The overall thrust is outlining the aim of Malaysia attaining developed nation status by the year 2020 (OPP3, 2001).

In line with this, Malaysia developed National IT Agenda (NITA), which aimed to formulate strategies and foster the utilization and development of IT, which is seen as the key to a dominant knowledge-based economy. It is followed closely by introduction of MSC in 1996 as the engine to accelerate economic development for the 21st century that has a vital signaling role as a global player in the application of ICT (Abdul Khalid, Gilbert, & Huq, 2014; Zainal Aznam Yusof & Bhattasali, 2008).

MSC as 'Multimedia Utopia': Infrastructure and Support Services

The MSC accounting a 50 x 50 km2 area, facilitated with basic telecommunication infrastructure, is a home for five emerging cybercities in the country, including Kuala Lumpur City Centre, Kuala Lumpur

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Tower, Cyberjaya, Technology Park Malaysia and Malaysian Technology Development Corporation- Universiti Putra Malaysia Incubator Centre (Ramasamy et al., 2004). The vision of the MSC was ultimately to foster an IT environment through the pursuance of two strategies namely; (1) attracting world leading IT companies to move their industries within the MSC region, conducting research while developing new products and technologies, exporting, and MSC acting as being a hub as well as a global test-bed for multimedia industries in Asia; and (2) encouraging the formulation as well as the development of Malaysian IT SMEs and transforming them into world-class companies (Mohan et al., 2004).

The MSC project, covering the duration of 20 years, was divided into three phases (Said et al., 2012). Phase 1 focuses to influence world first class companies to establish their operations in the region of MSC. This is parallel to the establishment of the two cyber cities; Putrajaya and Cyberjaya. Phase 2 emphasizes on providing a platform of borderless networking among the MSC and other clusters across the country. Phase 3 aims at stemming Malaysia for future growth; knowledge-based society, on the premise of MSC as host of cities which hold the key to the global information and technology.

Along with the development of MSC, the Multimedia Development Corporation (MDeC) was established in 1996 (Earlier known as MDC) and tasked to monitor the development as well as the achievement of the MSC (MSC, 2003). Apart from monitoring, MDeC provides differing level of services within the MSC region to ensure latest intelligent cities standards are applied such as managing the infrastructure incentives and other support service; funding and granting qualified companies, eliminating red tape assistance, facilitating services, overseas market accessing, assisting developing networks with other potential local partners and financiers, and enhancing technopreneurship nurturing programmes.

As part to pursue the strategies, MSC imposed the First Wave Flagship Application; e-government, multipurpose card, tele-health, and smart schools to facilitate unparalleled collaboration between local and international companies, and to set up business incubators centres as to stem the government's approach to support the formation and development of Malaysia IT SMEs. Besides that, in order to circumvent the MSC strategies to be hosting in technology in the country, MSC Malaysia 10 Bills of Guarantee (BoGs) was introduced where all the companies that are given title MSC-status, regardless local or foreign, are eligible for it. Some of the key elements of BoGs are the companies to be entitled to receive tax benefits, including those for their income and import duties, to employ unlimited foreign white-collar workers, to get a financing and flexible ownership option, and to utilize the government-contract business which is the so-called privilege of MSC companies (MSC Malaysia, 1998). All the MSC-status companies are classified into four main ICT focus cluster namely Information and Technology (Infotech), Creative Multimedia Cluster (CMC), Global Business Services (GBS), and Institutions of Higher Education and Incubators (IHLs and Incubators).

Growing recognition on MSC Malaysia is notable and is proven by the increasing number of companies that MSC Malaysia Status as depicted in Figure 1 (MDeC, 2014). In 2014, a number of 229 new companies were awarded MSC Malaysia status which accumulates a total of 3632 companies has received MSC Malaysia status. This accounted increment 7.0% from the previous year. It shows MSC programme managed to promote the growth of creation MSC-status companies.

While reviewing the data in details, Table 1 displays the number of companies awarded as MSC-status which are classified according to the technology cluster and the number of active companies out of it, in 2014. It is apparent that the effective cluster, Infotech has the highest rate as 71%, followed by CMC and GBS with 13% and 12% respectively. IHLs and Incubators falls at the lowest rate which is 4% (MDeC, 2014). However, it shows a positive indication in the implementation as 74.6% companies are active out of the total amount of companies awarded.

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Figure 1. MSC Malaysia status companies growth 2014
Source: MDeC (2014)

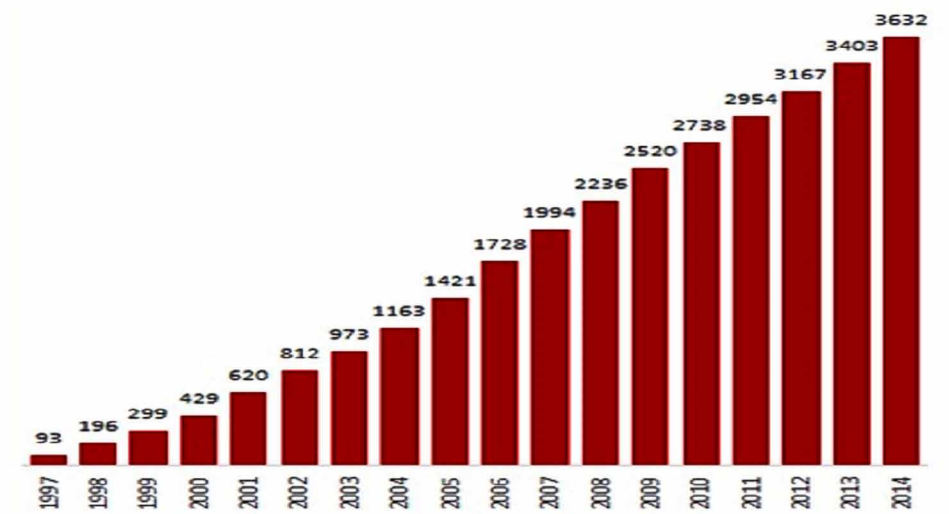


Table 1. MSC status companies awarded and active year 2014

Cluster	Number of Companies Awarded	Number of Companies Active
Creative Multimedia	436	334
IHLs & Incubators	125	111
InfoTech	2,665	1,920
Global Business Services	406	343
Total	**3,632**	**2,708**

Source: MDeC (2014)

Table 2. Number of employment from 2010-2014

Year	Number of Employment
2010	111,536
2011	119,138
2012	128,850
2013	138,071
2014	147,568

Source: MDeC (2014)

In tandem with this growth, MSC annual industry report (2014) presented data on the number of jobs created by MSC Malaysia-status companies from 2010 to 2014 which shows a marked increase from year to year (Table 2). An increment about 7%, which is from 138,041 in 2013, increase to 147,568 in 2014 indicating MSC Malaysia experiencing an expansion on the employment growth, and it is promoting to develop high-income community by 2020.

MSC Cybercities and Cybercentre: Key Economic Focus Area

The essential strategy for promoting clustering approach in MSC region is by designating two categories; (i) MSC Malaysia Cybercity- self-centre intelligent city with the aim to build world-class business eco-system offering MSC 10 Bills of Guarantees (BoGs), (ii) MSC Malaysia Cybercentre which is a building

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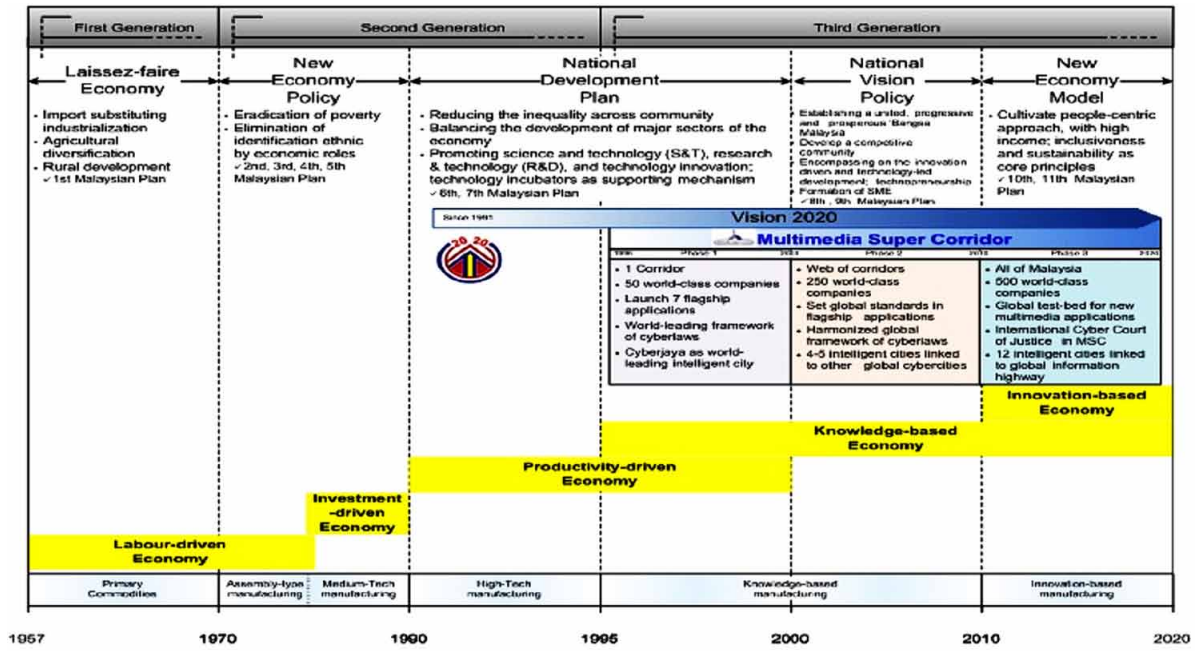
with essential enabling environment, aiming purely to nurture, stimulate and promote the growth of ICT and ICT enabled industries, while offering partial BoGs.

MSC Malaysia Cybercity includes Technology Park Malaysia, Universiti Putra Malaysia-Malaysia Technology Development Corporation (UPM-MTDC), Kuala Lumpur City Centre-Cyberjaya, Kuala Lumpur Tower, and Kulim High Tech Park. While, MSC Malaysia Cybercentre includes Kuala Lumpur Sentral, Menara MSC Cyberport in Johor, Mid Valley City, Bangsar South City, and Melaka International Trade Centre.

As part of the strengthening the MSC strategies, there are four categories of entity eligible for MSC status, which are; (1) companies that use high level of multimedia and provide technology as well as knowledge transfer to Malaysia; (2) Institutions of Higher Learning (IHLs) or faculty of IHLs; (3) incubators that provide and share basic facilities and services, and (4) shared services and outsourcing that have to fulfil four major criteria, including headcount, export, location and investment. However, only IHLs and incubators are gaining flexibility on the location, where they are not restricted to be located in MSC cybercities or cybercentre, but still eligible for some benefits from BoGs.

Figure 2 exemplified an overview of all the national policies, even from first generation till the third generation, which consists of pre-independent laiisez-faire followed by the stages of economic approach; labor-driven economy, investment-driven economy, productivity-driven economy, innovation-based economy and finally knowledge-based economy. Along with this, snapshot of the development of economic policies includes NEP, NDP, NDV and finally NEM are clearly shown.

Figure 2. Malaysian economic development and MSC Malaysia milestone
Source: Adapted from Nordin (2002), & Berma (2012)



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SMALL MEDIUM ENTERPRISES (SMES) IN MALAYSIA; A KEY DRIVER TO ACCELERATE MSCS' OBJECTIVES

Definition of SMEs

There is a wide range definition of SME which differs within institutions, countries, and regions. SMEs in Malaysia classified all the enterprises by the total annual turnover and number of full-time employees (SMIDEC, 2007) that resemble most of the universal characteristics. A common definition of SMEs in Malaysia which was endorsed by National SME Development Council (NSDC) since 2005, has been adapted and practiced across all the institutions, organizations, agencies, as well as the ministries.

However, the structure of economy evolved rapid changes including economy, business trend, and other structural changes, has led NSDC to introduce new definition of SME that was effective from 1st of January, 2014 (Table 3). A clear shift is observed where NSDC focused on classifying all the enterprises into two categories, which are (1) manufacturing, including transformation of materials or components, from physical or chemical component into new products, and (2) services and others including primary agriculture, construction, as well as mining and quarrying (SME Corp. Malaysia, 2013).

SMEs in manufacturing sectors are defined as enterprises with full-time employees not exceeding 200 workers and sales turnover not exceeding RM50 millions. SMEs in services and other sectors should have full-time employees not exceeding 75 workers and sales turnover not exceeding RM 20 million. The definition is applied to all the ministries, agencies and financial institutions that are involved in SMEs development programmes. Table 3 shows a clear new definition of SMEs in Malaysia by size and operation (Gopal & Mohd Sulaiman, 2013).

Table 3. New definition of SMEs in Malaysia, effective from 1st of January, 2014

Category	Micro	Small	Medium
Manufacturing	Sales turnover of less than RM300,000 *OR* full-time employees less than 5	Sales turnover from RM300,000 to less than RM15 million *OR* full-time employees from 5 to less than 75	Sales turnover from RM15 million to not exceeding RM50 million *OR* full-time employees from 75 to not exceeding 200
Services and Other Sectors		Sales turnover from RM300,000 to less than RM3 million *OR* full-time employees from 5 to less than 30	Sales turnover from RM3 million to not exceeding RM20 million *OR* full-time employees from 30 to not exceeding 75

Source: Gopal & Mohd Sulaiman (2013)

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Contribution of SMEs to Economic Development

SMEs are recognized as the backbone to economic development in Malaysia and seen as major contributor to Gross Domestic Product (GDP), export and employment. In 2011, the number of 645,136 SMEs shows a significant establishment in the development of economy, which reached 97.3% of the total enterprises indicated the importance of SMEs to the development of economy (Table 4). According to Economic/SMEs Census (2011), SMEs contribute 32.5% of GDP, 57% of total employment, as well as 19% of total exports in 2011.

While, Table 5 presents the contribution of SMEs to GDP in Asia-Pacific region where SMEs are the key drivers for both developed and developing countries. Almost all the countries within the region are considering SME as the engine for their economy development. According to Asia-Pacific SME Statistic, Index 2015, the highest contributions of SMEs to GDP is at the range of 40 to 60% from China (60.0%), Australia (55.7%), Hong Kong (54.0%), Japan (53.0%), Singapore (50.0%), South Korea (47.0%), and lastly followed by Vietnam (40.0%). Even Malaysia is in average stage, which contributed 32.7% to GDP, and still considered a good achievement. Thus, recognizing the importance of SMEs' contribution, the government has highly focused to increase the contribution to 41 percent of GDP by the year of 2020 as compared the contribution of 30% in the year of 2010, and to prepare Malaysia into a developed nation by the year of 2020, as shown in Table 6 (Hafsah Hashim, 2013).

As SMEs have a significant contribution on the economic development across the world, many researchers have look into various angle in the context of SMEs success factors. For example, innovation policies in SMEs (Wonglimpiyarat & Jarunee, 2016), motivation of SMEs entrepreneurs (Soltanian, Zailani, Azmin, & Aziz, 2016), knowledge management (Yigitcanla & Sarimin, 2015), organizational and management activities (Agostini, 2016), business-based website (Ramayah, Ling, Taghizadeh, & Rahman, 2015), network (Ing. & Ing., 2016), human capital (Onkelinx, Manolova, & Edelman, 2016) and many more.

However, in the practical perspective, critical challenges and difficulties lies ahead, particularly during the start-up phase. The failure rate of SMEs in their early stage is high and need urgent attention in most countries (Ahmad, Wilson, and Kummerow, 2011; Rasmussen, Mosey, and Wright, 2014). Therefore, many prominent researchers across the world (Aerts, Matthyssens, and Vandenbempt, 2007;

Table 4. Number of SMEs establishment by sector

Sector	Micro	Small	Medium	Total SMEs	Total SMEs	Large Firms	Total Establishments
	Number of Establishments				% Share	Number	Number
Manufacturing	21,619	13,934	2,308	37,861	5.9	1,808	39,669
Services	462,420	106,061	12,504	580,985	90.1	10,898	591,883
Agriculture	3,775	1,941	992	6,708	1.0	2,121	8,829
Construction	8,587	6,725	3,971	19,283	3.0	2,857	22,140
Mining & Quarrying	57	126	116	299	0.05	119	418
Total SMEs	**496,458**	**128,787**	**19,891**	**645,136**	**100.0**	**17,803**	**662,939**

Source: Department of Statistic Malaysia (2011)

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Table 5. Asia-Pacific SME statistic, Index 2015

Economy	Number of SMEs	SME Employment	SME Contribution to GDP
Australia	2,076,068	7,241,000	55.70
China	40,478,200	654,984,000	60.00
Hong Kong	316,432	1,296,003	54.00
India	36,200,000	101,200,000	6.20
Indonesia	56,534,591	107,657,510	23.20
Japan	4,115,830729	65,280,000	53.00
Malaysia	**645,136**	**8,460,971**	**32.70**
New Zealand	468,100	584,000	42.00
Philippines	816,759	3,872,406	35.70
Singapore	407,298	2,460,000	50.00
South Korea	3,351,404	13,059,372	47.30
Taiwan	1,306,	8,484,000	30.23
Thailand	2,913,167	10,995,997	36.60
Vietnam	242,453	32,505,242	40.00

Source: Asia Cloud Computing Association (2015)

Table 6. Actual and targeted contribution of SMEs

Category/year	Actual SME establishment 2010 (%)	Targeted SME establishment 2020 (%)
GDP	32	41
Employment	59	62
Export	19	25

Source: Hafsah Hashim (2013)

Bergek and Norrman, 2008; Calza, Dezi, Schiavone, and Simoni, 2014; Hackett and Dilts, 2008; Mas-Verdú, Ribeiro-Soriano, and Roig-Tierno, 2015) have heightened the importance of business incubator programmes as key drivers to foster the development of start-up firms through job and wealth creation.

INCUBATOR AS A SUPPORT MECHANISM TO SMEs

Having the right environment is essential in ensuring the effective and efficient creation process of technology-based entrepreneurs. Research has shown that in order to encourage the formation of technology based entrepreneurs, business incubators are needed to act as catalysts (Abdul Khalid, Gilbert, & Huq, 2011; Rosa Caiazza, 2014; Wonglimpiyarat, 2016). Business incubators are generally seen as a politically attractive and widely accepted means of increasing the chances of survival for new business ventures (Dee, Livesey, Gill, & Minshall, 2011; European Commission, 2002; Lalkaka, 2003; Smilor,

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1987; Tavoletti, 2013). They are also viewed incubator as one of the newest tool for promoting the growth and development of economic of a country (Al-Mubaraki & Busler, 2014; Mansano & Pereira, 2016; Marchis & Lecturer, 2011).

A systematic review was conducted on business incubation by Hackett & Dilts (2004). It was observed that most literatures agree that incubators-incubation represent a systematic method of providing business assistance to firms during the early-stages of their development. This assistance is provided with the aim of increasing firm survival rates (Mas-Verdú, Ribeiro-Soriano, & Roig-Tierno, 2015). It was also noted by earlier researcher, Allen & Rahman (1985) that while the universal purpose of a business incubator is to increase the chances of a firm surviving its formative years, the business incubator also adds value by maximizing the firms' growth potential (Rosa Caiazza, 2014).

Business incubators can be perceived to be a type of infrastructure geared to support and nurture the establishment and development of small enterprises (Bergek & Norrman, 2008; Brathwaite, 2016; European Union, 2014; Lesáková, 2012; Mas-Verdú et al., 2015; Peña, 2002). Incubators typically seek to provide a nurturing or a supportive environment by ensuring that start-up firms have access to the resources, services and assistance needed. These resources are more often than not a luxury that new ventures lack or cannot yet afford (Lee & Hunt, 2008; Trewartha et al., 2012).

Entrepreneurship in the United States thrives because of the prevalent culture of risk-taking, competitiveness, technical infrastructures, and venture capital (Adlesic & Slavec, 2012; Brathwaite, 2016; Chandra, 2009) practiced by the entrepreneurs. It must also be noted that in order to further foster the development of entrepreneurs, especially from the technology-based angle, the presence of business incubators are especially important economic development tools. A clear example of this is undoubtedly the Silicon Valley, which boasts of being the ultimate business cluster phenomenon. Results from a study conducted by Suzuki, Kim, & Bae (2002) which compared entrepreneurship in Japan and Silicon Valley showed that Japanese entrepreneurs and their counterparts from the Silicon Valley were different in four dimensions; which are motivation, risk and obstacles, growth factors and infrastructures.

In Korea and China, entrepreneurial activities are also enhanced by the emergence of science parks and incubators, which are mostly linked to universities (Lalkaka, 2002). According to Nam (2000), in Korea, the technological know-how and managerial skills could be regarded as a necessary but it is not sufficient condition to be successful ventures. As Sung, Gibson, & Kang (2003) explained that entrepreneurs in Korea have insightful evaluations about their resources and capacities as well as expectations towards the functions and features of science parks and incubators. However, it was also observed that the functions and features of science parks and incubators were generally not perceived to be a critical influence on business start-up firms or on the growth of new businesses. Contrarily, Chinese incubators not only helped to bridge the gap between government research and the marketplace, but also fostered entrepreneurial attitudes. Besides that, the incubation programs had also been effective in promoting continuous interaction and opportunities among the managers (Lalkaka, 2002).

Observations made in South East Asian countries have highlighted several initiatives which have been undertaken by various governments in order to nurture the development of entrepreneurs. Singapore's cultivation of technopreneurs as a social movement implies a fundamental shift in orientations, such as a higher concentration on innovation Foo & Foo (2000). The government has also conditioned favourable environments to encourage the blossoming of technopreneurship through the provision of a strong education system, infrastructure, and internet access. Studies have also shown a similar movement in Malaysia through the establishment of technology parks, MSC and incubators to nurture the start-up of

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companies. An example of this is the SIRIM Malaysia incubator hub in Sepang which aims at assisting entrepreneurs develop innovative concepts, upgrade skills and enhance their knowledge (Yunos, 2002).

Bergek & Norrman (2008) highlighted four components which bring business incubators and incubation into the limelight, namely; 1) shared office space which is rented under more or less favourable conditions to incubatees, 2) a pool of shared support services to reduce overhead costs, 3) professional business support or advice and 4) internal and external network provision. Governments have the role of providing the necessary infrastructure for the MSC, developing the human resource pool, the setting up of incubators and research agencies and councils to support SME, MSC as well as economic development. In comparison with other developing countries, Malaysia can be seen to have initiated the most integrated efforts in terms of government policies development, provision of incentives and infrastructures to support the growth of SMEs.

However, one of the challenges faced by SMEs during the start-up phase is the capability to utilize all the facilities provided by the government. One effort made by the government to reduce this problem is the increased running of programmes and policy regimes. It is hoped that through the delivery of these initiatives, SMEs will be able to enjoy further development and an escalated success rate. Six categories have been identified (SMIDEC, 2007), namely:

1. Programs on capacity building and human capital development,
2. Programs on technology development,
3. Programs on market access,
4. Programs on advisory services,
5. Programs on promotion and outreach, and
6. Programs on incubator centers and SME Industrial Sites.

Malaysia is not foreign to the concept of 'business incubators', as the nation has seen the adoption of this concept in the economy since the early 1990s. The number of business incubators has been on the rise since then, and as of 2009, it was noted that there were 110 incubators in Malaysia (Association of Business Incubation AABI; 2009), and 2000 incubating companies, as is depicted in Table 7. Although Malaysia currently ranks in the mid-range levels among the 14 listed companies, the statistics are still indicative of the positive future prospects of incubation development in Malaysia.

THE NUMBER OF BUSINESS INCUBATORS AND INCUBATEES IN MALAYSIA

According to SME Corp report (2012), although there are 126 incubation centres in Malaysia, only 103 of these centres are currently active. It was also recorded that 23 of these centres are in the pre-stage status at various incubation centres (Table 8). Key information highlighted in the table with regards to the 103 active incubators indicated that there are 988 incubatee companies residing in these active incubators, and that more than 50% of these companies have already developed commercial products and are generating revenue. Less than half (43%) are actual pre seed and start-ups, with a very negligible number of virtual incubatees (3%). These figures represent a ratio of 10 incubatees to 1 incubator, which is slightly less than the average ratio of 17 incubatees to 1 incubator as was highlighted by a study conducted by infoDev in 2009. The same study found China to have the highest incubatee to incubator ratio, which

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Table 7. Number of business incubators in Asia Pacific region

Country	Number of Incubators	Number of Companies Incubated
China	670	45,000
Korea	279	4,700
Japan	190	2,375
Singapore	120	1,800
India	110	800
Taiwan	104	1,300
Australia	80	160
Thailand	89	412
Malaysia	**110**	**2,000**
Uzbekistan	32	488
New Zealand	10	142
Hong Kong	5	200
Vietnam	11	47
Pakistan	1	9

Source: Asia Association of Business Incubators (AABI), 2009

Table 8. Number of incubators and incubatees in Malaysia, (SME Corp, 2012)

Number of Incubators	**A total 126 incubation centres**	
	Category	**Establishment**
	Active	103
	Pre-stage	23
	Total	**126**
Number of Incubatee	**From a total 103 active incubators**	
	Category	**Establishment**
	Pre-seed	93
	Start-up	336
	Matured	527
	Virtual	32

stood at 67:1, while Australia was observed to have the slightest ratio at 2:1. Japan and Taiwan both have a ratio of 13 incubatees to 1 incubator, placing both countries just above Malaysia (SME Corp, 2012).

There are two ways of categorising incubation centres in Malaysia, which is either by the type of incubator or according to its industry sector focus.

- **Type:** The incubator can be of technology, business, jobs/skills and virtual (Figure 3), and
- **Sector Focus:** Agriculture, craft, manufacturing and services (Figure 4).

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The following two figures provide a more detailed description of these categories.

EVOLUTION OF INCUBATION MODEL

Incubation models have undergone several evolution movements over the years and can be classified into different generations based on the period of change, as is highlighted in Figure 5 (Abdul Khalid et al., 2014). 1st generation incubation models entail incubation centres that focus solely on providing real

Figure 3. Incubation centres categorised by type
(SME Corp, 2012)

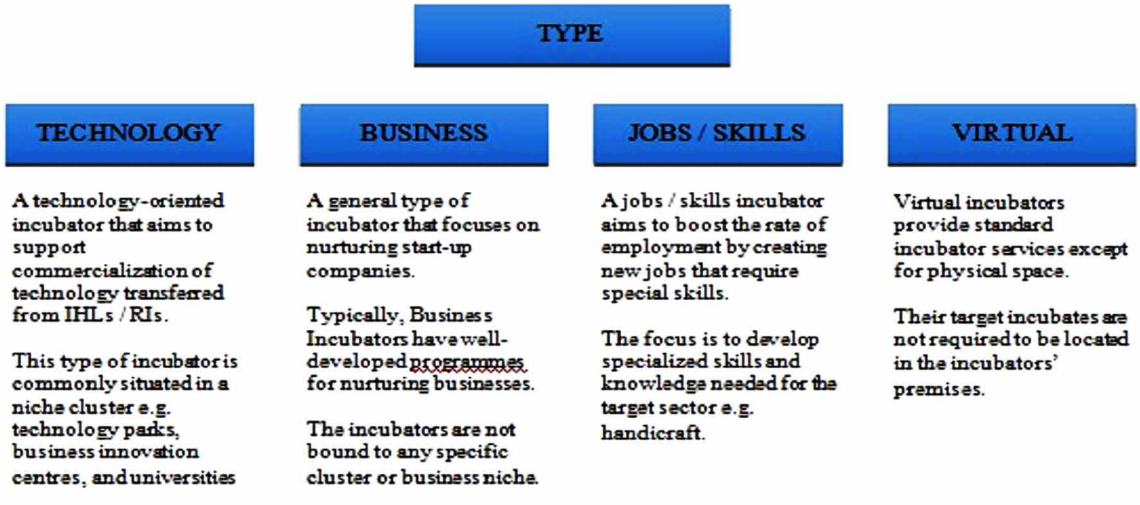
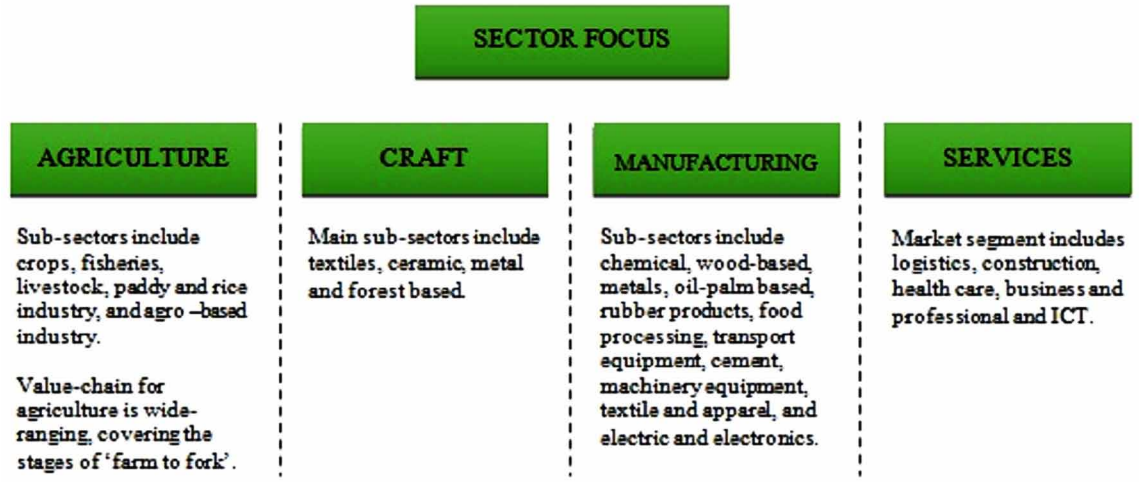
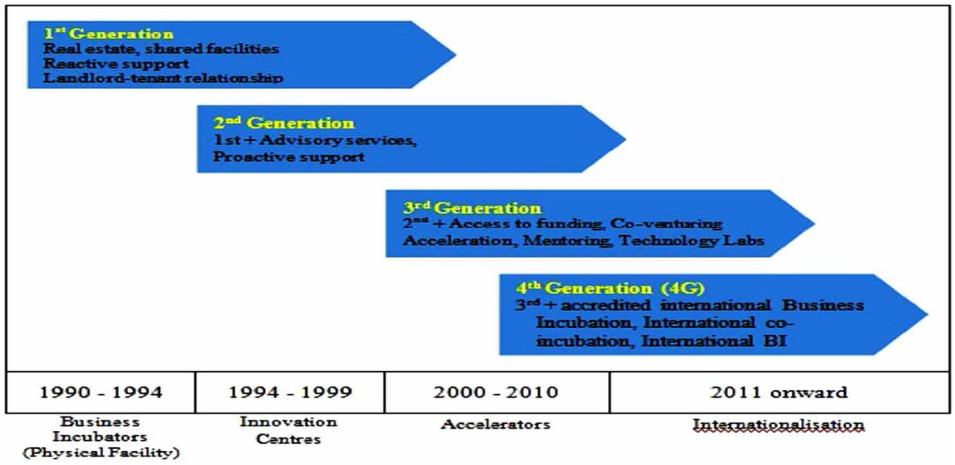


Figure 4. Incubation centres categorised by sector
(SME Corp, 2012)



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Figure 5. Generation of incubation centres development
(Adapted from SME Corp, 2012 and Abdul Khalid et al., 2014)



estate services and some shared physical facilities. On the other hand, 2nd generation incubation centres provide specific advisory services that are mainly based on the particular specialisation of the incubation centre. Support from the management at this stage is generally on request. 3rd generation incubation centres marked a significant change in terms of services, as these centres extended their services by providing business support (mentoring, coaching, business advisory), marketing support (market access, network, marketing services) and facilitation for access to funding sources such as grants, project financing, loans, venture capital, and investors. Currently, incubation models are at the 4th generation phase, and the services delivered by at this phase include greater support and add internalisation value of their clients' business, seeking access to global funding, international alliances, and international markets.

CHALLENGES OF BUSINESS INCUBATORS IN MALAYSIA

It is clear that SMEs are acknowledge in literature as one of the most potential drivers of the Malaysia's economy as they are significant contributor in terms of capabilities for creating employment, contributions to gross domestic product (GDP) and exports (Ahmad et al., 2011; Bakar, Mahmood, & Ismail, 2015; Isa, Aziz, & Razak, 2011; Muhammad Wasin Jan Khan & Dr Muhammad Khalique, 2014; Ramayah et al., 2015; Sharif, 2014; Tock & Rohaizat Baharun, 2013). Thus, business incubators programmes are seen to shed light to the SMEs by providing a nurturing business environment to accelerate the development of start-up firms.

After realizing the importance of business incubation programmes, tremendous support has been given by the government. Yet, according to Mohd Saffar (2007), SME Corp (2012), and Jamil et al. (2016) there are many challenges faced in the process of incubation as:

- Lack of skilled staff to coach and monitor the incubatees,
- Weak underlying processes in incubators,
- Lack of managerial skills among the managers operating incubators,

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- No standard definition and concept of business incubation modeled in Malaysia,
- Incubation programmes are parked in various ministries,
- Majority of incubators are funded by federal government, and
- Bureaucratic complexities in some of the processes.

Report from SME Corp (2012) has outlined realistic indication of Malaysia incubation scenario that 68% of business incubators in Malaysia are in first and second generation, accounted for 20% and 48% respectively. These generation incubation programmes adapt traditional landlord-tenant models (low-cost real estate), and provide basic incubation supports (office space and shared office facilities). The report also identified that 29% of business incubators are in third generation, while only 3% ended in the fourth generation. Both third and fourth generation incubators have updated their supports portfolio by offering business support services particularly coaching and mentoring, assisting the incubatees with technological upgrade, professionals, providing international market and network access, as well as providing essential support from local and global funds. This statistic infers that human, structural and network capital element need to be given attention, which will result in upgrading the level of the majority business incubators from the first and second generation to the third and fourth generation in the near future.

DISCUSSION AND FUTURE RESEARCH

Despite all the strategies and development in business incubators, little evidence on theoretical challenges was identified in Malaysia. Even developments in economics have highlighted the significance of business incubator programmes across the world, yet far too little attention has been paid on the business incubators-incubation research in Malaysia. This chapter is highlighting some of the literature research, from a range of period from 2000 to 2015 which has been conducted in both conceptual and research in Malaysia as shown in Table 9. The update clearly indicates a remarkable shortage of research in Malaysia. Thereby, this chapter suggests future researchers to explore and identify the success factors and performance of business incubator programmes which can be exploited in Malaysia particularly. It is very important for future research to close the gap by looking into the unexplored dimension. Based on the few studies conducted in business incubation, the following challenges were highlighted:

- What is the standardization of the incubation process? (Lee & Hunt, 2008),
- What is the best practise of an incubator? (Bergek & Norrman, 2008),
- What are the enabling factors for strategic management of business incubator? (Somsuk & Laosirihongthong, 2014), and
- How do business incubators use their intellectual capital? (Calza et al., 2014).

Thus, one way to explore the challenges faced by incubators in Malaysia would be exploring on the influence of intellectual capital to the performance of incubatees, as Malaysia is moving toward knowledge based economy. As intellectual capital is the major source of knowledge, Calza et al., (2014) had proposed a theoretical model to analyze the intellectual capital of new generation business incubators, where it encompasses three dimensions; human, structural and relational capital.

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Table 9. List of research in business incubators-incubation from 2000-2015 in Malaysia

Author (Year)	Title
Mohd Yunos (2002)	Building an Innovation-based Economy: The Malaysian Technology Business Incubator Experience
Jusoh & Idris (2002)	Role of Technopreneurs in Malaysian Economic
Ghazi (2006)	Growing a Vibrant ICT Incubator Industry In Malaysia.
Mohd Saffar (2007)	Malaysian Incubation Country Case Study
Sufian (2006)	Incubators as catalysts in developing high technology businesses: Malaysia's experience.
Mahmud (2003)	Seed stage venture capitalists & incubators in Malaysia: a win-win collaboration.
Mohd Saffar (2007)	Innovation and entrepreneurship policy framework: The Malaysian experience in building sustainable incubation industry (movement).
Mohd Saffar (2008)	Business Incubation and Support System in Asia-Pacific: Establishing International Cooperation among Asian Incubators
Abdul Khalid et al. (2010)	Current Practice of Business Incubation Process Elements in Malaysian ICT Incubators
Abdul Khalid, Gilbert, & Huq (2011)	Business incubation process impact on Malaysian ICT incubatee performance using multinomial logistic regression.
Abdul Khalid et al. (2012)	Investigating the underlying components in business incubation process in Malaysian ict incubators
Abdul Khalid & Gilbert (2012)	Third-generation Business Incubation Practices in Malaysian ICT Incubators – A Bridge Too Far?
Said et al. (2012)	Incubators And Government Policy For Developing It Industry And Region In Emerging
Abdul Khalid et al. (2014)	The Way Forward For Business Incubation Process in ICT Incubators in Malaysia

Therefore, moving forward, and in line with SME Masterplan 2012-2020, this chapter would like to highlight the gaps in business incubators research in Malaysia. This chapter clearly shows the urgency to carry out studies to identify the factors which influence the performance of business incubations in Malaysia, in the context of effectiveness of business incubators either during the phase of pre, during or post incubation.

CONCLUSION

As part of the journey in realizing Vision 2020, MSC and SMEs have played a vital role in contributing to the economic growth. Realizing this, government has formulated and multiplied strategies and action plan to drive together the promoting of the economic growth. Taken together, the study encompass the role of business incubators as an accelerator to start-up firms, and simultaneously in line with the objectives of SME Masterplan 2012-2020 to generate greater impact to SMEs development.

This chapter reviewed the significance of MSC and SMEs in the Malaysian economy; the small but important steps taken to facilitate more effective approaches to business incubation as well as a general typology of business incubators in Malaysia. As the government is the leading stakeholder of the incubation centres and their ecosystem in the country, this is a timely moment for the nation to take key steps to regulate the incubation industry into a single governance system, with a keen focus on nurturing the incubatees and increasing their chances of survival. Undeniably, there are many drawbacks in

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the Malaysian incubation industry such as the fact that most of the incubation centres in Malaysia are either federal or state owned, the loose interpretation of the term incubator in Malaysia, the trend of most incubation centres in the country being placed at either 2nd or 1st generation stages, equity funding by incubation centres that is not prevalent, human capital issues especially in terms of incubation managerial skills, structural capital as well as issues with innovation. These limitations indicate that there are still many steps which must be taken by Malaysia in order to successfully achieve the status that the nations hopes to attain within the incubation industry in the near future, encompassing on the intellectual capital context of business incubation.

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KEY TERMS AND DEFINITIONS

Business Incubation: A dynamic, interactive, and innovative process which stimulates and accelerates the discovery, validation, application of new ideas towards development and commercialization of tangible and intangible products in the market.

Business Incubator: An innovative system which is designed to accelerate the development and success of start-up firms by providing a broad range of resources and business services. Business incubators are primarily defined by nature of the incubator's promoters, their objectives, the types of projects and services, the financial model and the environment in which the incubator operates.

Economic Policy: The actions that governments take in the economic field.

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Incubatee: Firms that have been registered under an incubator and had been in operation for a period of time.

Multimedia Super Corridor (MSC): MSC Malaysia is Malaysia's national ICT initiative designed to attract world-class technology companies while grooming the local ICT industry.

Small and Medium Enterprise (SME): SME definition covers all sectors, namely services, manufacturing, agriculture, construction and mining & quarrying bases on sales turnover and number of full-time employees.

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Section 2

Development and Design Methodologies

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Chapter 6
A Model to Reduce the Risk of Projects Guided by the Knowledge Management Process: Application on Industrial Services

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ABSTRACT

Knowledge plays a key role in the information revolution. Major challenges are to select the information from numerous sources and transform it into useful knowledge. In this context and in an economy strongly focused on the "Knowledge", take the turn of knowledge management becomes a strategic issue for the survival of organizations. However, the research in knowledge management focuses mainly on the creation, capitalization, and knowledge transfer process. Researchers are centered on the establishment of the knowledge management process in companies, but little about interaction between the knowledge management process and the risk management process. In this article, the authors propose a new model to reduce the risk of projects guided by the knowledge management process represented by the GAMETH method. They apply their approach to ammonia industry presented by the FERTIAL (Algerian-Spanish company).

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INTRODUCTION

Very many companies use the risk management for developing their activity (construction, computer science, ecology, industrial, pharmaceutical, health, etc.). Among the different research themes addressed in the literature, the risk reduction of projects remains one of the most studied together other important works on detection, evaluation, estimation, solutions and tools to be implemented. However, it appears that appropriation (learning) and experience (know-how) are effective ways to prevent risks.

Such knowledge acquired in the past should be managed to allow more effective risk management: one role of knowledge management. The latter is a way of systematic management of tacit knowledge and explicit knowledge. Indeed, its purpose is to retain, to transmit and to develop knowledge in order to:

- Improve the skills management,
- Promote innovation and creativity
- Support decision making.
- Increase productivity

In sum, risk management and knowledge management are two different fields that become more and more important for companies dealing in a global and multicultural environment.

In the first part, we present the main concepts that are used in our paper regarding to context and elements of the project, the theoretical concepts of risk management process, and knowledge management process. In the second part, we present our model to reduce the risk of projects guided by the knowledge management process by using the GAMETH method (Grundstein, 2012; Brahami et al., 2015). Thus, we refer to the knowledge stakeholders, their tasks, and the results of their problem-solving activities as knowledge resources.

THEORETICAL FRAMING

This section deals with the main concepts that are employed in this paper regarding to context and elements of risk projects.

Context and Elements of the Projects

In the literature of management and according to (Morley, 2003), the term project corresponds to the situation in which one finds oneself when we shall reach a goal with the means with ad hoc and in a given time frame. According to (Marciniak & Rowe, 2008), a project is defined as a specific action, new, with a limited duration, which structures methodically and progressively a given reality to come. In addition, the project is a complex system of stakeholders, means and actions, with the purpose to provide a response to a demand or a need. For Giard (Giard, 2004), the project is indicated as a specific approach that allows structuring methodically and progressively a reality to come. Also, a project is defined and implemented to elaborate a response as required by user or customer and it implies an objective and actions to be undertaken via concept data resources (Reina et al., 2012).

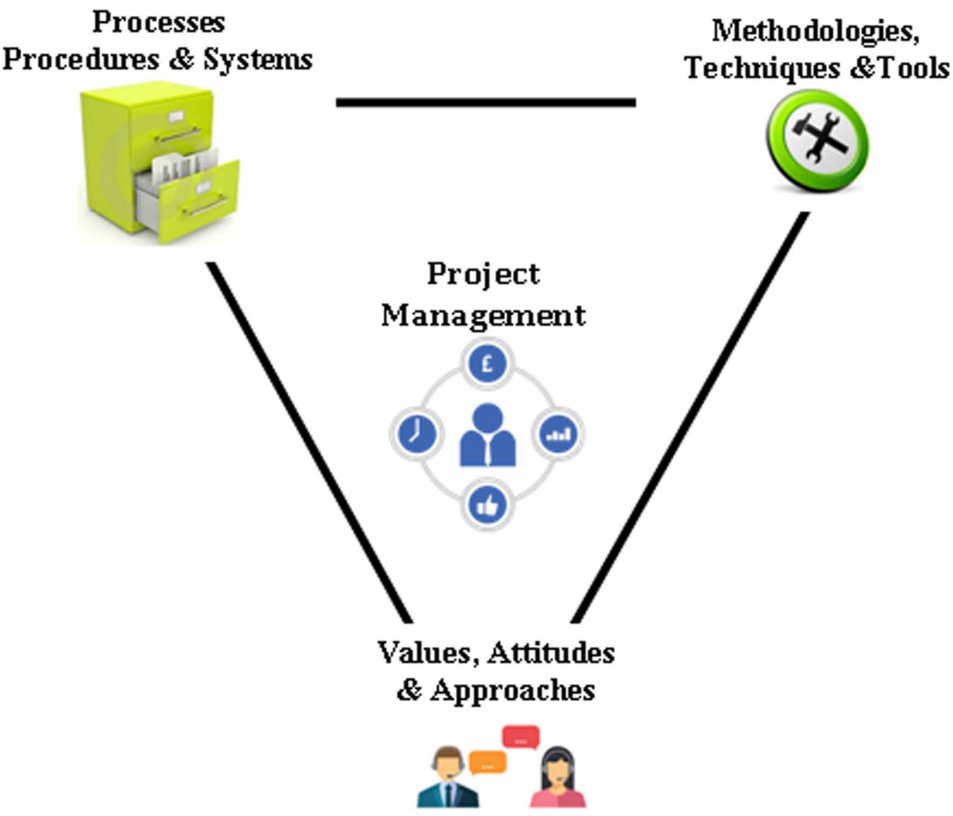
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At the conclusion of these three definitions, we find that the word project is highly bound to objective terms, means and time. The diagram below, adapted from (Briner et al., 1993), represents the fact that the realization of a project is influenced by organization policy, by some external constraints and by individuals' needs in the environment as well as within the organization. Consequently, these factors should be considered throughout the life cycle of project (see Figure 1).

In addition to its different elements, the project evolves in a particular context which confers the specific characteristics. According to Newcombe (Newcombe, 2000), this context is composed of the organizational structure of the enterprise, the direct environment of the project and the general environment of the enterprise. For Giard (Giard, 2004), the organizational structure of the enterprise determines the organization of the project because it affects the roles and tasks of the actors. The direct environment of the project "users, project team, and management type" influences the objectives and progress of the project. The general environment (competition, sector of activity, etc.) legitimates, regulates and / or strengthens the project.

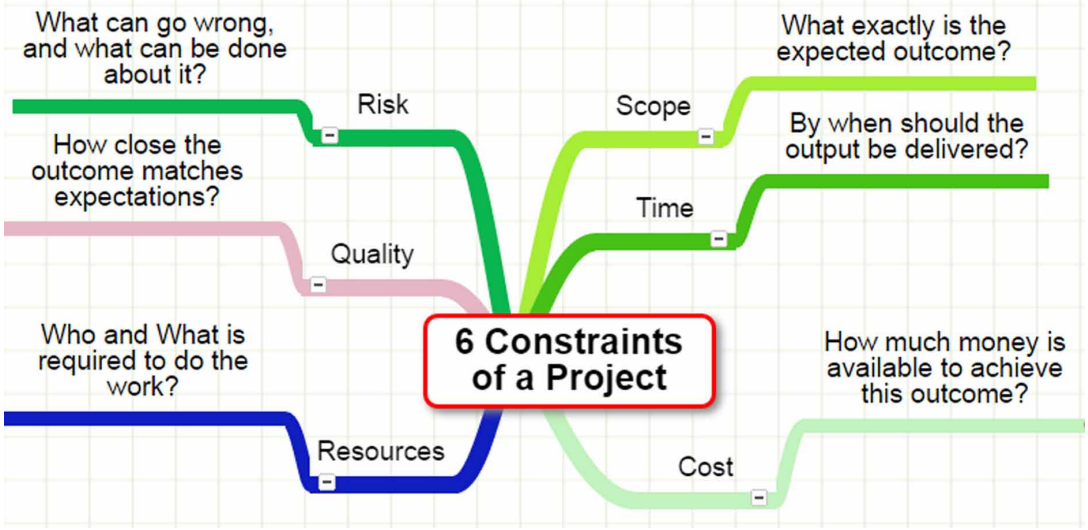
The project, its elements and its context are managed by the project leader. An abundant literature defines the project management. The project management is first presented like applying tools and technologies on resources for the accomplishment of a single task, complex possessing of the constraints of time, cost and quality. Other author specifies that the project management has the role to address these challenges by putting in place an organization and a planning of the all the activities aimed at ensuring the achievement of project objectives (quality, cost, time), performing their monitoring, anticipate the risks

Figure 1. The project management triangle



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Figure 2. The heuristic map of the constraints of a project



and the changes to be implemented, deciding and communicating (Emblemsvåg, 2010). The synergy of project management and knowledge management concepts creates a sturdy knowledge-based framework that enables sharing of project knowledge and lessons learned, and promote the cross-pollination of ideas (Kevin & Evaristob, 2006). This knowledge is hopefully fed through the other areas of the organization, such as engineering, research and development, and product development, so as to improve the products and services of the organization (Kevin & Evaristob, 2006) (see Figure 2).

Finally, some describe the project management like a process of organization, of planning and of coordination of means (Barker & Cole, 2007) rather than a process of control and of monitoring of the tasks. Although these knowledge areas are all equally important from a project manager's point of view, in practice a project manager might determine the key areas which will have the greatest impact on the outcome of the project.

All projects are not of successfully. By way of example, we can cite the studies of the Standish Group published in the "Chaos report" but which only relate information system projects. The latest public release of 2009 date and is given below (Morley, 2003).

Risk Management Process

The projects failures lead us to treat the existing risks preventing projects to arrive to their end or else to meet their initial specifications. For this, the need for risk management in projects is unquestionable. Almost all norms, quality models and standards of project management claim that risk management is essential. With the diverse interpretations of risk, the domain of the risk management becomes even more complex with different organizations and entities defining it in different expressions. Related to ISO 31000 defines it as a set of coordinated activities implemented in order to direct and control an organization with regard to risk. In fact, the risk management is a continuous process that will trigger further deliberation as soon as a fact is added to the knowledge base, which makes the situation risky. According to Bradley (Bradley, 2011) risk management embodies an organizational culture of prudent

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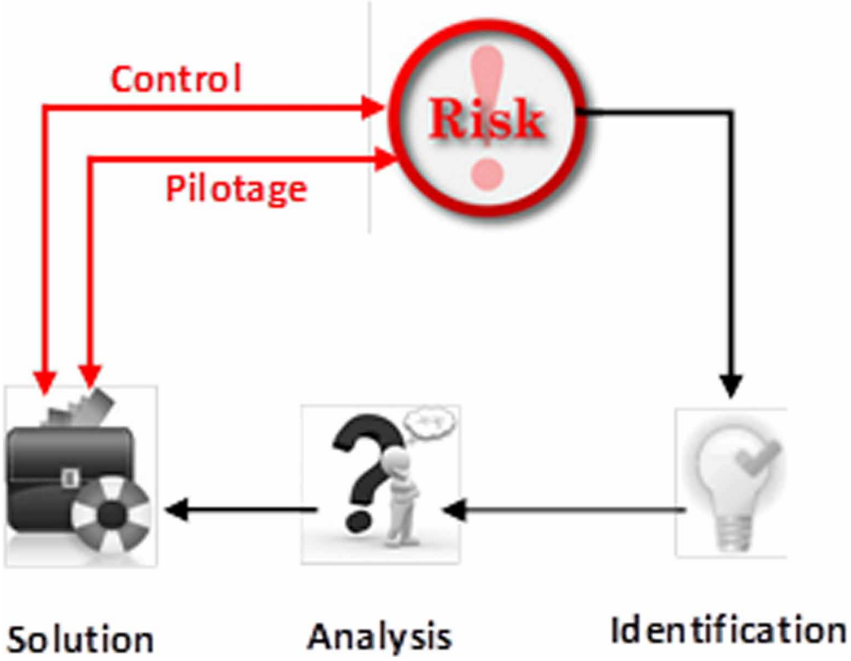
risk-taking within an agency. It is the process of identifying, assessing and responding to risks, and communicating the outcomes of these processes to the appropriate parties in a timely manner. For (Rachna & Shahid, 2013), the risk management process is a holistic approach includes the external and internal risks to be addressed in the corporate strategy in integration with corporate culture prevalent in the company. Moreover, he outlines a standardized approach to the identification, analysis, evaluation, treatment, communication and monitoring of risk. According (Pender, 2001), the risks management is present in all the systems of the model presented above: strategic, technical, social, structural, and the project management. The project manager must then seek to reduce them, and if he/she can't reduce them, he/she shall monitor their evolution. He set up in this optic a risk management. This risk management is a principal component of the project management. According to (Corvellec, 2009), risk management can be embedded in the daily management activities that typify the operational mode of the firm without explicitly referring to risk, but still addressing in a complete and effective manner the risk issues of the organization. For (Emblemsvåg, 2010), the risk management is required to take into account the past problems leading to complications, present challenges and predominant inclinations which impede the project's successful implementation. For (Berg, 2010), risk management is an activity which integrates recognition of risk, risk assessment, developing strategies to manage it, and mitigation of risk using managerial resources. Some traditional risk managements are focused on risks stemming from physical or legal causes (e.g. natural disasters or fires, accidents, death). In supply chain domain and according to (Borgman & Rachan, 2009), the risk management in supply chain operations is clearly of significant interest to production companies, intermediaries and consumers. Furthermore, it does not equate to disaster response only. Rather, it means keeping an increasingly complex process moving efficiently at the lowest total cost and without compromising the quality of the product or customer satisfaction. Moreover, an attempt was made by (Gupta et al., 2014) to bring out a schema for analyzing supply chain risks faced by the firm and develop a risk management action framework that would serve as a guide for practitioners to identify the level at which their firms are operating and the strategies they need to employ to combat or prevent supply chain risks. According to the authors, the data is collected by means of an online as well as an event survey from logistics managers of various supply chain firms.

Generally, the setup of a risk management process varies between different types of standards; some include the risk management process in the risk management framework and does not separate them (Hopkin, 2012). A risk management process aims to give the structure of how the organization should control risks, and independently of which standard's way of presenting the process that is used, most of the existing models gives the same basic work structure (Hopkin, 2012). According to (Zuo & Hu, 2009), a full cycle of risk management includes risk identification, risk analysis and risk mitigation. Effective risk management is to (1) identify any potential risks that an organization faces (including cyberattacks from external malicious hackers, internal human errors, and system failures); (2) assess the levels of threats to the organization's assets, and (3) develop strategies and approaches to mitigating risks. Likewise, risk management process is defined as a concatenation of five (05) steps (see Figure 3):

- **Risk Identification:** Attempts to establish threats (risks) to the project. Its goal is to anticipate what can go wrong in the project. The identified risks in previous similar projects can help the software engineer in that task. Risk identification is critical to efficient management of risks on construction projects;
- **Risk Analysis:** Concerns analyzing the identified risks, estimating their probability and occurrence impact (exposure degree);

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Figure 3. The risk management process (Emblemsvåg, 2010)



- **Risk Assessment:** Aims to rank the identified risks and to establish priorities. The goal is to allocate resources only for the most important risks, without managing risks with low probability and low impact;
- **Action Planning:** Concerns planning mitigation and contingency actions for the managed risks (those of higher priority). Mitigation actions aim to reduce probability or impact of a risk before it occurs. Contingency actions assume that mitigation efforts have failed, and are to be executed when a risk occurs;
- **Risk Monitoring:** As the project initiates and proceeds, managed risks should be monitored. Risks' exposure degrees could change, new risks could appear, or anticipated risks could be no more relevant. It is necessary to control managed risks, to identify new risks, and to accomplish the necessary actions and evaluate the effectiveness of them.

For to be reduced, the risk must first be identified it this is the first step. For the known risk, the analysis phase that follows consists in finding the causes of this risk and to evaluate its consequences. The project team then searches the possible solutions to reduce it and sets up the one which seems the most effective. This setting up of the solution is piloted and regularly monitored in order to check that it matches well to the expectations of the team that shall make changes if necessary.

In this context, very few articles attempt to combine knowledge management and risk management. Furthermore, managing organizational knowledge about risks is important to improve the accomplishment of this activity, and to allow organizational learning about risk management. In this way, many experts agree that "an organization can't manage its risk today without managing its knowledge". In addition, (Rodriguez & Edwards, 2014) have examined possible relationships between knowledge management constructs related to knowledge sharing, and two risk management concepts: perceived quality of risk

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control and perceived value of enterprise risk management. (Trkman & Desouza, 2012) also use the phrase "knowledge risk management" to refer to the risks associated with knowledge management, for example that too much sharing of knowledge can adversely impact competitive advantage. They categorize these knowledge risks, and examine how these risks affect knowledge transfer. In closing, (Benoit et al., 2011) have proposed a measure of risk exposure for knowledge management system use. This measure enables knowledge managers to assess the level of risk supported by their organization and to take the appropriate action to manage their risk exposure.

Finally, the Knowledge Management processes as well have turned out to become a strategic resource for the organizations. The knowledge management can have a great influence on reducing organizations' risks (Rachna & Shahid, 2013). However, using the knowledge management processes to improve the application of the risk management processes is a recent and significant research area. In spite of its importance, this area of research has not been addressed intensively up to now. A company cannot manage its risks effectively if it cannot manage its knowledge, many projects failed due to lack of knowledge among the project team members or lack of knowledge sharing during project progress (Rachna & Shahid, 2013).

Knowledge Management Process

Before understanding how knowledge management allows reducing the risks in the projects, we find out its own characteristics.

In the literature, we find several definitions of knowledge management. For this, we are focused in our paper about a few definitions. According to (Kusumawardhani & Markeset, 2015), knowledge management is an organized planning, coordination and control of organizational activities and resources to effectively capture, distribute, and use knowledge. For (Haapalainen & Pusa, 2012), knowledge management includes several processes, e.g., knowledge creation, knowledge storing, sharing, and using knowledge. When these processes run smoothly, an organization can confirm that information is available for users whenever needed. This is essential for organizations that sell knowledge based services. Moreover, (Barclay & Murray, 2004) defines the knowledge management as being "as a process of identification, formalization, disseminating and use of knowledge in order to promote creativity and innovation in companies". According to (Matta et al., 2000), Knowledge capitalization in an organization has as objectives to promote the growth, the transmission and the preservation of knowledge in this organization. According to (Grundstein, 2012), capitalizing on company's knowledge means considering certain knowledge used and produced by the company as a storehouse of riches and drawing from these riches interest that contributes to increasing the company's capital. In fact, the knowledge management is a way to answer the problem of capitalizing on the company's knowledge. This problem can be considered as a multi facet problem solving approach which is described by Grundstein as follows:(Locate, Preserve, Enhance, Actualize, and Manage) (Grundstein, 2012). For (Barthès & Grundstein,1996), knowledge management consists of capturing and representing knowledge of the company, facilitating its access, sharing and re-use. This very complex problem can be approached by several points of view: socio-organizational, economic, financial, technical, human and legal (Grundstein, 2012). Additionally, (Alavi & Leidner, 2001), identified the KM processes: creation, storage and retrieval, transfer and application of knowledge. These processes are looking for creating value from intangible assets: human capital, structural capital, intellectual capital, customer or relationship capital. For (Nonaka & Takeuchi, 1995), knowledge management systems are guided to capture, create, store, organize and disseminate

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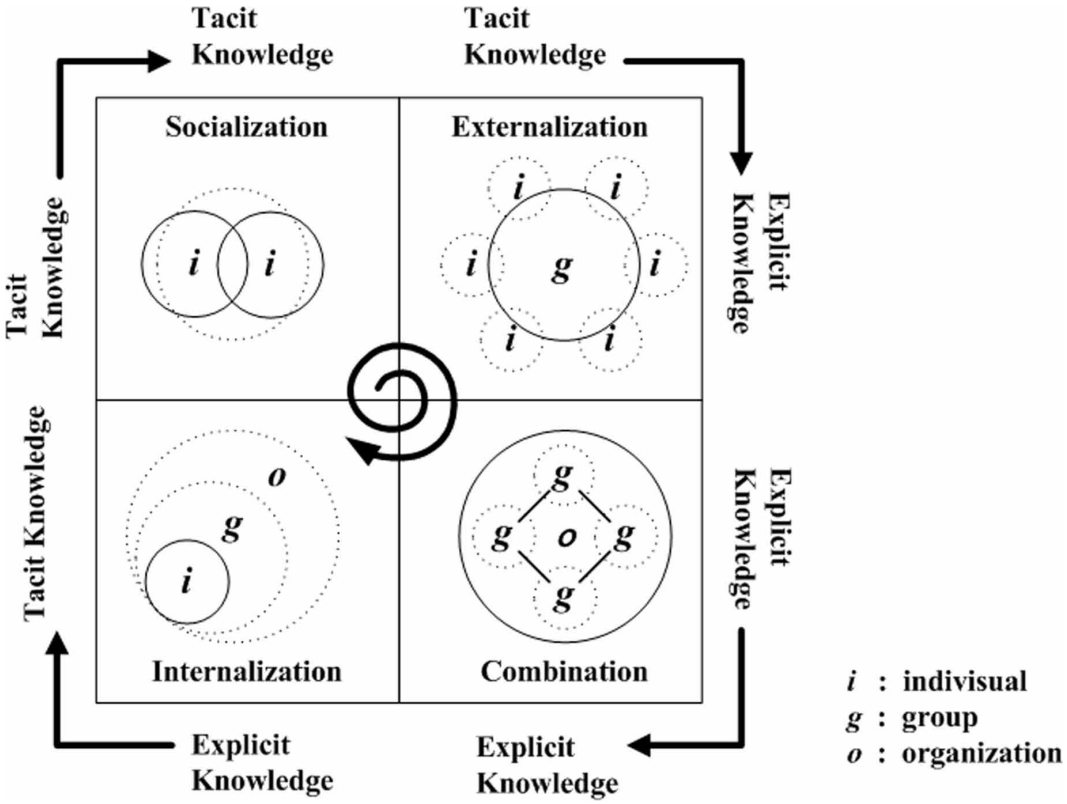
organizational knowledge. This process takes into account the transformation and the evolution of tacit to explicit knowledge (O'Leary, 1998) and of individual to collective knowledge. Tacit knowledge is represented by experience, beliefs and technical skills accumulated in the people's minds. Explicit knowledge is the knowledge expressed in documents, data and other codified forms (Reina et al., 2012). The interactions and movements from tacit and explicit knowledge to tacit and explicit knowledge on the individual and organizational level generate the knowledge creation in an organization (Nonaka & Takeuchi, 1995). The dynamic is expressed through the processes in Figure. 4 (see Figure 4).

It can carry both theoretical knowledge and know-how of the company. It requires the management of company knowledge resources to facilitate their access and their re-use (Pender, 2001).

Moreover, we can find in the literature different proposals of life cycle used to realize knowledge management (such as GAMETH, MASK, KALAM, BKMDM, REX, KOD, etc.). In our paper, we adopted the knowledge management life-cycle proposed by (Grundstein, 2012), where, according to him, "in any operation of knowledge capitalization, it is important to identify the strategic knowledge to be capitalized".

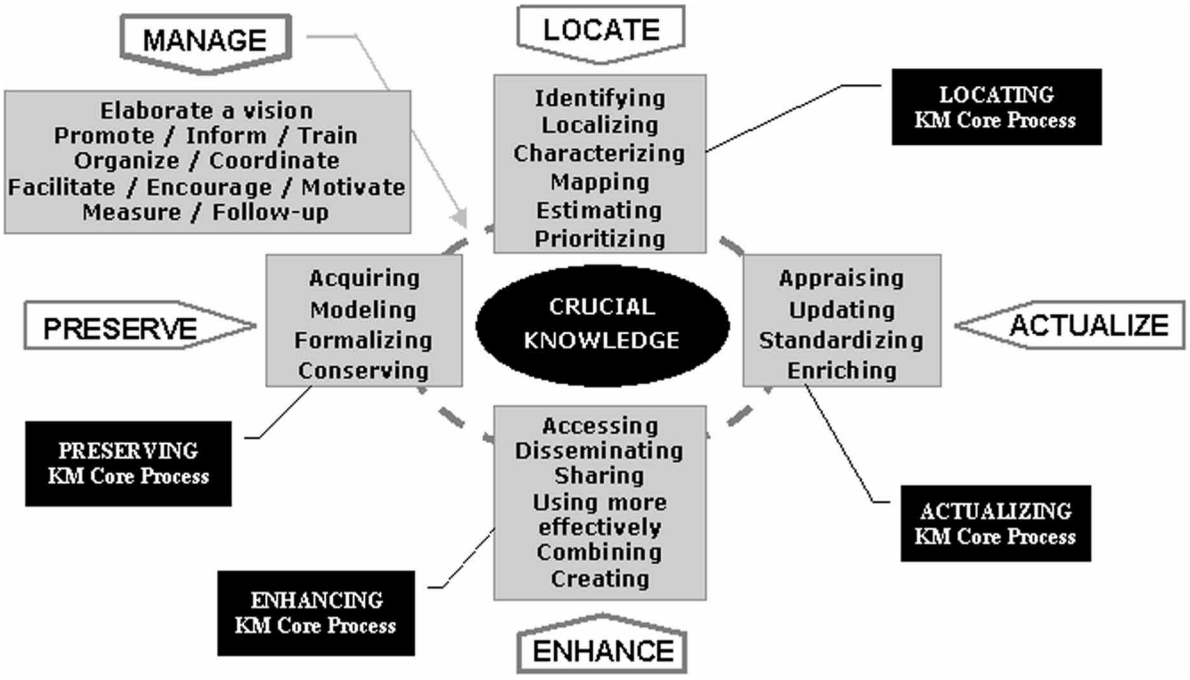
For our purpose, the knowledge capitalization cycle was chosen as the most appropriate because of its generalizing point of view. This cycle summarizes the knowledge capitalization tasks in four major steps: detection, preservation, capitalization, sharing and actualization of strategic knowledge, each of them declined by several detailed tasks (Brahami et al., 2015; Haapalainen & Pusa, 2012). These steps also reflect requirements for our objective, i.e. the development of a model to reduce project risks and a decision support system for FERTIAL Company of the Oran city in Algeria (see Figure 5).

Figure 4. A Model of Dynamic Organizational Knowledge Creation (Nonaka & Takeuchi, 1995)



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Figure 5. The generic Knowledge Management Processes (GAMETH method) (Grundstein, 2012)



THE MODEL TO REDUCE THE RISK OF PROJECTS GUIDED BY THE KNOWLEDGE MANAGEMENT PROCESS

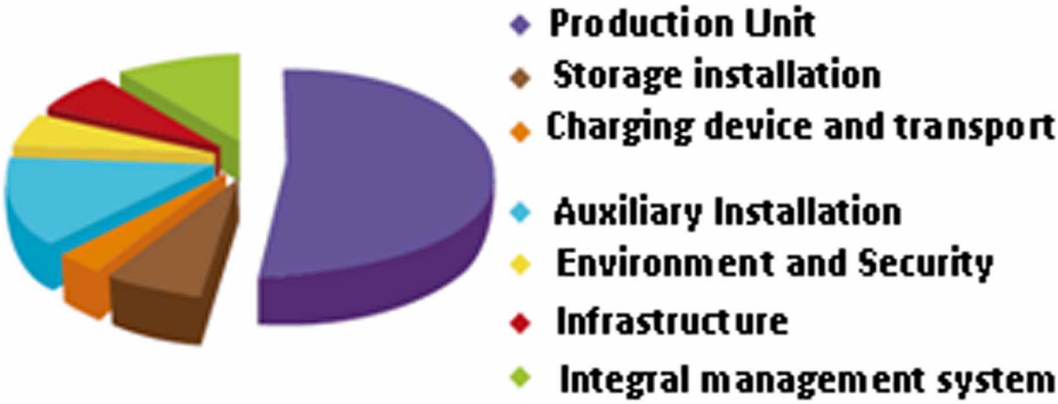
The capitalization gathers the processes allowing of valorize the knowledge "acquired": the return of experiments on reducing risks, capitalization around the finding solutions to improve the teamwork, use of tools for modeling, and the planning within the FERTIAL (National Fleuron of the petrochemical industry) Company.

FERTIAL (National Fleuron of the petrochemical industry), Company of Fertilizer of Algeria, is a company resulting from a partnership concluded in August 2005 between the Algerian Group ASMIDAL and the Spanish group GrupoVillar Mir. Also, it is composed of five major divisions specialized in numerous activities related especially the manufacture of fertilizers and agricultural fertilizers. Indeed, the security is a key factor in the Industrial Policy and Human Resources, as well as staff training, quality and respect for the environment. The company is committed to create a healthy and safe environment by implementing a security policy compliant with legislation and performance improvement. Therefore, the most important goal of the FERTIAL Company is to achieve zero accidents and ensure industrial safety of the surrounding communities by proposing an approach of knowledge capitalization in the trades' and its exploitation in the projects. These projects were intended for the renovation and modernization of industrial facilities to improve their capacity, the acquisition of new digital control system, to the environment and security, etc. (see Figure 6).

The knowledge management process can reduce the risk of projects. In fact, as we are going see through the Figure 5, the different phases of risk management correspond to the operational chain of the knowledge management process.

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Figure 6. Destination of investment projects in FERTIAL Company



During the Identification Phase, the project team puts in common all the knowledge related to sources of the risk and searches for the presence of these sources at all levels of the project. For that, we are also interested in this study to identify the sources of risks for people, property, and work at the level of FERTIAL group especially the complex Fertilizers Production. The table below recapitulates the identification of these risk sources (see Table 1).

This knowledge was accumulated during previous learning and from experiments of past projects. The acquisition of such knowledge that corresponds to the step of preserving (acquiring) the knowledge management core process is carried out using different means: learning, the experiments return, and the knowledge transfer between the actors of the project team. Moreover, we have used others project risk identification techniques including:

- **Brainstorming Sessions with Staff or External Stakeholders:** This brainstorming process is likely to highlight a large number of risks of differing importance. As a result, it is necessary to score the risks in terms of the likelihood of the risk being realized, the impact the risk would have on the achievement of projects objectives and the quality of the mechanisms in place to control (manage) the risk. This enables the relative importance of each risk to be assessed and ranked.
- **Use the Documentation and Existing Project Management Tools:** Project design tools (functional analysis, Pert (critical path key step), and budget);

Table 1. The different types of resources threatened by Risks in FARTIAL Company

Management, Skills	■ Membership resignation of the project team. ■ Departures of consultants or experts, (Death, Injury, and illness of an expert). ■ Go to another company – project. ■ Stress, exhaustion.
Technologies / Materials / Middle	■ Pollution in terms of environment (hygiene, waste management). ■ Accident in terms of health, ■ Gas leak ■ Incendie, Explosion
Identifying the stakeholders (i.e., who is involved or affected).	■ Past events, ■ Future developments.

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- **Check-lists or pre-established surveys** covering the different areas of the project (Environment and Safety).
- **Working from the problems encountered from previous projects** (Post-mortem, expert advice, and experiences Returns).

In the concrete case of a project, we have clarified some contextual information's: for example, which are users formed, what are the signatories and recipients of mail and what are the participants in the meetings...

However, these methods and tools each have their own limitations. For that, we find ourselves important to use them jointly in order to obtain a most exhaustive identification of the projects risk. This stock of knowledge feeds the discussions which occur during of the identification phase.

During the Phase of Risk Analysis, the knowledge acquired in the past relating to the evaluation and estimation methods and the risk measurement are put to contribution. The solution for reducing and / or controlling the risk arises from the analysis developed just before. Through knowledge detained by team, its trade's actors can more or less predict the consequences entailed by the solution establishment.

Furthermore, the method chosen for the risk analysis that we used combines the possible consequences or impact of an event (management, skills, environment, technologies, and health) with the likelihood of these events which occurring. The result is a 'level of risk' (see Figure 7).

Subsequently, the type of analysis that we used is qualitative (i.e. based on a "simplified" evaluation) that takes into account the severity and probability parameters according to the following four levels (see Table 2).

Also, we performed a mapping "Occurrence probability/ gravity." This mapping allows determining the nature of the risk treatment measures to be implemented depending on the type of risk (preventive measures for risk probability, measure of protection for gravity risks, avoidance or suppression, and priority by treatment, etc.).

Figure 7. Characteristics of Risks

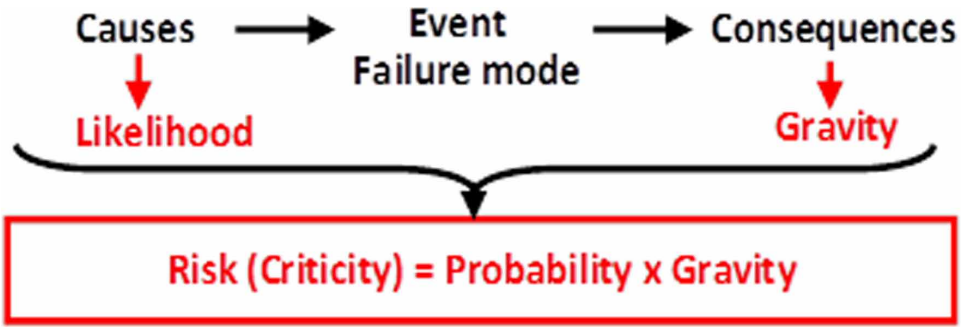


Table 2. Index of risk criticality

1	Null
2	Low
3	Medium
4	High

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It allows arbitrating the risk treatment with high probability of occurrence and strengthens protective measures for risks with high gravity (see Figure 8).

The choice of preventive actions to engage is performed by comparing the costs of implementing them with the consequences costs of the risk, taking into account their occurrence probability.

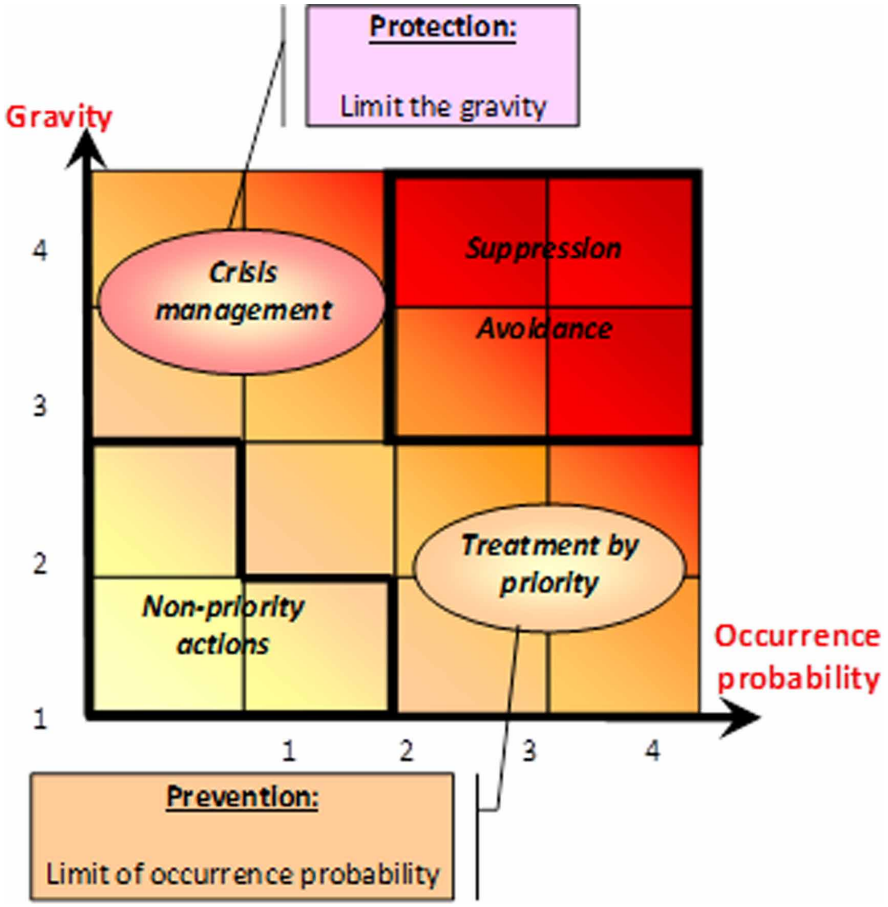
Thus, the steps of identification and analysis constitutes the Interaction Phase of our model that we have integrated into the GAMETH method (Grundstein, 2012) after the preserving phase (see Figure 9).

Moreover, the establishment of the solution is piloted and controlled by the project manager (leader) with the aid the effect evaluation of the solution of the risk, for example by using of monitoring balanced scorecard which contains (control efficiency, control cost, and monitoring of action plans) or by dialoguing with concerned trades' actors.

Likewise, we can through this mapping to launch a regular activity to risk monitoring. The latter allows following the evolution of the risk appearance probability (stable, on the rise, on the drop) to control the relevance of preventive actions engaged and eventually to correct the planned arrangements.

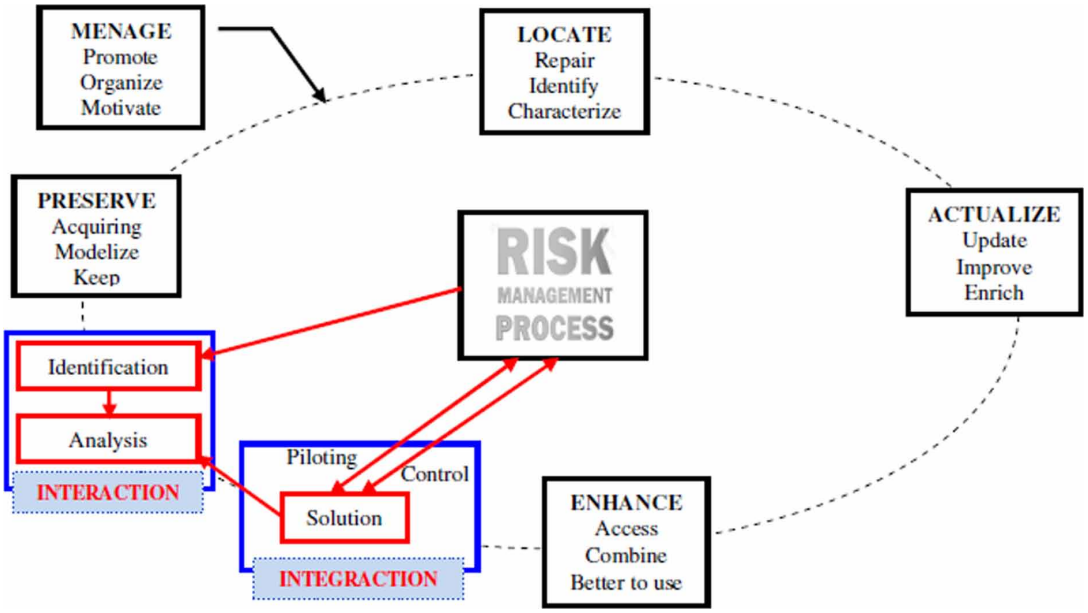
The interaction between the solution and the two managerial skills (piloting and control) is similar to the Integration Phase of knowledge management process (see Figure 9). Indeed, the implementation of the solution is akin to an action process which is tested and regulated by the control and piloting of the project manager.

Figure 8. The mapping "Occurrence probability/ gravity"



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Figure 9. Integration of the Knowledge Management Process (GAMETH method) in the Risk Management Process



This control and this piloting pulls out a more or less thorough evaluation of the effects of the solution envisaged and this evaluation serves as the basis for knowledge creating, the third step (Enhancing KM core Process) of the GAMETH Method. Evaluation of the solution consists in comparing the results obtained to desired results (effectively). This difference, positive or negative, between real results and contemplated results, allows the team (managers and trades' actors) to make self-criticism of the solution and to define thus the advantages and disadvantages of the solution developed to accumulate knowledge.

After updating, enriching, and appraising of the knowledge management process by the new knowledge (the fourth phase "Actualizing" of GAMETH process), this new knowledge is managed in a project memory (Matta et al., 2000) for that the knowledge management process can reduce the risks, follow-up the risks, and elaboration a vision of the future projects (the fifth phase "Manage" of the GAMETH process).

The knowledge management cycle is thus sealed off. The new knowledge accumulated over of the risk management is memorized and ready to be disseminated to the future of project teams. The risk management will be more effective because the phases of identification, of analysis, and setting up the solution will benefit from the experience of past projects. The introduction of knowledge management thus allows reduce directly the risks. However, it also influences indirectly risk sources:

- **The Responsiveness Lack:** This is organized by the establishing of the alert system; information processing systems by exception which enable quickly identify the risks that can arise, and the procedures aiming at reducing these risks. In other, the responsiveness is improved by the detection, identification and rapid risk analysis.

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- **The Cognitive Biases:** For (Zindel et al., 2014), the cognitive biases are cognitive processes which generate errors of appreciation and interpretation of the information at the individual level. Moreover, the cognitive processes serve to reduce and combine mentally of the information quantities. From sharing its process, knowledge management reduces the cognitive biases due to interactions between the team members.

CONCLUSION

We can summarize the contributions of knowledge management to reduce the risks in the following way:

- The knowledge management allows evolving the cognitive processes of the various project actors.
- The knowledge management favors the knowledge acquisition at the level the risks by making explicit the tacit knowledge of the different actors on the risks, retaining such knowledge and transferring them.

However, it must be noted that the use of the knowledge management to reduce the risk is only relevant if an assessment and an experience feedback of projects is performed by all project actors. Indeed, it was only at this time that the knowledge about the risks can extend thanks to the measurement of deviations between what that was expected of the project and the real results, by analyzing these deviations and by fixing this analysis in the knowledge base.

It does must also not lose sight of the fact that the knowledge management takes an interest in the environment that surrounded the project, because, the solutions applied to reduce the risks may be different according to the project environment.

Finally, we are currently working with our collaborator of FERTIAL Company to put our approach and its stages, including the risk monitoring plan and the knowledge capitalization, in practice, in a project to increase production capacity of ammonia and fertilizers.

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Chapter 7
Design Methods for Decision Support Systems:
A Perspective of Small Business B2C E-Commerce Environment

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ABSTRACT

This article reviews methods to the development of a decision support system (DSS) solution for small business owners/managers. The main objective of designing the DSS artefact is to support the strategic decision-making for achieving competitive advantages in the business-to-consumer (B2C) e-commerce environment. Many researchers in the DSS domain utilised various methods to design of information systems (IS) artefact, mostly intended for large businesses. Researchers have paid much attention to the business environment as a knowledge source for DSS design and development for the small business strategic decision support needs. User-centred design (UCD) principles were adopted for DSS development. Prior a novel DSS development, multiple case studies were carried out for understanding the user needs and system requirements. Also, knowledge was sourced from the external business environment via the analysis of small business website features against their overseas competitors. The findings suggested developing a DSS solution for small business needs.

INTRODUCTION

The analysis and design of decision support systems (DSS) is a multifaceted activity that points toward exploiting of suitable methodologies for modelling decision processes (Brandas, 2011). This article describes various system development approaches to select suitable method(s) for a small business DSS artefact design. The novel DSS is targeted to enhance small business owner/manager strategic decision-

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making capabilities. The idea is to provide an option to managers with appropriate knowledge to update competitive features on their websites within the business-to-consumer (B2C) e-commerce dynamic environment. DSS is the area of information system (IS) discipline focused on systems that support and improve managerial decision-making (Arnott & Pervan, 2012).

One of the vital roles of a manager in an organisation involves in making most profitable decisions within the business environment and implementing them for the productive business outcome. Making a productive decision is relatively a hard task for small business managers in the dynamic business environment (Power, 2010). Predominantly, decision making may difficult for small businesses in the B2C e-commerce environment, where millions of consumers have the opportunity to direct dealings with companies on their websites and can evaluate products and services until choosing one site (Haag & Cummings, 2009).

This changing environment influences both problems and opportunities for managers. Thus, managers as decision-makers require analysing problems in such environment (Hall, 2008). Moreover, global products and services are produced and delivered to customers in a technologically sophisticated electronic trading environment where markets change rapidly, and consumer demands are high (Power, Sharda & Kulkarni, 2007). Thus, the business processes are complex and competitive oriented (Alalwan, 2013). B2C e-commerce highly visible, as it directly interacts with more than several millions of consumers through websites (Haag & Cummings, 2009). Therefore, appropriate decisions and actions are required by the decision makers in such environment (Hall, 2008).

The majority of Australian small businesses in the B2C sector have been experiencing significant issues in running their online businesses successfully that were recognised through multiple case studies before a novel DSS solution development. In this environment, effective decision-making could be impossible without the use of appropriate technical support that can assist selecting competitive features on small business websites. The adoption of competitive website features would help a small business to reach potential customers to increase sell online. These discussions suggest designing a purpose-specific DSS solution artefact that is essential for owners/managers in making the strategic decision in such environment. The research objective of this study is:

What are the most appropriate methods for developing the novel DSS solution artefact for the small business strategic needs?

This article is organised as follows. First, it discusses the practical problems, DSS requirements, and method used for requirement analysis. Then, it discusses various DSS development approaches to identify the appropriate methods for small business DSS development, and finally, presents a conclusion.

PRACTICAL PROBLEM CONTEXT AND DSS REQUIREMENT ANALYSIS

DSS research has been established as a well-recognised tradition in IS research field. Its dedication is promised to improving decision-making process and practice through the application of appropriate technologies (Miah & McKay, 2016). DSS is significant for this study as it usually focuses on the effectiveness (such as decision) rather than efficiency (such as search & measurement) in helping decision-making processes (Eom, 2007). In small business context, it can assist owners/managers in improving their strategic decision-making process and capabilities using a novel DSS solution artefact because a

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DSS mainly helps human decision-making processes that are integrated into the organisational context and known as the new application domain (Angehrn & Jelassi, 1994). A DSS is also a comprehensive tool in IS discipline that can assist to improve decision-making processes in an organisation (Alyoubi, 2015). Decision-making is a process of choosing among alternative courses of action for attaining an organisational goal (Tariq & Rafi, 2012).

General benefits of DSS are to assist better decision-making process at various phases within the business environment and to assist decision makers in making better decisions (Pick, 2008). The vital role of the DSS is to support all phases of the decision-making process (Sprague & Carlson, 1982). Sometimes, a DSS does not provide better decisions, but the decision process can be improved, for instance, decision makers might be achieved their goals with less effort within a time frame, and in some cases requiring the better documentation, thus, decision process improvements may provide improved decisions (Pick, 2008). The next section describes user issues, needs and analysis methods on DSS requirements.

DSS REQUIREMENT ANALYSIS METHODS

This research is evolutionary, exploratory and centred on the practical problem and real business context, such as focused on the small business online system and strategic decision-making issues in the B2C e-commerce environment. Thus, prior to DSS solution development, multiple case studies were carried out with small business owners/managers from the online retail sector in Australia. The intention was to identify business internal issues and system requirements and recognise how owners/managers can address their problems strategically in such environment to make their websites interactive. This method was considered as the investigation and analysis of internal environment of small businesses and related factors. Summary of findings from case studies is discussed and analysed using the MRT (Mintzberg, Raisinghani & Theoret, 1976) model in the conceptual DSS solution framework as shown in Figure 1.

This study also carried out the web content analysis to identify issues of the small business existing e-commerce system, such as to determine the adoption levels of small business website features against those of their overseas competitors. The process is termed as the system analysis and requirements for a novel DSS development for the small business in the B2C e-commerce environment. This method can also be characterised the investigation and analysis of external organisational environment of small businesses and one of the significant external factors. The external factor was considered the overseas competitor who sell to Australia through their websites.

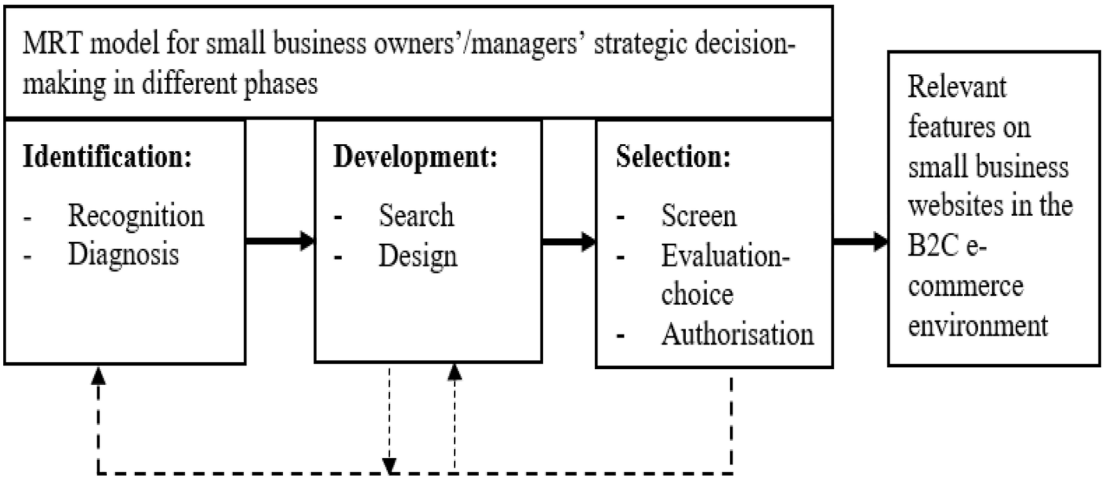
This study adopted constructivist research philosophy and the overall approach to research design for this study was qualitative and the strategy of enquiry by employing case study method with multiple cases. Constructivist research provides practical guidelines for understanding a context with various perspectives and diversities and generates theories. The constructivist research approach often combines with interpretivism and is typically seen as an approach to qualitative research (Creswell, 2013).

In the context of small business owners/managers strategic decision-making processes and making improved decisions, a conceptual DSS framework is constructed theoretical basis and based on the MRT model for strategic decision-making. This model is shown in Figure 1.

This model has been well-known in the strategic management literature. Many influential factors are associated with decision-making processes that are also part of the MRT model, and one of the factors is environmental forces. Another factor related to decision process is comprehension cycles to understand and process information and this factor also addressed by this model (Power, 2009).

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Figure 1. A conceptual DSS framework



This study considered the B2C e-commerce environment and associated internal and external factors that force to retail industry changes. This study also processed the information in different cycles to understand the small business problems, needs, and DSS requirements. These activities were involved in information processing through multiple case studies and analysis of small business website features. Finally, owners/managers participated in processing information using the functional DSS artefact prototype and evaluating it to test the usability and efficiency of the prototype.

MRT model consists of three phases: identification, development and selection phases for management strategic decision-making processes in the business environment. The findings from case studies have been discussed and analysed using the phases of MRT model in the conceptual DSS framework to determine how small business owners/managers have been accomplished their strategic decisions at different phases in the B2C e-commerce environment, particularly in the selection of competitive features on their websites. These phases are described in the following sections.

Identification Phase

This phase comprises two routines: recognition and diagnosis. The recognition routine initiates the decision-making process by recognising problems and opportunities for organisations within the business environment. In the problem recognition routine, this study found that all owners/managers had awareness and knowledge regarding online shopping problem in Australia. However, the majority had lack competencies and knowledge to address their problems. In the opportunity recognition routine stage, although the majority expressed their external opportunities to increase sales via websites, however, their strategies were inconsistent to accomplish such opportunity.

In the 'diagnosis routine,' further information is required for decision makers to define and clarify the previously recognised problem or opportunity. In the small business perspective, additional information is crucial for owners/managers in strategic decision-making in the B2C e-commerce environment to clarify and address the challenges that they have been experiencing in such context. A strategic decision focuses on analysing or assessment in both the internal and external business environments and associated factors (De Wit & Meyer, 2010; Mintzberg et al., 1976), also involves in qualitative judgments,

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using intuition and finally making rules or decisions (Bonczek, Holsapple & Whinston, 2014). However, many owners/managers lack awareness and analytical knowledge about internal and external business environment and associated environmental factors. Mainly, this inadequacy was showing in the B2C e-commerce environment. The analytical knowledge and its acquisition from the business environment are essential for improving business performance and remain competitive in the online business environment. Knowledge acquisition also associates with knowledge sources whether it can find internally or externally (Oliver, 2008).

Internal Factors and Requirement Analysis

Characteristically, internal environmental analysis involves recognising strategic factors crucial to the success of an organisation. This analysis also determines the importance of each of these factors, identifies the strengths and weaknesses of the organisation against each of these factors, and finally, preparing a strategic advantage profile for the organisation and comparing it with profiles of successful competitors in the industry (Srivastava & Verma, 2012).

Small business internal factors were considered to analyse and identify the real problem. These factors include owners/managers as system users' issue about strategic decision-making competencies in the B2C e-commerce environment, and the problem remains on their existing system related to adoption level of website features. Additional internal factors considered in this study including owner/manager knowledge and awareness about the business environment and associated factors (e.g., competitors). Moreover, how they can use their skills and knowledge for making the effective decision (e.g., significant internal factor) in the selection of relevant features on their websites. This study also considered internal strengths of small businesses and how they used them to maximise opportunities, and how they address their internal issues efficiently in the B2C e-commerce environment.

Although majority small businesses had a greater range of products as their internal resources, only one company had a strategy to provide relevant information on its website through which consumer interactions can be maximised. The majority small business internal weakness was lack skills to use advanced technology, and their strategies were unlike to counter this weakness. The most significant internal issue was the lack of understanding and analytical knowledge about the business environment. While the majority of owners/managers believed that their opportunity is to increase sales via websites, their strategies were irrelevant to exploit such opportunity. In the perspective of external threat analysis, the most were known their external threat as competitors, but they had lack strategies to address such risk. Moreover, many were not attentive and interested in overseas competitors who sell to Australia. Only a few were concentrated on local competitors.

In the concept of owner/manager strategic decision-making competencies (critical internal factor) that this study was considered to analyse how do they select relevant features on their websites in the dynamic B2C e-commerce environment. This study found that the majority businesses had lack own strategies to choose and maintain competitive functional features on their sites. Most relied on web designers or consultants who are the secondary decision makers. Even, nearly all businesses had lack awareness about the adoption level features of their overseas competitor websites through they sell to Australia. The most of them had lack awareness and knowledge what features are available on their sites. Most owners/managers were occupied with everyday business operations and had no time for research and development. Likewise, Buxton and Walton (2014) recognised that small businesses might find it challenging to collect market research data, due to limited time.

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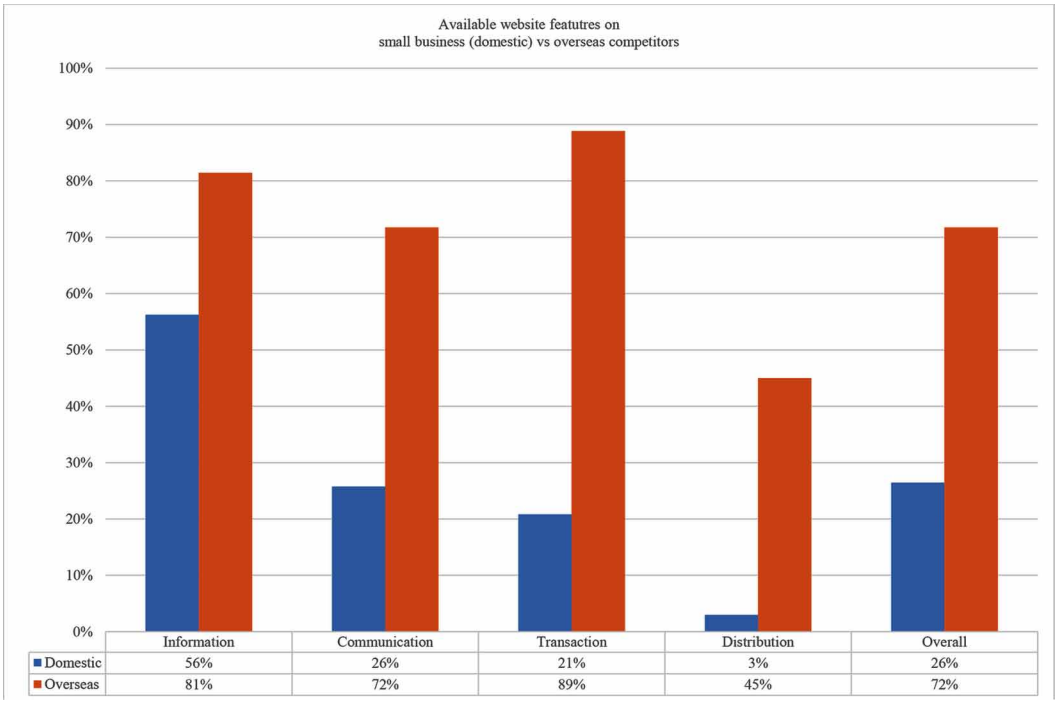
External Factors and Requirement Analysis

In the context of analysing the external business environment and associated factors, researchers were considered some factors including new technologies, customers, suppliers, the economy, competitions and government policies (Thierauf, 1988; Pedersen & Sudzina, 2012; Rosenblatt, 2014). This study looked at small businesses who have to deal with overseas competitors, a significant external factor, and who can compete via their websites through the Internet.

From the B2C e-commerce perspective, the online environment must be attractive, with adequate features so the consumers can choose, perform, and enjoy their shopping experience (Abdallah & Jaleel, 2015; Bilgihan & Bujisic, 2015). One of the significant challenges that small business owners/managers have been facing in forming strategies for creating their e-commerce website effective that found through case studies. The lack of strategy formation is centred on the selection and implementation of competitive features on their websites. This study does concern about the analysis of the external business environment and associated factors. Thus, it carried out an investigation at what extent small businesses adopted features on their websites against those of their overseas competitors. The study found that significantly lower of adoption levels of Information, Communication, Transaction, and Distribution related relevant features on their websites than those of their overseas competitors who sell to Australia. The results are presented in Figure 2.

Practical issues discussed above acknowledge to design and development of a novel DSS solution artefact. The DSS can assist in enhancing owners/managers strategic decision-making competencies to select and implement more competitive features on their websites in the B2C e-commerce environment and ultimately can maximise their sales online.

Figure 2. Problem finding through web content analysis



	Information	Communication	Transaction	Distribution	Overall
Domestic	56%	26%	21%	3%	26%
Overseas	81%	72%	89%	45%	72%

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Development Phase

The development phase of MRT model involves a set of activities that generate one or more solutions. This phase has two routines. First is the 'search routine' that aims at finding ready-made solutions. Second is the 'design routine' that seeks to develop new solutions or modify ready-made ones. In this phase, owner/managers can formulate or develop a decisions model, set the criterion for the choice, and search for alternatives. This study noticed that small business owners/managers had lack knowledge about the business environment that is significant for making strategic decisions to achieve organisational goals. Strategic decisions made by owners/managers were irrelevant to address the problems and opportunities. This study also found that many owners/managers are predominantly busy, and they had no time to participate, response and engaged in research and development activities.

Consequently, this study was initiated to design and development of a novel DSS with the involvement of small business owners/managers. Given that, this study was adopted the user-centred design environment (UCDE) method, as developed by Miah et al. (2014) for the overall DSS design and development, as well as evaluation of the artefact with the involvement of owners/managers as end-users.

Selection Phase

Mintzberg et al. (1976) suggested that the selection phase of MRT model as shown in the conceptual DSS framework is typically a multi-stage iterative process of decision-making. Three routines emerged from this phase: screen, evaluation-choice, and authorisation. The selection phase starts with a screening routine, which is activated to eliminate any impractical alternatives. Next, the best choice is selected, through a process of analysis, in the evaluation-choice routine. Finally, the decision goes through the authorisation routine. This activity involves an authorised decision-maker for making the strategic decision that relates to the selection of competitive website features. Competitive features for small business websites were categorised based on the business information, communication, transaction, and distribution (ICDT) provisions within the B2C e-commerce context by adopting Angehrn's (1997) ICDT model. This ICDT categories website features were recommended by Burgess (2016) for Australian small business. These website features are presented in Table 1 of the Appendix. A prototype method was used for the novel DSS solution development and evaluation. A prototype is a smaller-scale representation or working model of the user's requirements, or a system development method in information system research (Haag & Cummings, 2009).

Consequently, these activities were involved assimilating knowledge through analysing the external and internal business environment and related factors of small business organisations in the B2C e-commerce environment and system requirement activities. Evolving from the development phase of MRT model, next section discusses the system development approaches for the novel DSS solution design and development.

DSS DEVELOPMENT APPROACHES

Many approaches have been created for system development in the IS research. The most frequently used method is the system development life cycle (SDLC) (Kroenke, Bunker & Wilson, 2014). The SDLC approach involves a long-term focused with many stages (Turban, 2007), and with a large project

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(Kroenke et al., 2014). The small business strategic decision-making problem context in the dynamic B2C e-commerce environment, SDLC was unsuitable for the novel DSS design and development because this method is used for the massive project and the process taking a long time. Evolutionary prototyping method was suitable for the small business solution design and development. The evolutionary development considers set of causes, which can be forces or factors that motivate users to the DSS adaptation process, and leads to evolution. Causal factors can be originated from the business environment and can be cognatic factors to the decision maker (Arnott, 2004) that the current study was centred. The evolutionary prototyping is based on the user-centred system design and development principles (Gulliksen et al., 2005). A prototype is also appropriate approach because a prototype is a smaller-scale working model of the user's requirements, or a system development method in information system research (Haag & Cummings, 2009). The next section discusses the evolutionary prototyping system development approach.

Evolutionary Prototyping System Development Approach

As asserted by Chen and Lee (2003), the objective of cognitive decision support is to help managers in their decision making from human cognitive aspects, for instance, thinking, being familiar with the environment, understanding and predicting, and fully reusing their experience. Among these aspects, decision makers' situation awareness and mental models are considered to be two vital requirements for decision making, predominantly in the ill-structured and dynamic decision situations with uncertainties, and time limit. These researchers also identified that decision making is becoming increasingly difficult in the contemporary business environment where a cognitive style or a mental model plays a significant role that assists a decision maker for understanding business environments and ill-structured problems. Therefore, situation awareness by managers about the business environment is becoming a critical factor to make a productive decision (Niu, Lu & Zhang, 2009). Moreover, "Cognitive styles are also known as knowledge representation technique of human mental models that have received wide research attention in DSS researchers…" (Niu et al., 2009, p. 42). The term cognition comprises general processes by which particular information is attended, transformed, stored, and retrieved (Rogers, O'Brien & Fisk, 2013).

A typical example of cognatic causes of DSS evaluation is when managers learn more about the decision task by using the system and interacting with a system analyst. They also think of new system requirements through the conversation with another manager or can come from a consultant if the consultant is a domain expert rather than an information system expert. Also, attending conferences, seminars and training courses could provide a cognitive cause of DSS evolution. These interactions and participation influence managers in thinking about the DSS. Finally, the decision task may lead to ideas that cause evolutionary changes to the system (Arnott, 2004).

In the small business context, many owners/managers have no interactions with system analysts and other managers, as the majority small businesses are owner-operated, and an owner is the primary decision-maker. Owners/managers are busy at most of the time, therefore, have no time and resources for attending conferences, seminars and training courses, in addition to research and development. Thus, this study initiated to develop a user-friendly DSS to assist owners/managers to improve their decision-making competencies in the B2C e-commerce environment where most of them have no skills in using advanced technology, who are the primary users of the system.

The main advantage of evolutionary system development approach is that phases of this method are related to the quick prototype systems that are fully functional (Kroenke et al., 2014). Evolutionary prototyping is a special case of iterative prototypes in which the prototype evolves into part or all of

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the final system (Beaudouin-Lafon & Mackay, 2003). Evolutionary system development is an iterative process using the user-centred development (UCD) approach, which allows continuous iterations with users (Seffah, Gulliksen & Desmarais, 2005). These authors also recommended that design solutions need to be evaluated by users before they are made final. An iteration should contain a proper analysis of the user needs and the context of use, a design phase with suggestions for modifications and a redesign following the assessment results. An iteration could be as short as half an hour, as long as it contains all three steps of design, evaluation, and redesign.

This study was chosen evolutionary prototyping approach through updating the small business website features against those of their overseas competitors that originate from the analysis of external business environmental factors (Figure 2). This study also investigated owners/managers' cognatic causal factors through multiple case studies to analysed internal issues and needs. This investigation represents the evidence of initial requirement of system development with the interactions of system users and the researcher (as a domain expert). The small business owners/managers again involved in the evaluation phase of the novel DSS prototype development using focus group method. These activities are aligned with UCD principles with user (owner/manager) direct contributions to initial system requirements phase and the final evaluation phase of the novel DSS development.

Using UCD Principles for Small Business Novel DSS Design, Development and Evaluation

Although DSS has been commonly a successful concept that has been implemented in several forms over the last decades (Arnott & Dodson, 2008). Many researchers found that they did not always bring a practical outcome for their target users (Arnott & Pervan, 2014; Arnott & Pervan, 2012, Arnott & Dodson, 2008; Hosack, Hall, Paradice, & Courtney, 2012). Researchers found that the many failures of DSS project due to unfit design methods and the lack of user involvement in the design process (Nelson, 2007; Dwivedi et al., 2015). Also, the lack understanding their reality in the design process that creates inequality between the end user and designer motivations, and incompetent implementation methods (Arnott & Dodson, 2008; Arnott & Pervan, 2012). UCD principles adopted for the small business DSS development are discussed in this section.

The method of DSS design and development has traditionally established the importance of the decision, the system, or the support part of the systems (Courbon, 1996). In such concepts, various methods have been proposed for DSS design and development including decision-centred design, system-centred design, support-centred design, and UCD. The decision-centred design focuses on the portfolio management. The system-centred design comes from the software engineering field and is viewed as a model-based and data-based system (data and model combination). In the context of the support-centred design, the paradigm suggests early implementation and testing of the system to provide necessary support to users. Finally, in the UCD method, the main principles include beginning with a significant decision problem, using a short life cycle, evolving the system with multiple cycles and evaluating constantly. Moreover, the UCD approach ensures not only decision-making tasks but also considers the decision-makers' involvement in the decision-making process (Zarate, 2013).

UCD is also considered as a sociotechnical approach, which is guided by philosophies. There is no specific methods or processes are required for the design. The idea is to attempt the design using knowledge and willing to utilise social and cognitive analysis of human activities (Baek, Cagiltay, Boling, & Frick, 2008). UCD, besides, focused on cognatic causal factors to the decision maker. Cognatic style

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referred as the knowledge representation technique of human mental model also regarded as the situation awareness by managers about the business environment. Thus, the analysis of business environment is a critical factor to make a productive decision (Niu et al., 2009) that present study was also centred. Knowledge representation suggests the requirement of knowledge formalising in a symbolic form, and to find a symbolic expression that can be interpreted (Klein & Methlie, 1995).

There were various dimensions of user-centredness in the UCD literature. According to Gulliksen et al. (2005), UCD is based on following fundamental principles. These include user focus, active user involvement, evolutionary system development, simple design representations, prototyping, evaluate use in context, explicit and conscious design activities, a professional attitude, usability champion, holistic design, process customisation, and a user-centred approach. Likewise, an analysis of literature by Iivari and Iivari (2011) enabled four dimensions of user-centredness in the UCD literature: UCD as the user focus; UCD as user work-centeredness; UCD as user involvement; and UCD as system personalisation.

UCD as user work-centredness focuses on the relationship between people, technology, work requirements and organisational constraints in work settings, where people are with a set of skills and shared practices based on their experience of working with others. UCD as system personalisation focuses on the diversity of users use the system (Iivari & Iivari, 2011). These two dimensions were unsuitable for small business DSS development because the majority businesses are owner-operated, and they have lack skills of using advanced technology.

The UCD as 'user-focus' and 'user involvements' were appropriate for small business DSS development for the following reasons. This form of UCD places the person at the centre, and emphasis on the number of users use the system. Thus, when the system has one or only a few users, it is reasonably easy to detect them and to match the system according to their needs (Iivari & Iivari, 2011). This form of UCD is also "…focusing on cognitive factors (such as perception, memory, learning, problem-solving, etc.,) as they come into play during people's interactions with the interface…" (Shahar, GorenBar, Boaz, & Tahan, 2006, p. 119). This UCD is also to take every individual user's capabilities into consideration and fully satisfy his or her needs related to the system to be developed (Iivari & Iivari, 2011). These researchers also found in the early literature, where most studies viewed UCD as user involvement is an integral part of UCD method for DSS design and development. Many researchers also suggested for DSS development with the engagement of industry and decision makers (Arnott, 2006; Arnott & Pervan, 2012; Hosack et al., 2012). In IS design, user involvement is expected to lead to more accurate user requirements, features that meet the user needs, a greater acceptance of the system, and enhanced ease of use (Mao, Vredenburg, Smith, & Carey, 2005). A researcher also concluded that success in DSS design is associated with user involvement, which can be effective for appropriate method selection (Courbon, 1996). Therefore, in the UCD method, users' support and involvement are significant in developing products to match their requirements (Miah, 2004), where an appropriate set of web features were suggested for accessibility by students in the higher education sector.

Consequently, the engagement of small business owners/managers' was vital in the initial phase of the DSS design and development and the final stage of DSS evaluation. For problem identifications and system requirements, initially, case studies and web content analysis were conducted. The owner/manager understanding, knowledge, and analytical skills about the business environment and associated environmental factors were investigated through multiple case studies. These activities represented the investigation of the situation awareness (SA) and mental model (Niu et al., 2009) of decision makers that

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are required for the successful system design and development related to their business needs. Finally, the involvement of owners/managers was vital for evaluating the DSS prototype for confirming its usability and usefulness to end-users.

Supported on the above discussions, also for small business decision support requirements, the UCD as user-focused and involvements were suitable methods for DSS design, development and evaluation by employing the evolutionary prototyping approach of the direct participation of small business owners/managers as primary users.

CONCLUSION

This article reviewed DSS design methods in the theoretical concept of the novel DSS development and evaluation. Various system development approaches were discussed in this article aim of selecting suitable method(s) for the novel DSS artefact development and evaluation. The article also discussed real issues of small businesses within the B2C e-commerce environment using the MRT model in the conceptual DSS framework. Problems were identified through web content analysis and multiple case studies. These activities were considered as problem identification and system requirements analysis prior a novel DSS development. The significant issues were identified as the lack of realisation of their business strategies, and skills to use advanced technology for the improvement of strategic decision-making competencies in their business needs. The findings from case studies also produced the problem definitions related to many owners/managers' inadequate knowledge about internal and external business environment and associated factors that are significant for meeting the strategic decision-making requirements. These issues recognise a clear need for designing a context-specific practical DSS solution.

Many approaches have been employed for system development in the IS research. The most commonly used method is the SDLC. The small business strategic decision-making problem context in the dynamic B2C e-commerce environment, SDLC was unsuitable for the system design and development because this method is used for the vast project and the process is taken a long time. The evolutionary prototyping approach was suitable for the small business solution design and development because the evolutionary development considers set of causes, which are forces or factors that motivate users to the DSS adaptation process. Causal factors can be originated from the business environment or can be cognatic causal factors to the decision maker and involved user-centred DSS design and development. A prototype was an appropriate method because it is a smaller-scale system development working model in IS research that was selected for the small business DSS development.

The novel DSS was designed, developed and evaluated primarily adopting the UCD principles, focusing on user-specific needs. In such concept, involvements of small business owners/managers were vital for the artefact design, development, and evaluation through the evolutionary prototyping approach that this study was adopted. The study contribution goes to the field of DSS research as the objective of this research is to enhance the current theory and practices relevant to the knowledge-based personal DSS design. Personal DSS is defined as a small scale IS development for a manager or a small number of independent users to support their decision-making tasks (Arnott, 2008).

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APPENDIX

Table 1. ICDT model-based website feature categories

ICDT Model-Based Website Feature Categories in B2C E-Commerce Environment	
Information (I)-Based Website Features	**Subcategory of Features**
Contact details	Business name, email address, location with map, telephone and fax numbers
Business information	Product and service descriptions, static product reviews, product catalogue, policies and mission statements, company and employee background, privacy policy, customer testimonials, business images and videos, print order form
Added value	Frequently asked questions (FAQ), product use instructions, financial calculator
Communication (C)-Based Website Features	
Contact the business	Email form, email order form, customer enquiry form, and sign up for newsletter form
Reviews	Customer posting reviews direct to website
Social networking	Bulletin board, blogs, etc.
Transaction (T)-Based Website Features	
Online database	Real-time catalogue, online ordering, automatically record customer preferences
Payment	Real-time credit card payment, Internet banking, online voucher redemption, PayPal
Distribution (D)-Based Website Features	
Web-based distributions	Online download of digital goods or contents, software
E-services	Online digital product delivery information, online physical product tracking information

(Data Source: Burgess, 2016)

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Chapter 8
How to Launch a Successful Crowdfunding Campaign

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ABSTRACT

This chapter provides insights into the important characteristics of a successful crowdfunding campaign. It starts with providing the fundamentals of crowdfunding and shows the reasons why it is important to find the right target groups and communities for a campaign. It describes in details the Return on Involvement model, what the funders want in return for their support. In the second part the additional results of crowdfunding are discussed, such as market research, marketing, brand loyalty and the possibility to use crowdfunding to raise additional funding. The last part of this chapter will focus on the background of setting up and running a successful campaign.

INTRODUCTION

Why are some campaigns very successful and do they raise millions of euros and have other campaigns huge problems to get their first investors? What are the secret ingredients of a successful campaign? In the chapter will we look into the do's and don'ts of launching a campaign. This will involve a good planning and preparation, finding the right community that will fund, creating a good pitch and finding the rewards that will convince people to support a campaigns.

CROWDFUNDING = COMMUNITY FUNDING

The investors in a crowdfunding campaign are not an anonymous crowd of people that will automatically find a crowdfunding campaign and will support a campaign they find online and like. The majority of the funders are people that know the entrepreneur of project in advance, or get introduced at the campaign by someone who knows the. Therefore, it is important for a successful crowdfunding campaign to think about the communities that will be interested in the campaign and find out how to reach them.

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Find Your Communities

Every person and every organization has access to communities. Sometimes these are their own clients that are able to support the financing needs of the company, but it can also be business partners, current stakeholders of the organization, people from your own village or sport club up to friends & family and employees.

When the potential communities are identified, it is important to find the best way to reach out to them. Some communities are already grouped and can be easily reached through social media or on weekly/monthly regular meetings, but for other people it can be more difficult to contact them. For all of them it is important to identify some of the strongest connections in these networks. You can contact them in a later stage and try to convince them to help you promote your campaign in the community you are both part of.

Return on Involvement (ROI)

The strength of crowdfunding is the trust people have in the entrepreneurs running the campaign. They will not just financially support a campaign, but want to get involved in the process of making the project or company a success. This involvement is very important for all people supporting a crowdfunding campaign. But what do they want in return? What is the Return on Involvement of their participation in a crowdfunding campaign.

While launching the crowdfunding campaign it is very important to focus on the potential donors/investors and their expectations. The investors are strongly connected and involved in the projects they support, but the return they are interested in is very different. Some of them are interested in a social return, some want to have a material return (products/services) and some are more interested to support crowdfunding campaigns to have a financial return.

For campaigners it is very important to know your community and your community members and know what kind of return they are interested in and define returns bases on these expectations.

Social Return

People who are interested in a social return, only want to be recognized as donors and want to have a good feeling about the cause they supported. These kind of campaigns are normally launched by non-profit organizations that are able to focus on project based fundraising. These are typically the donation-based campaigns that are in line with the other type of fundraising activities of NGOs. This can be successful for some campaigns, but the average donation is rather small. In the fundraising world it is commonly know that providing tangible and unique reward to major donors, helps attracting higher amount of donations. This can also be applied to crowdfunding by offering small rewards in return.

When a project owner is offering small rewards, valued (much) lower than the price the crowdfunders are paying, this is called reward-based crowdfunding. These are campaigns where the project owner is offering for example a meet-and-greet with an artist or a VIP-dinner with the founders of a company or a public figure that will costs the project owner not much, but is worth a lot for the crowdfunders. For project owners it is important to look for people and companies in their network that are able to provide these products or services for them for free or for a large discount.

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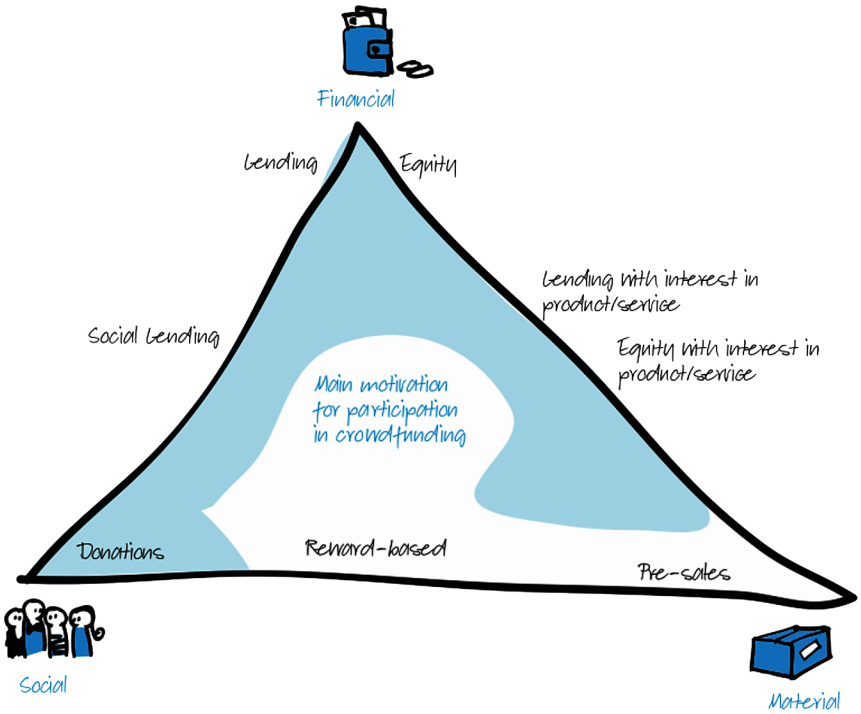
The main advantage of this strategy is that the average donation of a donation will be 3-4x higher than for average donations. In Europe the average donations are around 15-20 euro. In reward-based campaigns the average donation is 60-80 euro (see Figure 1).

Project-Based Fundraising for Non-Profits

For a lot of non-profits this is very interesting, because it will give them the opportunity to upgrade their current donors. Typically NGOs use an one-to-many (mass) mailing strategy to reach a lot of small donors for donations without a reward and they have a one-to-one strategy with unique, tailored rewards to a attract a few major donors. There are a lot of small donors who are willing to support the organization with larger amounts of money if they are also able to receive some (small) rewards and are very interested to support specific projects of their choice. NGOs can use this, but one requirement would be that they are able to focus on project based fundraising.

The main difference for most NGOs will be that they have to move from fundraising for their brand, to fundraising for individual projects. This has a lot of impact on their organizations, because they have to work with earmark money that can only be used for the projects they are raising fund for and their organizations should be able to describe and provide the programs that are in need for funding in advance. This sounds logical for crowdfunding, but al lot of NGOs are not used working like this. They raise funds and based on the amount of money they raised, they will later decide which projects will get funded.

Figure 1.



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Material Return

If a project owner is providing a reward that is valued at the same price of the amount of money that is provided, or is even worth more, we talk about pre-sales. Legally it is not really pre-dales, because in most cases the funder will provide money and finances the project that will give him ultimately (if everything goes as expected) a product or service in return. Therefore, it is not a a100% guarantee that the funder will gets its product, but because of reputation risks and possibilities for follow-up crowdfunding and continues support in his own communities, the entrepreneur will do everything what is possible to make sure he will deliver a good product or service in return.

This type of crowdfunding is mostly used by entrepreneurs, inventors and creatives who have an idea, and sometimes even a prototype, and need to have funding to create the first batch of their products. By pre-selling their products they get an immediate cash-flow which they can use to invest in creating these products.

An additional reason to use this type of crowdfunding is that it is a great way to do market research and find out of the entrepreneur is able to reach its potential market and if the potential clients are willing to pay for the product. This is the ultimate way of market research. It will not ask people about their intentions to buy a certain product, but let them vote with their wallet.

The risk in this type of crowdfunding is that the entrepreneur will need all the money to produce and distribute the rewards to his investors. After the products are produced and delivered he has made his first sales, but most likely will not have made a lot of profit. Therefore, this can be used very well for entrepreneurs to kickstart a business, but the company will need to get additional finance for further growth. This can also be done by crowdfunding or traditional finance. One of the additional benefits of having done a successful crowdfunding campaign is that attracting extra financing is easier when financers will see that you were able to attract a number of investors or customer in earlier campaigns.

Financial Return

The last type of return that can be offered is a financial return. This is called Crowd Investing of Crowd Financing. When funders are interested to support the entrepreneur and his idea, but don't want to give him a donation, or don't need the product or service that will be made, a financial incentive can be used to attract them. There are a number of financial offerings that can be made, and most of them are only limited by the possibilities of the regulations in the country. Because providing a financial return will in fact mean that the entrepreneur will offer an investment opportunity, the local regulators will have specific rules applied on Crowd Investing.

In general, there are two types of Crowd Investing that can be used by entrepreneurs that want to offer a financial return to their investors: Loan-based crowdfunding and Equity-based crowdfunding.

Loan-Based Crowdfunding

Offering Loan-based crowdfunding is the most popular way of Crowd Investing, especially in non-Anglo-Saxon countries, because this is most familiar with traditional bank loans. Instead of getting a loan from 1 bank, the entrepreneur will attract the loan from a group of funders. Normally a crowdfunding platform will act as a middle-man and collects the money, closes the deal and facilitates the interest payments to the funders. The exact terms of the loan (duration, interest, etc.) are unique per country and/or platform, but offer in most cases more flexibility than the standard loan models of banks.

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Equity-Based Crowdfunding

While offering a loan is the most popular option for traditional SMEs, for (fast-growing) startups or companies that need to have more equity capital, they can sell a part of the shares in their company to (small) investors. These can be business angels, but also individual investors who are interested to support the company and are willing to take the risk to invest in equity capital, but will also benefit from the capital gain if a company is successful.

There are typically two different ways the investment can be structured. The first one is that all investors will get direct shares in the company that is looking for an investment. The advantage for the funders is that they have a (small) say in the company and will have legal rights to attend shareholder meetings and vote. The disadvantage for the companies is that this is very difficult to manage and that all board decisions and shareholder meetings will be difficult to arrange. The second option is to use a Special Purpose Vehicle (SPV) that will represent all shareholders. This way all shareholders are grouped in one legal entity that has the total number of shares of all the investors. These investors will still have the benefits of capital gain and dividends, but will not have a direct vote individually. This structure is mostly interesting for small investors that are interested to participate in these companies, but are not interested in the (monthly) shareholder meeting and direct interaction and communication with the founders.

Social Lending

A special way of providing the right rewards for potential investors is social lending. These are loans that are provided to the entrepreneur with a very low interest rate, sometimes even 0%. This is interesting for people who want to support an initiative or entrepreneur and don't want to get a high interest rate, but are not willing to give the money as a donation.

This can be used by causes that are lending money the entrepreneurs in developing countries, such as Kiva. People can lend small ($25) or larger amounts of money through Kiva to Micro Finance Institutes (MFIs) that will distribute it to local entrepreneurs who need to repay the loans. With an almost 99% repayment rate most funders will get their initial loan back, so they can lend it to another entrepreneur.

Another great example is using it to finance the installation for renewable energy for a local school or sports club. The people connected to the school of club will provide the money that is needed to finance the installation of the system. From that moment the school or club has a lower energy bill and is able to start repaying the funders without (or a very low) interest. After a number of years the organization will have structural lower cost and can invest that money in education and sport equipment.

Lending/Equity with Material Return

Because investor feel really connected with a project, it can be a good idea to provide a product or service from the company they funded as part of the repayment. It can be a good idea to offer a product as interest payment. This way the funders feel even more connected with the company they supported, but it can also be beneficial for the funders and the entrepreneurs. The entrepreneur doesn't have to pay cash as interest payment but can provide the products or services it is producing already. Their cost prize is normally lower than the sales prize, so for them it is cheaper to offer that as a return, or they can be very generous and offer more than a funder normally would expect. This would be interesting for the funder.

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An example would be an entrepreneur who starts his own local brewery. He will use crowdfunding to get a loan from people in his network. Instead of paying them 5% interest every year, he will send them a box of beer. The market value of this box is for example equal to a 7% interest payment, but the cost prize to produce it is lower than 5%. This will be beneficial for the entrepreneur and the crowdfunder and has the additional benefits that the crowdfunder will feel much more connected with the company and therefore will be interested to help promoting the company or even buy additional beers.

Dunbar's Rule and Funding Target

Robert Dunbar suggested a maximum number of 150 people a person is able to create and maintain stable social connections (ranging from 100-250). Surprisingly enough this is also the average amount of people that join an average crowdfunding campaign. While preparing you crowdfunding campaign it is important to think about this to calculate the maximum amount of money you are able to attract. For example, at Kickstarter, one of the largest and most well-known reward-based crowdfunding platforms in the US, 85% of all the campaigns raise less than $20,000.

Every campaign is different and every project owner or group of project owners has different successes in their campaigns, but based on the average donation levels in your country, you can use Dunbar's Rule to make a calculation of the average amount of money you are able to attract and therefore to set the right goal in your campaign.

In Western European countries the average donation is for example 20 euro. Based on Dunbar's rule you will able to attract on average 3,000 euro per project owner. For a group of 3 people this can go up to 10,000 euro, although their will most likely be some overlap in these networks.

For reward-based crowdfunding this can be 3-4x more, because the average funding will be between 60-80 euro. This will result in 10-12,000 euro for an individual project owner up to 30,000 euro for a group of 3 project owners.

The highest funding goals can be reached by Crowd investing. On average funders will invest 500-1000 euro in a company, whereby it is normally much more difficult to attract investors in equity than in loans. An average campaign can, based on Dunbar's rule, raise 75,000-150,000 euro. A team of 3 people can raise on average 200,000-400,000 euro.

All of these examples are based on a good pitch, a good project and a team with a good reputation and no guarantee for a success. There are also always examples of projects and campaigns that are raising much higher amounts of funding, for example with reward-based campaigns that go viral, but the above calculations are based on averages.

CROWDFUNDING IS MORE THAN MONEY

While preparing a crowdfunding campaign, it is important to think in advance about the additional benefits you can get out of it. A crowdfunding campaign is a marketing campaign that includes raising funds. The community that will support the campaign will be interested in the end result. Therefore, they are interested to support on more levels then just donating money during the campaign. The campaign is also a good test of the ability to reach the potential end users of the product and convince them to buy it.

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Market Research

Crowdfunding can be used as a great tool for market research. When an entrepreneur wants to launch a new product the traditional way is to invest in developing and building the product, start a marketing campaign and try selling it. This can take months or even years before you can really find out if people are interested and if you invested your time and money in the right product.

Another option would be to create a proto-type or describe your concept in a crowdfunding campaign and ask people at the start if they are interested in buying the product in advance already. This way you can find out if you can reach the potential customers and if they can be convinced in buying the product. If nobody will support the project, then nobody is interested or the entrepreneur is not able to find his potential market. In both cases it would be useful not to further invest in the project, or adjust it in advance. This way the risk for the entrepreneur is reduced.

By applying this concept to more products, the entrepreneur will in an early stage know about products that people are interested in and continue investing in these products.

Marketing

Because a crowdfunding campaign is also a marketing campaign, it is important to look into the potential of using crowdfunding for marketing.

During the campaign there will be a lot of communication from the team to promote the crowdfunding campaign. Because the campaign has a clear start and end, all the marketing efforts will be bundled in a short period of time. The first supporters and the ambassadors of the campaign will also help in promoting it by spreading the word in their own network during the campaign. There will also be a possibility for free publicity of local (or even national) media willing to write about a successful campaign.

After the campaign is finished there is a strong network of ambassadors. They will be interested to help promoting the results of the campaign. If used wisely, these can be used as part of the marketing department of the organization.

Brand Loyalty

People who feel more connected to a brand, are more willing to support the brand, also when things go less good. It is important that they have a strong connection and this can be realized by making a strong connection with the projects and keep them informed about the progress.

People who invested in a company through loans or equity feel themselves (partly) owner of the company. They will think twice before they will buy at a competitor.

Access to Additional Finance

Because crowdfunding is a good market research tool, a successful crowdfunding campaign will make it much easier to attract additional finance from investors, grant from governments and loans from a bank.

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When a company can show they have already raised funding from hundreds or thousands of people, it shows an investor that there is an interesting market potential. It will also show the investor that this entrepreneur is able to sell the products. One of the most important success factors for a new business. For a lot of business angels, crowdfunding is therefore an important tool to find and pre-select the companies they are willing to invest in.

For a government providing grants to projects, it is useful to see if the general public is supporting them already and perhaps even they have funded a part of the project already. It can even be used as a pre-selecting tool in a competition for grants.

Depending on the type of financing raised, it can make it much easier to attract additional financing from a bank. Money invested in equity or junior loans make it easier for banks to lend additional money.

STRATEGIC CHOICES OF A CAMPAIGN

Crowdfunding Experts

Running a crowdfunding campaign for the first time is very time-consuming and it can be very useful to hire professional experts for support. These experts can help you preparing your campaign, but also advise on the legal and fiscal consequences of crowdfunding and help you to select the right platform for your project of start.

When choosing a crowdfunding expert for support, it is important to check in advance how much experience this person or organization has. Because this is a new industry and there are no certifications for professional or certified crowdfunding professionals yet, a lot of marketing and financial experts are promoting themselves as crowdfunding experts.

Based on the type of financing by crowdfunding an entrepreneur is looking for, a different type of advisor need to be selected. For a donation, reward or pre-sales campaign, it is important to find a campaigner who is able to setup a strong marketing and communication campaign. The background of these advisor are mostly in fundraising, marketing or community management. For investment campaigns, either loans or equity, such a campaign advisor is also necessary, but the focus will more be on the financial part of your proposal. You will need to have a financial advisor who can help you with the financial part of your business plan and can create a good overview of your cash-flow for the next years.

Separately a tax advisor need to be consulted in advance to know how to structure your campaign regarding VAT and afterwards for tax filings.

DIY Crowdfunding or Using an Existing Platform

Most people will use a crowdfunding platform to publish and promote their crowdfunding project. This has a lot of advances and it makes your life much easier, because you don't have to build a website yourself and you know that the legal and fiscal elements are taken care of. A well-known crowdfunding platform can also create an additional level of trust to your potential donors/investors. The downside is that you have to pay some fees for putting your project on their platform and success fees when reaching your goal Depending on the size of your campaign and the type of crowdfunding you want to use this can go up to 5-10% of the amount of money you are raising.

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If you are expecting to raise a lot of money it can be useful to build your own crowdfunding campaign website for it. This is normally interesting while raising 100.000 euro or more, but this depends on the country where you are based and what type of crowdfunding you are using. In general investment based crowdfunding (lending/equity) is much more expensive to setup, and sometimes illegal to do it yourself, then donation-based crowdfunding or reward-based crowdfunding. Other reasons to start your own crowdfunding campaign site are that you can brand your crowdfunding campaign site much more in your own look-and-feel and you have 100% control over the contact details of the people that donated to your campaign, because normally they will be stored in the database of the crowdfunding platform. Especially with companies that have a very strong community of people that know them, or if you want to use crowdfunding often for different projects, it can be very interesting to do it yourself.

THE PLANNING OF A CAMPAIGN

The more time and energy spend on the preparation of a Crowdfunding campaign, the more successful it will be. A crowdfunding campaign is a marketing campaign, so a campaign need to be planned thoroughly and you need to know the target audience you want to reach to maximize the results. Because a good crowdfunding campaign costs a lot of time and resources it is important to know the additional benefits of a crowdfunding campaign to get the most out of it.

Pre-Campaigning

Before starting a campaign, it is very useful for an entrepreneur to take a look at other campaigns to find out what other successful and less successful campaigns in their country have done before. It will give inspiration and insight for the campaign. If possible it would be very beneficial to meet with the founders of these campaigns to hear their side of the story. In most cases much more happened then can be seen from a campaign site. You can contact them directly or go to local crowdfunding events where entrepreneurs tell about their experiences in the campaign. In a lot of cities these events are organized by banks, accountancy firms or by independent organizations such as a Chamber of Commerce or CrowdfundingHub.

In this phase it is also useful to focus on the goal of your project and prepare your pitch. What is the main goal and why do people want to support you? What will be the outcome of the project for you and your investors? Talk with people about the plan and the campaign. Don't be afraid someone will steal your idea. Most people will offer you their help and these are already your first ambassadors for your campaign later.

You will also need a team of people who will support you. You shouldn't do crowdfunding alone. When people are very enthusiastic you can ask them to become part of your crowdfunding team. You will need to have ambassadors promoting your project, but also people helping you in your (social) marketing activities, organizing events, etc.

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Preparation of a Campaign

When the decision is made to start a campaign, the most important part of the campaign will start: the preparation phase. The biggest mistakes are made in this phase. Mostly because of underestimation of the process and not preparing for all the additional values of crowdfunding.

Storytelling

An important part of Crowdfunding is to convince people in your (extended) network and outsiders who don't now the entrepreneur and the project before, to support the idea. Therefore, the entrepreneur should be able to explain clearly the reasons why this project should start, what will be done with the money that is being invested and what the investors will get for it in return. It is important to make the message very clear and powerful.

The best way to convince people is by storytelling. Build a story about why it is important for you, the community or society that this needs to be done and why you and your team would be the best to realize it, whether it is a new company, a small local community project or a new product you'd like to create. This message should be written down and recorded on video, so it can easily be distributed.

For recording a video, the passion of the entrepreneur is very important. People like to give to other people who are passionate about their projects. Make also sure the video is short (max 2-3 minutes) to keep the attention of the viewer and show you key message in the beginning of the video.

Identify Your Target Group

The next step would be to identify your target groups. Who are the people in your own network or external network who would potential be interested to support the project? These can be different groups with other expectations and therefore it is important to adjust the marketing message for the different target groups.

Some groups of people are closely related to you and you have a strong personal relation with them (family, friends), some have more a business relationship with the entrepreneur (customers, business partners, LinkedIn contacts) and some have looser connection, because they are part of the same (local) communities or social media network.

For the campaign it is important to identify these potential networks in advance and make sure that the right networks will be approached on the right moment. It is important to first start with the people who know you personally and who you can approach with a personal appeal (1-to-1) and later use one-to-many communication for people who you don't have a very strong personal connection, but will still know you. In the last phase you will use mass communication to approach the large communities about your campaign. For details about this planning, see the "campaigning" paragraph below.

Rewards

People have different motivations of supporting a crowdfunding campaign. As discussed earlier in the chapter on Return on Involvement there will be different expectations for the people what they will get in return. Especially for reward-based crowdfunding it is important to be creative in finding interesting rewards. Not only will this increase the number of people supporting the project, it will even motivate them to spend more on the campaign.

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The first rewards can be found within the project itself. If the result of the campaign will be a product or service, then this can be given back as a reward. To make it special it is possible to create "first-editions" of the project or add special features to the product that will not be available for the retail edition. These can also be VIP services for cultural/creative projects.

The second type of rewards are rewards from the entrepreneur or the team. This starts with small personal thank you messages to a diner with the founders or unique services the entrepreneur can give from his/her own background. These can also be other products of the company, or activities like a product tour through a factory, research lab or company.

A third type of rewards can be found at companies closely related to the campaign. Companies and people who like to support the campaign, they can also donate some of their own products and services as a possible reward to offer in the crowdfunding campaign, instead of supporting the campaign with money.

Planning Communication

Because a campaign is very intense, it is very important to prepare a lot of work and activities already in advance. You can plan a lot of (speaking) events, publications in advance and of course it is important that the flyers will are ready in time. Something most people don't think about is that it is also possible to prepare a lot of the social media communication and emails that will be send to people who are interested and as a thank you to people who invested in the campaign. When these texts are written a bit in advance, the entrepreneur will not only write nicer and better messages, he also will have more time to think about the possible follow up actions that can be done by the investors. A simple message on social media will be shared by the funder within his/her own network, if you make it really personal, perhaps even with an personal image or video. And an email with a simple description how your funder can help you to spread this message will stimulate him to forward your email to a number of friends and show them your campaign.

In the months before the campaign you will gather all the people in your community and find the best way to communicate with them. Try to reach out to them far in advance of your real campaign and inform them you are working on a new product/service and want them to get involved. Build up mailing lists, online (Facebook) groups or other platforms that give you the opportunity to easily interact with your community.

Pre-Campaigning

A few weeks before your campaign starts it is important to test your final pitch. You should reach out to the inner circle in your community, the people that know you best, and test your final pitch and ask them directly if they will support your campaign. If they do, you ask them for how much they will support you and what rewards they would like. This way you can not only test your pitch and rewards, but this is also a good test about the possible funding goal you are able to reach.

This test will show the capabilities of the entrepreneur to reach out within his/her own network and the ability to convince people to support him. It will also show how much they are willing to invest. Because a large part of the funding and support of first-time campaigners will come from their own inner-crowd, this is a good prediction of the total amount of fund that can be raised. Before the start of the campaign, the entrepreneur should have at least 20-30% of the amount pledged by people from his own network. If this is (much) lower, the funding goal should be lowered, because it would otherwise be very difficult to reach that goal.

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One of the additional requests for these investors is that they will fund the campaign at the start. This way the campaign will have a good start.

Campaigning

It is very important for the first people to invest at the start of the campaign. When they do this, it will give a boost to the campaign and from the start it has a more positive vibe. This is very important, because most people are risk-averse and will not join a campaign or project when they are one of the first. They want to join when they see it is already a success and they want to become part of that success.

Therefore, it is also very important to build up the campaign in 3 phases. Because the strength of crowdfunding is community funding, you should also embrace the strength of the community to support the campaign. At the start of the campaign the communication should be focus on the Inner Crowd. These are the people that know the founder best and can be reached individually. After these people are connected it is important to reach out the rest of the community of the founder. This can be done my mass e-mailings, communication by social media or newsletters. Only in the last phase people will be reached by mass media, traditional newspapers and support of other networks.

Inner Crowd

In the Inner Crowd are the people that can be reached personally. The more personal and intense these connections are, the more successful they are. The most successful communication methods here are physical meetings or phone calls. The conversion rate here is very high, because it is much harder to say no to a personal friend who is reaching out for support in this phase. Because this is a very time consuming effort, his should only be done by people that are well known, but because it is so successful, every campaigner should do this by at least 10 people to get the first funding.

The next step would be to approach people personally with an individual and tailored message, but contact them online. This can be done by a personal email or DM messages through social media. Spend enough time on every message to make it tailor-made for the recipient. The more personal approach, the higher the conversion rate is. A follow-up call is of course also very useful.

For all these steps it is important to keep an overview of the people you contacted, how much they committed and if they indeed contributed already in your campaign. A lot of people are really willing to support you, but because of a lot of different reasons and a busy life, they tend to forget it. Because the campaign is only running for a small amount of time, it is important to do follow-up calls or send them an email if you notice they didn't contribute yet.

Therefore, a daily check on the people that donated is very important. This will also give you the possibility to reach out to the people that contributed and thank them for their support. If you do this through social media, they will also reply on it and help you spread the message of your campaign to a larger audience.

Own Community

When you've reached out in the first phase to the people you know best and contacted them personally, it is time to move to the next phase and use mass marketing to reach the people in your network that still know you, but the connection is not strong enough to send them a personal update (or your network is too big to reach out to all of them personally).

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At this moment your campaign is running for a number of days and because of the support of the people in the pre-campaigning phase and the support from you inner crowd, you already have a good start in your campaign. When people that know you and hear about your campaign from your mass emailing or the communication you send to them through social media, they notice that you have a successful start of your campaign and therefore they are much more willing to join.

External Communities

After you have reached out to the people you know, you can start to find people who don't know you yet, but would be potential funders of your campaign. The best way to do this is to identify the characteristics of the people that would be most interested to support you. In most cases these are the people in the networks and communities that are closely linked to your cause, such as sustainability or specific niche groups interested in a specific sport, activities, pets or hobby's.

Before starting the campaign, it is important to identified these networks already and contacted them about your plans. This way it is easier for you to contact them during your campaign and you can show them some real progress and success. They will be able to spread your message in their own (social media) network, but will also be interested to publish an interview in their internal newsletter of magazine.

At this moment you will also plan your speeches and presentations at external events. Contact far in advance the organizers of events you know take place during your campaign and are interested for your target audience. The conversion rate at these events is not very high, but in most cases it will generate a few more funders, but at least a lot of extra fans. These fans can be beneficial in a later stage of your company. In most cases it will also connect you to other people you never were in contact with before and who can help you to introduce you by other investors, potential clients, partners or employees.

This is also the right moment to publish your story in newspapers and other mass media. Most entrepreneurs send their press release to as many blogs, newspapers and tv stations as possible, but the success rate us normally very low. And even if it is successful, it will not help the campaign. The reason for this is that in general media is not interested to hear about your ideas. They want to publish successes. Therefore, it is better to contact them later, when you show some success and your reached your first milestone already. For your potential funders who have never heard about you before is it also important to show them how successful you are and that a lot of other people already funded you. People are not interested to be the first funder when nobody else is supporting you. But when they see that it is a success and already a few hundred people participate, they follow the rest much easier.

End Sprint

The last days of your campaign will be very hectic, but if you use them wisely it can provide you with a lot of extra funding. A lot of people are lazy, also in supporting you. They really want to support the campaign, but they waited because they were busy doing other things. Now it will pay off if you kept records of the people that were interested. Send them an urgent last-minute email telling them that they only have x days left and tell them exactly when the campaign will close and thisis their last chance to join. Make it as easy as possible with a direct link to your payment page, perhaps even pre-selected the amount of money and/or reward they told you they were interested in.

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This is also the moment to send a last reminder to your current funders about the end of the campaign and ask them to think about upgrading their funding and asking all of them to ask 1 or 2 friends to join the campaign.

This will normally give a boost in the last phase in your campaign that will help you to reach finally the target or will even give you a large boost for over-funding.

Post-Campaigning

Directly after your campaign finished, send a thank you message to all your funders and congratulate them with the success you made together. Continue building the relationship with your (new) community. These people are very strong connecting to your goal and are willing to help you in the next phases also. Keep them close. Make sure you update them in the next months and years about the progress of your company, because they made it possible.

When you offered rewards, now it is time to start distributing them to your funders. Group your funders in categories, so you can update them on the individual rewards they will get and give them, if possible, a good estimation when they can expect their rewards. If you can send them already, do as quickly as possible. If they pre-financed some product or service that first need to be created, give you funders a clear planning when they can expect it. And keep your promise! If anything goes wrong and you expect a delay in delivering your reward, be open and transparent about it. The worse thing to do is not tell any of your funders about it. If you are transparent and open about it, they will understand in most cases.

Next Steps

After finishing a campaign, this is not the end. This is the start of the preparation if the next campaign(s). Companies can use serial-crowdfunding and start new campaigns in different phases of the growth if their company. They can start with an equity campaign to raise some seed-funding, pre-sell their first products and services by reward-based crowdfunding and lend money through crowd lending when they are in need for some growth capital and don't want to give away additional equity.

Companies using this concept on a structural level will also transform into a CrowdBusiness business model, where they not only use their network to raise funding in one or more campaigns, but also involve their community in marketing activities, crowdsourcing for new innovations and will even move into co-operative models where their investors will become owner of the organizations.

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Chapter 9
A Risk Integration Framework for the Service-Oriented Enterprise

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ABSTRACT

Enterprise architecture management provides the mechanism for governing enterprise transformations required by changes in the environment. In this article, the authors focus on changes that result from the analysis of information system risks and of their impacts on the services delivered by the enterprise. The authors present how the concepts of an information system risks management domain can be integrated into the ArchiMate enterprise architecture modelling language. This article approaches the conceptual integration in two design cycles: first, this article will consider information security risks, and then the authors generalize to information system risks. Additionally, the authors illustrate the application of the proposed approach and demonstrate the benefits of the integrated model through the handling of a case study, first in the domain of information security, and then in the domain of information privacy. The generalized risk-oriented EA model leads to a risk integration framework for the service-oriented enterprise.

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INTRODUCTION

To remain competitive in the growing services' economy, enterprises have to transform themselves in business service-oriented enterprises. Business services are delivered by service system defined as "a configuration of people, processes, technology and shared information connected through a value proposition with the aim of a dynamic co-creation of value through the participation in the exchanges with customers and external/internal service systems" (Spohrer, Maglio, Bailey, & Gruhl, 2009).

The value proposition of a service system can be refined into a number of requirements qualifying the expected characteristics of the provided business service. Today, many business services are information intensive, and the achievement of those requirements heavily depends on the properties of the supporting Information System (IS). Our research investigates this type of requirements, and more specifically those associated with information security and privacy: the "security goals" and "privacy goals" according to the usual requirements engineering terminology (Elahi & Yu, 2007). The sources for these goals are customers' needs but also the many regulations and norms the enterprise has to comply with. The occurrence of security and privacy breaches may result in deviations (misalignments) between the goals of the enterprise and the supporting IS. There are many other goals associated with the IS, like accountability, non-repudiation, auditability, trustworthiness (Cherdantseva & Hilton, 2013), which need to be addressed uniformly.

Given the strong dependency of the business service on the supporting IS, the alignment of the deployed IS with the business service system is a key issue, also from a security and privacy perspective. The purpose of Enterprise Architecture Management (EAM) is to align an enterprise to its requirements and business goals, and specifically to the goals associated with the business services. EAM helps to design and guarantee a coherent enterprise's organizational structure, business processes, and infrastructure (Lankhorst, 2013) through a set of models.

The solutions to overcome the misalignments are more and more complex and it is not either technically feasible or economically sustainable for an enterprise to solve all potential breaches. Risk Management (RM) is a central process managing the effect of uncertainty on the business goals and is largely used to balance the often-conflicting constraints in information security engineering (NIST SP 800-60). It also becomes the response to the increased concern of personal data protection.

The first objective of the paper is to report about our contribution (Grandry, Feltus, & Dubois, 2013) to the design of a security risk-oriented Enterprise Architecture (EA) model. The core of the framework relies on the integration of Information System Security Risk Management (ISSRM – Dubois, Heymans, Mayer, & Matulevičius, 2010) concepts into EAM constructs from a service system perspective. It also addresses the model representation of risk analysis, leveraging the ArchiMate modelling language (The Open Group, 2016), which has been purposely designed for supporting EAM, and inherently supports the service-oriented enterprise.

The second objective of the paper is to generalize the model to manage the risks on any goals of the information system supporting the delivery of business services, not restricted only to the security goals. This generalised model is validated with a specialisation addressing the privacy goals of the business service. The integration of these additional concerns opens the door to the management of the interactions amongst risks: a control mitigating a security risk can indeed cause risks to breach privacy objectives.

The paper is structured as follows. In the next section, the research methodology is exposed, giving insights on the process followed to elaborate the artefacts. Afterwards, we provide background knowledge regarding ISSRM and ArchiMate EA Modelling language. Then, we describe the initial extended

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EAM, as a mapping between the ISSRM and ArchiMate metamodel, which is illustrated with a case study. The conceptual integration is generalized and illustrated to information system risks, including information privacy in the next two sections, where privacy risks and information security risks are combined, introducing the concern of risk interaction. We finally review related work and conclude with future perspectives.

RESEARCH METHODOLOGY

According to Hevner, March, & Park (2004), the design science paradigm seeks to extend the boundaries of human and organisation capability by creating new and innovative artefacts, and the authors further maps their defined artefact to the four artefacts proposed in the research framework from March & Smith (1995), i.e.: construct, model, method and instantiation. This framework prescribes four research activities: build and evaluate, and theorise and justify. The first two refer to design sciences activities, whereas, the latter two concern the natural science activities.

Our development of a metamodel integrating the concepts of both ISSRM and EAM is a research that is in the scope of Design Science Research. We focus on the build activity (i.e., integration of the risk management and the enterprise architecture into an integrated model) and evaluate activity (i.e., validation of the metamodel through case studies).

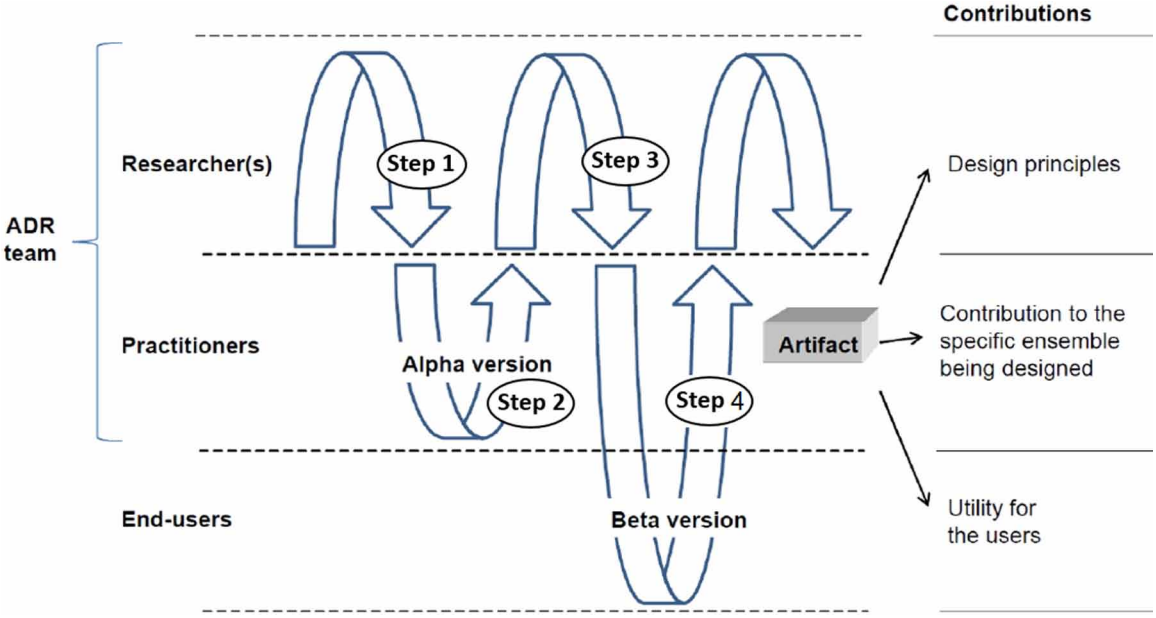
In practice, we note the build and evaluate design activities are preceded, in most design science research methods, by an activity of problem discovering (e.g., Peffers, Tuunanen, Rothenberger, & Chatterjee, 2008[1]). Given that our artefact is motivated by real problem and relies on the knowledge of the field, we need to involve practitioners and end-users all along the artefact building activity. Therefore, we have applied the design research method proposed by Sein, Henfridsson, Purao, Rossi, & Lindgren (2011): the Action Design Research method has for objective to strengthen the connections between the practitioners (the risk experts selected to participate to the metamodel elaboration) and the researchers by combining the building, intervention and evaluation (BIE) activities. Given that the elaboration of our artefact strongly relates to IS, we apply an IT-Dominant BIE Generic Schema[2] (Figure 1).

When applied to our research, at step 1, we (researchers) have proposed leveraging EA models to enhance the ISSRM (Dubois et al., 2010). At step 2, security experts (the practitioners) from the telecommunication services, designed a first model integrating information security risks and EA description in participative workshops (Mayer, Aubert, Cholez, & Grandry, 2013). At step 3, the researchers formalised the ISSRM and EAM integration in ArchiMate (Grandry et al., 2013). At step 4, the metamodel was both implemented in a supporting tool (TISRIM - Mayer & Aubert, 2014) distributed to the end-users, and further experimented with end-users from the healthcare services, in participative workshops (Schwartz, Grandry, Aubert, Watrinet & Cholez, 2015). It was also used in support to a master thesis in information security risk management (Tovstukha, 2014). Step 5 integrates the feedback from these experimentations and starts a new design cycle with a generalization of the artefact by extending the scope of risk from information security objectives to information system objectives, including privacy (Feltus, Grandry, Kupper, Colin, 2017).

According to March & Smith (1995), the evaluation of a designed artefact must use precise evaluation criteria. Provided that the goal of our research is to support end-users with a useful metamodel supporting risk management, the validation criteria is the usability of the metamodel, defined in ISO

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Figure 1. IT-Dominant BIE generic schema



25010 (SQuaRE) by the sub-characteristics of (1) understandability - determines the ease of which the [artefact] can be understood, (2) learnability - learning effort for different users and (3) operability - ability of the [artefact] to be easily operated by a given user in a given environment.

BACKGROUND KNOWLEDGE

In this section, we introduce the two main sources of knowledge for our research, namely a conceptual security risk model and the ArchiMate EA modelling language.

Information Security Risk Management

ISSRM is paramount because it helps companies to adopt cost-effective security measures: security threats are so numerous that it is impossible to act on all of them as (1) every technological security solution has a cost, and (2) companies have limited resources. Hence, companies want to make sure that they adopt only solutions for which the Return On Security Investment (ROSI) is positive. This is done by comparing the cost of a solution with the risk of not deploying it.

In a previous research, the different concepts of ISSRM and their relationships have been formalized under the form of a domain model, i.e. a conceptual model depicting the studied domain (Mayer, 2009; Dubois et al., 2010).

The ISSRM domain model is organized in three groups of concepts:

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- Asset-related concepts describe the assets and the goals which guarantee the security of the assets; according to the IS theory, the IS supports the Business System and the assets are specialized as business assets and IS assets (aka Supporting Assets, Resources), and the IS assets support the business assets.
- Risk-related concepts present the risk itself as composed of a potential event together with its impact on the enterprise's asset (whether business or IS); in the domain of security, the feared event is itself defined as a threat exploiting vulnerabilities of the IS assets.
- Risk treatment-related concepts describe what decisions, requirements and controls should be defined and implemented in order to mitigate possible risks.

In this paper, we use the concept of Security Goal, which merges the Security Criterion and Security Objective defined in the initial ISSRM (Dubois et al., 2010).

We have experimented the ISSRM in various projects (Mayer et al., 2013, Goettelmann, Mayer & Godart, 2014; Mayer, Grandry, Feltus & Goettelmann, 2015) and demonstrated that it is neutral with respect to the types of business, the industries and sectors. Later in this paper, we will discuss its specialization with respect to the service industry.

In these projects, we also identified that the design of the asset model is a key activity to get the value out of the ISSRM: identifying the business and the IS assets, as well as their links is the main challenge when applied in the context of real enterprises.

EAML and ArchiMate

The Open Group proposes ArchiMate as a standard Enterprise Architecture Modelling Language (EAML), which provides the capability to represent an enterprise in a uniform way, according to the multiple stakeholders' viewpoints, across business, IS and IT architecture layers (Lankhorst, 2013). Although it has not been specifically developed for the service system domain, ArchiMate introduces constructs supporting the concept of service as an abstraction of the behaviour exposed by a system (The Open Group, 2016). In enterprise engineering, an enterprise is viewed as a complex designed system, and a service-oriented enterprise can therefore be considered as a set of services exposed to the enterprise's environment.

ArchiMate 3.0 organizes the representation of the enterprise along several abstraction layers: strategic, business, application, technology and physical. The layers conform to strict dependencies going from upper layer (strategy) to bottom layer (physical). There are no dependencies permitted the other way round.

The modelling pattern of ArchiMate revolves around the concept of service: a service both abstracts a behaviour (that realizes the service) and is a part of a behaviour (composed of services). The pattern is instantiated in each abstraction layer of the core framework, contextualized with the relevant concepts of that layer: business service, application service and technology service.

The Motivation extension was introduced in the version 2.0 of ArchiMate and is reinforced in version 3.0: besides the what (passive structure), who (active structure) and how (behaviour), the motivation supports the why dimension. The motivation is relevant in each abstraction layers of the full ArchiMate framework and allows tracing the rationale behind the elements of the architecture. A motivational element is related to a core element of the architecture through the concepts of requirement, value and meaning. A requirement is realized/influenced by a (set of) core structure/behaviour elements of the architecture (except stakeholder), which is associated with a value or a meaning.

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INFORMATION SECURITY RISK INTEGRATION

Our initial research (Grandry et al., 2013) had the objective of conceptually integrating the domains of ISSRM and EAM through the Enterprise Model Integration (EMI) approach (Kühn, Bayer, Junginger, & Karagiannis, 2003; Karagiannis & Kühn, 2002), which consists mainly in resolving semantic heterogeneity through concept mapping and integration rules (Zivkovic, Kühn & Karagiannis, 2007). A concept mapping introduces a correspondence between at least one concept of each of the source model. The major correspondences are: Equivalence, Relation and Non-Relation. A relation between two concepts can be a generalization (and reversely specialization), a composition, an aggregation, an association, a classification. While the concept mapping addresses what is integrated, the integration rules address how the integration is actually performed, depending on the defined mapping. Equivalent concepts are integrated through an alignment rule (merge, mapping, abstraction), while related concepts are integrated through a connection rule (generalization, aggregation, composition, association, classification).

Asset

The ISSRM distinguishes between the business assets and the IS assets. Security risk management end-users usually classify business processes, information, skills and capabilities as business assets. Accordingly, the EAM concepts of Business Process, Business Object, Business Actor and Business Role are all business assets: information, business processes and skills are leveraged for the service-oriented enterprise to deliver its value through the business service. The Business Service encapsulates these business assets and abstracts the value they bring to the enterprise.

The concept of IS Asset in ISSRM abstracts a component of the IS that support the business asset. It is very close to the EAM domain that considers that elements of the application layer realize (or are used by) the elements of the business layer. Application and technology services are the major abstractions of the application and technology layers. They are however not sufficient in the mapping of the IS Asset in terms of risk management: the vulnerabilities are indeed not the characteristics of the packaged set of resources (which the service abstracts), but of the actual components that the service is made of, i.e. of the structural elements of the technology architecture.

Risk

A Security Goal represents an intention of securing the business assets in order to increase the value of the associated business service. For example, the confidentiality of the information manipulated by the business service increases the value of the service when it is relevant for the business. Although it could be tempting associating the Security Goal with a goal in terms of EAM, it is important to remind that risk management defines the Security Goal as an indicator to assess the significance of the risks: a security goal is not an end-state to be achieved per se, but rather a driver that indicates a direction of change. We therefore map the Security Goal to the concept of Driver in terms of EAM (a Security Goal is-a Driver), and the concept of Risk to the concept of Assessment (a Risk is-a Assessment). The mapping of the relation between Security Goal and Business Asset requires additional concepts to be considered: ArchiMate does not support direct relation between Driver (Security Goal) and the elements of the busi-

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ness layer (Business Asset). However, a Driver influences the Value of a Business Service: the Security Goal associated with a Business Asset influences the value of the Business Service encapsulating these assets, e.g. the confidentiality of the information manipulated by the business service increases the value of the business service. Given this mapping of concepts, security risk management can be expressed in the following way: a risk is the outcome of the analysis made on the intention to secure business elements of the enterprise in order to increase the value of the associated business service.

The components of the Risk (Event and Impact) are also modelled with the concept of Assessment and the composition relation (an Assessment composed of other Assessments), as they are the results of the risk analysis. The same approach is applied to map the Threat and the Vulnerability.

Finally, we propose modelling the chain of impacts in ArchiMate with a composition of impacts. It should be noted that the final element of a chain of impact might negatively influence another driver than the one that initiated the risk assessment, and even a non-security driver. For instance, the 'Reputation of the Enterprise' is a strategic driver that is not a security goal. It is however negatively influenced by the impact 'loss of reputation' associated with the security risk 'identification theft' associated with the security goal 'Guarantee integrity of information'. It is therefore very relevant to integrate the analysis of security risks as a strategic activity of the enterprise, and not perform it in a silo.

Risk Treatment

The Risk Treatment is the decision of how to treat the Risk: retention, reduction, transfer, avoidance. It is mapped to the EAM concept of Goal: the Goal (Risk Treatment) addresses the Assessment (Risk) of the Driver (Security Goal). The Security Requirement is introduced when the Risk Treatment decision is to reduce the risk. The Security Requirement is modelled with the EAM concept of Requirement: they are the means to reach the end, i.e. to realize the Goal. Finally, the Control as the abstraction of the solution that implements the Security Requirement is mapped to a (set of) Core Elements of the architecture: the realization relation between Requirement and Core Element is used to trace the rationale behind the elements of the solution. The solution to a security requirement can be realized by elements of the business layer, application layer and/or infrastructure layer. When multiple solutions can be envisaged, the enterprise architecture models represent a support to decision-making, potentially based on an ROSI analysis.

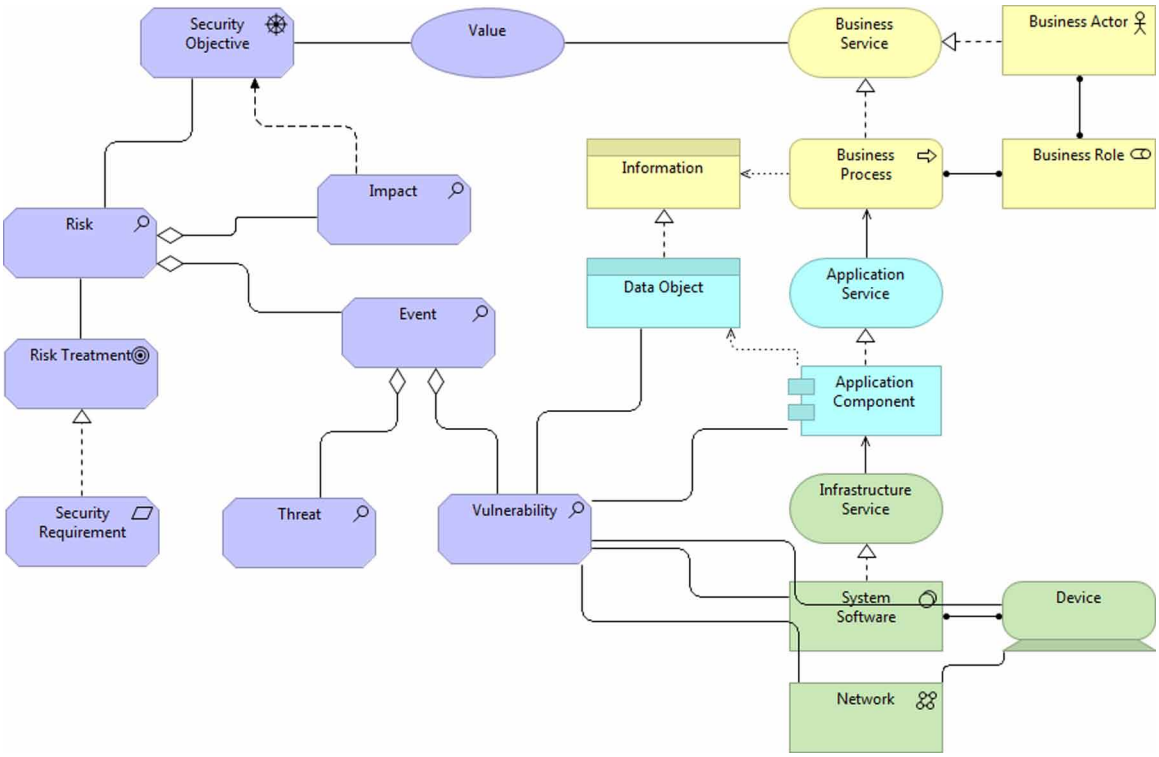
Integrated Metamodel

Besides mapping the concepts of ISSRM to ArchiMate, we also represent at this stage the risk concepts (concrete syntax) with the existing ArchiMate notation: a Security Goal is a Driver, and reuses the Driver symbol as representation. The resulting integrated metamodel is illustrated in figure 2, in the ArchiMate notation.

There are two channels of exchange between the risk model (left side) and the architecture model (right side): on one hand, the IS architecture is a source of vulnerabilities that might be exploited by threats; on the other hand, the resulting risk impacts the value of the business service the architecture supports.

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Figure 2. ISSRM in relation with EAM



CASE STUDY SECURITY – @RCHIMED

The metamodel integration is illustrated with a lab case study, @rchimed[3], which is a reference case study for the EBIOS risk analysis method (DCSSI, 2004) defined by the French Ministry of Defense. First, we present the context and the existing enterprise architecture of @rchimed: we identify the assets of the enterprise and we elaborate a standard ArchiMate EA model that highlights the connections between the business and the IS assets; then we model the security risk perspective of the system.

@rchimed Architecture

@rchimed is an AEC company specialized in the design of blueprints for the building of new factories and offices. To that end, @rchimed provides services related to the analysis of building stability and estimations of the costs. The reputation of the enterprise is a very important factor to win market shares in a competitive market. @rchimed's strategy is based on two drivers: on one hand improving the reputation of the company, and on the other hand reducing the costs to remain competitive.

The business service "studies elaboration", which value relies on the accuracy of the delivered artifact, is part of the @rchimed service offering, and is realized by three processes performed by the @rchimed experts, namely: the visualization elaboration, the structures calculation and the technical plans

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elaboration. These processes generate two business objects: the building structure calculations and the structural parameters. The structures calculation process is supported by the calculation service which is itself realized by the Structure Management Software. This application is accessed by the experts through the parameters setting interface and generates the calculations on files, listings and USB supports.

The relevant @archimed architecture is described in figure 3, using the standard ArchiMate language.

Security Risk Management

A classical risk analysis is deployed, which consists of 3 steps (according to ISO/IEC 27005, 2008): identification of the context and security goals, analysis of the risks and definition of the risks treatment.

Context and Security Goals

Given the value of the studies elaboration business service, @archimed has a strong requirement on the integrity of the calculation, which is strategically more important than its availability and confidentiality. The security goal integrity of calculation is modeled as a driver positively influencing the value of the business service studies elaboration.

Risk Analysis

A calculation alteration represents a breach of the integrity of the service. A lack of access control on the information system (vulnerability) can be exploited to thieve identity (threat) and cause a calculation alteration risk (risk), which negatively impacts (loss of integrity) the security goal, and decreases the value of the business service. A loss of integrity might be the initial node of a chain of negative impact, leading to a loss of reputation, but also to an instable building, a collapse of the building and lawsuits. It also negatively impacts the strategic goals of the company through a loss of reputation and new costs induced by the lawsuits. This risk analysis is modelled in figure 3 according the proposed extended EAM.

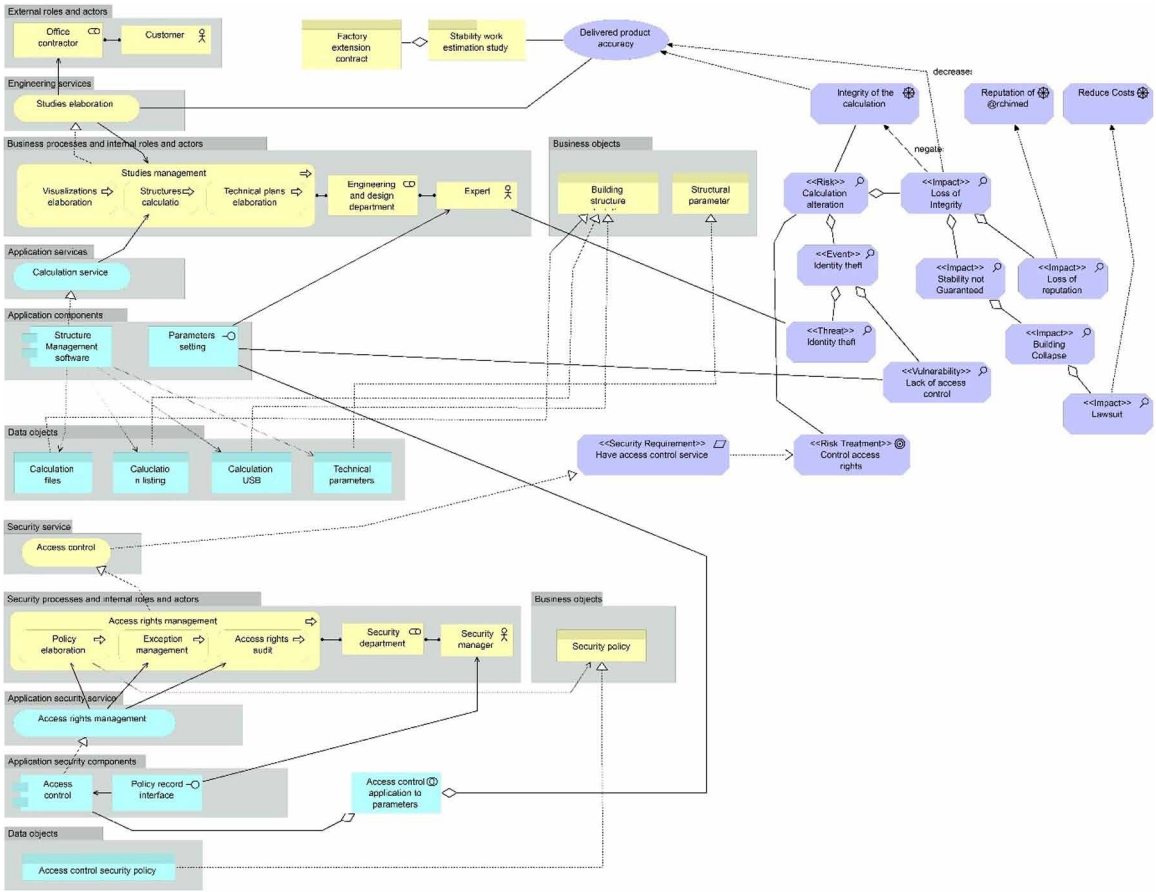
Risk Treatment

Although @rchimed is looking for cost reduction, the impacts of a calculation alteration are high and the company decides to mitigate the risk through the deployment of an access right management system. This control reduces the vulnerability to identify theft.

The risk treatment is modelled with a goal, influencing the value of confidentiality/integrity of the parameter settings interface. This goal is realized by the security requirement to have an access right control service. This service is realized by three security processes, namely: the policy elaboration, the exception management and the access rights audit, which are assigned to the security department and use the access right management application service. This latter is realized by an access control application that read the access control security policy data object and collaborates with the parameters setting interface to control the user's access rights.

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Figure 3. @rchimed security risk model



Discussion

The case study demonstrates the usability of the integrated metamodel to capture the results of a risk analysis. However, the language does not allow relating the assessment concept to the core concepts with stronger relation than the association. Thereby, it prevents from strongly typing the relation between the vulnerability (and threat) concepts with the core EAM concepts.

The metamodel improves the security risk management activity by addressing the challenge of designing the asset model. The simplistic ISSRM asset model is replaced with the EA model, which captures the actual dependencies amongst assets, and better reflects the complexity of the enterprise IS thanks to the richer description both in terms of elements and in terms of relations. Moreover, the asset model design relies on the body of knowledge of EA, and more specifically modelling techniques.

The metamodel emphasises the service-oriented enterprise as the primary object of risk management: the business asset of the enterprise is the business service, and the risks are prioritised and mitigated according their effect on the value of the associated business services.

The metamodel was experimented in several collaborative projects with industrial partners: telecommunication services (Mayer et al., 2013), healthcare services (Schwartz et al., 2015). It is the underlying model of the TISRIM tool (Mayer & Aubert, 2014), deployed to support information security risk assess-

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ment in various industries. It is also used as a reference model in a master in Information Security run by the LIST, and in a master thesis addressing the integration of mal-activities diagrams in EA (Tovstukha, 2014). The constructs of the model were therefore validated by both the practitioners (security risk experts participating to the model elaboration) and by end-users (security risk experts not part of the model elaboration) as being understandable and learnable. However, from an operability perspective, information security risk analysis usually relies on knowledge bases containing a considerable amount of risk entries: graphically representing the security risk elements of the model is therefore seen as a cumbersome task without any added-value. The actual value of the model resides in the conceptual integration rather than in the reuse of a graphical modelling language.

GENERALIZING THE INTEGRATION OF RM AND EAM

Based on the first integration of EAM and Information Security Risk Management, we consider extending the conceptual integration to any goal and related risk associated with the information system supporting the delivery of business services. The specific example of privacy risk is used to illustrate the argumentation.

Information System Objectives and Risks

An information security risk is a risk concerned with the security objectives of the information system. Security is often used as a placeholder for any objective associated with the information system: the reference model of information assurance and security (RMIAS – Cherdantseva & Hilton, 2013) defines security objectives as including the usual confidentiality, integrity and availability objectives (the CIA triad), but also accountability, auditability, trustworthiness, non-repudiation and privacy. The model acknowledges that countermeasures (i.e. controls) of different nature are deployed to protect the information according to the set of (security) objectives: organisational, human-oriented, technical and legal countermeasures are combined to meet the objectives on the IS. The NIST (Brooks, Brooks, Garcia et al., 2017) distinguishes privacy from security: it defines the domain of information security as the concerns arising from unauthorised system behaviour, and the domain of information privacy as the concerns arising from by-product of authorised processing of personally identifiable information (PII). The overlap area of security and privacy domains is concerned with the security of PII, i.e. the unauthorised processing of PII. We first generalize this approach and consider that many objectives are targeting the IS, and not only security and privacy: any IS property contributing to the value of the business service is in our scope.

The NIST leverages risk management to integrate privacy concerns in the engineering process and designed three privacy objectives (equivalent to CIA in security) to enable system's engineers to build IS capable of implementing the organisation's privacy goals and support the management of privacy risks: Predictability (the enabling of reliable assumptions by individuals, owners, and operators about personal information and its processing by an information system), Manageability (providing the capability for granular administration of personal information including alteration, deletion, and selective disclosure), and Disassociability (enabling the processing of personal information or events without association to individuals or devices beyond the operational requirements of the system).

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Extending its proven information security risk framework, the CNIL (CNIL, 2012) is also developing a Privacy Risk Management models and considers that a privacy risk is composed of a feared event (impacting the privacy of data subject, such as the unavailability of legal processes, or the illegitimate access to personal data), and the threats that make it possible. Threats exploit vulnerabilities of the IS and allow the feared event to happen. The NIST on the other hand considers that threats and vulnerabilities fail to capture the essence of many privacy problems for individuals: the adverse outcome can indeed arise from the operations of the system itself, regardless of external event and in the absence of technical vulnerability.

Integrating RM and EAM

Besides addressing specific objectives and supporting the engineering of information systems in silos (security engineering, privacy engineering), risk management also provides a common language to address the risks associated with the combined objectives of the information system: we argue that assessing the risks associated with any property of the IS contributing to the value of the business service is relevant and that these risks needs to be uniformly managed. Risk Management is an instrument to prioritise issues, support trade-offs and decision making across the several objectives associated with the information system, and contributing to the value of the service-oriented enterprise. This leads us to extend the scope of our integration, from the specificities of information security to any other goal associated with the information system. We validate this generalized metamodel by instantiating the concepts in another critical domain, the privacy.

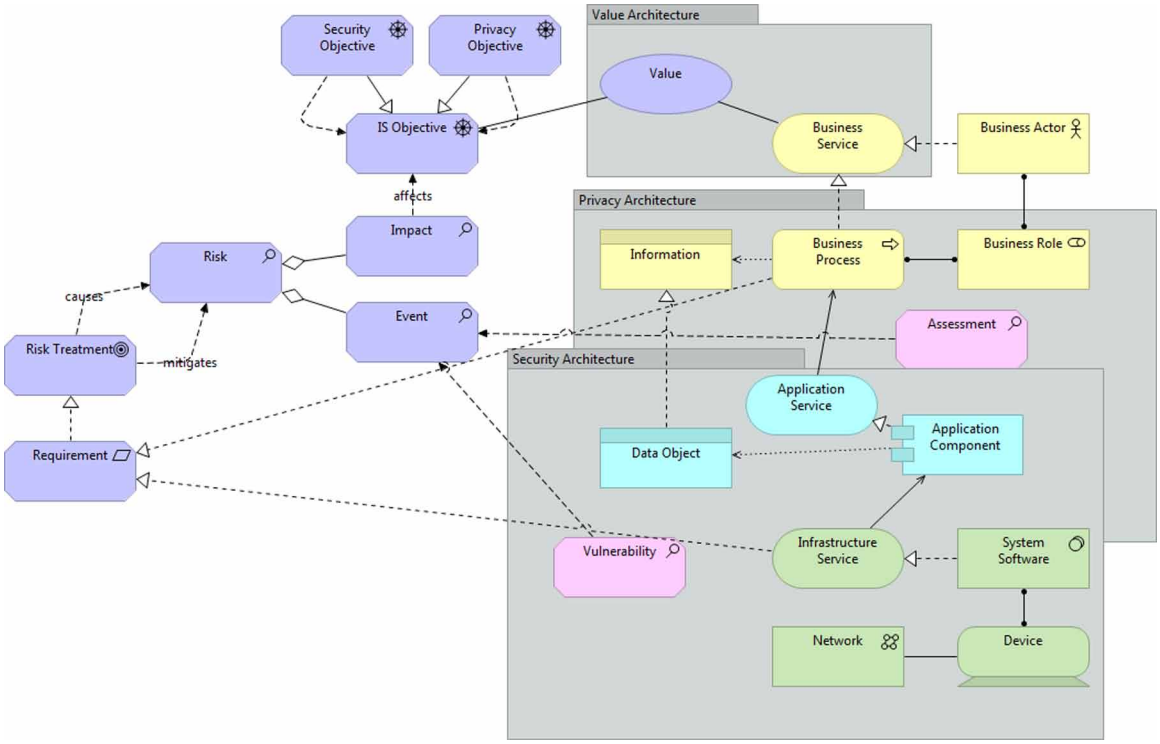
The elaboration of the generalized metamodel brings a major change in our security risk model, which is reflected in the generalized model: the concepts of vulnerability and threat cannot be generalized as the components of the potential event. We therefore remove them from the risk model and integrate them in the so-called information security architecture: they are indeed relevant concepts supporting the identification of the risk associated with the security architecture of the system. We apply this pattern for each relevant property of the IS, and consider that the view concerned with that specific property is responsible for identifying the relevant risk. A privacy architecture therefore needs to be designed, which will support the identification of privacy risks, and each relevant property of the IS requires the development of the associated architecture. This modification solves the weakness identified in Tovstukha (2014) as it is now possible to define mal-activity diagram as the relevant security architecture integrated in the EA.

The resulting integrated model is depicted in figure 4:

- Security objective is generalized in objective, and specialized in privacy objective and security objective: it is defined as a property of the information system that has an impact on the value of the business service.
- Threat and vulnerability are abstracted away and moved to the security architecture, part of the enterprise architecture
- Requirement generalizes the realization of risk treatment; the requirements are realized by controls, which are elements of the architecture: security controls are included in the security architecture, while privacy controls are included in the privacy architecture
- Objectives are not independent of each other's, and an influence relationship captures the dependency amongst them. Events also relate to each other's

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Figure 4. Generalized integrated model



The risk and EA models are joined through the following concepts: (1) the Risk/Event abstracts the result of the assessment of potential event's occurrence, considering the various properties of the IS; (2) the Value abstracts the effect of the risk on the business service; (3) the Requirements abstract the intention to change the IS as a consequence of the Risk Treatment.

The risk is now promoted as the common concept for abstracting any potential event having uncertain outcomes on any objective associated with a business service, and the generalized metamodel becomes a risk integration framework for service-oriented enterprises.

CASE STUDY PRIVACY – @RCHIMED

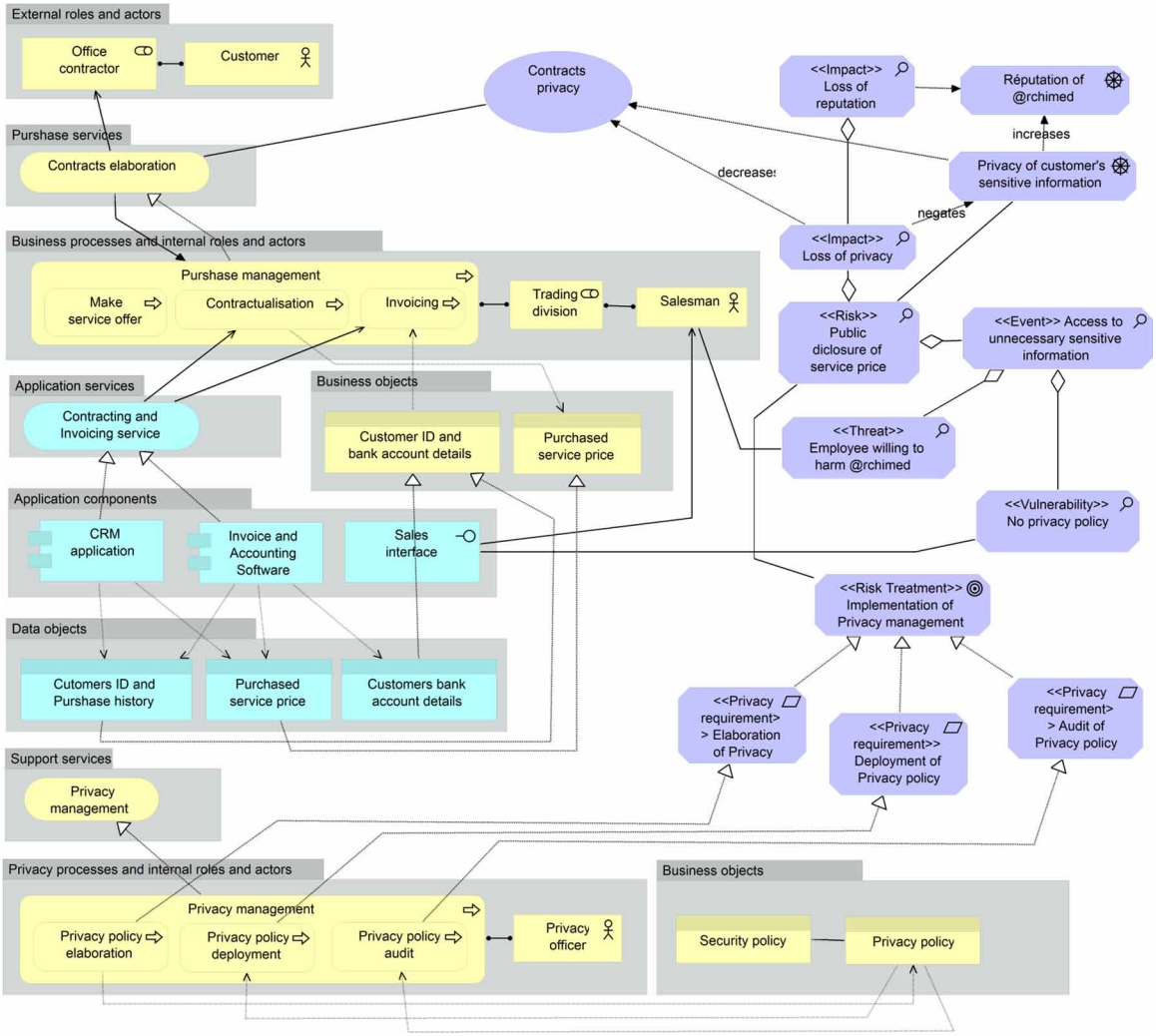
This case study illustrates how the extended metamodel supports the management of the privacy and how it supports the combination of the security and privacy objectives. The associated model is depicted in figure 5.

Privacy Concerns at @rchimed

The case study addresses the management of the privacy associated to the contracts elaboration, realized by three processes performed by the @rchimed trading service, namely make service elaboration, contractualisation and invoicing. These processes exploit and generate sensitive information: the customer

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Figure 5. @rchimed privacy risk model



ID and bank accounts details and the purchased service price. Amongst these processes, contractualisation and invoicing are supported by the contracting and invoicing application service, which is realized by the Customer Relationship Management (CRM) application, and invoice and accounting software. These applications are accessed by the salesmen through the sales interface, and they use and generate the customer ID, the purchase history and the purchase price which are types of business objects.

The value of this business service depends on the privacy management: the contracts elaboration business service is the business asset and the CRM application, the invoice and accounting software and the sales interface are supporting IS assets.

Privacy Risk Management

The management of the privacy risk is performed in 3 successive steps: definition of the context and privacy goals, analysis of the risks and definition of the risks treatment.

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Context and Privacy Goals

@rchimed identifies that it is highly valuable to guarantee the management of the privacy, especially for the Contract Elaboration business service: Guarantying the privacy of customer's sensitive information is modeled as a driver positively influencing the value of the business service.

Risk Analysis

A public disclosure of the price of the service causes a breach of privacy when using the service, which can be induced by the access to unnecessary sensitive information due to a lack of privacy policy in the company. The risk (public disclosure of price) is composed of the potential causing event (access to unnecessary information) and impact (loss of personal data protection) affecting the privacy objective associated with the business service, and therefore negatively influencing the value of the business service. Moreover, this breach of protection of sensitive customer information also negatively impacts the reputation of the company, and therefore negatively influences the strategic goal of @rchimed.

Risk Treatment

The risk reduction is achieved with the deployment of privacy management processes, dealing with specific rules regarding the processing of sensitive customer data.

This risk treatment is modelled with a goal, realized by three requirements: the elaboration, the deployment and the audit of privacy policy. These requirements are realized by the privacy management service, which is operated with three privacy-related processes: the policy elaboration (that generates the privacy policies business object), the privacy policy deployment and the privacy policy audit. The privacy policy clearly states that only necessary information is collected and processed, reducing the risk associated with the access to unnecessary sensitive information.

Discussion

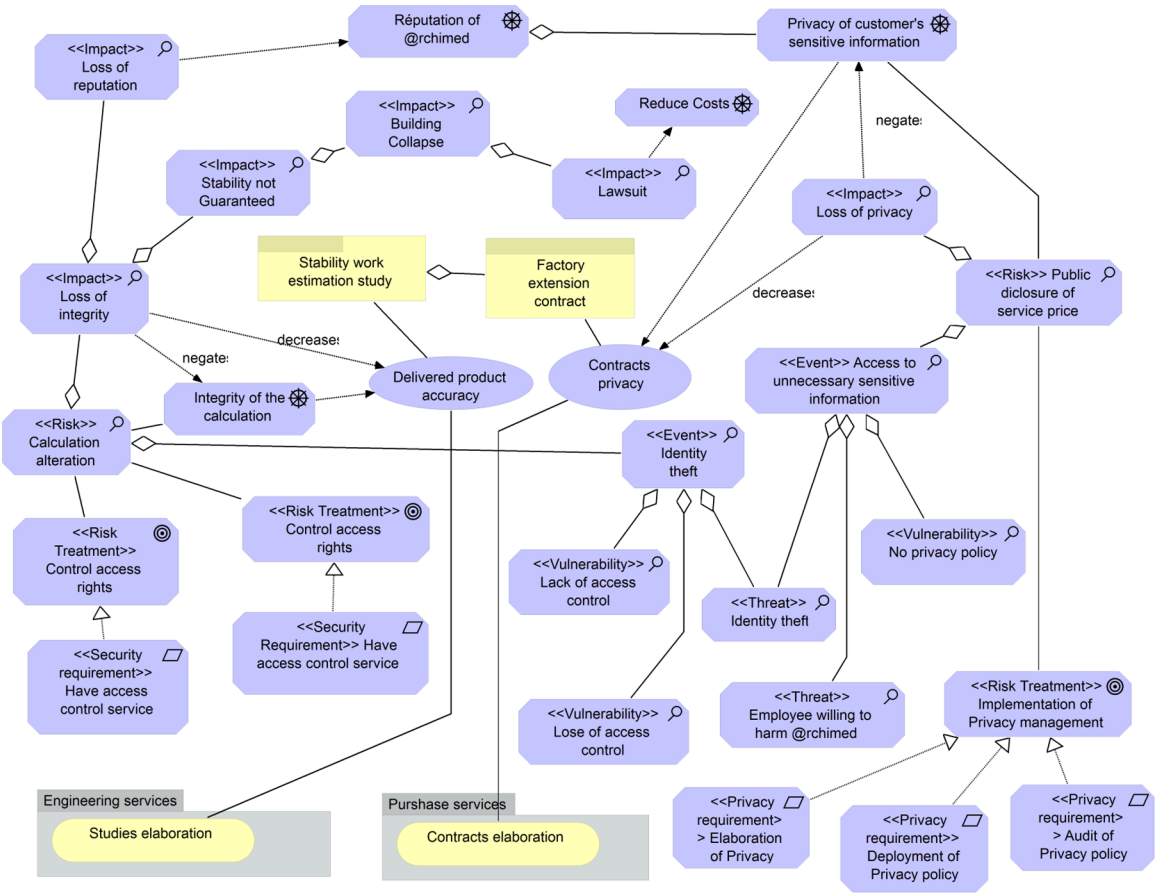
As the threat and vulnerabilities are abstracted away from the risk model, there is a need to design the right security architecture that supports the identification of the security risks, and the privacy architecture that supports the identification of the privacy risks. The case study adopted the previously applied threat-vulnerability approach inherited from security architecture body of knowledge, but other models could be developed and integrated.

Although the value becomes the integration concept for abstracting the effect (either positive or negative) of the risks on the business service, ArchiMate weakly defines the value concept, and does not provide any guideline and/or model to describe it. A specific view of the enterprise should be designed to capture the (relative) value of the enterprise assets (the value architecture).

The integrated risk model also acknowledges that a potential event might impact various objectives associated with the value of a Business Service, possibly in diverging directions. It implies that trade-off analysis will be required when considering multiple objectives, such as illustrated in figure 6.

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Figure 6. Security and privacy risk interactions



RELATED WORKS

As stated in Dubois et al. (2010), the introduction of a model-based approach for ISSRM is motivated by an efficiency improvement of the ISSRM process, and by the enhancement of the product resulting of the process. Existing information security risk approaches are already based on model, such as UML profile CORAS (Mass Soldal, Solhaug, & Stølen, 2011), and extension of the i* framework (Elahi, Yu, & Zannone, 2010; Matulevičius, Mouratidis, Mayer, Dubois, & Heymans, 2012). However, theses languages lack from a crosscutting viewpoint relating all three conceptual areas of risk management together- assets, risks and risk treatments. EAM provides a better answer by acknowledging that an enterprise is a system that requires modelling from multiple perspectives and at different levels of abstraction.

Integrating security risk with multiple perspectives of the enterprise is addressed by other researchers: Goldstein & Frank (2016) use a proprietary modelling language framework (MEMO) and extend its set of Domain Specific Modelling Language (DSML) to support the management of IT security. To do so, they had to extend the meta-modelling language itself to support the concept of security concern. Our approach differs conceptually as we are not prescriptive on how the assessment of the risk (the method) should be performed for each domain, but on how each assessment's results are combined to

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a risk common language. Our integration model can therefore also be viewed as an integration framework for assessment methods. Moreover, as we use a standard EA modelling language (ArchiMate), we also benefit from the product offering around the language and do not force the end-users to adopt any specific modelling environment. Finally, our integrated model does not directly depend on any specific modelling technology: it could be realized on Eclipse technology (EMF), by extending an existing tool (such as Archi), but also on more flexible model technology such as JSMF (Sottet & Biri, 2016).

Leveraging EAM to defragment the identification of risks and to manage them in a holistic way was also proposed in Barateiro, Antunes, & Borbinha (2012): EA description is used to model complex business system at the desired level of abstraction, and to cover the views of the enterprise relevant to assess and manage the different kinds of risks. The approach however focuses on the process integration between RM and EA activities, and relies on the development of a specific xml-based risk language (Risk-DL).

Szwed & Skrzynski (2014) demonstrate the value of ArchiMate as a mean to model the added value tree which is the core of their information security risk assessment method. We are covering the full risk model with ArchiMate, model the risk identification, impacts and treatments.

Tovstukha (2014) is using our proposed mapping for designing the asset model in ArchiMate, which is then transformed to mal-activity diagram (MAD) to perform the security risk analysis and identification of controls. This work is now seen as complementary to our research, and particularly aligns well with our proposal for risk integration framework: the MAD is a security view of the enterprise, generating potential events to be integrated in our risk model.

From an industry standard perspective, integrating security risks management and enterprise architecture is also specified by The Open Group ArchiMate forum (Band, Engelsman, Feltus, Paredes, Hietala et al., 2015): the proposed extension uses ArchiMate concepts AS-IS to model risk/security aspects, to elaborate risk/security-specific specializations (stereotypes/profiles) and to define new concepts. We participated to this standard development and leveraged the first results of our research (Grandry et al., 2013). We now address in this research the risk associated with other objectives of the information systems, and expect to also play a role in the adoption of related open standards.

CONCLUSION AND FUTURE WORK

In this paper, we have proposed an integration of ISRM and EAM in the form of an integrated metamodel. The value of this integration was illustrated with case studies in information security and information privacy domains: enterprise architecture description better supports the identification of business and IS assets, as the complex relationships amongst them are maintained; the extension to any IS concern clarifies the integrated model as a risk integration framework for the service-oriented enterprise, centred on two unifying concepts: the risk and the value.

The unifying concept across the assets of the enterprise is the Value in our integrated metamodel. We expect to leverage this concept to unify other perspectives of the service enterprise, and manage other risks of the enterprise, especially those not directly associated with the information system: Reputation, Legal and Financial risks are very relevant to be addressed together with the operational risks (and especially the information system risks). As soon as the required perspectives on the enterprise are designed, which capture these specific concerns, we can expect to better manage the interactions amongst these risks through the unifying lens of our integrated metamodel.

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The integrated metamodel does not only serve as the basis for a potential new language extension to ArchiMate, it also drives the management of the various parts of the model, in the way it is prescribed by megamodelling theory: a megamodel is a special kind of model, composed of models, which provides the holistic view on all the models of the system (Barbero, Jouault, & Bézivin, 2008). Megamodel has been demonstrated as an instrument for system management and we plan to leverage it as an instrument to manage complex enterprises. We are actually developing such as model management platform, enabling the collection of the different parts of the integrated metamodel expressed in various languages: ArchiMate for the Enterprise Architecture model, Excel for catalogues of risks, threats and vulnerabilities (Sottet & Biri, 2016).

Risk management is not only used to estimate the uncertainty and support sound decision-making and priorities setting in management of the enterprise, but also as an instrument to regulate the ecosystem. The Council of Europe formally adopted in May 2016 the Network and Information System Security Directive (NIS, 2013), laying down the measures to achieve a high common level of security of networks and information systems so as to improve the functioning of the internal market. Risk Management plays a central in managing the security of interconnected systems in this Directive, which scope of applicability is very broad, as operators of essential services include any company whose operations is critical to any of the following industries: energy, transport, banking, financial market infrastructures, health sector (public and private), digital infrastructure.

In the domain of privacy and personal data protection, risk management is also emerging as the standard instrument to adapt existing systems and engineer future systems. In April 2016, the European Parliament adopted the long awaited General Data Protection Regulation (GDPR, 2014), laying down rules relating to the protection of individuals with regard to the processing of personal data and rules relating to the free movement of personal data. It specifically requires a Data Protection Impact Analysis (DPIA, PIA) to be performed as soon as personal data are processed, and the Section 3 of Article 33 states that "the assessment shall contain […] an assessment of the risks to the rights and freedoms of data subjects, the measures envisaged to address the risks, safeguards, security measures and mechanisms to ensure the protection of personal data and to demonstrate compliance with this Regulation".

We plan deploying our metamodel to actually manage the compliance with regulatory requirements, and especially across regulations.

ACKNOWLEDGMENT

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ENDNOTES

1 Peffers et al. (2008) call this activity: Problem Identification and Motivation

2 The alternative to the *IT-Dominant BIE Generic Schema* proposed by Sein et al. (2011) is the *Organisation-Dominant BIE Generic Schema* which suits to design artefacts where primary source of innovation is organisational intervention.

3 http://www.ssi.gouv.fr/IMG/pdf/EBIOS-EtudeDeCas-Archimed-2010-01-25.pdf

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Chapter 10
Social Media Strategies for Small and Medium Scale Enterprise in the Klang Valley Region of Malaysia

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ABSTRACT

Despite the current widespread adoption and use of social media as a marketing tool, very little empirical research focusing on local small and medium-sized enterprises (SMEs) is available. This study examines the usage of social media by small and medium-sized enterprises (SMEs) in Malaysia. The study assesses the impacts of age, educational attainment, and industry characteristics to the utilization, perceived benefits and barriers of SMEs. Results of the study indicate that social media is used by most SMEs for customer acquisition and its benefits are developing new business opportunities, reduced cost of advertising, 24 hours accessibility and decreased travelling time. The results however indicate that there is a lack of allocation of resources mainly in staffing and training when adopting the social media. Results also indicate that manager's age and educational attainment had significant impacts on social media strategies. The results did not reveal any evidence of different industry sectors relevance towards social media strategies. Implications for research are discussed.

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INTRODUCTION

Background of the Study

In this modern era, most people spend some time of their day accessing one or even several social media networks. It is possible to say that an individual would find his day incomplete if his daily routine did not involve logging into Facebook, Instagram, Twitter and many others that are freely available. With the dawn of mobile technology, many online sites have become mobile friendly, thus further deepening our involvement in social media. Social media is an essential and necessary tool in this generation, as it has become the recent trend and preferred Internet application.

Social media does not only play a significant part for large organizations, but is also becoming increasingly important for small and medium-sized enterprises (SMEs). Researches in Germany noted that 47% of all companies use social media (Meske & Stieglitz, 2013). SMEs stand to gain a great deal by utilizing easy-to-use and easy-to-implement social media applications (Zeiller & Schauer, 2011). Furthermore, it has become less difficult and less expensive to adopt social media applications due to its wide availability and advancement in technology. As social media has become widely used by more and more SMEs, it could assist to "level the playing ground" with large competitors. (Kim, Lee, & Lee, 2011). Nevertheless, many small businesses still struggle to use social media as most of them still lack the knowledge on how to use them appropriately.

Problem Statement

As SMEs are a vital element of all economies representing 99.2% of total business establishments in the Malaysia, they are of high social and economic importance (Malaysian Business Advisory 2015). Nonetheless, SMEs are often left behind when compared to large firms in the adoption of modern technologies.

In this regard, this paper intends to discover the adoption and goals behind SMEs for using social media applications as well as to what extent are social media practices being used by SMEs specifically for marketing activities. In particular, it is important to identify social media's perceived benefits and factors behind the unwillingness of SMEs to adopt social media as marketing tool.

Research Objectives

Social Media is a relatively a new media. Studies into the commercial use of social media thus far have almost entirely been about large organizations. Although there has been increased press coverage of the use of social media by SMEs, these have primarily focused on a specific SME segment. It is therefore warranted for new research in comparing the use of social media by SMEs in different industries within Malaysia to provide a good foundation for further research in the future.

The research main objectives for this research are:

1. To investigate the adoption, goals, and social media practices, particularly the usage of social media platforms as a marketing tool in SMEs.
2. To investigate perceived added values and barriers of adoption of social media and its effectiveness as a marketing tool.

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Research Questions

Based on the objectives, the main study argues that the demographic profile of an SME affects their marketing strategy. To do so, the study attempts to answer the following main research questions:

1. What are the social media usage habits and what benefits do SMEs get from using Social Media?
2. What are the barriers that SMEs perceived in using Social Media?
3. Do SMEs prioritize Social Media via the resources that they allocate to it?

Significance of the Study

This primary investigation intends to provide a deeper perspective on the uses of social media by small businesses based on characteristics (age/ education level/ industry) of owners/managers, the extent of dependency on social media and whether appropriate social media practices are being followed to when adopting this new technology. Current studies are limited and are mostly based on big companies. Till date, there is still a void on research regarding the use of social media by small businesses.

Next, the research aims at getting a deeper understanding on the main perceived values gained by small businesses using social media versus the barriers of its adoption. Lastly, this research is done in the two most booming industries of small businesses in Malaysia and a cross comparison analysis can be done to summarize the results across industries.

Scope and Limitations of the Study

The scope of this research is small businesses that only use social media as a marketing tool for their marketing activities.

Similar to other studies, this research also has several limitations. Firstly, this research focuses only on the main casual social media platforms such as Facebook, Twitter, Instagram and blogs. The social media application YouTube was not included in the research, as YouTube is not widely used by Malaysian SMEs as a marketing tool in acquiring new customers.

Next, the limitation for this study was that it targeted only two industries and specifically in the Klang Valley Region of Malaysia. According to the Malaysian Ministry of Domestic Trade, Cooperatives and Consumer Affairs as cited by the Malaysian Business Advisory 2015, Food and Beverage is the leading industry in Malaysia amounting to 36% of SME franchises. The Apparel and Accessory industry has recently witnessed a rising interest in the sector by more and more entrepreneurs accounting for about 11% of the Malaysian franchise industry. The research focuses only on the two most prominent industries accounting to 47% of SMEs in Malaysia to facilitate a smoother data collection procedure.

Operational Definitions

Consistent with prior studies in this area, the following terms will be defined as follows:

1. **Web 2.0/Social Media:** Anderson (2007) describes Web 2.0 or social media as a group of technologies that have become deeply connected contributing to a more socially linked web where everybody is capable off adding and editing content.

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2. **Small and Medium Entrepreneurships (SMEs):** The National SME Development Council (NSDC) Malaysia (2013) defines SMEs in two categories. Manufacturing: Sales turnover not exceeding RM50 million OR full-time employees not exceeding 200 workers and Services and other sectors: Sales turnover not exceeding RM20 million OR full-time employees not exceeding 75 workers.
3. **Marketing Activities:** The activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large. (American Marketing Association, 2013).

LITERATURE REVIEW

Social Media and Businesses

Web 2.0 or social media can be described as a group of technologies that have become deeply connected contributing to a more socially linked web where everybody is capable off adding and editing content (Anderson 2007). The introduction of SixDegrees.com in 1997 sparked a social media revolution leading to the development of key sites such as MySpace and Facebook in 2003 and by 2008 it had become a worldwide phenomenon (Boyd & Ellison, 2008). The acceptance and practice of social media has grown swiftly among its users and gain much media attention but academic literature on it still lags behind.

The term "social media" means Internet-based applications that help individuals to connect and share resources and information with one another (Lindsay, 2011). Social media was initially meant to be a medium where friends could connect, communicate and share but has also been implemented as a tool for businesses (Bughin & Manyika, 2007). As social media becomes synonymous in today's modern society, the trends for it are ever changing, improving and updating to meet the demands of its users. It is difficult to define which technologies are "social media" and which are not (Alavi et.al, 2014). New advanced technologies with inventive features are constantly being introduced and are often confusing to differentiate the many variations of social media technologies available.

More and more businesses these days are shifting towards social networks in order to aid their business procedures such as marketing, customer relations' management and business networking both inside and outside the company (Kim et al, 2010). This is particularly important to small businesses or companies that have a partial or if not all of their operations in direct contact with social media. Small business owners and managers are now realizing the inevitability of being swift to adapt and change according to the technologies or stand the chance of being outdated.

Prior industry reports have shown that in 2014, 92% of small business owners seem to indicate that social media is crucial to their business (Stelzner & Stelzner, 2014). This figure had risen from 86% in 2013 whereby businesses are repositioning the investments from traditional marketing approaches to social media and other incoming strategies in advertising (Stelzner & Stelzner, 2014). Since 2013, a constant trend regarding image and video sharing has emerged compare to text-based content. Image focused social media such as Instagram, Pinterest, Tumblr and Snapchat have been on the rise but are still not a major competitor to Facebook which has a solid loyal user base (Demers, 2014). Active daily users on Facebook have increased by 8% in 2014, whereas mobile daily active users almost double that amount, an increase of 15% in the same year (Katz, 2014).

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One main problem that arises though is that SMEs frequently struggle to implement this new technology because of the lack of knowledge, funds and technical expertise compared with bigger rival companies (Harris et al, 2008). With the expansion of the Internet and social media, SMEs are now given a chance to overcome these problems. The Internet has greatly lowered down the marketing costs against traditional approaches. (Harris et al, 2008). Businesses are now able to leverage of each other's connections to advertise their products, services and brands (Harris & Rae, 2009).

Challenges and Opportunities for Social Media

As with every new kind of technology being used, challenges to social media are unavoidable. Researchers have listed several challenges concerning social media. Among these challenges include the sharing of content among users or content communities and blogs (Kaplan & Henlein, 2010). These content communities can make or break any small businesses as information is spread from one user to another at rapid proportions. Any dissatisfied or disappointed clients may choose to engross in social media for complaining in the form of disapproval websites or blogs (Ward & Ostrom, 2006).

In the business arena, there is a change in tendency to opt for personalization against other businesses. While technological advancements make the world more connected, consumers seem to resist being homogenized and therefore making marketing even more localized and personalized (Dan, 2014). Big companies will now have to rethink the way they do marketing as smaller companies mainly SMEs are giving stiffer competition due to the level playing field thanks to social media.

Utilizing social media as a means for marketing or business may not be as direct as it seems. Small business owners are hesitant to get involved in social media and some even struggle with the idea of social media being used for their businesses. Most of the misconceptions regarding social media often come from the lack of knowledge on its uses and benefits to the business. Nevertheless, there is still a chance for business owners to obtain social media through free platforms that are widely available on the Internet. The most important thing for small businesses to remember about social media, is that whatever content they have it needs to be in which ever platform they decide is right for them (Nenni,2014).

Carr (2003) is one of many researchers to lead the way by questioning the value gained from investments in IT, and there is substantial literature examining the relationship between IT investments and a company's performance. Similarly, other studies focused on the "use of technology" and discovered IT payoffs can be found and measured (Devaraj & Kohli 2003). They additionally recommend cross-sectional studies with large samples in order to generalize results across different industries (Devaraj and Kohli, 2003).

A review of the literature shown above, describes the usage of social media in SMEs in general. It highlights the importance of social media platforms for marketing activities of businesses. The research paper therefore attempts to contribute through an operational model adapted from (Wamba & Carter, 2014) in Section 3 to get broader insights by analyzing the characteristics of SMEs and the use of social media.

RESEARCH METHODOLOGY

The main intent of the current study is to examine social media strategies among SMEs in Malaysia mainly in the food and beverage and apparel and accessory industry. This study particularly focused on how SMEs in Malaysia adopt and use social media, specifically for their promotion activities and marketing tasks.

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Operational Framework

Three approaches had been referred to in the development of the framework of this study. The first approach was adapted from an empirical study conducted on "Social Media Tools adoption" by Wamba and Carter (2014). According to Wamba and Carter (2014) social media adoption by SMEs can be measured by manager/owner characteristics (e.g., age, and education) of the said SME. Secondly, the conceptual model of Derham, Cragg, and Morish (2011) focused on the SMEs goals and values derived from the use of social media. Finally, several aspects of the survey had been referred from a study of online marketing survey conducted by an American professor Edward Boches from Boston University (Boches, 2012).

Through the adoption of this framework, the researcher seeks to investigate the demographic characteristics of SME owners/managers in Malaysia and the values derived by SMEs from social media. To date, there are actually very limited studies on social media and SMEs in Malaysia and no single research adopting this framework specifically in the Malaysian context has been found. Therefore, this paper aims to fill the gap in the literature by providing a detailed analysis for Malaysian SME owners/managers and social media.

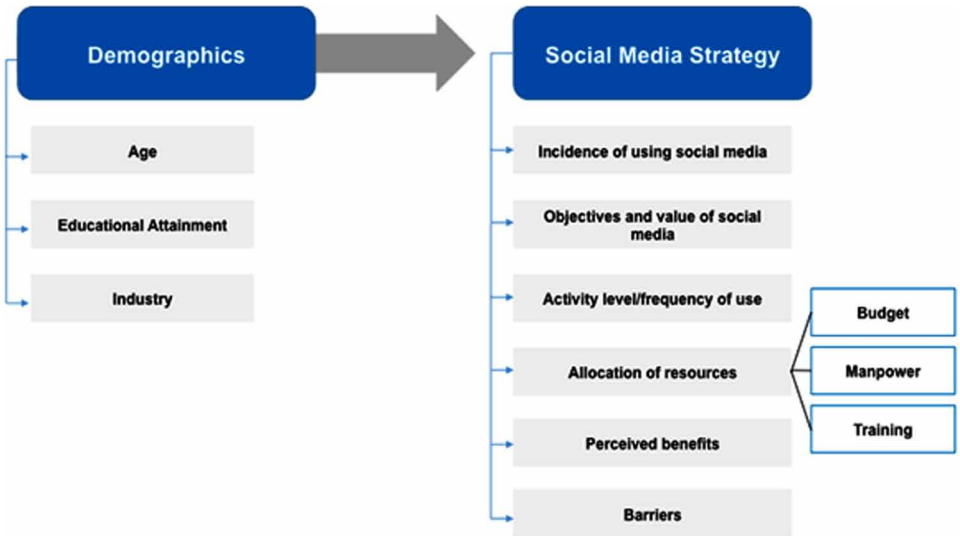
Figure 1 shows a framework adopting and combining all of these concepts.

Sampling and Data Collection

A quantitative research methodology was used to answer the research questions in Section 1. The implementation of a quantitative method permitted for the gathering of measurable data on SMEs and to examine the relationships between SMEs and their social media practices.

The questionnaire method or technique employed is to establish the current standing of a phenomenon (Powell & Conway, 2004). The researcher referred and adapted the questionnaire from previous study done (Edward Boches, 2012). Questions used were multiple choice, which is simple, effective

Figure 1. Operational framework of SME demographics and their social media strategies



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and easy to complete by the respondents. The population of relevance was SME owners or managers in the Klang Valley. The questionnaire was distributed to 150 SMEs in either the food and beverage or the apparel and accessory industry.

The survey was conducted in GM Klang, a shopping complex that rented out 400 places exclusively for SMEs to conduct their businesses. The survey was conducted from July 15th to 31st July 2015. Each survey required approximately 5-10 minutes to complete. A copy of the detailed survey is contained in Appendix 1.

The survey consists of three sections. The first section comprises of questions related to the demographics attributes of the respondents (age, education attainment, industry). Section two of the survey covers questions that address social media strategies of SMEs with regards to their demographic attributes. Finally, the third section covers the perceived benefits and barriers for SMES in using social media.

Data Analysis

Data analysis of the present study consists solely of quantitative data analysis. The researcher implemented an online web survey application "Typeform" to aid in the gathering, storage and analysis of the data. The researcher had chosen this particular online application due to its simple layout and support of mobile phone interactivity compared with other online surveys.

Subsequently, descriptive statistics were used to examine the data manually. Descriptive statistics are techniques of getting characteristics or summary indicators from the raw data collected from the survey. Descriptive statistics are provided for both the independent variable from the first section of the survey consisting of percentage graphs and pie charts for the categorical (e.g., age, education attainment, industry) and multiple responses from section two (e.g., incidence of using social media) and section three (perceived benefit and barriers).

This section has described the research approach taken in the current study. The quantitative (questionnaire) employed is described in detailed including the advantages and disadvantages of the approach. The next section contains a presentation of the quantitative results of the current study.

RESEARCH RESULT

This section presents the descriptive analysis of the survey. It includes frequencies and percentages for the categorical and multiple responses. It provides findings from 144 out of 150 respondents. The analysis indicated that 6 out of the 150 of the respondents' data had been corrupted and was not applicable

Demographics and Total Responses

This section aims to provide the relevant demographic background parameters of the respondents (e.g., age, educational attainment, industry) and discuss the overall responses of this study.

Figure 2 shows the percentages of the age groups of the owners or managers of the SMEs.

Individuals above the age of 50 are not found in the population. A possible explanation of this could be that, these individuals grasp of current technologies are limited and prefer to delegate the tasks of handling social media to the younger generation. The age group 20-29 had the most number of respondents totaling 53% (n= 76). The second age group 30-39 comprised of 39% (n=56) of the respondents while the age group 40-49 accounted for 8% (n= 16).

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Figure 2. Age group of respondents

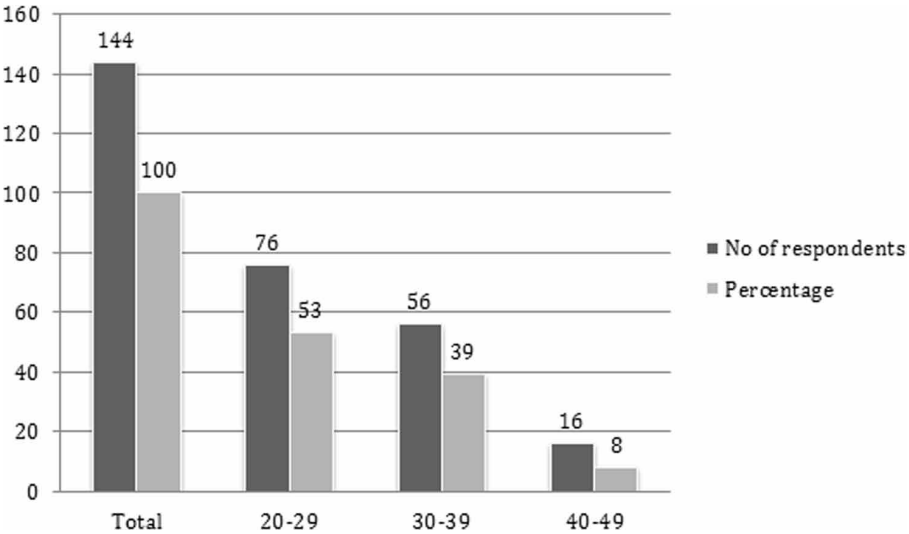
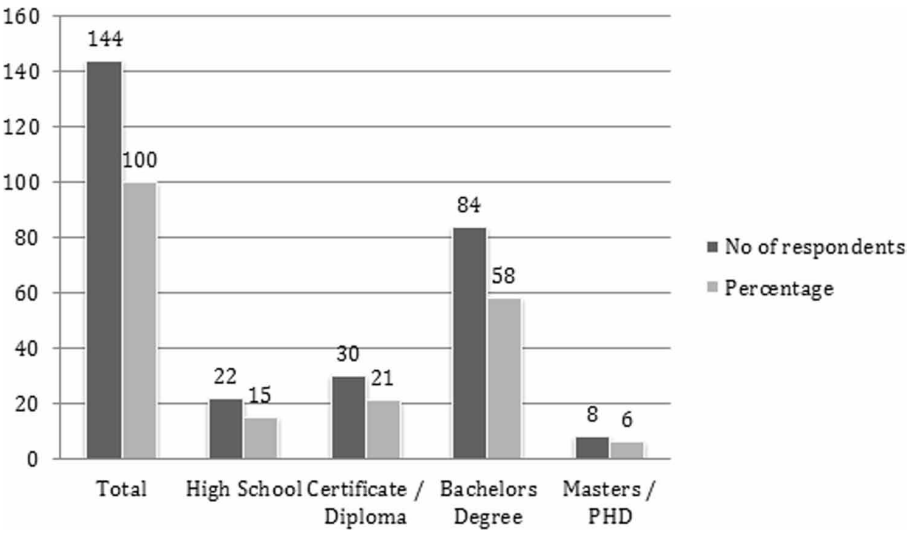


Figure 3 illustrates the educational attainment of the owners or managers of the SMEs in the survey.

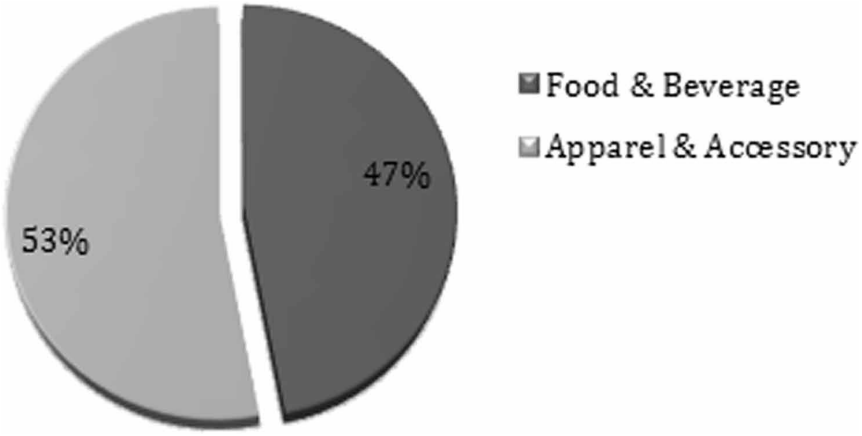
Educational attainment is classified into four clusters, which are, high school, certificate or diploma, Bachelor's degree, and Masters Degree or PHD. Out of the survey conducted, the majority of respondents had a Bachelor's Degree qualification amounting to 58% (n=84). The second highest was the Certificate and Diploma level accounting to 21% (n=30) respondents while 15% (n=22) of the respondents had basic high school education and 6% (n=8) had either a Masters Degree or PHD qualification. The industries of SMEs are depicted in Figure 4.

Figure 3. Educational attainment of respondents



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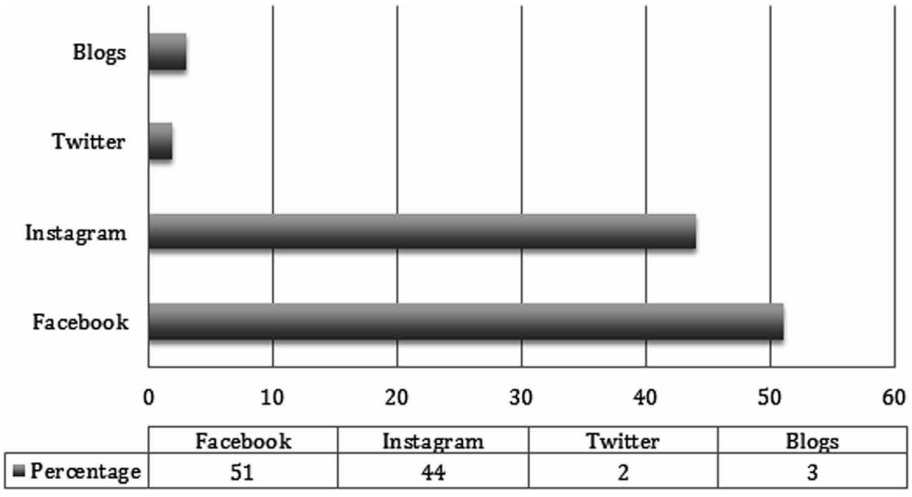
Figure 4. Industry of respondents



Two industries of SMEs were covered in this study namely the food and beverage industry as well as the apparel and accessory industry. Respondents from the apparel and accessory industry amounted to 53% whereas the remaining 47% were from the food and beverage industry. It is possible to say that both industries are currently thriving in the Malaysian economic scene, as the distributions of SMEs are almost similar

On the incidences of SMEs using social media, 92% of owners and managers claim that social media is incorporated into the SMEs marketing strategy while only 8% do not associate social media as part of their marketing strategies. Facebook ranked the top most used social media by SMEs with 51% of respondents using this platform while Instagram is the next choice of totaling 44% of the replies. Twitter and Blogs usage remain relatively low with only 2% and 3%. Youtube was not included, as SMEs in the survey did not use this social media application for their marketing activities. Figure 5 depicts this.

Figure 5. Social media platform usage by SMES



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The primary objectives of using social media by SMEs in the Klang Valley tend to vary according to the individual goals of the respective owners and managers as seen in Figure 6.

The number one objective for SMEs in using social media is customer acquisition with 44%. Brand awareness is also an important objective with 33% of businesses ranking this as their end goal. Customer support and loyalty is third with 16% and only 7% of businesses use social media as a means of continuous engagement with customers. It can be implied that most businesses see social media as an advocate to help acquire more customers and in gaining customer awareness on their business

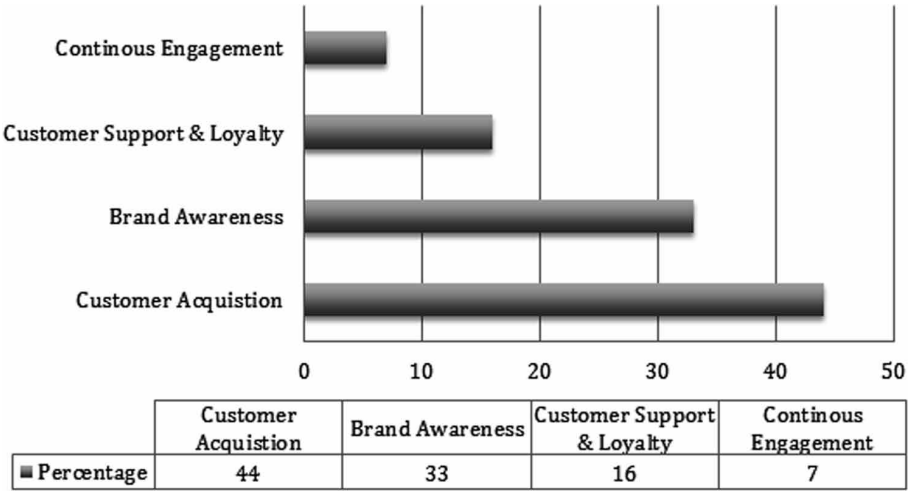
Following the objectives, the research also sought to identify the values of content that SMEs provide their customers through the use of social media. Respondents were given the option of selecting more than one value for this question. Figure 7 displays the result findings.

Out of the total responses, 88% of businesses chose "promote products and offers" while 72% of businesses "deliver updates" to their customers via social media platforms. SMEs are also actively interacting with their customers via social media as "respond to requests" is chosen by 63% of the respondents. The options of "add value to the content" and "provide utility/solve problems" were of lower interests with only 32% and 22% of respondents selecting this as values provided to customers.

Next, the research prompted respondents on the activity level or frequency of use of social media. A total of 46% of SMEs spend an average of one to two hours daily on social media related activities, 37% dedicated more than four hours, and 17% use three to four hours of their day doing online sales via social media. On uploading new social media content, 50% of SMEs create new media on a daily basis, whereas 33% do it weekly. 15% of SMEs have monthly updates and 2% who claim to update content yearly. Figure 8 and Figure 9 show this.

The next step was to discover the resources that these businesses allocated for the social media platform. On the question of allocation of budget for social media marketing activities (e.g. Facebook ads, Instagram reviews, etc.) only 26% of respondents answered that they had a monthly marketing budget set aside for social media. Those respondents who had answered this question quoted a range of RM300 to RM500 per month. From this it is possible to assume that most SMEs choose social media as a marketing tool due to its "free publicity" nature. Another question on resources was whether SMEs had a

Figure 6. Objectives of social media



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Figure 7. Values of social media

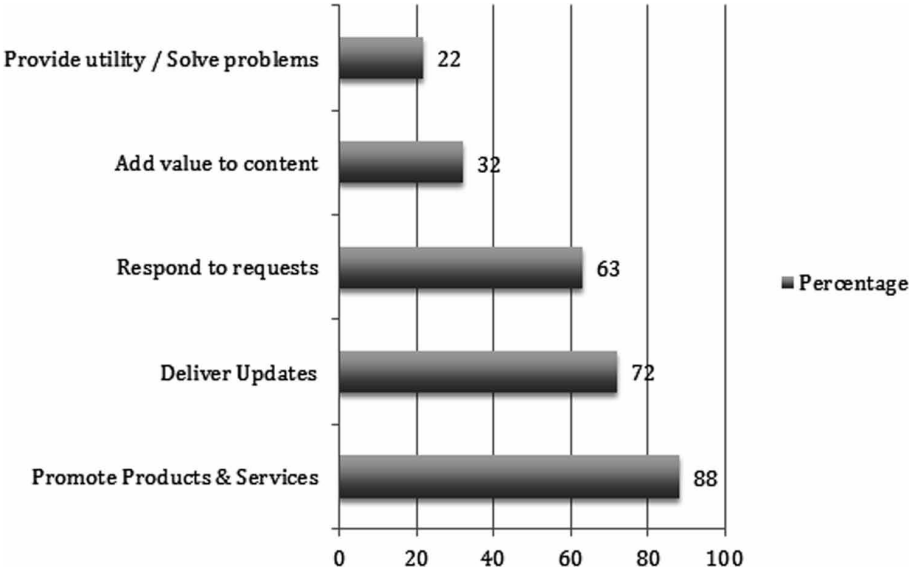
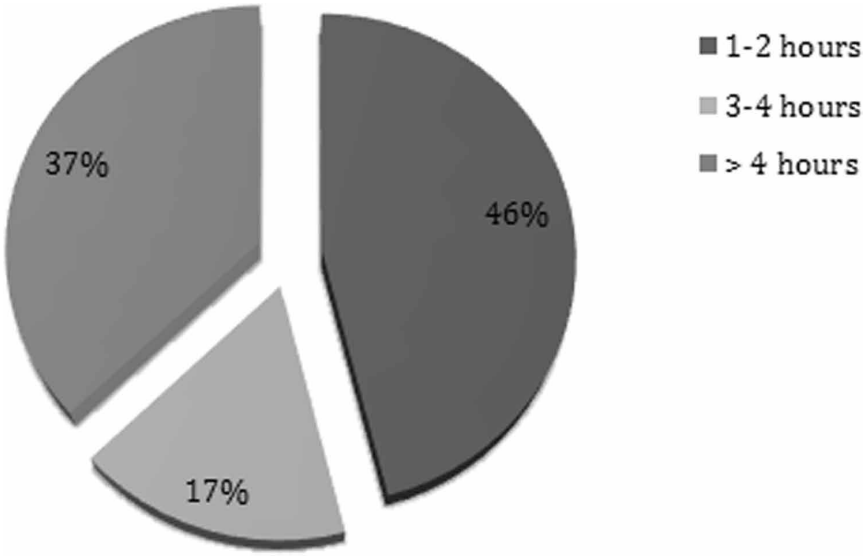


Figure 8. Daily use of social media

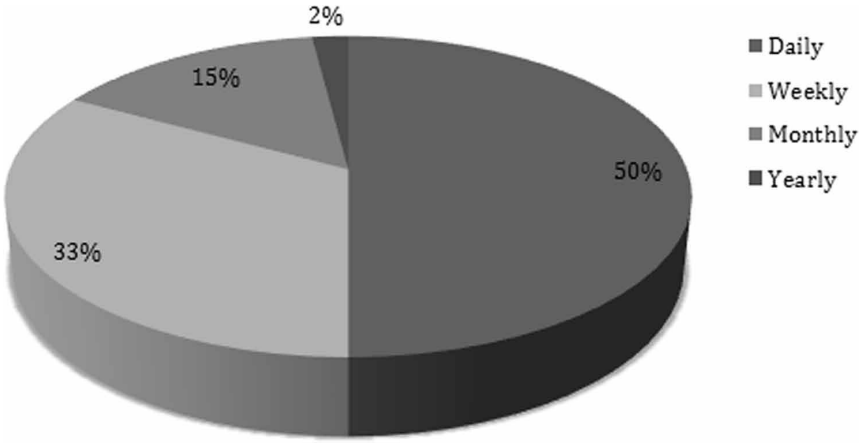


designated staff to handle their social media marketing, to which only 28% of the respondents had a dedicated employee in the company assigned to this function. In the case of social media training provided to staff; only 12% of SMEs provided some sort of guidance on social media marketing to the employees.

In the final section of the research, the perceived benefits and barriers on the adoption social media by SMEs was studied. Perceived benefits by SMEs were divided into four sections, namely, market development, efficiency in sales and promotions, ease of accessibility, and cost reduction. In market and development, the benefits ranked as chosen by respondents were; - 1) "developing new business oppor-

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Figure 9. Updating the content



tunities" (57%), 2) "providing better service to customers" (28%) and 3) "enhancing company image" (15%). For efficiency in sales and promotions, the benefits ranked as chosen by respondents were; - 1) "reduced cost of advertising" (51%), 2) "providing more effective promotions" (25%), and 3) "online sales and operations" (24%). As for ease and accessibility, benefits ranked as chosen by respondents were; - 1) "24 hours accessibility" (56%), 2) "ease of access to potential customers" (37%), and 3) "low communication cost" (7%). As for cost reduction 81% of respondents chose "decrease in travelling" over 19% of respondents opting for "savings in phone bills" as the benefit. Figure 10, Figure 11, Figure 12 and Figure 13 illustrate the data according to the sections.

Lastly, the barriers of SMEs in the adoption of social media are discussed. Among the four difficulties, the biggest difficulty for SMEs is due to the lack of knowledge and expertise of staff on social media marketing with 38% of businesses stating this as their main problem. Staffs of these SMEs are usually of basic education qualifications and the outsourcing of menial jobs to foreign workers here in Malaysia maybe why this happens. Second is the uncertainty of whether or how can social media help the business with 32% of respondents selecting this as a barrier. From this, it can be presumed that although businesses use these technologies, they are unable to quantify or trust in social media strategies. The third highest ranked barrier was that social media required a big investment in time as chosen by 26% of respondents. Generally, most business managers or owners were more focused on daily operations linked directly to sales and profits. There is a small percentage of 4% of SME owners and managers that believe social media is not important for their business. These owners or managers may still prefer to do their marketing via traditional means of advertising. Figure 14 illustrates this.

Social Media Strategies by Age

In the first comparison analysis, the research aims to relate the (age of manager/owner) with the social media strategies employed by the SMEs. The three age groups of managers or owners covered in the survey are 20-29 years, 30-39 years, and 40-49 years.

For incidences of using social media, on the question of incorporating social media strategies in the SMEs marketing plans, managers from age group 20-29 recorded the highest amount. Managers in the

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Figure 10. Benefits: Market development

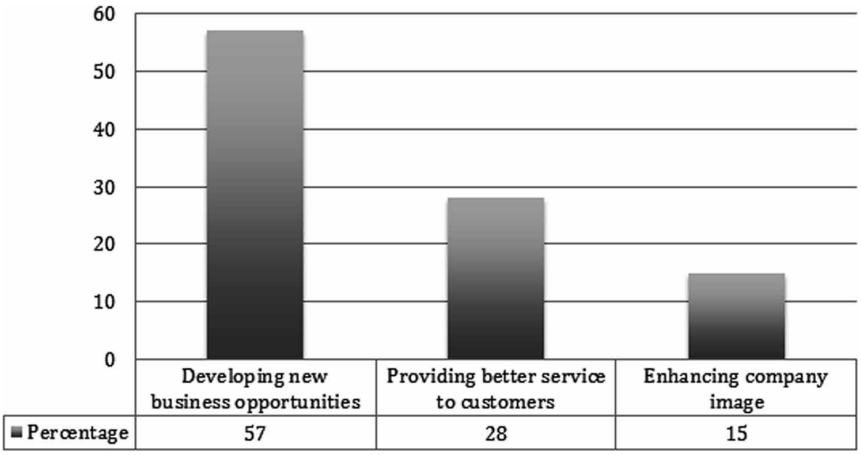


Figure 11. Benefits: Efficiency of sales and promotion

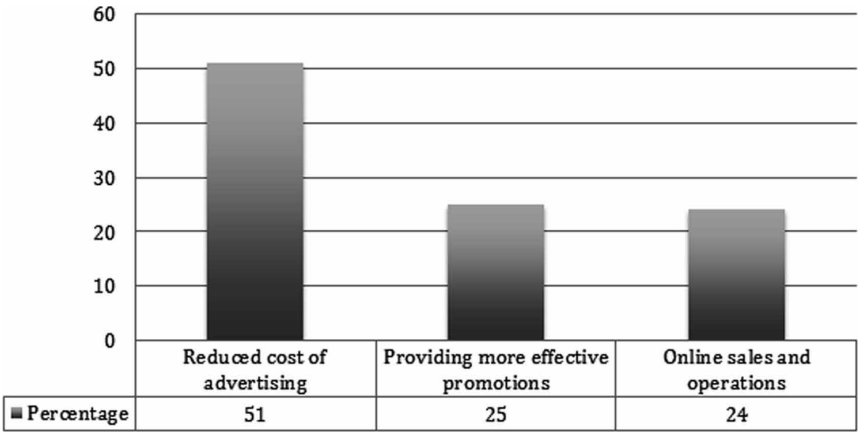
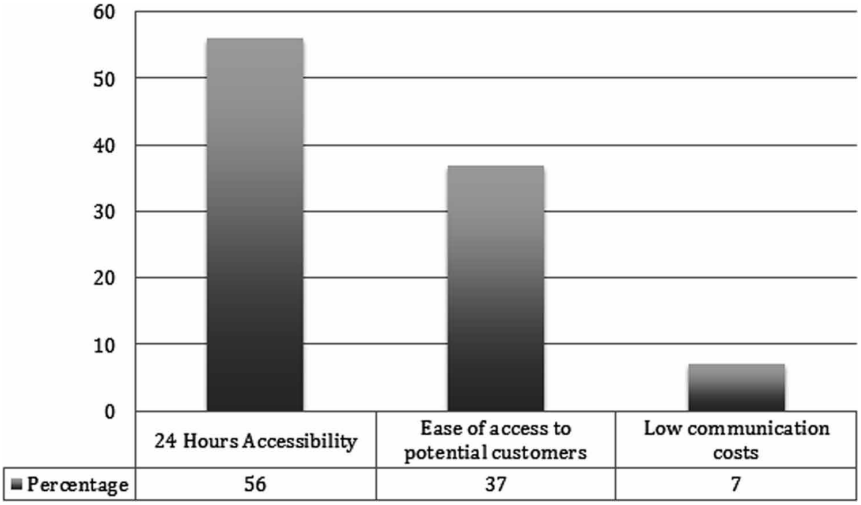


Figure 12. Benefits: Ease of accessibility



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Figure 13. Benefits: cost reduction

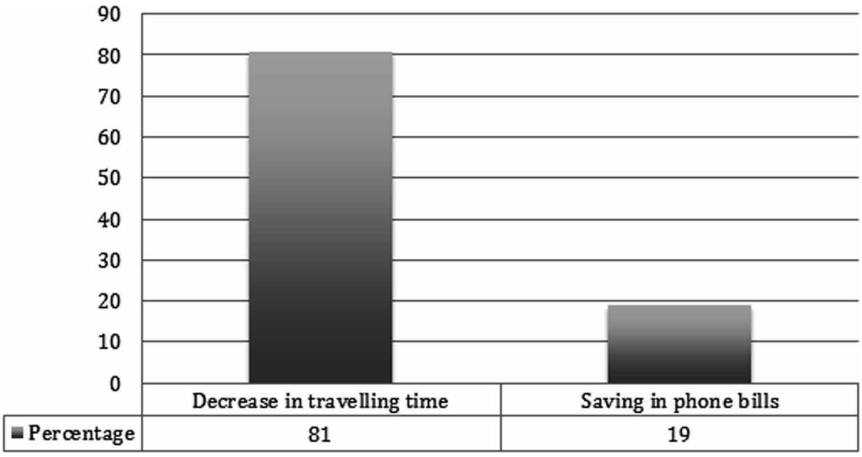
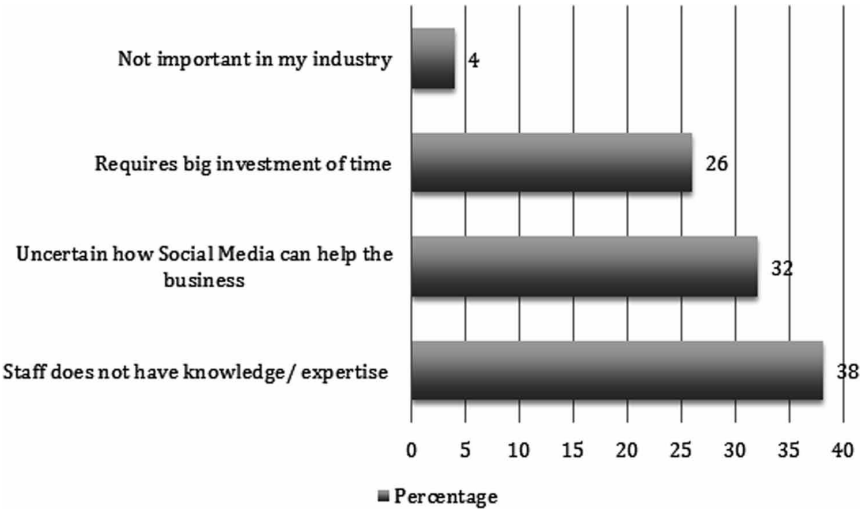


Figure 14. Barriers in adopting Social media



age group 30-39 also had social media incorporated into their marketing strategies at a lower percentage. The lowest percentage was from the age group 40-49. The results further strengthen reports of (Damanpour & Schneider, 2009) in that; older managers tend to be more accustomed to their routine and favor traditional forms of marketing. As for younger managers in both the lower age groups, it is clear that an element of social media is embedded from the very beginning and is one of the core marketing strategies.

The next comparison was the types of social media platforms that were adopted by the SMEs according to the manager or owner age level. Facebook remained the number one choice for all age groups. The adoption of this platform however was at different levels.. As with previous research (Wamba & Carter, 2014), Facebook is still the most used platform due to its widespread adoption and amount of users on the application, hence it is typical that this is the first go to for any SME adopting social media as a

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marketing tool. The current on-going trend or latest application that ranked second in being adopted by SMEs as conducted in the survey is Instagram. One plausible explanation for this is that Instagram uses online mobile photo or video sharing where marketers are able to promote their products.

The next comparison was the objectives and value of content based on age group of managers or owners of SMEs. Younger managers seem to be motivated towards brand awareness. For managers in the older age groups the emphasis was towards customer acquisition. Customer acquisition is preferred among older managers due to its direct correlation with profits whereas younger managers goals could be to foster better consciousness among customers as a means to separating themselves from competitors. Promoting products and offers is reflected to be most important value of content for all SMEs regardless of the age group of the managers or owner's. The importance of marketing products for SMEs remains the same for all levels of managers or owners in the hope of influencing consumers to purchase their products or service.

Following that, the activity level or frequency of use of social media was conducted. Respondents in the age group 20-29 spend the highest amount of time, committing more than four hours daily on social media marketing activities. In the age group 30-39 and 40-49, respondents were less active on social media averaging one to two hours per day. The amount of time spent on social media decreases proportionally as the managers or owners' age increases. The advent of mobile devices such as hand phones and handheld computers may support this data. As younger managers are more technology savvy hence the usage of social media is much more when compared to their older counterparts.

Subsequently, a comparison was done on the allocation of resources of SMEs. Majority of managers took on the responsibility of handling social media activities with the exception of older managers whereby the task of social media was delegated to a younger supervisor or family member in the business. Trainings for staff on social media were also very low across all age groups. It can be said that although the usage of social media is high among SMEs, the requirement for structured ways of using social media is not enforced because most SMEs do not allow staff to handle social media marketing activities.

Lastly, a comparison on perceived benefits and barriers to the adoption of social media by SMEs according to the age was examined. In Market Development, the most looked-for benefit was that of "developing new business opportunities". This benefit is more sought by older managers compared younger managers, the percentage was much lower. The cause of this is that managers in this age group also prioritized "providing better service to customers" as the main benefit. The second sub category was Efficiency in Sales and Promotions. Younger managers were of the same requirements whereby "reduced cost of advertising" was the most chosen benefit. Older managers however cited "online sales and operations" as their chosen benefit. In newer SMEs with lower capitals, social media provides an excellent way to promote the business without much cost (Harris et al, 2008). As for more experienced managers, the ambition is to use this new technology to help improve current processes and transform it into a digital form. The third benefit category was Ease of Accessibility. Among the benefits in this category, managers or owners had all selected the same benefit, which was "24 hours accessibility". As with the use of online technologies for marketing activities, most SMEs found it more convenient as they are able to access the business and potential customers at any time fitting to them. Businesses are no longer tied to the standard operating hours but are available to customers 24-7. The last benefit category was on Cost Reduction. Results for this category was similar to that of the previous one, in that all the different age groups of managers or owners had chosen the same benefit, which was "decrease in travel time". The percentages showed an increase in the amount of managers, as the age groups get older. One reason behind this could be the value of time for business owners. Established owners tend to have multiple businesses and social media helps reduce the hassle of travelling long distances for business dealings.

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Finally, the research intended to understand on the different barriers by SMEs in adopting social media according to the age level of managers. Younger managers said the main barrier they faced in adopting social media was "social media marketing requires a big investment in time". Middle-aged managers noted that barriers for adoption of social media would be that "staff is unfamiliar or lacks technical skills". Older managers said the main obstacle would be "uncertain whether or how social media marketing can help the business". Through the comments, it is clear that not every individual views the adoption of social media the same. For younger managers who are more confident on using social media and tend to handle social media marketing activities themselves, the worry is that too much time is required and they will be unable to perform other tasks related to marketing. On the other hand, middle-aged managers tend to lean towards the competency of staff, as most managers may want to delegate the job of social media to their employees. Older managers however, are still used to the traditional forms of marketing.

Social Media Strategies by Education Attainment

In the second comparison analysis, the research examined the (education attainment of manager/owner) with the social media strategies employed by the SMEs. Education attainments in the survey have been classified into two groups, which are Basic Education (High School and Certificate/Diploma) and Higher Education (Bachelors Degree, Masters Degree and PhD).

For incidences of using social media, on the question of integrating social media strategies in the SMEs marketing plans, both groups of managers noted that social media strategies were incorporated into their marketing plans. The next comparison was the types of social media platforms that were adopted by the SMEs with managers from different education levels. In the basic education group, Facebook was the most widely adopted. But for the higher education group, Facebook and Instagram shared the same amount of adoption.

The next comparison was the objectives and value of content based on education attainment of managers or owners of SMEs. Managers in the basic education levels are driven by sales. For managers in the higher education group, the objectives are far less outward as customer acquisition and brand awareness are both deemed equally important. Managers with higher education may be exposed to business strategies and understand the importance of creating brand awareness for long-term profits. As for the value of content, both groups irrespective of the educational attainment had selected "promoting products and offers". In the business industry, all SMEs adopt the fundamental marketing strategy to promote products and services to customers and influence them to make purchases.

Subsequently, the activity level or frequency of use of social media by SMEs based on the different educational groups was analyzed. Managers in both the groups spent one to two hours daily on social media marketing activities. In creating new social media content, both education updated news daily. In terms of activity level and frequency, no difference is noted.

With regards to staffing, it is noted that managers or owners of different educational attainments still opted to handle social media marketing activities themselves. Trainings for staff on social media were also very low across both education groups.

Finally, a comparison on perceived benefits and barriers to the adoption of social media by SMEs according to the educational level was studied. In Market Development, the most looked-for benefit was "developing new business opportunities".. The second sub category was Efficiency in Sales and Promotions. Out of the two education groups, "reduced cost of advertising" was the most selected benefit. Social media is viewed as a cheaper alternative for promotion and publicity when compared to traditional forms of

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advertising (e.g. newspapers or brochures). The third benefit category was Ease of Accessibility. The benefit of "24 hours accessibility" was the number one criteria selected by both groups. Both groups agree that through social media, the businesses are able to run more efficiently and owners may access the platform at any time. The last benefit category was on Cost Reduction. Both groups selected "decrease in travel time".

Finally, the research intended to understand the barriers by SMEs in adopting social media according to the different educational level groups. In both groups, "staff is unfamiliar or lacks technical skills to use social media marketing" is deemed to be the biggest obstacle. This highlights the general view of managers concerning staff competency or lack of it in managing and using social media marketing strategies.

Social Media Strategies by Industry

For the third comparison analysis, the research intended to observe the (difference in industries) with the social media strategies employed by the SMEs. The two separate groups studied in the survey were the Food and beverage industry and the apparel and accessory industry.

For incidences of using social media, on the subject of incorporating social media strategies in the SMEs marketing plans, both groups of managers noted that social media strategies were incorporated into their marketing plans. Across industries, social media is a core component in the marketing strategies of SMEs. The next comparison was the types of social media platforms that were adopted by the SMEs. Facebook ranked the most used social media platform in the two different industries.

The next comparison was the objectives and value of content based on the different industries of SMEs. The most selected objective across both industries was customer acquisition. For the value of content, "promoting products and offers", had been chosen by both industries. The percentages for the apparel and accessory industry are slightly higher possibly due to the heavy reliance of social media to sell the continuous range of products to customers.

After that, the activity level or frequency of use of social media by SMEs based on the different industries was conducted. Respondents in the food and beverage industry spent one to two hours of the day on social media marketing activities. SMEs in the apparel and accessory industry however spent more time on social media marketing activities committing up to four hours daily. In creating new social media content, both industries uploaded new content on a daily basis. The average daily time spent on social media is higher in the apparel and accessory industry probably due to SMEs having to promote various goods across the product range to customers.

Next, a comparison was done on the allocation of resources of SMEs by industries. The research indicated that in both the industries, managers or owners of SMEs chose to handle social media themselves. Trainings for staff on social media were also minimal in both industries. In both industries, it is noted that there is low levels of training provided to staff as most managers or owners chose to carry the task of managing the marketing activities themselves.

Finally, a comparison on perceived benefits and barriers to the adoption of social media by SMEs in different industries was studied. In Market Development, the most wanted benefit was that of "developing new business opportunities". The second sub category was Efficiency in Sales and Promotions. Both industries agreed that "reduced cost of advertising" was the most sought benefit. The third benefit category was Ease of Accessibility. The benefit of "24 hours accessibility" was the number one criteria chosen from both groups. The last benefit category was on Cost Reduction. The results of percentages were nearly the same with both industries selecting "decrease in travel time" as the benefit. In this the difference in industry does not affect the outcome of the perceived benefits.

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Lastly, the research intended to understand on the different barriers by SMEs in adopting social media according to the industries. In both groups, "staff is unfamiliar or lacks technical skills to use social media marketing" is deemed to be the major difficulty for SMEs to adopt social media. In the same way, barriers for adoption of social media by SMEs are the same.

Based on the results, it can be stated that successful adoption of social media practices, perceived benefits and barriers depends on the manager's age and educational level. The final section will provide the conclusion and recommendations of the study.

SUMMARY AND CONCLUSION

The study aimed to identify SMEs use of social media, their social media practices and the perceived benefits and barriers in adopting social media for marketing strategies.

In the operational model, the manager/owner characteristics (age / educational attainment) and different industries of SMEs lead to social media practices as well as perceived benefits and barriers. The research shows that use of social media has provided value for SMEs in the incorporated marketing strategies. The results of this study indicate that Facebook still holds it place as the most used social media platform by businesses in the Klang Valley region of Malaysia. However, new social media platforms such as Instagram are gaining popularity among the businesses.

The research results also indicate that the main objective of using social media strategies by SMEs is for customer acquisition but brand awareness is becoming more significant as SMEs learn to understand its importance. Besides that, the research findings highlight promoting products, delivering updates and responding to requests as the main values of content for SMEs in using social media. In terms of activity level or frequency of use, the research results point out that SMEs are indeed active on using social media as a marketing tool, spending a few hours and updating content daily

Surprisingly, the research results discovered a major flaw in the adoption of social media strategies by SMEs. Though usage of social media strategies was high, almost all of the SMEs did not emphasize on the allocation of resources to this tool. Budgets were not divulged and very few SMEs had a dedicated staff to handle the social media marketing. Besides that, there was very minimal training provided to staff on how to handle social media marketing activities.

Out of the four categories of benefits, the research results show that social media marketing helps SMEs in developing new business opportunities, reduces the cost of advertising, is accessible 24 hours and decreases travelling time. The research results also indicate that the major barrier for SMEs in adopting social media is that staff are unfamiliar or lack technical knowledge on social media marketing.

In comparison of the different attributes of SMEs, the research results indicate that managers or owners age level and educational attainment have a major impact on the adoption of social media as a marketing tool. The research results indicate that younger managers are more flexible and open to new ideas and tools and are more likely to incorporate social media into marketing strategies than older managers. Younger managers also spend more time utilizing social media as a marketing tool compared to older managers, a finding consistent to previous literature. The research results illustrate the difference in perceived benefits and barriers of social media marketing strategies amongst managers of different age groups. In addition to that, the research results also imply that a manager or owner's educational

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attainment has a positive affect on the use of new technologies by the SMEs. Managers with higher educational backgrounds are more supportive of using new technologies (e.g the use of Instagram) as compared to managers with basic education. Finally, in comparing different industries, the research result did not exhibit any significance in the adoption of social media by SMEs.

Implications for Research

The increasing acceptance of social media for marketing activities makes adoption very attractive for SMEs. Firms can now use social media to foster interactions with existing and new customers and to enhance sales and operations of businesses. In many cases, they can improve customer acquisition and create brand awareness by providing constant product updates and receive feedback from customers

The research has significance in that it identifies the main objectives, practices, benefits and barriers of social media by SMEs. Although research on use of social media is rising, there are currently few studies on use of social media by SMEs. Available literature on local businesses are limited and focused on larger corporations or individual companies. This study is an attempt to highlight the social media practices as well as explore the factors that significantly affect social media as a marketing tool among SMEs.

Implications for Practice

The results indicate that there is a notable relationship between the manager's age and adoption of social media. Younger managers are more probable to adopt social media strategies. SMEs should therefore consider developing young managers as this could positively influence the direction of the business to adopt social media marketing strategies. Larger companies have management trainee programs designed to groom fresh graduates for managerial positions. SMEs could gain by emulating such programs. More importantly SMEs should consider allocating more resources to the use of social media. Trainings with consultants or online advertising companies should be provided to staff as to overcome the barriers of adopting social media. SMEs could also apply "best practices" based on the trainings to better benefit from social media.

Limitations and Suggestions for Future Research

There are several limitations with this study. Similar to other survey based projects, there is a risk of bias. Sometimes, respondents may provide answers deemed to be desirable instead of reporting the normal practice. In this research, quantitative data was obtained from 150 respondents in the Klang Valley due to time constraint and limited financial resources. Future research could include qualitative data for better understanding and analysis. To broaden the coverage of the research different industries and a wider location across Malaysia can be explored further. For future research direction, analysis regarding the effectiveness of social media in leveraging competition by small businesses against big companies can provide a better insight and understanding towards this study.

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KEY TERMS AND DEFINITIONS

Facebook: As defined by Derham, Cragg and Morish (2011), Facebook is one of the main platforms for social commerce that allows firms to harness social capital by tapping into the tremendous word-of-mouth potential of its active users.

Innovation: The Oxford Handbook of Innovation Management (2013) describes innovation as an essential means by which organisations survive and thrive.

Manager's Characteristics: A critical role of managers (age, education, and gender) in influencing behaviours in a wide variety of domains (Damanpour & Schneider, 2009).

Marketing Activities: The activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society at large. (American Marketing Association, 2013).

Small and Medium Entreprises (SMEs): The National SME Development Council (NSDC) Malaysia (2013) defines SMEs in two categories. Manufacturing: Sales turnover not exceeding RM50 million OR full-time employees not exceeding 200 workers and Services and other sectors: Sales turnover not exceeding RM20 million OR full-time employees not exceeding 75 workers.

Social Media Tools: Online platforms that provide improved communication and collaboration between the firm and its stakeholders (e.g., customers, suppliers, business partners). (Wamba & Carter, 2014).

Web 2.0: Anderson (2007) describes Web 2.0 or social media as a group of technologies that have become deeply connected contributing to a more socially linked web where everybody is capable off adding and editing content.

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APPENDIX: QUESTIONNAIRE

Section 1

1. What is your age group?
    a. 20-29
    b. 30-39
    c. 40-49
    d. 50 and above
2. What is your highest level of education?
    a. High School
    b. Certificate / Diploma
    c. Bachelor's Degree
    d. Masters Degree/ PHD
3. What industry are you currently in?
    a. Food/Beverage
    b. Apparel/Accessories

Section 2

4. Is social media incorporated in your marketing plans?
    a. Yes
    b. No
5. Based on the list, what social media do you use?
    a. Facebook
    b. Instagram
    c. Twitter
    d. Blogs
6. Please indicate how focused your marketing is on the following platforms.

Box 1.

	Not at all focused	Somewhat focused	Very focused
Facebook			
Instagram			
Twitter			
Blogs			

7. What are your primary objectives of using social media?
    a. Customer Acquisition
    b. Brand Awareness
    c. Ongoing Engagement

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   d. Customer Support and Loyalty
8. How do you measure success?
   a. Number of Fans/followers/Likes
   b. Number of Comments
   c. Number of Retweets
   d. Referrals
9. What is your daily time commitment for social media?
   a. 0 hours
   b. 1-2 hours
   c. 3-4 hours
   d. More then 4 hours
10. How often do you create new social media content?
   a. Daily
   b. Weekly
   c. Monthly
   d. Yearly
   e. Never
11. What is the value of your content? (Select all that apply)
   a. Deliver updates
   b. Promote products and offers
   c. Add value to the content
   d. Respond to requests
   e. Provide utility/solve problems
12. Do you have a dedicated employee/personnel specifically handling social media activities?
   a. Yes
   b. No
   c. I handle the social media activities myself
13. Do you have any social media training to your employees?
   a. Yes
   b. No
14. Do you have a social media-marketing budget?
   a. Yes. (Please specify amount. RM_____)
   b. No

Section 3

15. What benefits do you think are the most important in using social media for your business?
   a. Market Development.
      i. Developing new business opportunities
      ii. Enhancing company image
      iii. Providing better service to customers
   b. Efficiency in Sales and Promotion.
      i. Online Sales and Operations

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   ii. Reduced cost of advertising
   iii. Providing more effective promotions
c. Easy of Accessibility.
   i. Low communication cost
   ii. 24h accessibility
   iii. Ease of access to potential customers
d. Cost Reduction.
   i. Decrease in travel time
   ii. Savings in phone bills

16. What are the barriers for you to adopt social media marketing for your business?
   a. Social Media Marketing is not important in my industry.
   b. Uncertain whether or how can social media marketing help the business.
   c. Social Media Marketing requires a big investment in time.
   d. Staff is not familiar with social media marketing.
   e. Staff does not have technical skills to use social media marketing.

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Chapter 11
Metacognition of Organization Members as the Basis of Learning Strategy in Higher School

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ABSTRACT

The concept of metacognition is used to study knowledge of knowledge, and mainly in cognitive psychology. According to the content; metacognition is an intelligent process related to memory, reflection and motivation. The problem, we research, concerns the fact that the content and the mismatch of employees views can lead to non-constructive activity that violates the effectiveness of an organization as a whole. The outcome of this study is a model that describe the characteristics of the organization through determination of the metacognitive skills of employees at different levels. The model takes into account the emotional colouring, different levels of metacognition inconsistency, characteristic of the organization effectiveness and various inconsistencies of metacognitions.

INTRODUCTION

The theory of metacognition is currently one of the most studied topics of empirical research in cognitive psychology. Since the emergence of research interest in this field, a number of experiments has been made dealing with mechanisms that people use to overcome decision-making difficulties and form their perceptions of the surrounding world. Modern psychology has various approaches in defining

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metacognition: J. Flavell [1979], who introduced this term, meant a special cognitive process aimed at understanding one's own cognitive activity or, in other words, "mental activity aimed at understanding the thinking process". This is the definition followed by this article's authors. J. Flavell distinguished three main components of metacognition: planning, monitoring, and regulation. W. Schneider and K. Lockl (2002), M. E. Marinez (2006), K. Ray, M. C. Smith (2010), B. White (2005) associate metacognition with a wide range of psychological phenomena such as motivation, critical thinking, and meta-memory. G. Schraw, K. J. Crippen, K. Hartley (2006) mentions the possibility of applying metacognition as an indicator of learning activities; these authors also note the possibility of viewing metacognition as an indicator of a higher school graduate's realization as a specialist in an organization. The authors view a graduate's metacognition as a component of planning which includes knowledge of the organization (their image of the relations between "myself", "organization", and "society"; metaphor of the organization; knowledge of its structure, size, hierarchy, resources, information ties, motivational system and mission), monitoring of the thinking process (which includes the images of the organization's current and desired states) and regulation of their own behavior in the organization on this basis. It should be noted that research on metacognition in education is being done relatively often; for instance, there is a differentiation of metacognitive skills and metacognitive knowledge. G. Schraw, K. J. Crippen, K. Hartley (2006) write that knowledge is the complex of a student's views on the relations between their own personality traits and a problem's properties and possible solutions – as part of an academic situation for a student and as part of a specific organization for its member. Metacognitive skills provide regulation and control of learning activities [Schneider, Lockl, 2002], in the case of the authors' research – control of a higher school graduate's activity in an organization. For example, the results by S. Gómez-Haro, J. Aragón-Correa, E. Cordón-Pozo (2011) show that organization members react to the perception of context rather than to the organization's objective characteristics. It should be noted that the authors did not find a research dedicated to the specifics of metacognition formation in higher school graduate students as members of organizations, even though such information would make it easier for them to start a professional experience and build a career in an organization. Thus, the problems raised by this research dedicated to the study of metacognition formation sources in organization members appear to be relevant and in high demand in the context of application in higher schools. The authors take into account the institutional approach in the implementation of this study, referring to the interaction of specific aspects of an organization (structure, size, hierarchy, resources, information ties, motivational system and mission) and its members' characteristics (position etc.) in the formation of metacognition. The institutional approach is considered by the authors to have a top priority in the interaction of organization leaders with higher school graduates. In addition, it is also the basis for the work of higher school educators on securing the graduates' entrance into the professional sphere. The authors' research uses the theory of strategic choice for the analysis of metacognition (in their regulative aspect) and characteristics of organizations that hire higher school graduates.

The aim of this chapter is to examine the relationship between (1) perceived aspects of an organization and (2) objective positions of its members and of the organization as a whole (official position, age, size, territory, and sector). Due to a large volume of research, the authors had to confine this work to the official position, but other characteristics are planned to be studied as well. The relationship under research appeared on a quantitative level; the authors' opinion is that it is two-way, so non-parametric criteria of differences between groups were used for the analysis.

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The article's structure is as follows: in the first section, the authors present the theoretical basis of the research and hypotheses. The second section is a description and justification of research methods. The third section presents the results of the analysis and discussion in the context of the objectives set and the hypotheses suggested. The conclusion lists the main findings and limitations along with suggestions for further research.

THE THEORY AND HYPOTHESES OF THE RESEARCH

Modern psychology provides various definitions of metacognition. J. Flavell [1979], who introduced this term, meant a special cognitive process aimed at understanding one's own cognitive activity or, in other words, "mental activity aimed at understanding the thinking process". If learning is taking place without understanding the cognition process, the knowledge is passive and has a lower efficiency. Metacognition is viewed as control and management of low-level thinking (operations) by a higher level of thinking [Broadbent, 1977].

J. Flavell was the first to attempt to identify elements of metacognition. He built a cognitive model or regulation made up of: 1) metacognitive knowledge; 2) metacognitive experience; 3) cognitive goals or objectives; and 4) cognitive strategies. By monitoring their thinking, people receive information about their state of knowledge or cognitive strategies, while control is used to regulate their thinking [Flavell, 1979].

Next it would be appropriate to highlight the subject of metacognition with regard to organizations. Organizational psychology has various structures and models for describing organizations. Managing an organization in any culture, economic and political conditions is always associated with the definition of objectives and characteristics of the organization. Naturally, a question arises regarding the assessment of the structure's correspondence to stated goals and objectives of the organization in the employees' eyes. To evaluate the success of a chosen structure, the optimality of coordination processes is usually analyzed, and to assess its adequacy, various characteristics of the staff are considered. We should focus on studying an organization's structure and role in efficiency management as covered in the works with the latest research on organizations [Argyris, 2004; Warner, 2001].

Any organizational structure is stable enough and is able to reproduce the patterns of management and interaction. Explicit or hidden rules produced by the structure are unambiguously related to an organization's stability and preservation. One could say that an organization's structure is a mechanism of reproducing business relations. The structure, in its turn, manages communication processes. Clear communication reduces the uncertainty of a work's conditions and criteria; it allows to make decisions timely and share responsibility for real achievements and failures. In an effective communication system, the organization's goals, objectives and standards are legalized, which makes them understandable for the employees [Mintzberg, Quinn, & Ghoshal, 2001; Yakimanskaya 2013].

In the classic organization theories, the conscious acceptance of goals by the employees and the realization of a particular type of strategy are recognized as key factors of organizational success. A common assumption in the modern theory of organizations is that a goal or strategy defines the organization's characteristics. At the same time, the primary task of the leaders to explain the goals and mission and to inspire the staff is emphasized [Muczynski, 2004].

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It has to be admitted that researchers do not restrict themselves to proclaiming the priority of goals over contextual characteristics; attention is also paid to searching models and means of effective staff management and organization management. A special mention should go to the approach originated in the works of F. Selznic (1984) and A. Etzioni (2001).

At various points of teamwork one or another factor requires study and managerial work on explanation and coordination of positions. Attention to the points of agreement allows to prevent malfunctioning in the organization and to localize social risks and conflicts in good time [Molokostova, 2013; Yakimanskaya, 2014].

In the early 20th century, Roger Paul Lawrence and Jay William Lorsch proposed a model called "complex organizations". According to the authors, each unit works with a separate part of the environment and applies specific methods, algorithm and communications. This division inevitably leads to the formation of three large and relatively autonomous organizational substructures: development department, sales department, and production department. Consequently, a problem of building interactions and resolving conflicts between the departments arises. The more complicated and diverse the organization's activities are, the more difficult communication and interaction between the departments become. The difficulties are eliminated by introducing integration groups of employees or by the addition of integration and communication functions to their responsibilities. From a behavioral point of view, conflicts are successfully resolved by leaders who are prepared to handle problems and are willing to use negotiations, and not just allow one side to force the other to carry out the decisions on their elimination [Rubin, Pruit, Kim Hye Sung, 2003; Warner, 2001]. In this case, conflicts are not defused but rather aggravated, but with timely and competent management they do not become destructive.

The search for predictors that would allow to anticipate and control the difficulties of the future development periods of an organization in the communication process is an objective of empirical research, but at the same time it requires a theoretical understanding [Molokostova, 2013].

An organization is more directly influenced by market demand, competition, laws and their amendments, etc. than it is thought and perceived to be by the members of the organization. We consider it appropriate to specify the three abstract components of social systems important for our work: roles, norms and organizational culture [Muczynski, 2004].

All these aspects depend on the organization's kind of activity and on the characteristics of employees who constitute it. The formation of loyalty is determined by how the goals and environment of the organization are accepted in an employee's personal meaning [Adizes, 2008].

How does the law of conservation of an organization work in times of crisis? Naturally, the first to notice the existence of the crisis are top managers, as the need for change is evident for the leaders. Middle managers are involved in the solution of specific tasks and do not think so big. Line managers develop the feelings of incomprehension and personal dissatisfaction with what is happening, the feeling of pressure from the management. Resistance becomes a major obstacle to the changes planned by the "tops" [Yakimanskaya, 2014]. Evaluation of the organization's current situation by line managers is a key factor since the effectiveness of change and control of social risks depend on their personal position and loyalty to the organization, on the extent to which they are ready to act in the conditions and times difficult for the organization.

According to a research by E. Miller and E. Menzies, many ways of working are primarily aimed at maintaining a relatively comfortable emotional state, so performing work tasks consumes significantly less energy, which is not conducive to effective work (Miller, 2001). The most effective option is con-

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sidered to be a combination of high demands with the support of the leader. Thus, an internal knowledge of the organization as a dangerous environment is formed, and any changes may lead to a greater harm to the employees [Lazarus, 2003; Fernham 2014].

Taking responsibility for the implementation of imminent modifications or rejecting activity is determined by how much value and personal meaning the organization has for the employees [Lupina-Wegener, Drzensky, Ullrich, & Van Dick, 2014].

Basing on the characteristics of the organizational environment cited above that give reasons for assessment and prediction of its future state and effectiveness, the authors identified the parameters or sets of characteristics of an organization that constitute the metacognition of its members; they are informative for a research of the real difficulties faced by both management and employees.

One more work seems interesting to us since it has to do with finding the key factors of an organization and developing effective communication between employees of different departments performing both administrative and executive functions. This is a work by James David Thompson who says that organizations are open multi-component systems operating in a situation of high uncertainty [Thompson, 1956].

The interpretation of modern organizations as complex systems is based on distinguishing therein two professional groups, or two types of units with opposing goals, nature of conditions and functioning principles: the technical core producing the main product, and service departments. These substructures perform different functions and are subject to unfavorable environmental conditions to different degrees.

Consequently, the work on developing effective interaction between employees with different functions in the organization is associated by the majority of researchers with the establishment of a clear communicative system enabling to receive and impart information, to understand the goals and objectives, and to take part in important decisions. To study real organizations, it is important to understand at what stage of development they are [Adizes, 2008].

According to the authors' opinion, the significant points of organization members' metacognition in Russian organizational psychology most often include the following ones with respect to the organization: its size and structure, hierarchy, goals, resources, types of resources, information ties system, reward system, corporate ethics, its message to the world, and its mission [Bogdanov, 1989; Kabashov, 2011].

Let us consider some factors that are directly relevant to the goals and objectives of this research.

The indicator of the organization's size and structure reflects its most common parameters as viewed by its members and allows to keep the correspondence of the company's goals and aims and its objective characteristics up to date. The indicator of the organization's hierarchy shows how well-developed and well-known the relations of subordination and superiority are to its members, how clearly the power is distributed and whether the declared objectives of the organization agree with the objectives of its management. The indicator of the organization's resources and their types makes it possible to reflect the availability of the organization's sources of development for its members, to give a characteristic of the organization's overall potential, a scenario of its development. The indicator of information ties system in the organization reflects the internal and external state of the information field. This mainly refers to the streams of information that exist within the organization and are aimed at the coordination of teamwork through timely exchange of data and relevant information. The indicator of the system of rewards and sanctions in the organization and corporate ethics allow to determine the general condition of the members' motivation, to identify the piled-up discontent and difficulties in the system of "superiority–subordination" and develop common directions of incentives for the employees. The message to the world is reflected in the organization members' views of its mission, role in society and, in particular, of its value for themselves and other people.

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From this perspective, the authors decided on two hypotheses (Figure 1):

Hypothesis 1: The perception of the organization's characteristics which are independent variables can be used by its members in the process of formation of images, i.e. metacognition.
Hypothesis 2: Metacognition of organization members differ in connection with their position.

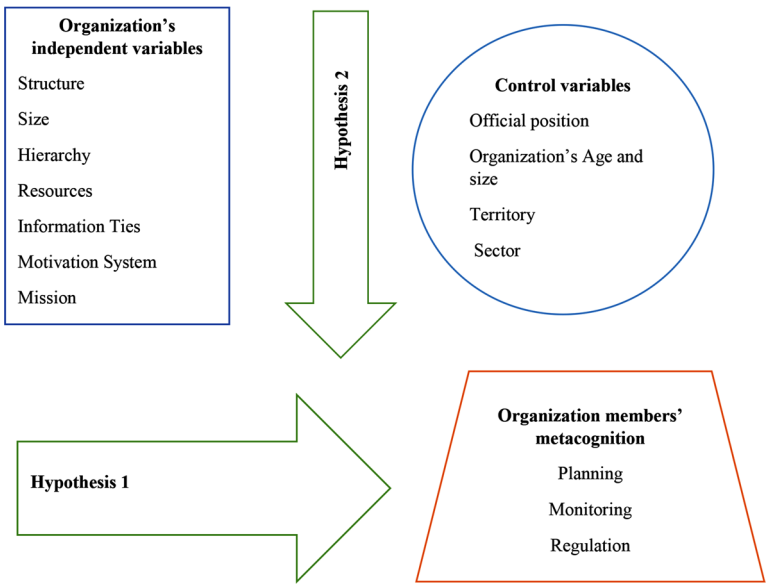
Thus, in times of crisis and instability, activity and metacognition of employees can both contribute to and hinder the success and reliability of an organization. The employees, being the only ones who fulfill the organization's goals and objectives, may have different positions according to their degree of loyalty, involvement, approval, etc. The decisive role here is played by the attitude that the top management, which solves the organization's problems in different ways, accords to their employees [Borkowski, Carr, & Pressely, 1987].

DESCRIPTION AND JUSTIFICATION OF THE RESEARCH METHODS

This research was conducted in several stages as the problem of building a complete picture of metacognition at various levels of the organization had to be solved as follows:

- A research on the image of the organization's characteristics in its members differing by their position as the basis of metacognition formation (to test hypothesis 2). In this research, the authors considered only a few important characteristics of the organization as viewed of its members: its structure and size, resources, hierarchy, communication and information streams, motivation system.

Figure 1.



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- A research on the employees' views on the real and desired state of the organization. Employees of various departments and positions were asked to describe the current state of the organization and its desired state. The discrepancy of the two images made it possible not only to understand what actions should be taken to improve the efficiency of the system, but also to draw conclusions on how the employees' views are formed.
- An analysis of the views on the relations between "myself", "organization", and "society"; a metaphor of the organization by its members. This side of metacognition allowed judging not only the direct but also indirect components of the views on the organization.

The aim of this research is to study the relationship between (1) the perceived aspects of the organization and (2) the objective positions of its members and of the organization as a whole (official position, age, size, territory, and sector). Due to a large volume of research, the authors had to confine to the official position, but other characteristics are planned to be studied as well.

A complete picture of an organization's condition consists of a comparison of inconsistencies witnessing the absence of coordination not only in the understanding of the organization's objectives and structure, but also in communication and teamwork. The employees' knowledge of the organizational system and metacognition are determined by the organization's characteristics and by personal traits and perceptions of individual employees. Describing the elements of knowledge of the organization requires identifying the organization's key factors determining the general views of the employees.

We have consistently carried out the following tasks:

- A theoretical description of a complicated notion of metacognition as a system of employees' views on the organization;
- An empirical research on metacognition peculiarities in members on various levels of the organization;
- A comparison of metacognition in members of a specific organization;
- Creating a description model of organizational environment conditions that would allow diagnosing it and using for teaching higher school students.
- A research on the image of the organization's characteristics in its members differing by their position.

Due to the research's approximate, preliminary nature, the authors decided to make the sampling as wide as possible, so the study was conducted in 3 organizations of various orientations: educational, productive, and social. The samplings consisted of top and middle managers and workers; 15 randomly selected members of different positions were surveyed in each organization (50% males and 50% females, balanced by age, average 35-40 years). A total of 45 subjects participated at this stage.

The authors used the structured interview technique; its topics were the organization's characteristics and their discussion. Groups based on formal structure were formed (top and middle managers, subordinates); interview questions were developed; protocoling and deciphering the data was conducted followed by summarizing the results.

To comply with the ethical requirements increasing the reliability of the information received, it was important to create in the groups as much free space communication as possible; it gave the participants an opportunity to share their ideas and express their views on emotionally-charged issues.

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- A research on the employees' views on the real and desired state of the organization.

Employees of various departments and positions were asked to describe the current state of the organization and its desired state. The discrepancy of the two images made it possible not only to understand what actions should be taken to improve the efficiency of the system, but also to draw conclusions on how the employees' views are formed.

The comparison of parameter values for the real and desired states of the organization shed light on what the organization should strive for according to the staff. In the context of metacognition content construction, it was important not only to detect the discrepancies but to confirm that they are crucial elements of organizational knowledge and make an integral picture formed within the organization.

The diagnostics of the organization's condition was carried out by studying the employees' attitudes and perceptions of the organizational system through formalized interviews. For this purpose, we modified M. Zilberman's questionnaire containing 40 questions which we grouped by five factors: organization's achievements, social involvement, feedback, employee loyalty, and ability to change [Zilberman, 2007].

The basis for the research was a commercial organization – a small business going through a period of growth. The request for research was submitted by the organization's owner and is caused by the necessity of change in society and economics during the crisis.

The research involved 75% of the organization's staff who had work experience from several months to 5 years. Employees of different positions answered the consultant's questions; all the answers were protocoled. At this stage, 22 employees took part in the research: 9 top managers and 13 line managers. Since personal perception was under focus in this case, the definition of organization was given first – so that the subject of study is the same for all employees. Then primary assessments and relationship measures of individual parameters for the real picture and the expected organization were calculated in the entire set of responses. The general directions of the results' description and analysis are as follows:

- Identifying lowest and highest parameter values for real and desired state of the organization;
- Identifying the biggest discrepancies between the real and desired states;
- Making the pictures of real and desired organizations.

To confirm the statistical reliability of the differences and discrepancies under study in the estimates of the same sampling, the authors used Wilcoxon's signed rank test.

- The analysis of the views on the relations between "myself", "organization", and "society"; a metaphor of the organization by its members.

The authors undertook a qualitative study using the proposed and piloted projective techniques including the semantic psycho-geometric test and the "Postcards" test.

The authors believe that characterizing the intra-organizational environment and highlighting the areas of particular tension and social risks recreates an overall picture of knowledge or metacognition of the employees. These subjective phenomena are not easy to objectify since the employees, fearing pressure from the management, try not to show their negative perception of what is happening in the organization.

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The authors are convinced that such emotionally-charged issues as the attitude to the organization, management and hierarchy, and one's own role in this system require the utmost discretion and respect for psychological safety requirements. Direct questions do not allow making a reliable picture of cognition; moreover, the use of implicit research methods allows weakening the cognitive control encouraging socially desirable answers.

Firstly, the authors conducted preliminary interviews with the participants of business processes in the organization and defined the stimulus materials. Then we picked up a group of organization members of various positions most typical by age, working experience, and status and invited them for the research after taking informed consent to participate in the experiment. Then, after processing the obtained data, the authors discussed them at the organization meeting.

The group that took part in the research included 2 subgroups: top managers (8 people) and line managers (8 people), 50% males and 50% females of 30-40 years of age.

The authors used the following projective methods:

- Semantic psycho-geometric test (S. Dellinger's test modified by us). The employees were offered a set of figures of various sizes and shapes. The group members were asked to relate the figures and the concepts of "myself", "organization", and "society". To do that, they were asked to choose a shape (triangle, square, circle of a large, medium and small size) associated with the concepts above and to color it. Then the selected pieces were placed on a standard sheet of paper and outlined; within the shapes the group members wrote their associations. The concepts of "myself", "organization", and "society" were chosen to describe the views on the organization's state in the outer and inner spaces: environment space and personality space. The participants of our study showed a distinctive projection of the characteristics and state of the intra-organizational environment. The analysis of the psychosemantic geometric test was carried out according to standard categories. The experts were 3 practicing psychologists with 5 to 10 years of experience. To analyze the relations of the used concepts, we used spatial categories: size, shape, and location.
- The method of selection of postcards associated with the organization's productive environment. The stimulus material was a random set of postcards with little story-telling content. The participants were asked to present their vision of the organization and try to find at least three images in the postcards associated with this image. To analyze the selected images, the experts used the categories of "Color" and "Content of the image".

THE ANALYSIS' RESULTS AND DISCUSSION

The research showed that metacognition of organization members of different positions do not match in various aspects, sometimes completely contradicting each other.

Concerning *the organization's structure and size* it may be noted that occurrence frequencies of responses are different in the groups ($\chi^2 = 3.5000$, i.e. group differences are significant). For example, the prevailing response in the top managers' group is "structure is not clear", while in middle managers it is "weak structure". This is quite an indicative response since senior management is closest to the means of structural development and change. This response may be indicative of its inefficiency and encourage to seek the causes of the current situation. The small number of responses concerning the power and accordance with the structure in both groups indicates unanimity in the negative assessment

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of the current structure. It is worth noting that top managers note the growth of the organization, while in middle managers' group it is not observed. Most likely, the plans and prospects of organization's development initiated by the senior management are not known to other categories of employees, so it is possible to conclude that the organization's dynamics are not present in the metacognitive picture of mid-level employees.

We found out that the magnitude of shifts in estimates changed slightly. It was required to specify the direction of shifts whether the changes were positive for the most of the estimated characteristic responses. We made sure that the value of shifts varies from 10-38% as a result of mathematical processing. The received results show that in 81 cases values of estimates of desirable condition of the organization were smaller than values of estimates of real condition of the organization. In 539 cases the values of desired state of the organization were greater than the values of real state estimates. It is noted that equal count of values of real and desirable state of the organization was established 300 times. The significance value $p = 0, 000$ indicates a statistically significant difference between estimates of real and desirable state of the organization according to the answers of the employees.

We believe that the assessment of real state of the organization reveals the emotional aspects of knowledge about the organization as desirable state is always colored positive.

Most of employees appreciate highly such parameters of the organization as achievements relating to the product and services, the loyalty of employees and the implementation of changes in the organization. Probably, it is possible to draw a conclusion on a positive sign of emotional relationship.

The social involvement of the organization, feedback condition, loyalty of employees and capability to changes in the organization are estimated moderately as having a tendency to higher values. Probably, according to these characteristics it is also reasonable to conclude that they are assessed emotionally positively.

Tolerant attitude of the organization to employees, who used new techniques and methods of work and failed, received the lowest values. The degree of freedom in which the organization allows the employee to take the risk of mistake in the performance of professional duties is also quite low assessed, but this estimate is in the zone of moderate assessments.

There is a contradiction that loyalty of employees according to the characteristic of understanding of the purposes is highly appreciated. It is estimated moderately by the degree of freedom in what the organization allows the employee to take the risk of mistake in case of accomplishment of the professional obligations. These estimates can demonstrate a tough control of actions and negative attitude to independence of employees which reduces their effectiveness, but makes goals and objectives of the organization more clear in general. This contradiction finds interrelation significant for the creation of metacognition model; it is the current control and constant feedback which is replaced with punishment according to employees. So, negative emotional conditions show that there is the fixing of knowledge of the organization; the information flow is interrupted by anxiety and expectation of danger. The expected social risk distorts the perception of real situation, reducing the productivity of the employee at the stage of cognitive processing.

The direct involvement in resolving social contradictions which is performed by the organization in addition to its core business is also evaluated low. Therefore, the organization is relatively isolated from society in representations of employees. We believe that group identification and group boundaries are shown in this fact. So, the essential characteristic of opposition of the organization to interests and attempt to be protected from social problems of bigger scale is revealed.

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Confirmation of negative emotional perception of communication system is quite low estimates of feedback in the organization that, in fact, confirms the distortion of knowledge about the organization and processes according to the answers of the majority of employees.

It is possible to conclude that lack of reliable and safe feedback breaks cognitive control; metacognitive ideas of the organization are distorted in lack of complete and non-evaluative information by the organization's management. Emotional aspects of perception of organizational conditions by employees and the organizational environment at the intrapersonal level of metacognitive complex were studied by us from the standpoint of content of the relations.

Analyzing the views on the relations between "myself", "organization", "society", and the organization's metaphors by its members, the main tendencies characteristic of group members have been found, such as a positive attitude to the concepts of "myself", "organization", and "society" tending to an upward bias. There is an indicative priority of the categories of "domination", "submission", and "no contact" with regard to the concepts under study.

We undertook a qualitative study using the projective techniques proposed and approved by us, in particular, the semantic psycho-geometric test and «The postcards» test.

We consider that the characteristic of the intra-organizational environment, allocation of zones of special intensity, social source of risks emergence recreate full picture of knowledge or metacognitive ideas of employees of the organization, allowing to identify the emotional aspect of this knowledge. It is hard to objectify such subjective phenomena as employees do not aim to find the negative perception of the events in the organization, being afraid of an assessment and pressure of management.

We are convinced that such emotionally charged issues as the relation to the organization, management and hierarchy in this system require the maximum discretion and compliance with the requirements of the psychological safety. Direct questions do not allow allocating a reliable picture of the knowledge; moreover, the use of implicit learning methods allows weakening the cognitive control, acting in the direction of socially desirable answers.

First, we conducted primary interviews with participants of business processes in the organization and defined stimulus materials. Then we picked up a group of the most typical on age, seniority, status position, members of the organization of the different levels and invited them for research after taking the informed consent to participate in the experiment. Then, after the processing of the data, we conducted their presentation at the meeting of the organization.

The group participating in research included 2 subgroups of heads (tops) of the organization (8 people) and line managers (8 people).

So, we used the following projective methods:

1. Semantic psycho-geometric test (the test of Dellinger S. modified by us). The set of figures of different size and form was offered to employees. The group used in the choice of the perception as «I», «organization», «society» of the relationship between the figure and the concepts. For this purpose it was offered to them to choose a figure which is associated with the above-stated concepts and paint it. Then, the chosen figures were placed on a standard sheet of paper and were outlined, participants of group designated inside their associations.
2. The method of selection of postcards with the association on the production environment of the organization. The accidental set of the postcards which are not loaded with plots and events acted as stimulus material, participants were asked to present their vision of the organization and try to find at least three images on the postcards that are associated with this image. We assumed that

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distinctions in emotional perception of the organizational characteristics of leaders of different level complete the realized ideas of the organization and specify how the metacognitive complex is created at the intrapersonal level. The main tendencies peculiar to members of group, such as the positive attitude towards the concepts as «I», «organization», «society» with a tendency to overestimate are observed. The obvious priority of the categories «domination» and «submission», «there is no contact» in the ratio of the studied concepts is indicative.

Probably, these results indicate the existence of the deep conflict which is one of risks of safety in the organization, connected with a contradiction of directions on domination over people around – submission to people around. The lack of contact with itself, the organization and the society is combined with the adaptive position of the line managers who are not inclined to take the initiative and activity. The emotional attitude reveals the impossibility of full cooperation and manifestations of independence in their actions.

In accordance with the task to understand how knowledge of employees of different levels is developed, we compared the elections of the figures on two groups of managers. For confirmation of reliability of distinctions in perception of oneself, organizations and society we carried out statistical analysis of the obtained data with the help of criterion of chi-square. At the level of tendencies it is possible to say that the senior and line managers give various answers finding the attitude towards the specified concepts. The most similar answers are received concerning the concept «society». Most likely, it is necessary to say that society is the sphere, the least dependent from respondents, having an insignificant resource, weak connection with values and needs. It is possible to conclude that knowledge about the organization is separated or isolated, poorly connected with processes on the scale of society or the country. Managers of both levels perceive real and actual processes and conditions of the organization, not including it in a wide social context. Probably, it is possible to draw a conclusion on a neutral emotional condition in relation to society.

The senior and linear managers give the most various answers concerning the concept «I», there are fewer distinctions concerning the concept «organization». The differences may be indicative of the importance of their role and the perception of oneself as a leader. Line managers found lower activity and leadership aspirations, feel less self-importance and the ability to influence what the events happening in the organization. The organization is perceived as poorly manageable, the interaction is performed in the form of control and domination or isolation and avoidance. The cooperation and contact are not shown concerning both groups of leaders.

It is also possible to find interesting results in features of the choice of images on postcards by members of groups. The color and black-and-white pictures are selected very unequally that can be connected with the conflict which is characterized by a high saturation of an emotional component and a lack of the realized opportunities for the analysis of the created situation of the organization.

Most examinees most often chose postcards with the image of people, buildings and landscapes on content. Most likely, this choice is also indirect evidence of the importance of relations and contacts with other people and can confirm the desire to avoid interpersonal conflicts. The appeal to neutral and emotionally positive material happens in connection with unconscious desire to reduce an involvement into conflict communication and rivalry, to reach balance and tranquility.

Organization members spoke in interview about the negative non-equilibrium conditions increasing over time. Psychological pressure may be one of the basic social risks menacing to safety of intra-organizational environment; it leads to a decrease in the efficiency and reliability of the organization

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functioning in a result of reducing of loyalty and positive motivation of employees. It is evident that the formation of metacognition of employees is determined by steady domination of the top management; and, it is possible to speak about pressure and stress which distort the perception of the organization of both cognitive and regulatory processes. Further, the distorted picture of the events in the organization «manages» the activities of employees, forcing them to defend themselves and save efforts for self-preservation.

Thus, Hypothesis 1 put forward by the authors (the perception of the organization's characteristics which are independent variables can be used by its members in the process of formation of images, i.e. metacognition) proved true. In the process of experiment, organization members indeed showed their views on it, voiced their opinions of its certain aspects and expressed their attitude to them.

Hypothesis 2 (metacognition of organization members differ in connection with their position) was also confirmed in the research: it was found that there are significant differences in knowledge of the organization (structure, size, hierarchy, etc.), views on one's self in the organization ("myself" – "organization" – "society") and its dynamics (real and desired state) in its members: top managers and line managers.

CONCLUSION

The aim of this research was to study the relationship between (1) the perceived aspects of the organization and (2) the objective positions of its members and of the organization as a whole (official position, age, size, territory, and sector). To achieve this aim, the authors used J. Flavell's model (Flavell J.H. 1979) defining metacognition as a special cognitive process aimed at understanding one's own cognitive activity or, in other words, "mental activity aimed at understanding the thinking process". This is the definition followed by this article's authors. J. Flavell distinguished three main components of metacognition: planning, monitoring, and regulation.

This work has an approximate, preliminary nature, so it tends to take into account qualitative rather than quantitative characteristics of the subject being analyzed. The analysis of three Russian small and middle business companies showed some important aspects of an organization as viewed by its members: structure, size, resources, hierarchy, communication and information streams, motivation system. Their content varies among organization members of different positions, which allows drawing conclusions concerning the risks of instability for the organizational system and processes violating the coordinated functioning of the organization, so formation of such metacognition in higher school students will be useful for them and for the organizations where they plan to work. There are metacognition differences in terms of monitoring, or views on the organization's real and desired state forming a multidirectional activity of organization members related to their official position. Formation of this kind of knowledge is also important for students in terms of their career in an organization.

The results of this research can be useful for those who study metacognition in developing markets and institutional environment in the context of using the results to teach high school students, especially in Russia. The theoretical contribution of this work is related to developing and testing a model of relations between perceived aspects of an organization and objective positions of its members and the organization as a whole that can be used in developing training courses for higher school students. In terms of practical importance of the research results, the authors' opinion is that the assessment of

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importance of Russian institutional environment organization members can be useful for entrepreneurs in forming a more humane, person-centered environment in higher school and in various fields of graduates' further activities.

The obtained results should be considered in the context of limitations of the research. Firstly, it refers to the sampling, which only includes three types of organizations from one Russian city. This does not allow the authors to extend the findings to all Russian organizations and beyond the Russian Federation. Russia has its own cultural, political, and social climate, and our model can be applied with changes in the variables included in the study. The directions of future research can include the study of relations between views on an organization and its age, location, sector, profitability etc. The authors believe that this information will allow to specify the content of programs for students. Secondly, because of the complexity of data collection in Russian organizations, only a restricted group of their members were interviewed in each case, which may have led to common method bias [Tang, Hull, 2012; Podsakoff et al., 2003]. That is why we, following recommendations [Podsakoff et al., 2003], took measures to control the possibility of this bias. The authors explained the test subjects before they participated in the survey that it would be anonymous, only the general results will be published, and nothing personal would be brought to knowledge of other participants of the research. In addition, we placed different versions of the same themes in different parts of the interview, and if there was a discrepancy between the responses, we withdrew this unit from the analysis. Thirdly, our research focuses on the regulatory environment, which is especially important in Russia.

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KEY TERMS AND DEFINITIONS

Cognitive Control: A psychological mechanism denoting person's assessment of the current situation to the choice of activity strategy.

Cognitive Style: Includes characteristic of the person's metacognitive regulation of intellectual activity: narrowness - breadth of scanning the visible field; field dependence - field independence; impulsivity - reflexivity; narrow - wide range of equivalence and orientation characteristics within the subjective time [Kholodnaya, 1997].

Complex Organizations: A term for analysis of joint activity of all departments and organizational environment, applying specific methods, the algorithm and communication [W. Loursch].

Emotional Aspects of Metacognition: The predictors of current state and perception of organization and its processes.

Higher School: A general name for the higher education institutions and postgraduate education.

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Metacognition: The complex structure of the human thinking, which occurs from a position of motives and needs of the individual attitudes in the formation of a strategy to achieve or overcome existing difficulties.

Organizational Structure: A term denoting a stable device and the hierarchy of the company.

Social Risks: The interpersonal factors interrupting safety and productivity of whole company and individual activity without direct physical threats. Significant metacognition points of members more often are defined as follows: the size and the structure of the organization, the hierarchy in the organization, its goals, the organization resources, types of resources, the system of information communications in the organization, the remuneration system in the organization, corporate ethics, the message of the organization to the world, the mission of the company [Bogdanov, 1989; Kabashov, 2011].

The Study of Organizations in the Higher School: The process of students' education through the understanding of goals and sustainability of an organization, which leads to the necessity of constant studying, taking responsibility for decision-making and arrangement of one's own study process in an active way. The understanding and the description of the displacement effect in grades and differences in perception of the separate character features of an organization is useful in the education process of the Higher School students. The reason fo that is that their metacognitive abilities get targets that are more precise and reduce the adjustment time to the new conditions of the organization, where they come as young professionals.

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Chapter 12
Exploring the Determinants of Organizational Resilience in Islamic Banks: A Framework Development

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ABSTRACT

Resilience has been viewed as the critical component behind Islamic banking organizations' ability to respond and compete during crisis. However, there seems to be scarcity of empirical attempts to explore the determinants of stronger resilience in Islamic banking organizations. This article is an attempt to develop a managerial framework of Islamic banking organizations that identifies these determinants of improved resilience. Two case studies were conducted in two Islamic banks in Palestine. Data were collected via semi-structured interviews, observations, and archival documents, followed by the use of the Resilience Benchmark Tool (RBT). Cross-case analysis of the results shows that organizational resilience in banking organizations is characterized by two dimensional determinants for improving organizational resilience; planning and adaptive capacity along with a set of ten resilience enhancing factors. The article demonstrates important dynamics of how resilient capabilities can be incorporated into the managerial models of banking organizations during turmoil.

1. INTRODUCTION

Generally speaking, turbulent events that can affect organizational performance take many forms, such as the 2004 Indian Ocean Tsunami, the 2010 Haiti and Chile Earthquakes and the recent global financial crisis. Natural disasters, pandemic disease, economic recession, system failures and human errors can all pose both a potentially unpredictable and severe threat to the continuity of an organization's operation.

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Therefore, the concept of resilience has been reaching increasing prominence both within academia and industry over recent years (Bhamra et al., 2011). The Concept of resilience is grounded in the roots of ecology and social psychology and has expanded to address various areas including organizations, industrial safety, supply chain management, infrastructure development, crisis, and disaster management. Although the context and meaning of resilience may vary across disciplines, the fundamental principle of resilience remains the same (De Florio, 2015). Resilience relates to the capacity of a system to absorb discontinuities and disturbances, such as natural disasters and other potential crises, and retain essential system structures, processes and feedbacks (Adger et al., 2005). As highlighted by several authors (Seville et al., 2006; Crichton et al., 2009; Gibson and Tarrant, 2010; Lengnick-Hall et al., 2011), through the cultivation of resilience within a system, it may be possible to not only overcome potential disruptions but transcend these events and develop towards a more robust system.

Banking organizations, similar to other organizations, are subject to a diverse and ever-changing environment. The threats that turbulent environment possess can vary in both severity and frequency and may originate internally or externally to banks. An event in one area of the environment can often have disastrous effects on these organizations (Juttner, 2005). The recent global financial crisis has been described as the worst in history. It has adversely affected the global banking organizations performance and profitability. Researchers argued that the major cause of this crisis is financial imbalances. Nevertheless, there is no full agreement about the origin of these financial imbalances. As a result, several banks collapsed and many others were bailed out by their governments. Other large banks, such as Royal Bank of Scotland and Citibank, have survived this crisis but suffered tremendous losses (Acharya and Schnabl, 2010). Conversely, during the financial crisis, researchers and financial reporters witnessed an unprecedented better cumulative profitability and performance of Islamic banking organizations than conventional banks.

Islamic Banks and Conventional Banks have similar roles. They manage all types of risks such as liquidity risk, operational risk and others. The main difference between them is that Islamic Banks operate in accordance with the rules of Islamic principles. The aim of Islamic Banks is not only the creation of maximum returns on capital but also the achievement of socio-economic goals of the Islamic region, such as full-employment, high economic growth rate, equitable distribution of wealth and income, socio-economic justice (Ouerghi, 2014). Central to Islamic financial system adopted by Islamic Banks is the fact that banks are not allowed to benefit from lending money or receiving money from customers. This means that earning interest is strictly prohibited as a method of creating profit. Instead, Islamic Banks can create profit by adopting the principles of trading through selling approved commodities and services to its customers. Therefore, Islamic Banks are expected to trade in Islamic Law-compliant investments using the money deposited by customers, and then profits are shared by the two parties (Hassan and Mervyn, 2007). There are three main schemes that can contribute to the profits gained by Islamic Banks; a) buying a commodity or goods for a customer then leasing it back to them (i.e. Ijara), b) selling a commodity or goods that are owned by the bank to its customer based on mutually negotiated margin (i.e. Murabaha), c) and creating a joint venture where the customer and the bank contribute to a capital for specific project or operation with an agreement about shares and returns for each party (i.e. Musharaka) (Ouerghi, 2014). However, in order to achieve socio-economic justice, Islamic Banks are required to comply with the Islamic law of *Zakat* inherited in Islam*;* a mechanism for the redistribution of wealth in the Islamic society. The amount of *Zakat* is 2.5 percent on assets held for a complete year. The most important purpose of *Zakat* is to reduce differences in the Islamic society by enabling the poor/needy to have a normal and decent life (Hassan and Mervyn, 2007).

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There are several studies on comparison of efficiency between Conventional Banks and Islamic Banks, but few studies are focused on exploring the factors enabling Islamic Banks to respond to disturbances in crisis periods (Dridi and Hasan, 2010; Boukhris and Nabi, 2013). Previous research has proposed conceptual models that illustrate how organizations respond to discontinuities (Staw et al., 1981), it has also identified human, operational and financial resources, and other factors necessary for organizations to achieve resilience (Bennis and Thomas, 2002; Worline et al., 2002; Hamel and Valikangas, 2003; Sheffi and Rice, 2005). Resilience, in this sense, is a multidimensional and multifaceted concept (Ponomarov and Holcomb, 2009), as it resides in both individual and organizational levels (Bhamra et al., 2011). The interaction between the individual resilience and organizational resilience is quite similar to the interaction between the systems and subsystems (Lengnick-Hall et al., 2011). Therefore, the research question sought to be answered in this paper is as follows:

RQ: What are the determinants for improved Islamic banking organizations' resilience over conventional banks?

Bhamra et al. (2011) and Jaaron and Backhouse (2014) have explained that literature is lacking empirical methods such as case studies on how organizations, including Islamic Banks, can achieve resilience. To close this gap, two independent case studies are presented in this paper. The case studies were conducted in two Islamic Banks operating in Palestine. The results of this research suggest that Islamic Banks can perform better than conventional banks during turbulent events due to availability of two dimensional determinants for improved organizational resilience; adaptive capacity dimension and planning dimension. The adaptive capacity dimension has been found associated with minimization of silos, internal resources, staff engagement and involvement, information and knowledge, leadership, decision-making, and situation monitoring and reporting, whereas the dimension of planning has been found to be associated with planning strategies, stress testing plans, proactive posture, external resources, and recovery priorities. The paper is focused on developing a resilience enhancement framework, for Islamic banking organizations, where resilience determinants are identified.

The paper is structured into eight sections. In the next two sections, the concepts and dimensions of organizational resilience are presented. Then, an account is provided in section four on achieving organizational resilience in organizations based on a review of existing literature. Next, Islamic Banks are characterized and compared with Conventional Banks in section five. The research methodology, including research sites, is then presented in section six. Finally, in the seventh and eights sections, results are presented and conclusions discussed.

2. CONCEPTUALIZING ORGANIZATIONAL RESILIENCE

The term resilience is used in a wide variety of fields that include ecology (Walker et al., 2002), metallurgy (Callister, 2003), individual and organizational psychology (Barnett and Pratt, 2000; Powley, 2009), supply chain management (Sheffi, 2005), strategic management (Hamel and Valikangas, 2003) and safety engineering (Hollnagel et al., 2006). Although the context of the term may change, across all of these fields the concept of resilience is closely related with the capability and ability of an element to return to a stable state after a disruption (De Florio, 2015). This is similar the definition of resilience from an engineering perspective, where it is defined as "the tendency of a material to return to its original

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shape after the removal of a stress that has produced elastic strain" (Merriam-Webster Dictionary, 2007). Nevertheless, when the notion of resilience is applied to organizations, this definition does not drastically change. Organizational resilience is, therefore, related to both the individual and organizational responses to turbulence and discontinuities that allow organizations to return to their stable operational modes after turmoil (Bhamra et al., 2011). In this sense, Jaaron and Backhouse (2014) define organizational resilience as the ability of an organization to adapt to the conditions and changes available in the surrounding environment based on its ability to absorb environmental variability. The business environment is constantly changing. Managing change to adapt to an uncertain future is a challenge that requires resilience. While it is not possible to foretell the future, the organizations can equip themselves to adapt to the turbulence ahead, so resilience may be the key to sustainability (Hart and Milstein, 1999, Hamel and Valikangas, 2003, Moore and Manring, 2009). Organization's must strive and continually adapt in order to sustain competitiveness and remain viable within uncertain environments. Through turbulent economic, social and environmental periods, organizations will experience disruptions and discontinuities. The concept of resilience within organizations may offer a potential framework to overcome these disruptions and discontinuities, and allow for organizational development (Bhamra et al., 2011). Resilience, in this sense, is perceived as a dynamic capability of the organization that must be linked with surrounding environmental conditions (De Florio, 2014a). The study of organizations from a disaster perspective includes an array of literature examining why they fail, which is mainly drawn from the analysis of major accidents (Choo, 2008; Paté-Cornell, 1993; Sheaffer et al., 1998), as well as several studies proposing models of crisis causation and management (Hwang and Lichtenthal, 2000; Pearson and Mitroff, 1993; Pearson and Clair, 1998; Shrivastava et al., 1988; Smith, 1990; Turner, 1976). Less attention is given to what makes organizations succeed despite disaster. According to De Florio et al. (2014b), no organizational solutions have so far been introduced to be activated in preparation, during, and after crisis that can tap on the abilities of the social capital of the organization. However, organizational resilience literature is beginning to fill this gap and to focus on the characteristics of employees in organizations that survive and thrive (Corey and Deitch, 2011; Kendra and Wachtendorf, 2003; Seville et al., 2008). Concepts have also emerged that provide a sociotechnical systems view of organizations such as high reliability organization theory (Bierly and Spender, 1995; Bourrier, 2011; Roberts, 1990), and normal accident theory (Perrow, 1999), which also explore elements linked to resilience. As shown by a variety of authors (Dooley, 1997; Comfort et al., 2001; Dalziell and McManus, 2004; Vogus and Sutcliffe, 2007; Pettus et al., 2009) within an ever changing environment capable of significant turbulence, a system is required to change and adapt in response to environmental fluctuations in order to sustain function and retain advantage. Without this change in the face of adversity, systems will follow a primarily recovery based approach which may introduce maladaptive cycles of development. Instead, a resilience approach in the face of perturbation is suggested to enable the adaption to new risk environments and circumstances (Bhamra et al., 2011). Within the context of organizations, resilience relies upon processes, structures, and practices that promote competencies, restore efficacy, and promote growth and development. Through this, resilience provides organizations with the dynamic capabilities to mediate and overcome major disruptions (Vogus and Sutcliffe, 2007).

In this paper, the definition of organizational resilience adopted is "a function of an organization's situation awareness, identification and management of keystone vulnerabilities and adaptive capacity in a complex, dynamic and interconnected environment" (McManus, 2008). Resilience thereby strongly relates to the adaptive capabilities that enable an organization to respond to change effectively while enduring minimal discontinuity. Organizational resilience depends on the capability of an organization

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to restore efficacy after a disruption. However, within complex environments often organizations have limited capacity to anticipate every challenge and discontinuity that could possibly occur (Sutcliffe and Vogus, 2003). As identified by Shaluf and Said (2003), disruptive events also stand to temporarily overwhelm the response capacity of affected systems through both natural and man-made events. These events can vary in both severity and magnitude, causing extensive damage, economic loss, disruption, injury or in severe instances loss of life. As such, there has been a growing amount of evidence from several large-scale incidents over the past decade that have highlighted the need to develop organizational and infrastructural systems capable of adapting and overcoming complex disruptive events.

The literature on resilience suggests that there is a need for constant, proactive and ever quicker approaches to change (Bolton, 2004), before the case for change turns out to be urgently inevitable (Hamel and Valikangas, 2003). In effect, resilience is an organization's level of preparedness to change by rapidly redeploying and reconfiguring its technical and organizational resource base, thus enabling a quick response to unpredictable changes within its operating environment (Sine and Davidm, 2003). Consequently, it is agreed that resilience is a distinctive organizational capability (Stoltz, 2004; Barton and Christianson, 2006; Bergman et al., 2006) that is underpinned by an organization's ability to change timely, rapidly and easily (Vickers and Kouzmin, 2001). However, in most organizations, change is still problematic; studies have shown that two out of three change initiatives fail (Sirkin et al., 2005). As such, there is an urgent need to understand the dimensions of organizational resilience that are considered a prerequisite for organizational preparedness to changes, and also to understand organizational structures where these dimensions can prosper to enhance resilience. These are highlighted in the next two section of this paper.

3. DIMENSIONS OF ORGANIZATIONAL RESILIENCE

In pursue of researchers to understand the dimensions of resilience, Mallak (1998) developed six factors as metrics of resilience, these are goal directed solution seeking, avoidance or skepticism, critical understanding, role dependence, source resilience, and access to resources. Subsequently, Somers (2009) developed the organizational resilience potential scale (ORPS), where he used Mallak's (1998) six metrics of resilience in addition to measures of decision structure and centralization, connectivity, continuity planning, and agency accreditation. While both studies of Mallak (1998) and Somers (2009) represent significant theoretical contributions, neither of them was developed using a random sample and therefore cannot be used as the sole base for a robust resilience measurement tool. However, De Florio (2014a) asserted that due to the dynamic nature of resilience, it cannot be measured in absolute terms and that a number of indicators need to be taken into consideration in this process. According to author, these indicators include, first, the behaviors that system parts, such as the parts of an organization, are able to perform. Second, characteristics of individuals and the social system they are located in. Third, the organizational structures and the degree of control and centralization they employ. Similarly, McManus et al. (2008) proposed a definition of organizational resilience as "a function of an organization's overall situation awareness, management of keystone vulnerabilities and adaptive capacity in a complex, dynamic and interconnected environment." Through this definition, authors developed a model where relative overall resilience (ROR) is composed of three factors (situation awareness, management of keystone vulnerabilities, and adaptive capacity) and also introduced 15 indicators of organizational resilience,

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five for each factor (McManus et al., 2008). The ROR model has been found to be a comprehensive tool covering all dimensions of organizational resilience identified in literature. Therefore, the ROR provides a good context for this current type of research. The three factors of the ROR models are explained below.

3.1. Situation Awareness

The term situation awareness was first used in connection with the military, where pilots are required to understand, assimilate, and act on large volumes of information to perform their roles (Endsley, 1995). Endsley et al. (2003) define situation awareness as "being aware of what is happening around you and understanding what that information means to you now and in the future." They go on to note that the term is usually applied to operational situations. One example of this is the application by Masys (2005) to airline operation and safety, which suggests that situation awareness is distributed across teams, groups, and organizations, as well as human and machine agents. Masys (2005) draws on Stout and Salas (1998) and argues that situation awareness "should be regarded as an essential requirement for competent performance in dynamic environments, with inaccurate and incomplete situation awareness often leading to dangerous and life-threatening consequences." Crichton et al. (2005) echo this when they discuss incident command skills in the oil industry. They argue that situation awareness is a vital command skill in a crisis because the first step in decision making is to evaluate the situation. Roth et al. (2006) discuss the importance of shared situation awareness as an informal cooperative strategy between workers which occurs within the organization's culture.

3.2. Management of Keystone Vulnerabilites

Turner (1978) made the first theoretical analysis of organizational vulnerability to technological disasters, emphasizing the role of organizational norms and values. Several authors have also focused on identifying organizational vulnerabilities that have contributed to organizational losses or failure during and after disasters using case study and survey research. Kroll et al. (1990) identify organizational size as vulnerability when they discuss how small businesses suffered more severe losses during and after the Loma Prieta earthquake. Durkin (1984) and Alesch and Holly (1998) identify pre-disaster economic health as a vulnerability during and after the 1984 Coalinga earthquake and the 1994 Northridge earthquake. Alesch and Holly (1998) also identify the owners' entrepreneurial skills, or lack of, and the effect of the disaster on demand for the organization's products or services as vulnerabilities. McManus et al. (2008) discuss what qualifies a particular vulnerability as keystone vulnerability and note other uses of the term keystone: ecological and architectural. They go on to define keystone vulnerabilities as "components in the organizational system, which by their loss or impairment have the potential to cause exceptional effects throughout the system" (McManus et al., 2008).

3.3. Adaptive Capacity

An organization's ability to adapt is at the heart of its ability to display resilient characteristics. Kendra and Wachtendorf (2001) argued that the idea of resilience as adaptive behavior is increasingly being applied to the business environment to help explain how organizations manage the balance between stability and change. Starr et al. (2003) discussed the importance of adaptation and suggest that adaptive capacity is also linked to an organization's competitiveness. Kendra and Wachtendorf (2003) noted that organizations

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displayed "adaptive behavior that was not dependent on either specific physical facilities or specific technological systems." Here they described how organizations drew on their culture and the capabilities of their staff, as opposed to their structures and technology, to develop adaptive responses to emerging situations. An organization's adaptive capacity then, is their ability to continuously design and develop solutions to match or exceed the needs of their environment as changes in that environment emerge.

4. ACHIEVING ORGANIZATIONAL RESILIENCE

Building a resilient organization can provide high levels of competitive advantage (Lee et al., 2013). Stephenson et al. (2010) have explained that organizations can struggle to allocate resources to building resilience, given the difficulty of demonstrating progress or success, particularly during times of crises. This is partly because resilience building programs need to compete for resources against profit-driven activities for which there are metrics to evaluate whether they have produced financial growth or not (Kay, 2010). Lengnick-Hall et al. (2011) has emphasized that building organizational resilience is possible as it is embedded in a set of individual level attributes and organisational level processes. In congruence to this, Jaaron and Backhouse (2014) have explained that organisational resilience can be achieved by having an organic structure in the organisation where individual employees are supported to build high level of affective commitment towards their organization. Meyer et al. (1998) demonstrated that during times of instability and crises, affective commitment can activate organisational resilience as it emanates from the organization's individual employees located within team, by efficiently reconfiguring organizational resources to respond to threats. Various behavioural characteristics have, therefore, been linked with achieving organizational resilience (Limnios et al., 2014). However, Stephenson et al. (2010) asserts that organizational resilience is more than individual capabilities and social interactions that are usually difficult to measure, and that a direct link to financial measures is particularly important to support and enhance organizational resilience. This view is also shared by Farooq and Zaheer (2015) in their study of organizational resilience in Islamic Banks. They found that better financial performance of Islamic Banks during economic crisis, accompanied by supportive leadership and both cultural and religious values, explained in the next section, has brought about more resources spending on business operations to deal with the economic crisis. They also added that Conventional Banks lack some cultural and religious values, found in Islamic Banks, which are essential for enhancing resilience. It is as stated by Bhamra et al. (2011) and Giezen (2013) that the efficient employment of organizational resilience is mainly driven by the development of a resilience culture, within a prosperous business values, where leaders are supportive and employees are working within teams (Oppong et al., 2014). It would seem more logical, then, that achieving resilient organizations requires financial stability and cultural readiness before resources can be spent on building internal operations that enhance organizational adaptability and take advantage in the face of discontinuities (McManus, 2008).

5. ISLAMIC BANKS VS. CONVENTIONAL BANKS

As it was mentioned earlier, business arrangements and contracts in Islamic Banks are based on the concept of prohibiting the use of interest or usury (Riba). Islamic banking system appeared in the 1970's by the establishment of the Dubai Islamic Bank (DIB) in the United Arab Emirates, followed by the

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Islamic Development Bank (IDB) in Jeddah, Saudi Arabia. Islamic banking is based on different business law: Profit and Loss Sharing (PLS) principle, fix charges established forehand, no interest, and lender-borrower collaboration. Chapra (2008) stated that debt selling and derivatives are the main causes of the financial crisis. The author also explained the difference between Islamic Banks and Conventional Banks in the way they deal with risk-taking. In the Conventional Banks, risk is transferred to them by depositors which receive guaranteed and predetermined rate of return of their investment. However, in the Islamic Banks, profit and losses are shared, the return for the investors are not guaranteed and depend on the banks performance. Another point of divergence between the two types of banks is the risk transfer. In Conventional Banks borrowers pay interest independently of the return of their investment. So, Conventional Banks transfer the risk through credit default swaps or securitization, financing is debt-based. However, in Islamic Banks, there are two main uses of sources that have been explained earlier: Musharaka (Equity participation) and Mudharaba (Trustee finance). In the Musharaka contract, both banks and investors contribute to the capital of project and share possible profit or losses according to their shareholding capital. In the Mudharaba contrast, Islamic Banks provide the required capital for a project, the investor contributes expertise, labor and management of the firm in this case, only profit is shared by the bank and investor, losses are supported by the banks (Ouerghi, 2014). Few studies conduct a comparative analysis on Islamic Banks and Conventional Banks performance during and after the global crisis. Dridi and Hasan (2010) analyzed the impact of the global crisis on profitability, credit growth, asset growth and external rating, on the sample of 120 Islamic and conventional banks. Their results support the better performance of Islamic Banks during the economic crisis.

6. RESEARCH METHODOLOGY

In order to empirically explore the determinants of organizational resilience in Islamic banking organizations, two case studies were conducted in two Islamic Banks in Palestine. Case studies have the advantage of being able to answer questions like ‘what’, ‘how’ and ‘why’ (Yin, 2009). Also, case studies typically use any and all types of methods for collecting and analyzing research data such as interviews, questionnaires, archives, and observations (Hamel, Dufour, and Fortin, 1993).

The mixed methods design (Tashakkori and Teddlie, 1998) is used in this research as the technique for conducting the research process. Further, cross-case analysis was used to search for common factors and themes. Both quantitative and qualitative data were collected in the two case studies simultaneously. Four main sources of qualitative and quantitative data have been employed; these are observations, semi-structured interviews, questionnaires, and documents (Bryman and Bell, 2007). Overall, 12 semi-structured interviews were conducted to identify availability of resilience capabilities and to initially explore main determinants for enhanced organizational resilience in these banks. Interviewees from both case studies were asked questions such as ‘What sort of hazards/problems/events the bank is facing or do you think this bank is exposed to?’, ‘What do you think the consequences of these events would be on the bank?’, ‘how well can you manage these events and what level of control do you think the bank has over this?’, ‘what level of business interruption insurance or external aid is available to the bank?’, ‘how suitable is this for the expected range of hazards and their consequences on the bank?’, ‘what does, or should, an emergency management plan look like for the bank?’, ‘what level of emergency management exercises does the bank engage in? how frequently? what are the principle barriers to participation in such exercises?’. Interviews were tape recorded and transcribed in preparation for data analysis. Observations

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and notes were recorded to supplement the data collected through interviews. In fact, observations and documents collection captured things that escaped the interviewees' awareness during interviews. Furthermore, the Resilience Benchmark Tool (RBT) (ResOrgs, 2013); developed by the Resilient Organizations research program at the University of Canterbury and the University of Auckland in New Zealand was implemented. The RBT was used to; firstly, confirm availability of resilience capabilities in the two case study organizations, and secondly to scrutinize the main determinants of resilience capability identified via interviews. The tool consists of thirteen indicators to measure the three interdependent attributes of organizational resilience: Leadership and Culture, Networks and Change Ready. It is a tool for improving the organization understanding of its resilience capabilities and performance. In addition to this, the tool allows the organization to benchmark other organizations within the same sector thus, providing the organization with a self-analysis of resilience strengths and weaknesses in order to enhance their overall organizational resilience. The two research sites of the case studies are presented below, and data sources used in the two case studies are summarized in Table 1.

6.1. Research Sites

The estimated market share for the Islamic banks in Palestine is approximately 8% of the net assets of the Palestinian banking sector and approximately 9% of the total direct funding and customer deposits. Knowing that the share of the global Islamic banking industry exceeded 25% means that there is great opportunity in front of the Islamic banking industry in Palestine to expand its market share. In this research inquiry, two Islamic Banks have been studied. The banks details, as well as those of the participants, are kept anonymous and the banks will be denoted as 'Bank A' and 'Bank B' throughout this paper.

"Bank A" is one of the local leading banks in Palestine. It was established in 1995 as a public limited company, in 1997 the bank got the license from Palestinian Monetary Authority (PMA) to undertake banking business in accordance with the provisions of Islamic Sharia. In 2005, the bank signed an agreement with Cairo Amman Bank to purchase his net assets in Islamic transactions branch. While at the beginning of 2010, the bank singed another agreement with Al-Aqsa Islamic Bank to purchase its banking portfolio. At the time of the research, "Bank A" operates from its main branch in Ramallah along with

Table 1. Source of case study data

Bank	No. of Interviews	Interviewees' Roles	RBT	Observations	Documents
Bank A	7	• Member of board of directors • Regional manager • Risk management manager • Internal audit manager • Financial manager • Human resource manager • Branch manager	Circulated among 7 senior managers	Covered all aspects of planning and risk management activities	Various sources of publications and governmental and internal reports
Banks B	5	• Risk management manager • Internal audit manager • Financial manager • Human resource manager • Al-Bireh branch manager	Circulated among 5 senior managers	Covered all aspects of planning and risk management activities	Various sources of publications and governmental and internal reports

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another seventeen branches distributed allover West-Bank and Gaza Strip. The bank has a total of 397 employees comprised of 48 regional managerial staff, 81 managerial staff, and 268 customer service staff.

"Bank B" is the first Islamic banking company operating in Palestine. It was established in 1995 as a public limited company. At the begging of 1996 the bank got the license from Palestinian Monetary Authority (PMA) to undertake banking business in accordance with the provisions of Islamic Sharia. At the time of the research, "Bank B" operates from its main branch in Al-Bireh city along with another nine branches distributed allover West-Bank and Gaza Strip. The bank has a total of 264 employees comprised of 142 executive management staff, 122 customer service staff.

7. DATA ANALYSIS AND RESULTS

Once each single-case was conducted thoroughly, the cross-case analysis was carried out at two different levels. Firstly, qualitative data analysis, including thematic analysis of interviews, observations and documents were completed. Secondly, the quantitative data generated from the use of RBT (ResOrgs, 2013) was analyzed to measure the three interdependent attributes of organizational resilience: Leadership and Culture, Networks and Change Ready to confirm initial findings from qualitative data analysis. The aim of multiple case analyses is to search for similarities and differences and to expand the understanding of similarities and differences across cases (Miles and Huberman, 1994). The results from the thematic analysis of qualitative data were directly compared with results from the quantitative methods of the two cases. The process started by transcribing and studying the interviews, the 'thematic analysis' approach (Taylor and Bogdan, 1984; Attride-Stirling, 2001) was employed to analyze the data following Bryman and Bell's (2007) considerations in coding in order to achieve the analysis themes; these are illustrated in the following stages:

1. General theoretical topics were identified by reading the interview transcripts and revising the research question;
2. General theoretical topics helped in generating a coding framework for the interview transcripts. This is a set of topics carefully selected to reflect what has been said in interviews (Attride-Stirling, 2001);
3. After identifying the coding framework it was possible to divide the interview transcripts into meaningful parts, and every part was given a code that belongs to a pre-defined topic;
4. At this stage it is necessary to revise interview transcripts to find codes with similar topics. Similar topics are clustered around larger central themes that were used later for interpretation.

Table 2 illustrates the coding framework devised and the central themes found.

7.1. Theme 1: Risk Management Activities

With this theme aimed at identifying the foundations for the risk management significance to the Islamic banks as a methodology to enhance the overall organizational resilience. The prevalent feeling among interviewees was that their risk management tools were vital for their readiness for any unexpected disruptions or events, and that provided them with a sense of organizational proactive posture. The interviewees identified that their improved risk management capabilities were due to delegation of decision

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Table 2. Thematic analysis

Codes	Issues Discussed	Basic Theme	Central Theme
• Hazards found • Consequences • Manage risk	• Sort of hazards the bank is facing or do you think this bank is exposed to • Consequences of these hazards • Management of these hazards and the level of control over it	• Justifying risk management • Decision Making • Readiness and Proactive posture	Risk management activities
• Knowledge • Empowerment • Systems	• Staff roles, responsibilities and training • Staff make business decisions • Systems and procedures documentation and implementation	• Staff information • Leveraging knowledge • Situation Awareness • Internal resources	Internal capacity building
• Strategy • Planning	• Strategic, business continuity, stress testing, emergency planning • Integration of plans and monitoring and evaluation of polices and plans	• Role of planning • Stress testing plans • Planning strategies • Identifying, assessment and controlling role	Planning strategies
• Leadership • Commitment • Communication	• Decision making during times of crisis • Senior management support to the risk management activities • Staff empowerment and rewarding system • Upwards and downwards communication and effectiveness of communication channels	• Leadership • Staff engagement • Breaking silos	Leadership and staff engagement

making authority to most highly qualified personnel in the organization. The adapted risk management concept and its related activities have been developing since the establishment of the two banks and still improving; intensive monitoring and evaluation for stress testing plans and business continuity plans are practiced at a constant base, gradual employee empowerment to use their knowledge in novel ways to solve new and existing problems was encouraged. On the other hand, most interviewees pointed out the importance of the compliance and internal audit department in risk management activities for improving organizational resilience.

7.2. Theme 2: Internal Capacity Building

Interviewees pointed out the importance of information and knowledge for human resource development especially in the field of risk management. It was clarified that equipping employees with the full situational understanding, skills and access to information, and specialized training that enables them to perform risk management activities effectively was another pillar for their perceived organizational resilience capabilities. They also pointed out that critical information is stored in a number of formats and locations and the staff has access to this information in addition to having access to experts' opinions when needed. They also emphasized on the importance of job rotation concepts and roles sharing between employees; so that qualified personnel will always be available to fill key experts' roles in times of their absences. The results also showed that the two case study banks adopted a rewarding scheme for rewarding those employees who think outside the box.

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7.3. Theme 3: Planning Strategies

The interviewees pointed out the importance of strategic plan, business continuity plans and stress testing plans in enhancing the overall resilience capabilities and practices in the two banks. They also empathize on the importance of development of a risk management strategy to be aligned with the bank strategy. On the other hand, the interviewees were satisfied with the current monitoring and evaluation mechanism for following-up and updating the plans. Moreover, the interviews pointed out the importance of identifying all hazards in their departments by undertaking a risk assessment on a specific task/activity periodically. The two banks to some extent practiced looking for hazards that have the potential to harm people, systems being used, work environment and/or work processes adopted. Due to this, several risks are visible and their occurrence is reduced as reasonably as possible.

7.4. Theme 4: Leadership and Staff Engagement

Majority of senior managers were directly involved as a member in risk management committee other senior management were involved from the earliest stages. Interviewees insisted that staff engagement at operational levels and senior management support was vital for resilience enhancement. When risk management was first introduced in the banks, head office senior management and other departmental managers were provided with qualitative evidences on how potentially the risk management concepts are beneficial to their bank. Interviewees revealed that difficulty in quantifying the impact of risk management, at the beginning, was a source of threat to risk management implementation at all levels. However, the two banks used successful case studies to convince their top management of these benefits. Furthermore, interviewees emphasized that open channels of communication between departments and branches is essential for information sharing and thus better response to unexpected events.

7.5. Resilience Benchmark Tool Analysis

The statistical analysis of the data collected via the RBT (ResOrgs, 213) showed that the average level of organizational resilience for Bank A and Bank B was very good with an overall average of 4.0 and 3.93 respectively. Despite that, none of the two banks were found to be outstanding in all attributes, showing that there is room for improvement for the two banks. Figure 1 shows that the attribute with the highest value and greatest similarity between the two banks is in leadership and culture at an average of 4.21. The change ready attribute also reflected in a small difference between the two banks at an average of 3.98. The lowest value for the two banks was in network attribute at an average of 3.7. Table 3 shows the scores of the thirteen indicators at both research sites for these three attributes.

The differences between the two banks lie in the comparison of the 13 resilience indicators shown in Table 3. Although the same pattern of scores has been detected in the two research sites, the indicators with the greatest similarity between the two banks are mostly in the indicators of Leadership and Staff Engagement in the “Leadership and Culture” attribute, and Internal Resources indicator in the “Network” attribute. Also, Planning Strategies indicator in the “Change Ready” attribute. However, the largest differences were relatively noticed in Decision Making indicator of “Leadership and Culture” attribute, Leveraging Knowledge indicator in “Networks” attribute, and Unity of Purpose and Stress Testing Plans in “Change Ready” attribute. Figure 2 shows a comparison of the thirteen resilience indicators in the two research sites.

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Figure 1. Comparison of the three resilience attributes for "Bank A" and "Bank B"

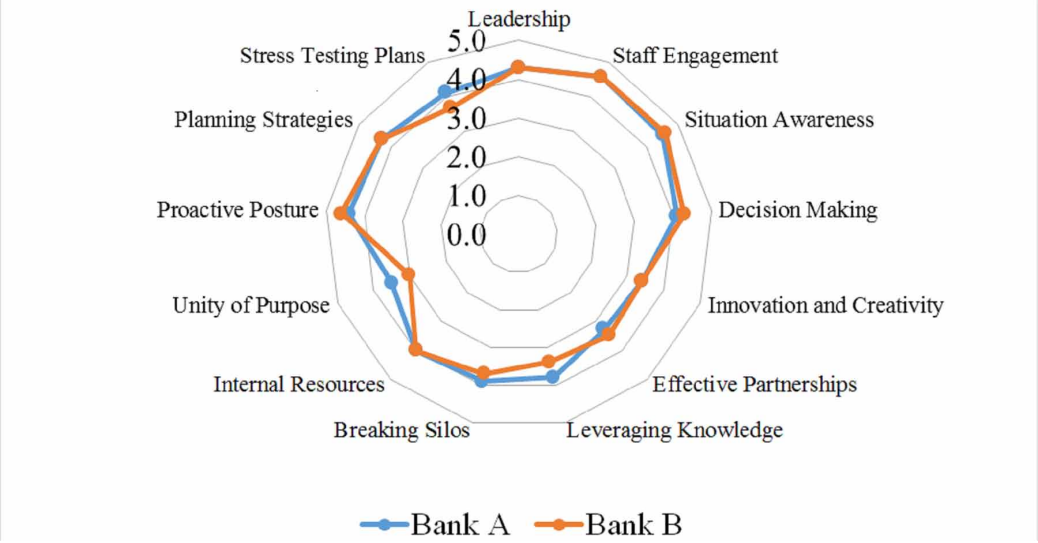


Table 3. Results of RBT at research sites

Attribute	Indicator	Bank A	Bank B	Mean	Supported
Leadership and Culture Attribute	Leadership	4.3	4.3	4.3	Yes
	Staff Engagement	4.6	4.6	4.6	Yes
	Situation Awareness	4.5	4.6	4.5	Yes
	Decision Making	4.1	4.3	4.2	Yes
	Innovation and Creativity	3.4	3.4	3.4	No
Leadership and Culture Attribute Overall Mean		4.18	4.24	4.21	
Networks Attribute	Effective Partnerships	3.3	3.5	3.4	No
	Leveraging Knowledge	3.8	3.4	3.6	Yes
	Breaking Silos	3.9	3.7	3.8	Yes
	Internal Resources	4.0	4.0	4.0	Yes
Networks Attribute Overall Mean		3.75	3.65	3.7	
Change Ready Attribute	Unity of Purpose	3.5	3.0	3.2	No
	Proactive Posture	4.4	4.6	4.5	Yes
	Planning Strategies	4.3	4.3	4.3	Yes
	Stress Testing Plans	4.1	3.7	3.9	Yes
Change Ready attribute Overall Mean		4.07	3.90	3.98	
Overall Mean		4.0	3.93		

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Figure 2. Comparison of the thirteen resilience Indicators between "Bank A" and "Bank B"



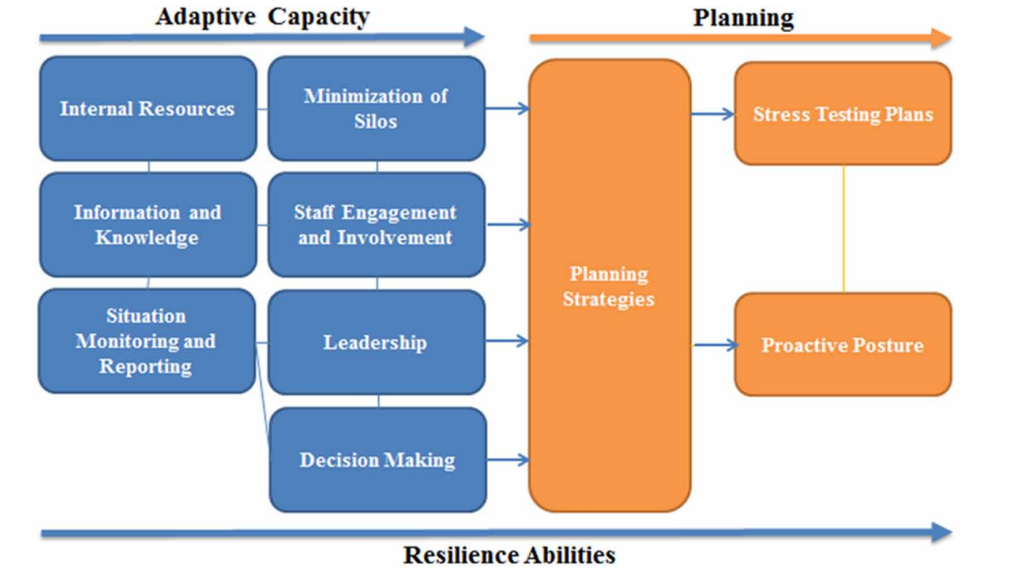
However, results show that out of the thirteen indicators measured by the RBT only ten indicators were supported by interviews results as the main determinants for improved resilience capabilities in the two Islamic Banks studied. These are the indicators of leadership, staff engagement, situation awareness, decision making, leveraging knowledge, breaking silos, internal resources, proactive posture, planning strategies, and stress testing plans. While the remaining three indicators of innovation and creativity, effective partnerships, and unity of purpose where not supported by the interviews results. This explains why these three indictors scored the lowest values in the RBT as shown in Table 3.

8. DISCUSSION AND CONCLUSION

In this exploratory study, an attempt has been made to investigate the availability of resilience capabilities in Islamic Banks, and to identify the major determinants of this resilience capability. The study demonstrated an important dynamics of how resilient capabilities can be achieved in Islamic Banking organizations. A managerial framework, where resilience capabilities determinants have been incorporated, is shown in Figure 3 below. The framework has been constructed to operationalize resilience as a function of adaptive capacity and planning dimensions. Based on the result of both interviews and RBT, there are ten indicators for organizational resilience for Islamic banking organizations. The first set of determinants is minimization of silos, internal resources, staff engagement and involvement, information and knowledge, leadership, decision-making, and situation monitoring and reporting. These represent the adaptive capacity dimension. While the remaining five determinants are planning strategies, stress testing plans, proactive posture, external resources, and recovery priorities. These represent the planning dimension. This framework represents congruence with the work of McManus (2007). He presented a Relative Overall Resilience (ROR) model consisted of three dimensions; situation awareness, management of keystone vulnerabilities and adaptive capacity with fifteen different indicators.

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Figure 3. Managerial Framework showing determinants for enhancing organizational resilience in Islamic banking organizations



The results show that the two Islamic banks included in the study possess relatively high levels of resilience capabilities. However, there seems to be room for resilience improvement for the two banks. As a smaller country, Palestine is regularly exposed to business threats with changing markets, supply chain issues and staffing challenges. The country is to some extent vulnerable to natural disasters such as bad weather conditions and constant political instabilities. Islamic banks in this environment keenly consider the importance of organizational risk management for business as a driver for surviving a crisis and even thrive. The result of the two case studies showed that risk management introduction and maturity to the Islamic banks is a step in the right direction to enhance the organizational resilience of these banks. Further, human resources capacity building through leveraging staff knowledge levels and information sharing was vital for sustaining relatively high level of resilience capabilities. In addition, the results supports the notion that a well-integrated action plans and strategies can enhance the overall organizational resilience from two perspectives; supporting the new concept of organizational resilience and harmonizing the development and evaluation of plans and strategies. Another dimension where resilience capabilities availability in Islamic Banks was supported is the senior management engagement in risk management activities. Furthermore, results have proved that staff empowerment by their immediate top management was very essential for employees to use their latent skills and innovation to solve and adapt to unexpected disruptions. This explains why the two case study banks included in this research showed an excellent resilience score in leadership, staff engagement and situation awareness indicators. On the other hand, leveraging knowledge and breaking silos indicators resulted in a fair resilience score, while proactive posture, decision making, internal resources, planning strategies, stress testing plans indicators scored a good resilience result.

The analysis of the results showed that the indicators of leadership, staff engagement, and internal resources have the same resilience benchmark average. This is due to the fact that the Palestinian banks should be committed to PMA obligations and instructions regarding the risk management procedures,

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practices and activities including the procedures for managing their internal resources and the implementation of Basel II accords. In addition to that, PMA conducted several training workshops for the risk management team in "Bank A" and "Bank B" so that they have a mutual information and knowledge backgrounds. Furthermore, the two banks implemented the same risk management system; they have interchanged seven senior managers so they almost share the same experience and culture.

Moreover, analysis of the results at both case studies suggested that in order to enhance the organizational resilience the Islamic banks should embrace the concepts of "Leveraging knowledge" necessary for learning organizations. A learning organization is the organization that acquires knowledge and innovates fast enough to survive and thrive in a rapidly changing environment. Change management is a systematic approach to dealing with change, both from the perspective of an organization and on the individual level. Engaged and involved employees are emotionally invested in the whole organization, they believe in what they are doing and are dedicated to their peers, their supervisors and their organization. When done right, engagement and involvement is a powerful mixture, and the power is contained within the concept of discretionary effort, increased levels of employee engagement and involvement correlate with higher knowledge acquisition and profit generation, productivity, while decreasing absenteeism, and turnover.

This research has the limitation of providing attempts to only explore the dynamic of organizational resilience in Palestinian Islamic banks. Future research is needed to explore the dynamics of organizational resilience in Islamic banks in other countries and regions. As such, future research directions should explore and compare the enabling conditions and determinants of organizational resilience between countries and regions. In addition, further research is required to investigate how the implementation of Basel III: A global regulatory framework for more resilient banks and banking systems impact the resilience of Islamic banking organizations. Furthermore, it is proposed that future research directions focuses on exploring the enablers of organizations to go beyond resilience by discovering how to tap employees commitment and develop the capacity to learn at all levels. It is as Senge (1990) said "Learning organizations are possible because at heart we all love to learn. Through learning we re-create ourselves and are able to do something we were never able to do earlier. Through learning we re-perceive the world and our relationship to it. Through learning we extend our capacity to create, to be part of the generative process of life". Therefore, further research is needed to look at how organizational resilience can help Islamic banking organizations to build internal capabilities and processes to enhance the learning process of understanding the business environment to become better performers.

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Chapter 13
AHP-Driven Knowledge Leakage Risk Assessment Model: A Construct-Apply-Control Cycle Approach

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ABSTRACT

Intellectual Capital (IC) is becoming more widely understood by the academic and business communities, especially its important role in value creation of an organization. However, few people are aware that IC, if not managed properly, may also pose threats, sometime serious, to an organization. Knowledge leakage from an organization, for example, may come about when an experienced employee leaves for another job. Knowledge leakage is pervasive throughout an organization but is seldom noticed until the consequence is felt. This intellectual capital risk has to be systematically and effectively identified, assessed and controlled in the whole value chain of an organization. An AHP (Analytic Hierarchy Process) based multi-dimensional decision making and assessment model is developed to determine knowledge leakage risk in an organization.

INTRODUCTION

In the globalized knowledge-intensive, technology-driven economy, the importance of knowledge to any sector in society or business has never been so critical. Intellectual capital (IC), a term often used interchangeably with knowledge assets, refers to the knowledge, skills and experiences of employees, and the

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knowledge embedded in business processes, management practice, company culture, client relationships etc. of an organization. Edvinsson (1997) stated that IC was knowledge that could be transformed into values (products or services) to generate revenues for an organization. For a long time since the term was coined, IC has been classified into three categories: human capital, structural capital and relational capital (Edvinsson & Kivikas, 2007). IC has also received growing attention by the public and business people, and a fair amount of research efforts by academics. The focus up to now has been on the value creation side of IC. This is expected. However, the downside of IC, or IC risks, is not on the radar of many professionals, including researchers, despite its potential disastrous impact on an organization in some instances of IC risks occurring in real life. IC risks include, for example, employee turnover (experienced staff leaving the organization) (Harvey & Lusch, 1999; Parise, Cross, & Davenport, 2006) and reputation damage (product safety has serious problems) (Harvey & Lusch, 1999).

Among the typical IC risks in an organizations, knowledge leakage risk is by far one of the most pervasive and it can occur in different business functions or processes. By definition, knowledge leakage refers to the loss of knowledge to a third party which is owned by and resident in an organization for internal use only (Frishammar, Ericsson, & Patel, 2015). Knowledge leakage can take many forms and bring many disadvantages to an organization. For example, an organization may have developed a very effective sales/marketing software to streamline the sales process and reporting which is of great help in increasing the productivity of sales staff. If the design of the software is leaked to a competitor, the 'secret' of success may be replicated in a short time in the competitor's systems to enable it to enjoy the same benefits offered by the software. The organization's competitive advantage may be seriously affected, making the resulting costs of knowledge leakage quite obvious (DeLong, 2004). This example showed that the downside of knowledge leakage can threaten the survival of even a large corporation, but research in this type of common IC risk is still insignificant (Parker, 2012). In an attempt to fill this research gap, this study proposes a knowledge leakage assessment model driven by the Analytic Hierarchy Process (AHP). In the following sections, the building components of the model, methodology, benefits and examples of applying the model in the business world are discussed.

RISK ASSESSMENT AND ANALYTICAL HIERARCHY PROCESS

In enterprise risk management, there are a number of frameworks in use today and COSO (Committee of Sponsoring Organizations of the Treadway Commission) (Curtis & Carey, 2012) is the most widely adopted by organizations. Typically, risk management involves identifying, prioritizing, responding to, assessing, monitoring and reporting risks. The risks may include physical risks like fire and earthquake and financial risks like interest rate instability and payment default. However, there is also an important category of risks not specifically addressed by these common frameworks but related to IC of organizations which must be effectively managed to ensure competitiveness and sustainability. These risks, arising from IC not properly managed, are called IC risks. Examples are: knowledge leakage, intellectual property (IP) loss and employee turnover. In this paper, the focus is on risk assessment component of a framework as applied to one of the most important IC risks - knowledge leakage. As for risk assessment, it refers to activities carried out in establishing assessment criteria and scope, determining likelihood and impact of risks, and prioritizing them (Hallikas, Karvonen, Pulkkinen, Virolainen, &Tuominen, 2004). Common frameworks like COSO (Curtis & Carey, 2012) and CAS (Casualty Actuarial Society)

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(Casualty Actuarial Society, 2013) have similar risk assessment methodology. The determination of the level of risk is important in risk management, including IC risk management. According to Zhi (1995) and Williams (1993), risk is expressed mathematically as:

$$R = P \times I$$

where R is the level of risk, P is the probability for the risk to occur and I is the impact of the risk.

In the usual risk management of an organization, the management process consists of a number of sequential steps: identification, prioritization, aversion, mitigation, assessment, monitoring, reporting and review (Hallikas, Karvonen, Pulkkinen, Virolainen, & Tuominen, 2004). In this study, the focus is on the assessment step which is roughly at the middle of the process. In this step, the performance of the preceding steps is measured. The assessment results then become input to the following steps which depend on such inputs and other information to achieve the objectives of monitoring and review, for example. Therefore, a study of risk assessment will yield a high ROI (Return on Investment) and improve the whole risk management process significantly. However, the assessment of IC risks has been mainly qualitative and done on individual risks often in isolation from each other. What is lacking is unified empirical assessment not only at individual risk level but also at functional and organizational levels to obtain better overall management. To fill this gap, the current study will deal with the organization-wide empirical assessment of IC risks. Thus a common IC risk, knowledge leakage, which can occur in many functions, departments or projects, is chosen for the study. To carry out the empirical assessment of an IC risk with an organization-wide characteristic, Analytic Hierarchy Process (AHP) was selected. The suitability of AHP in this project would be explained as follows. The chosen knowledge leakage risk has many kinds and can occur in different functions at different management levels and their relationships would best be described by a hierarchy, as explained in the later section on knowledge leakage hierarchy construction. Since AHP is hierarchy-based, both are compatible and AHP can be applied to this hierarchy to assess risks.

In practice, AHP starts first with the construction of a hierarchy of criteria relevant to the context of the decision to be made. In this project, the criteria became the different kinds of knowledge leakage risks, the context was the knowledge leakage situation in an organization and the decision making was about finding the relative risk impacts. Then pair-wise comparison of two criteria in terms of relative importance is done before an algorithm is deployed to determine the weighting of each criterion (Partovi, Burton, & Banerjee, 1990). The weightings calculated make AHP especially useful in multi-criteria decision making and are thus similarly used in the assessment of knowledge leakage risks hierarchy, as shown in the sections below.

Going back in history, AHP was a process developed by Saaty (1977) for multi-criteria decision making. It was used for prioritization of tasks or allocation of resources (Saaty, 2008). Since then, AHP has been applied in various business areas, for example, in risk assessment, project risk assessment (Mustafa & Al-Bahar, 1991) and overseas construction project risk assessment (Zhi, 1995). Scholars have also used AHP to weigh the knowledge assets of a company (Carlucci & Schiuma, 2007); to select the best set of knowledge management (KM) tools (Grimaldi & Rippa, 2011); to evaluate KM strategies (Wu & Lee, 2007) and to explore KM enablers (Jandaghi, Jandaghi, Irani, Mousavi, & Davoodavabi, 2014). Other industries include supplier selection (Handfield, Walton, Sroufe, & Melnyk, 2002), weapon system evaluation (Cheng & Mon, 1994) and site selection (Saaty, 2008). Finally, organization examples

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are: Department of Defence in the U.S., British Airways and Federal Financial Institutions Examination Council (Saaty, 2008). The great number of varied applications of AHP since its inception shows that it is a strong, proven analytic tool with a wide range of usability. The AHP in knowledge leakage risk assessment represents only one of the recent novel research efforts.

KNOWLEDGE LEAKAGE RISK HIERARCHY

In any organization, knowledge is embedded in employees, business processes, systems, databases, marketing campaigns, design documents, patents, products, services and so on. During normal business activities, knowledge, sensitive or insensitive, public or confidential, is used to carry out daily tasks. It is probable that some or significant portion of the knowledge, intended for internal use only, may be exposed to external parties because of errors unintentionally or business necessities unavoidably (Ahmad, Bosua, & Scheepers, 2014). The worst happens when highly sensitive proprietary knowledge is in the hands of competitors or parties hostile to the organizations, causing potentially great damage like loss of competitive advantage (Frishammar et al., 2015). The above incidents are knowledge leakage and the undesirable effects are referred to as the negative side of knowledge leakage. On the other hand, there is the opposite side to knowledge leakage too. When knowledge is intentionally leaked or lost to selected outside parties beyond information sharing or business collaboration needs to achieve something advantageous to the organization, for example, better collaboration or business relationship, such benefits are known as the positive side of knowledge leakage (Jiang, Li, Gao, Bao, & Jiang, 2013; Mohamed et al., 2007). Normally, in the course of business, knowledge leakage is predominantly negative. Therefore, though both the positive and negative sides of knowledge leakage are under-researched (Mohamed et al., 2007), much more attention to the latter side is required (Frishammar et al., 2015) and the present study belongs to the latter.

In nature, knowledge leakage risks have characteristics distinct from other common enterprise risks. Knowledge leakage can occur at any time in any place in an organization. Business processes, product designs and trade secrets may suffer from knowledge leakage from time to time. It is the pervasiveness of knowledge leakage which makes it different from other common risks such as stock price risks, payment default risks and country risks, which may be dealt with by some specific departments only. Knowledge leakage risks, because they can occur in many different functions, are rather being addressed by employees in many departments or groups. Then within a department, for example, marketing, there are also different kinds of knowledge leakage in areas like product sales data, promotional strategies, major customers list and pricing strategies. Going further, another sub-departmental level of knowledge leakage is possible. Considering the situation as a whole, a hierarchy becomes a natural choice to depict their relationships. Furthermore, as there are many properties common to different kinds of knowledge leakage, a multi-level hierarchy and its sub-hierarchies help group similar knowledge leakage risks together for more uniform and effective risk management at different levels of the hierarchy. It also follows that risk assessment can be done at different levels, depending on the needs.

In the proposed model, a similar knowledge leakage hierarchy of an organization is used in the risk assessment. To do this, a simple hierarchy is constructed first by making use of the key knowledge leakage drivers and a subset of sub-drivers extracted from the corresponding full set of a larger scope appeared in a study by Mohamed et al. (2007). The purpose is to illustrate some of the steps, factors and considerations involved in the construction process and therefore, only general business and risk knowledge of

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a typical organization of today is used here to arrive at several common sub-drivers examples for each key driver. This hierarchy is also developed to illustrate how AHP can be applied in the assessment of knowledge leakage as in the later sections. The description and explanation is not intended to modify or replace any of the original arguments presented. In practice, the key staff of the organization will take part in the process as well. It details the factors and considerations involved in building this three-level hierarchy. The top level is the 'Risk of knowledge leakage' with four children (key drivers) at the level below being respectively 'Suppliers', 'Customers', 'Competitors' and 'Employees', from left to right in the figure. Each has several sub-drivers at the next lower level (third level). Refer to Figure 1 for all the elements of the hierarchy.

The 'Supplier' key driver is at the leftmost of the second level. In any business, suppliers of products or services are essential. However, during the course of conducting business transactions with them, knowledge leakage can happen. For example, in the purchase or tendering process, an organization provides specifications for products/services to be purchased from suppliers, which at least indirectly lets the suppliers know some part of the future sales plan or future products in design/manufacture, when such information is generally regarded as trade secrets. In another instance, the organization may outsource internal IT services to an outsourcing provider, and the risk of leakage of sensitive business information to suppliers is high and must be managed properly. In an organization which relies on an excellent supply chain to produce products, it has excellent relationships with suppliers, and if necessary, may transfer proprietary knowledge/skills to them so that their product/services can meet the requirements of the supply chain. These suppliers effectively become business partners. However, this situation makes the relationship with them riskier than with ordinary suppliers because more specialized proprietary knowledge is released to a third party who may pass it to the organization's competitors especially when these suppliers cease doing business with the organization and turn to its competitors instead. The stakes are high with such supplier partnerships for the organization. The four sources of knowledge leakage identified become four sub-drivers of the key driver 'Supplier': 'Tendering/Bidding', 'Outsourcing', 'Strategic alliances/Partnerships' and 'Turnover of suppliers'.

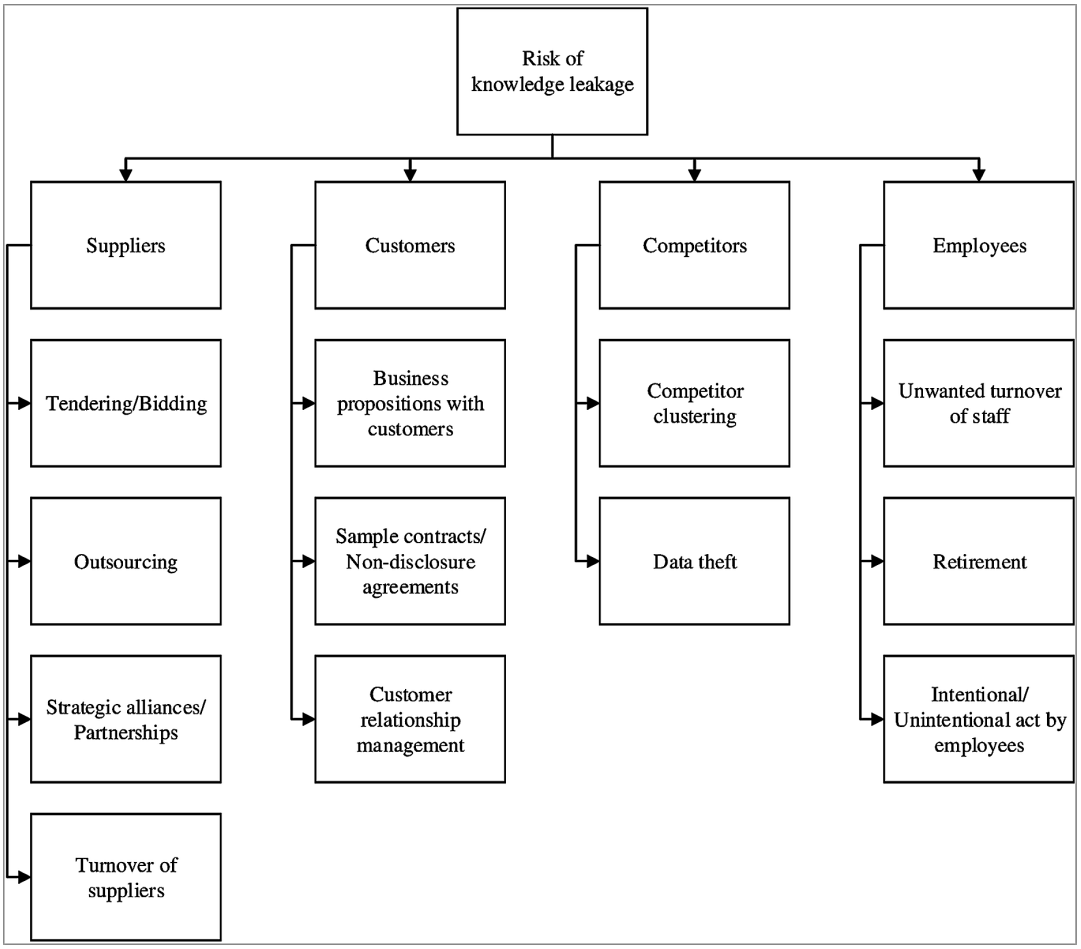
The second key driver is 'Customers'. Customers, a critically important asset of an organization, can be a driver for knowledge leakage. During the sales process, presentations and proposals are made to sell proposed solutions to a potential/existing customer business problem. These proposed solutions are the output of applying the knowledge of the organization to a sales situation and might be leaked. The potential/existing customers may take the ideas in the proposed solution and develop them further for their own purposes. Similar kinds of leakage occur in sample contracts or non-disclosure agreements. At another sales step, customer relationship building, a sales manager may reluctantly or unintentionally disclose some sensitive business information to a customer when being asked in order to make the customer satisfied. In light of these considerations, four sub-drivers under 'Customer' are identified: 'Business propositions with customers', 'Sample contracts/non-disclosure agreements' and 'Customer relationship management'.Besides 'Customers', 'Competitors' can become a key driver of knowledge leakage as well. It is very common in many industries for participants in the same industry, who are competitors, to attend trade shows, exhibitions, seminars, workshops, meetings or conferences together. During these occasions, they share news, trends and developments or exchange information. If participants do not take sufficient precautionary measures, it is easy for them to disclose unintentionally some confidential company business information to other participants who are competitors, and will take advantage of this unintentional knowledge leakage. At other times, there are people who are very

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knowledgeable in computer security and attempt to access the database of their competitors to gain unauthorized copy of trade secret information. These considerations give rise to two sub-drivers for 'Competitors': 'Competitor clustering' and 'Data theft.'

The last key driver of knowledge leakage is 'Employees'. People are regarded as the most important asset in an organization because any successful running of a business depends greatly on the knowledge, skills and experience of its employees. Therefore, if employees leave an organization, very often this also means loss of knowledge as far as the organization is concerned. An organization would try to minimise the loss of key staff and their associated knowledge to avoid the undesirable effects on the organization's daily operation and growth. At the same time, an organization must get prepared for the retirement of staff so that the knowledge and skills of retired staff can be transferred to other employees in a timely and orderly manner. In other situations, some employee may leak company information to people outside the organization unintentionally or by mistake, or intentionally for benefits, because of dissatisfaction with the organization or other factors. Proper employee training in data security measures and ethics may reduce such knowledge leakage. What have been considered leads to three sub-drivers identified for 'Employees': 'Unwanted turnover', 'Retirement' and 'Intentional/unintentional act by employees'.

Figure 1. The knowledge leakage risk hierarchy adapted from Mohamed et al. (2007)



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KNOWLEDGE LEAKAGE RISK ASSESSMENT MODEL

In the model proposed in this paper, AHP plays two important roles. The first role is to make use of AHP algorithms to create the weighting matrix for a given hierarchy. The second is to multiply the matrix with necessary risk impact and probability data from real-life risk practice to obtain the risk score, which reflects the result of the current risk controls adopted. Therefore, there are two cycles in the model as shown in Figure 2, corresponding to the two roles.

In the first cycle, shown on the left in the figure, is the sub-cycle and is known as the hierarchy cycle. The knowledge leakage hierarchy is constructed according to the current business context. Then pair-wise comparison is performed for each pair of risks in the hierarchy according to AHP, producing the weighting matrix for all the concerned risks. Usually the hierarchy and pair-wise comparison remain stable over a relatively long period of time. However, if the business context changes in the future, the hierarchy is updated or the pair-wise comparisons are done all over again to produce an updated weighting matrix for use in AHP. Therefore, there is the step at the bottom of the cycle for this. The second cycle, shown on the right in the figure, is the main cycle and is known as the control cycle. It makes use of the weighting matrix, which is the common part of the two cycles, to compute the risk score of the hierarchy based on the current risk impact and probability data. Risk control is carried out in this cycle with the use of the weightings for task prioritization and other risk control measures like risk mitigation. As soon as the risk controls or changes in business context affect the impact or probability of a risk, such data are updated and then combined with the weighting matrix to produce a new risk score for evaluation and monitoring. Usually, as time progresses, this cycle repeats itself as often as required, depending on the changes in risks or business context. Therefore, these parts are much more active and dynamic than the other parts in the left cycle and assume a greater role in the model. It explains why the right cycle is the main cycle whereas the left is the sub-cycle. As can be seen in Figure 2, AHP is driving the two cycles, making the elements and actions depicted by the model interact in constant motion in the context of the bigger Construct (Hierarchy) – Apply (AHP) – Control (Risk) cycle.

METHODOLOGY OF THE MODEL

The methodology of the model involves a process of three phases during which AHP is applied to the knowledge leakage risk hierarchy constructed, as shown in Figure 3. The first phase is the construction of a hierarchy for the knowledge leakage risks of an organization while the second and third phases are the assessment of the knowledge leakage risks in the hierarchy using AHP.

Phase 1: Construction of a Hierarchy of Knowledge Leakage Risk

In this phase, a hierarchy of knowledge leakage risks of an organization is constructed based on studies carried out for the organization. The number of levels and the kinds of leakage risks to be dealt with are identified to reflect the business context, the nature of risks and the depth of assessment. The procedures involved are best explained with an example. Refer to the section on ‘Knowledge Leakage Risk Hierarchy’ for details.

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Figure 2. The knowledge leakage risk assessment model

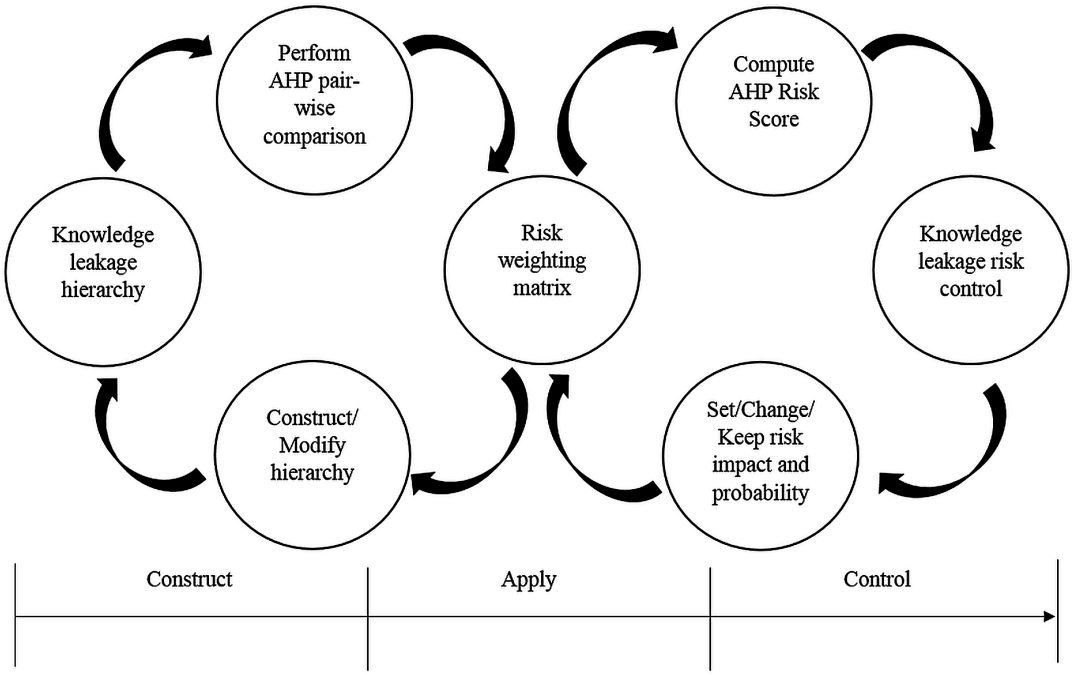
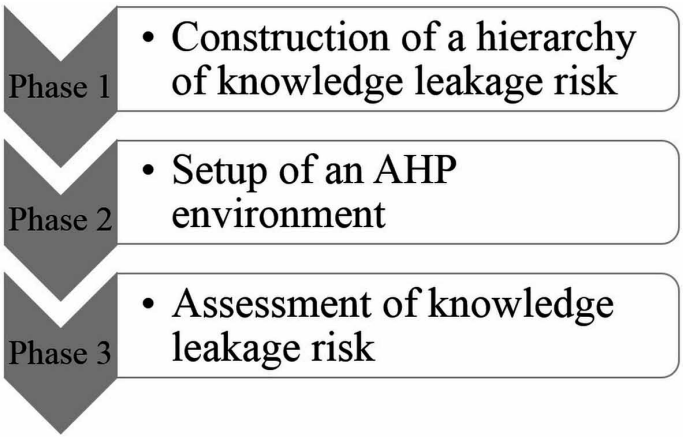


Figure 3. The 3 phases in the methodology



Phase 2: Setup of an AHP Environment

AHP is applied to the knowledge leakage hierarchy to assess the knowledge leakage risk. To do this, risks are measured in terms of their importance to the organization, and a weighting factor is assigned to a risk accordingly. The greater the importance is, the higher the weighting is. Starting with the four key drivers of knowledge leakage risks, a pair-wise comparison is performed for each driver with each of the other three drivers using Saaty's scale (Saaty, 2008) for pairwise comparison as in Table l. In this

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section, a hypothetical organization is used and the data chosen reflects business parameters close to real world organizations. To illustrate, referring to the second, third and fourth entry in the first row in Table 2 (the first entry is for self-comparison), the importance of knowledge leakage through suppliers is considered as three times more than that through customers, three times less than that through competitors and seven times less than that through employees. The same comparison procedure is then applied to the set of sub-drivers of each of the key drivers and the results are given in Table 3 to 6.

Table 1. Scale for pair-wise comparison by Saaty (2008)

Intensity of Importance	Definition	Explanation
1	Equal importance	Two activities contribute equally to the objective
3	Moderate importance	Experience and judgement slightly favour one activity over another
5	Strong importance	Experience and judgement strongly favour one activity over another
7	Very strong or demonstrated importance	An activity is favoured very strongly over another; its dominance demonstrated in practice
9	Extreme importance	The evidence favouring one activity over another is of the highest possible order of affirmation
2,4,6,8	Intermediate values	
Reciprocals of above	If activity *i* has one of the above non-zero numbers assigned to it when compared with activity *j*, then *j* has the reciprocal value when compared with *i*	

Table 2. Pair-wise comparison matrix for the four main drivers of knowledge leakage

Main drivers	Suppliers	Customers	Competitors	Employees
Suppliers	1/1	3/1	1/3	1/7
Customers	1/3	1/1	1/5	1/7
Competitors	3/1	5/1	1/1	1/5
Employees	7/1	7/1	5/1	1/1

Table 3. Pair-wise comparison matrix for sub-drivers under 'Suppliers'

Sub-drivers	Tendering/ Bidding	Outsourcing	Strategic alliances/ Partnerships	Turnover of suppliers
Tendering/Bidding	1/1	1/3	1/9	1/5
Outsourcing	3/1	1/1	1/7	1/3
Strategic alliances/ Partnerships	9/1	7/1	1/1	3/1
Turnover of suppliers	5/1	3/1	1/3	1/1

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Table 4. Pair-wise comparison matrix for sub-drivers under 'Customers'

Sub-drivers	Business propositions with customers	Sample contracts/ Non-disclosure agreements	Customer relationship management
Business propositions with customers	1/1	1/1	5/1
Sample contracts/ Non-disclosure agreements	1/1	1/1	5/1
Customer relationship management	1/5	1/5	1/1

Table 5. Pair-wise comparison matrix for sub-drivers under 'Competitors'

Sub-drivers	Competitor clustering	Data theft
Competitor clustering	1/1	1/9
Data theft	9/1	1/1

Table 6. Pair-wise comparison matrix for sub-drivers under 'Employees'

Sub-drivers	Unwanted turnover	Retirement	Intentional/ unintentional act by employees
Unwanted turnover	1/1	3/1	1/4
Retirement	1/3	1/1	1/9
Intentional/unintentional act by employees	4/1	9/1	1/1

Following AHP procedures, the elements C_{ij} in each pair-wise comparison matrix A, as below, are translated into absolute values (weightings) with a consistency ratio (CR) for each set of matrix.

$$A = \begin{pmatrix} C_{11} & \cdots & C_{1j} \\ \vdots & \ddots & \vdots \\ C_{i1} & \cdots & C_{ij} \end{pmatrix}$$

The consistency ratio is calculated as below:

$$A\omega = \lambda_{max}\omega$$

where ω is the principal Eigen vector of the matrix.

$$CR = \frac{CI}{RI}$$

$$CI = \frac{\lambda_{max} - n}{n - 1}$$

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Table 7. Sample Random consistency index RI as in Patil and Kant (2014)

Size (n)	1	2	3	4	5	6	7	8
RI	0	0	0.52	0.89	1.11	1.25	1.35	1.40

where *CI* is the consistency index and *RI* is the random consistency index in Table 7 and *n* is the

A web-based AHP software application developed by Dr. Klaus D. Goepel (http://bpmsg.com/academic/ahp.php) was selected to perform the AHP calculations to obtain the required weightings. There are a number of professional commercial software packages available for AHP (Al-Harbi, 2001; Alidi, 1996), e.g. Expert Choice, Criterium. Dr. Klaus D. Goepel's version was chosen because its features and capabilities are sufficient to support the non-complex AHP processing needs of this paper to illustrate the use of AHP in the knowledge leakage context, making the commercial grade software with sophisticated features unnecessary. Furthermore, the chosen is free and easy to use over the web with no local software installation required.

The weightings of the four key drivers and the consistency ratio are presented in Table 8. Subsequently, for each of the sub-driver pair-wise comparison matrices, the final weightings w'_{ij} are obtained by multiplying the weighting w_i *(i = 1,…,D)* of the respective main driver d_i *(i = 1,…,D)* with the initial weighting w_{ij} *(i = 1,…,D ; j = 1,…,S)* of the respective sub-driver s_{ij} *(i = 1,…D ; j = 1,…,S)* as below:

$$w'_{ij} = w_i \times w_{ij}$$

where w_i is the weighting of the main driver d_i and w_{ij} is the initial weighting of the sub driver s_{ij}

In this way, the final weightings of each sub driver are normalized with:

$$\sum_{j=1}^{s} w'_{ij} \leq 1, i = 1, \ldots, D$$

For example, the final weighting w'_{ij} for 'Tendering/Bidding= 0.0048 is obtained by multiplying the weighting of 'Suppliers' = 0.097 by the initial weighting of 'Tendering/Bidding' = 0.049. The final weightings with the consistency ratios are presented in Table 9. All the consistency ratios are less than 0.1, indicating that the results are sufficiently accurate (Partovi et al., 1990).

Table 8. The weightings/prioritised ratings for the four main drivers

	Suppliers	Customers	Competitors	Employees	CR
w_i	0.097	0.051	0.209	0.643	0.088

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Table 9. The initial and final weightings/prioritised ratings for the sub-drivers

Sub-drivers	w_{ij}				w'_{ij}	CR
	Suppliers	Customers	Competitors	Employees		
Tendering/Bidding	0.049	-	-	-	0.005	0.032
Outsourcing	0.101	-	-	-	0.010	
Strategic alliances/partnerships	0.607	-	-	-	0.059	
Turnover of suppliers	0.243	-	-	-	0.024	
Business propositions with customers	-	0.455	-	-	0.023	0.000
Sample contracts/Non-disclosure agreement	-	0.455	-	-	0.023	
Customer relationship management	-	0.091	-	-	0.005	
Competitors clustering	-	-	0.100	-	0.021	0.000
Data theft	-	-	0.900	-	0.188	
Unwanted turnover	-	-	-	0.200	0.129	0.010
Retirement	-	-	-	0.073	0.047	
Intentional/unintentional act by employees	-	-	-	0.727	0.467	

Phase 3: Assessment of Knowledge Leakage Risk

The impact and probability are then assessed for each sub driver after risk control actions have been performed. The more effective the risk control measures are, the more risk these measures can control and the less risk remains. The impact scale is a 1-10 scale, with 1 as the least impact and 10 as the most severe impact, while the probability scale is a 1-10 scale with 1 as the least possible and 10 as the most possible. The final risk score is capped at 100 and is calculated as:

$$Score = \sum_{j=1}^{S} w'_{ij} \times I_{ij} \times P_{ij}, i = 1,...,D$$

where w'_{ij} is the final weighting of the sub-driver s_{ij}, I_{ij} is the impact score of the sub-driver s_{ij} and P_{ij} is the probability score of the sub-driver s_{ij}

As illustrated in Table 10, the final risk score for the hypothetical organization is 33.8. The risk score can be used as an indicator of the level of risk in the organization as well as for monitoring the effectiveness of risk control measures taken. Basically, the higher the final risk score (the closer it is to 100), the higher the risk of knowledge leakage in the organization.

DISCUSSION

As can be seen in the model and methodology sections, the assessment of the knowledge leakage risks of the whole organization is facilitated with the application of AHP in the risk management process. The weightings help the prioritization of risks, or in better allocation of resources to tackle the knowledge risk. The two cycles, the hierarchy cycle and the control cycle, operate inter-dependently and co-opera-

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Table 10. Risk scores for sub drivers

Risk of Knowledge Leakage	Weighting w'_{ij}	Impact I_{ij}	Probability P_{ij}	Risk Score
Tendering/Bidding	0.005	3	7	0.100
Outsourcing	0.010	3	7	0.206
Strategic alliances/partnerships	0.059	7	4	1.649
Turnover of suppliers	0.024	5	2	0.236
Business propositions with customers	0.023	3	5	0.348
Sample contracts/Non-disclosure agreements	0.023	6	3	0.418
Customer relationship management	0.005	5	5	0.116
Competitors clustering	0.021	7	4	0.585
Data theft	0.188	9	2	3.386
Unwanted turnover	0.129	7	6	5.401
Retirement	0.047	8	7	2.629
Intentional/unintentional act by employees	0.467	8	5	18.698
Total				**33.8**

tively, though assuming different roles and fulfilling different needs in knowledge leakage assessment. The end result is that a risk score can be obtained as often as the business context demands for more effective assessment and quicker response across business entities or across different time periods in an organization, large or small. Though the risk score has to be interpreted together with other business performance indicators, it is still usable in monitoring. It indicates how AHP drives better risk management of knowledge leakage.

In fact, the hierarchy in the example can be replaced by another knowledge leakage hierarchy to suit a new business demand, where the top level becomes Sales/Marketing, Customer Service, Inventory Operations, Hardware Support, Software Support, Manufacturing and R&D, for example. Below the top level, each top level element is furthered composed of a number of knowledge leakage sub-risks specific to the top-level element. Almost immediately, another Construct-Apply-Control cycle can be carried out to assess the knowledge leakage risks from another perspective. This shows the flexibility of the present approach. To develop a usable hierarchy requires the cooperation of internal managerial staff and external specialists, where applicable. The hierarchy construction process can make use of the Delphi method (Sun, Srivastava, & Mock, 2006), a managed procedure to brainstorm alternatives and choose the different options available. One added benefit of the hierarchy construction process is that it enables the managing staff concerned to think systematically of the knowledge leakage risk they face every day without ever having a chance or time to think them through in a more organized way in order to discover what they do not already know or ignore most of the time. The knowledge leakage risks will be better attended to and managed.

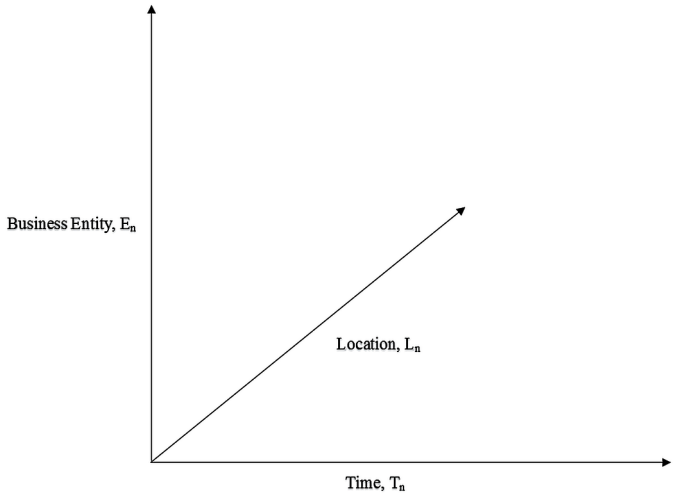
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Application I: Applying the Model across Organizational Structure

Except for small organizations, there are usually more than one business entities inside the same organization. In addition to constructing the knowledge leakage hierarchy for the whole, known as the main hierarchy, individual hierarchies, known as sub-hierarchies, can also be constructed for different business entities, and an independent AHP can be done for risk control of a particular entity. In other words, depending on the business needs, the model can be used for any structural or functional part of the whole organization as long as it makes business sense, from the corporate risk management perspective. In fact, the model can be deployed as one of the management tools for a specialized project of a definite duration. As a result of this flexibility, more cost-effective and detailed risk assessments can be carried out to meet current or anticipated needs.

To implement this flexibility in practice, there are three main directions for applying the model across different business entities, as shown by the three axes in Figure 4. First, for the x-axis, the axis of time, if the hierarchy and weightings are the same or stable over a period of time, a line graph constructed along this axis can show the risk score trend of the same business entity for different times. For the y-axis, the axis of business entity, if a number of business entities in the same organization location (e.g. a plant) are of similar business nature (e.g. product groups with each working on a different product in the same manufacturing campus) and thus share the same hierarchy and same weighting matrix, a line graph can be drawn along this axis to show the variation of risk scores for different entities in the same time period. Then for the z-axis, or the axis of business location, if a business entity of the same nature (e.g. web page design project group) exists in different business locations (e.g different districts in the same city or different cities in the same country) and they share the same hierarchy and weighting matrix, a line graph drawn along the z-axis can show the risk scores of entities in the same period in different locations for risk control results comparison. For a multi-national company with subsidiaries around the world operating in the same business and sharing the same management structure and practice, the AHP can be applied to offer tangible data for monitoring and comparison of the same or different business entities over time or space.

Figure 4. Risk Scores comparison along time, business entity and location axes



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Application II: Using the Model in Credit Risk Analysis

The AHP-driven knowledge leakage risk assessment model can be used in an organization to manage the concerned risk. At the same time, external parties can also take advantage of the usefulness of this model and one of them is the credit risk analyst of a financial institution which lends money to companies for running their businesses. At present, the credit risk analyst adopts the established practice for the credit risk assessment of loan applicants by mainly making use of the financial reports (Iazzolino, Migliano, & Gregorace, 2013). However, any knowledge leakage can potentially affect the competitive advantage significantly, putting its earning capacity in doubt. Therefore, it is advisable to include knowledge leakage risk assessment in the credit risk analysis of the applicant.

The financial institution can ask the applicant to submit knowledge leakage risk control reports which show their objectives, planning and review of what they have done in this domain of risk management. Further, the analyst can visit the applicant's office and hold meetings/interviews with the concerned staff to have on-site information gathering and observation. If the applicant uses the AHP-driven model, the analyst can do a better job in credit risk analysis in several ways. First, the risk hierarchy constructed for the model enables the applicant to have a critical systematic analysis and review of the current knowledge leakage risks faced. This action results in better planning and prioritization for the leakage risks to increase the ability to eliminate or reduce losses, especially those affecting the repayment of loans. Thus the hierarchy work provides documented evidence to support what the applicant claims in the loan repayment schedules. The quality of the documents at least reflects to a certain extent how well the applicant manages the risk.

Second, the weighting matrix, as a product of applying AHP to the hierarchy show the relative importance of the leakage risks in the applicant portfolio of the knowledge leakage risks. Detailed study by a credit risk analyst may reveal useful information, notably about the company's risk distribution but also the most important risks being faced, which may affect the organization's earnings in the future.

Third, the risk score, a numeric figure provided by the model, is very useful. The figure, when combined with other risk-related information, will inform the analyst about the quality of risk management in the organization. As this data can be provided regularly, like other financial data, the risk score can be used for the monitoring of risk management performance by comparing the figures in different periods.

Finally, this important numeric risk score can be fed into the credit risk analysis system of the lending company as part of the regular input data, making it a strong candidate to be one of the independent variable with the potential to enhance the credit risk analysis results. Earlier work by Iazzolino et al. (2013) showed that the use of intellectual capital related data (knowledge leakage is in this category) can benefit credit risk analysis. Further modelling work on the credit risk analysis software is required to realise this perceived advantage of the model.

LIMITATIONS AND FUTURE RESEARCH

The application of AHP to knowledge leakage risks of an organization is a novel approach conceptually and the empirical results after assessing a hierarchy of risks instead of individual risks are not commonly found in existing AHP applications nor in other risks assessment methods which are largely qualitative. The novel approach comes with limitations which are anticipated however. First, if the hierarchy consists of many kinds of knowledge leakage risks, to do all the pair-wise comparisons becomes a lengthy and

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cumbersome process (Belton, 1986), making some comparisons not be done accurately. This undesirable situation may occur especially when the model deals with a large hierarchy or a hierarchy which changes its structure and components quite frequently. More fundamentally, it may be argued that the translation of assessor understanding, perception or evaluation in the pair-wise comparisons into numbers may be inaccurate though the assessor may think otherwise (Deng, 1999). Associated with this translation concern and as it is usual the case with other empirical methods which rely on the assignment of numbers to a set of related qualitative measurements, the analysis results (the risk scores in the assessment model) can be difficult to interpret for practical use. This limitation is magnified when the risk scores of the same hierarchy are compared for two or more different periods and then interpreted.

In view of the above, more research needs be done to address them. One probable route to take is to use a fuzzy scale in the model to overcome the undesirable uncertainty or inaccuracy associated with pair-wise comparisons (Mikhailov & Tsvetinov, 2004). Also, efforts should be made in finding other empirical methods to augment the AHP in the model so that the new numeric results can be interpreted on stronger theoretical grounds. Finally, as with any novel theoretical considerations, the proposed model should be put to test in small or large organizations in order to get field feedback from practitioners as well and increase the model's strength. Since both the positive and negative sides of knowledge leakage risk are under-researched (Mohamed et al., 2007), testing the model for the positive side can be one of the next logical steps of future work.

CONCLUSION

How AHP can be applied to the knowledge leakage hierarchy constructed for an organization in the risk assessment cycle is demonstrated and how the AHP-generated weighting matrix can be used in risk control effectiveness comparison and monitoring across time and business entities at various levels of the organization locations is also discussed. Such work done and demonstrated in this paper is built on strong, solid theoretical and risk management grounds with significant implications.

It is the nature of knowledge leakage that it can occur in any business entity and any point in the value chain, implying that there are quite many kinds of knowledge leakage faced by an organization. This makes using a hierarchy to visualize them and show their inter-relationships, either functionally or structurally, a logical first step to take in any risk control effort of knowledge leakage. Therefore, hierarchy-based AHP and the knowledge leakage hierarchy come naturally together in determining the weightings of risks in the hierarchy. It is easy to understand and do the pair-wise comparisons across the risks at the higher level horizontally and across those risks one level immediately below vertically. The readily available AHP software in the public domain then creates the important weighting matrix for the hierarchy, giving at a glance a total picture of the relative importance of all knowledge leakage risks of the whole organization. This indicates the power of AHP combined with the organizational leakage hierarchy.

Conceptually, AHP has been developed for a long time and is theoretically a sound solid methodology in multi-criteria decision making and a hierarchy of knowledge leakage risks is also a theoretically sound representation of knowledge leakage risks in business because it reflects the nature of such risks in an the real world. From a theoretical standpoint, the application of AHP to knowledge leakage is valid and similar to many past usage examples of AHP much mentioned in the literature. What is unique is

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that this paper argues the conceptual combination of the two theoretical approaches and put forward the theoretical construct-apply-control approach in the risk assessment literature. Notably, it is the first time when the AHP theory is deployed to a new area of IC risks with revealing results when IC risk itself up to now is an under-researched topic for many years (Mohamed et al., 2007; Frishammar et al., 2015).

From the standpoint of management practice, the total organizational picture of knowledge leakages not only helps the allocation and prioritization of resources to combat leakages but also serves to monitor the risk control effectiveness across time or business entities, all being critical components in any risk management. The flexibility and robustness of AHP in knowledge leakage control become evident and crucial when IC, IC risks and knowledge leakage risks may change quickly, and new or emerging ones may come in great numbers without any pre-warning in the globalized knowledge-intensive economy. When even primitive tools let alone empirical ones of any sort are difficult to find in a research field as new as IC risk, the ease of using AHP makes it an attractive, effective tool to use in the initial control set up and following mitigation and monitoring to meet the fast changing uncharted IC risk waters. Compared against many existing risk management frameworks or systems, a systematic empirical means of risks assessment across time or business entities in an organization provided by the paper's model is conspicuously absent in them.

As said above, an AHP-driven risk assessment model is well-suited to knowledge leakage, as well as IC risks in general. The model can be further refined and developed to enlarge its scope of applicability and has the potential to use with other innovative empirical tools to provide risk assessment measures not seen at present in any risk management systems. As what it is now and will continue for some considerable time in the future, the robustness of this AHP model will make it a growing contributor in the empirical IC risk landscape and enterprise risk management landscape as well.

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Chapter 14
Towards a Hybrid MAS Organizational Model: Combining the ACMAS and OCMAS Viewpoints

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ABSTRACT

The organizational aspects are currently getting a great attention within the multi-agent systems (MAS) community. The motivation towards this trend is finding a way to handle the increasing complexity and distribution of modern agent-based applications using higher order abstractions such as agent organizations. It is a transition from concerning the micro level (individual agents) to concerning the macro level (the whole system) to handle complexity. A large number of MAS organizational models can be found in MAS literature. Some of them adopt the ACMAS (Agent-Centered MAS) viewpoint and others adopt the OCMAS (Organizational-Centered MAS) viewpoint. Each of the ACMAS and OCMAS viewpoints has its advantages and disadvantages; therefore, combining them into a hybrid model is expected to give us the chance to take benefit of their advantages and avoid their disadvantages. This chapter presents our recent work towards the conceptual design of a hybrid MAS organizational model that combines both of the ACMAS and OCMAS viewpoints.

INTRODUCTION

Multi-Agent Systems (MAS) are currently widely adopted for modeling, designing, and developing a diversity of real-world application domains. The design concepts behind agents are vital in the globalization context as globalization refers to an inherently distributed world both from geographical and information processing perspectives. What distinguishes the agent-based approach from traditional

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approaches is its unique ability to handle simultaneously many challenges of future and even present real-world applications especially those applications which are highly distributed and their working environments are highly dynamic and uncertain. MAS are considered as a promising engineering (i.e., architectural) style for developing adaptive software systems able to handle the continuous increase in their complexity as a result of their open, heterogeneous, and continuous evolution nature. They model the system as distributed autonomous agents cooperate together to achieve system goals. There are two viewpoints of MAS engineering, the first one is the agent-centered MAS (ACMAS) in which the focus is given to individual agents. With this viewpoint, the designer concerns the local behaviors of agents and also their interactions without concerning the global structure of the system. The global required function of the system is supposed to emerge as a result of the lower level individual agent interactions in a bottom-up way. The key problems of the ACMAS viewpoint are mainly related to the unpredictability and uncertainty of agents' behaviors and interactions. Because the whole is more than the sum of its parts (Upton et al., 2014), this approach can lead to undesirable emergent behaviors that may impact system performance, as a result, this approach might be not suitable to design and engineer complex multi-agent systems.

The second viewpoint of MAS engineering is what is called organization-centered MAS (OCMAS) in which the structure of the system is given a bigger attention through the explicit abstraction of agent organization. With that approach, the designer designs the entire organization and coordination patterns on the one hand, and the agents' local behaviors on the other hand. It is considered as a top-down approach because the organization abstraction imposes some rules or norms used by agents to coordinate their local behaviors and interactions with other agents.

Although the MAS paradigm is successfully adopted for the development of many applications either industrial or any other real-life domains, but their adoption for developing large-scale applications that contain a very large number of agents is currently facing many challenges. The reason is that the current practice of MAS in industrial environments tends to be limited to individual agents and static small face-to-face groups of agents that operate as closed systems, which comprise a small number of agents' types and a small number of agents in general (Odell, 2003). This approach is not adequate for modeling and designing complex, open, heterogeneous, and highly distributed systems, where agents must be able to reorganize towards the most appropriate organizations to adapt unpredictable environment changes within MAS. Types of reorganization can be seen from two different levels. The individual agents level (the micro level) where an agent changes its behaviors and interactions with other agents to adapt the dynamic changes of its environment. And the organizational level (the macro-level) where the whole system changes its structure by adding or removing agents. Abbas et al. (Abbas, 2015a; Abbas, 2015b) provided a comprehensive overview about MAS organization including its motivations, paradigms, models, and other related concepts such as self-organization and emergence. The key conclusion of the authors' overview is that in MAS literature there are a large number of organizational models proposed to enable dynamic reorganization within MAS. The large number of present MAS organizational models indicates that concerning the organizational aspects within MAS is currently a very active and interesting research area. Also, it indicates that till now there is no a fit-to-all organizational model that can be used for engineering all possible application domains. To our best knowledge there is not any proposed model for enabling dynamic reorganization within large-scale and ultra-large-scale MAS. Although some of them are claimed to be adequate for developing open MAS but their proof-of-concept case studies are small-scale applications. We are convinced that still there is a need for a new MAS organizational

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model that can be used to model a wide range of real-life applications including large-scale industrial environments such as smart grids and SCADA networks (Abbas, 2014). Generality is the main feature that we are looking for in the design of the new model, that generality includes not only the diversity of real-life applications which can be modeled and designed based on the new organizational model but also the applications with different scales (small, medium, and large).

Regarding the two MAS engineering viewpoints (ACMAS and OCMAS), the new model should provide the adequate framework for adopting both viewpoints in contrast to present models which concern only one viewpoint, the ACMAS or OCMAS and therefore each of these models provides the advantages of the adopted viewpoint and lacks the advantages of the other one. In this chapter, it is intended to design a novel MAS organizational model that is tailored to the development of adaptive large-scale and highly distributed agent-based applications. The new organizational model should be a general model, in the sense that it should simultaneously concern the important MAS perspectives and characteristics that have not been tackled or have been partially tackled by current MAS organizational models. These perspectives are: Generality, the integration of the ACMAS and OCMAS viewpoints, transparency (the application domain independency), static and dynamic aspects of the system, autonomy, heterogeneity, mobility, and security. These important perspectives and characteristics are highlighted and defined in the following section, and then our journey to design the new hybrid MAS organizational model will start in easy to follow steps.

The remaining of this chapter is organized as follows. The second section is dedicated to highlight the required characteristics of the new MAS organizational model. The third section presents the design methodology of the new model, the adopted methodology comprises seven easy to follow and understand steps. The fourth provides a hint on how to implement the change in the proposed organizational model. The fifth section provides a general discussion and highlights future trends regarding to the maturity of the proposed organizational model. The sixth section provides a way to implement the change in the proposed model. Finally, the seventh section concludes the chapter and highlights the next work intentions.

THE CHARACTERISTICS OF THE NEW MODEL

This section highlights the important characteristics that a new MAS organizational model should have. The combination of these characteristics in one model is expected to make it more appropriate for engineering a wide range of real-life applications specially the future large-scale and complex highly distributed applications.

Generality

One of the key problems with the present MAS organizational models is their specialization, as when proposed they were dedicated to specific application domains and hadn't been applied to other domains. That is why there are a large number of organizational models in MAS literature, each one was proposed for specific application. A general MAS organizational model is still required to be adopted with different application domains based on common organizational constructs and abstractions.

Further, scale is an important dimension of generality; to our best knowledge till now there is not any MAS organizational model that can be used to design small, large, and ultra-large-scale systems with one MAS framework. Modern Real-life systems are continuously increasing in scale and distribution,

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one of the important truths in our universe is that all things (seen and unseen) are connected. Therefore, the new organizational model should be prepared to handle the dramatic increase in scale, complexity, and physical distribution of the future highly networked applications.

Hybrid Approach

Each of the MAS engineering approaches: ACMAS and OCMAS, has advantages and disadvantages (Abbas, 2015b). For instance, with the ACMAS viewpoint, the system has the advantage of giving better performance because agents are able to quickly adapt to environmental changes that would otherwise require permission from an organization (Jensen, 2013). Further, the ACMAS viewpoint is more efficient and effective for small-scale closed MAS, where there is a little number of agents than the OCMAS viewpoint for the same application. From the other hand, the ACMAS approach can complicate the system-to-be because the individual agents can act unexpectedly, i.e., how can we ensure that the system will converge towards a specified state and not continuously adapt and change. Also, an ACMAS requires complex intelligent agents because agents will be the engines of the system and accordingly will have dual responsibility: functional and organizational, and off course that will make the agents more complex.

On the other hand, the OCMAS viewpoint allows the designer to focus on what the system goals are, without considering how the goals should be fulfilled. The OCMAS are modeled with a higher level of abstraction, so the conceptual gap between real world and models is reduced (Garcia, 2008). Further, the OCMAS approach makes it possible to create the structure of the system without specifying details about the implementation. Also, this kind of systems offers facilities to implement open systems and heterogeneous member participation. However, the OCMAS approach may reduce agents' autonomy, and their degree of intelligence. Compared to the ACMAS approach, the OCMAS approach often results in lower performance because of the dynamic reorganization process overhead.

Therefore, it seems a good idea to merge both approaches in one model and taking the advantages of both of them and also compensating the disadvantages of each one with the advantages of the other. Thus, the new MAS organizational model should adopt a hybrid approach combining both of the AC-MAS and OCAMS viewpoints trying to take benefit of their advantages and avoid their disadvantages.

Transparency (Domain Independency)

The application domain independency necessitates transparency. The system higher level adaptation behaviors should be transparent from the lower level individual agents. Individual agents should find the help when they need without knowing the source of that help. This philosophy is aligned with the ACMAS viewpoint where agents aren't aware of the existence of the organizational system behaviors.

In distributed systems, such as MAS, the consistency of the system is maintained using predefined access architectures and protocols, which are designed depending on the semantics of each type of entity. These distribution strategies can't be modified by the individuals, who are limited to use the default design. Transparency of the adaptation behaviors allows us to modify the organizational rules and schemes without making any change in the functionality of the lower level agents. Most of the current MAS organizational models adopt explicitly the concept of agent roles (remember that a role is an abstract description of a functional activity), and this strategy makes the organizational model tightly coupled with the application domain. It had better make the relation between the organizational model

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and the application domain loosely coupled so that the organizational model can be easily used to model any application domain (generality). Therefore, the new MAS organizational model should be domain-independent by realizing the adaptation transparency relative to the individual agents.

The Static and Dynamic Aspects

A static system is a system in which there is no change, like the solar system. A static MAS is often completely engineered in design time and mostly every behavior in the system is predefined, system components are also predefined and their interactions are known in advance. These systems although are stable and have better performance, but they are not robust enough to survive against unexpected situations such as the crash of one or more system components. Also, they aren't flexible (i.e., can't adapt their environment dynamic changes).

In contrast, a dynamic system is a system that is constantly changing, like the human body system. It is designed to be robust by possessing the ability to adapt environment changes or other types of perturbations. The increasing complexity, heterogeneity, and openness of modern and future real-world applications make the predefined behaviors in design time not adequate because it will be very difficult or impossible for the designer to expect every behavior or situation in the system-to-be. Therefore, a method to make the system able to dynamically change (regardless of the type of change) to handle new situations will be a requirement for these systems.

Therefore, the organizational model should adopt a hybrid approach regarding to the static and dynamic perspectives, to take advantage of the stability provided by the static perspective and also to take advantage of the robustness/flexibility provided by the dynamic perspective.

Autonomy

Autonomy was and still the main concept behind agents and multi-agent systems. Autonomy can be defined as the state of existing or acting separately from others. Thus, an autonomous agent is a software entity able to decide for itself independently without direct commands from other entities. Full autonomy is not a preferred agent characteristic in MAS research, and we can only find a type of full autonomy with humans (although controlled by the society) because they have perfect and rational minds, but agents (software or hardware) designed for specific missions in certain application domains and the requirement of safety imposes some constraints on their autonomy. Designed organization, where agents give up some degree of self-motivation and autonomy can be the appropriate choice, because it can serve as a kind of 'tuning' of the agent's autonomy. Figure 1 presents a possible spectrum of agent autonomy. As shown in the figure, the lowest autonomy level (the extreme left side) is when the agent is designed to be command-driven, where every action it does is selected by the operator. These types of systems are similar to open loop control in control theory (Doyle, 1992), where the operator is responsible of the control process state and he must observe the process and must enter the suitable setpoints to keep the process in stable conditions. Although it is a safe approach because it depends on a perfect agent like human but it is not flexible, not efficient, and not reliable. In time-critical control processes, a rapid action is required to adapt the unexpected situations. In this case, closed loop control with feedback is the appropriate system; according to an optimized predefined mathematical model it changes the output according to the input change in suitable time automatically without human intervention. Typical example of this system is the PID controller.

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A full autonomous system is presented in the autonomy spectrum shown in Figure 1 in the extreme right side, where the agents do plan and decide for their actions by themselves. The agent organizations can be represented in the figure by a pointer used to select the adequate agents' autonomy level. Agent organizations can tune (statically or dynamically) agents' autonomy levels using rules, norms, and specific constraints. Therefore, the new organizational model should be able to statically and dynamically tune agents' autonomy according to the context and system objectives.

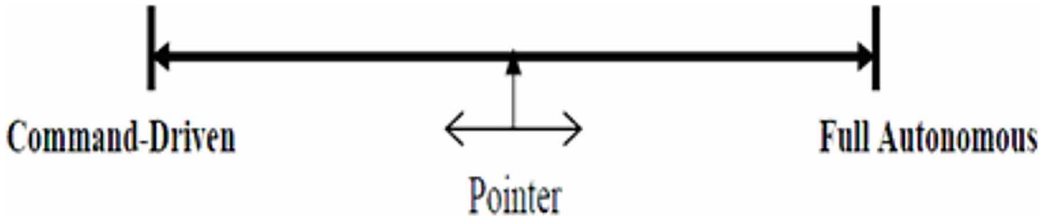
Heterogeneity

Heterogeneity signifies diversity. The Internet is an example of a heterogeneous system full of different types of systems, components, networks, data, devices, protocols, etc. The emerging information technology paradigms and concepts such as Cyber Physical Systems, Cloud Computing, Internet-of-Things, etc, represent a clear evidence of the emerging worldwide trend towards heterogeneity. For instance, the Cloud Computing Business Framework (CCBF) was proposed to help business organizations in achieving good Cloud design, deployment and services (Chang, Walters, & Wills, 2013). CCBF provides the framework needed for linking both computing and businesses, and provides insights into how challenges can be resolved in the business context with improvements in efficiency, profitability, and customer satisfaction. It is a dynamic framework that identifies the organizational needs and then designs Cloud systems, applications or services based on user requirements. It deploys, migrates and supports services using Cloud strategies, technologies and resources. That imposes new requirements on software engineering to actively concern heterogeneity of modern systems. The Agent-Oriented Software Engineering (AOSE) is not an exception; it should assume that agents (human, software, or physical) are heterogeneous, have different architectures, communication languages, and situated in heterogeneous environments with different types of resources. Thus, the new MAS organizational model should concern the heterogeneity of its components and their interactions.

Mobility

Although mobility is considered as an optional characteristic of agents, but rapidly evolving network and computer technology, coupled with the exponential growth of the services and information available on the Internet, will soon bring us to the point where hundreds of millions of people will have fast, pervasive access to a phenomenal amount of information, through desktop machines at work, school and home, through televisions, phones, pagers, and car dashboards, from anywhere and everywhere.

Figure 1. Agent autonomy spectrum



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Mobile code, and in particular Mobile Agents, will be an essential tool for allowing such access. Mobile agents have many benefits such as providing improvements in latency and bandwidth of client-server applications and reducing vulnerability to network disconnection (Singh, 2012; Lange, 1999). Unfortunately, mobile agents are not getting the same amount of attention like other MAS disciplines. The logical speculation and prediction tell that mobile agents will be given a great focus in future applications especially with the ultra-large-scale applications, which are expected to dominate the computer science research in just the next few years (Kotz, 1999). Thus, the new MAS organizational model should provide the required efficient and flexible infrastructure for mobile agents' functionality.

Security

Security is an important issue for large-scale systems especially if the Internet is their communication medium. It is required to support MAS organizational models with security techniques. Security can be realized using two approaches. The first approach adopts hard security techniques such as encryption, authentication, or firewalls which are traditionally and increasingly used for securing users' data and systems information (Chang, & Ramachandran, 2016; Chang, Kuo, & Ramachandran 2016). The second security approach relies on soft security methods such as trust and reputation based techniques, which are seen to be more adequate for distributed systems and specially MAS. Therefore, the new organizational model should adopt effective security approaches and techniques that combine both security approaches especially if it is assumed that agents are mobile and can to move between agents' organizations.

THE MODEL DESIGN METHODOLOGY

The design methodology of the required MAS organizational model comprises seven steps; each of them concerns a different perspective of the new organizational model.

Step 1: Identifying the Key Solution

This initial design step is dedicated to find the key solution to the problem. The realization of the mentioned characteristics (generality, dynamicity, autonomy, security, etc) of the new MAS organizational model can be achieved by adopting the loose coupling paradigm. In computing and systems design a loosely coupled system is one in which each of its components has, or makes use of, little or no knowledge of the definitions of other separate components. Figure 2 provides a discrete spectrum of systems coupling. Moving from left to right, the first class is decoupled (or isolated) components where each component possesses a high degree of autonomy and as a result can be run in isolation from other components, but in this case the integration of these components is low and even complex to be realized.

The next class is loosely coupled components where system components still have autonomy (although less than the decoupled class) and can interact together to achieve a common system goal, also in this class system components can be integrated to form one whole system and they follow the general system rules as needed. The final class is the tightly coupled components with high capability to be integrated with the price of low component autonomy.

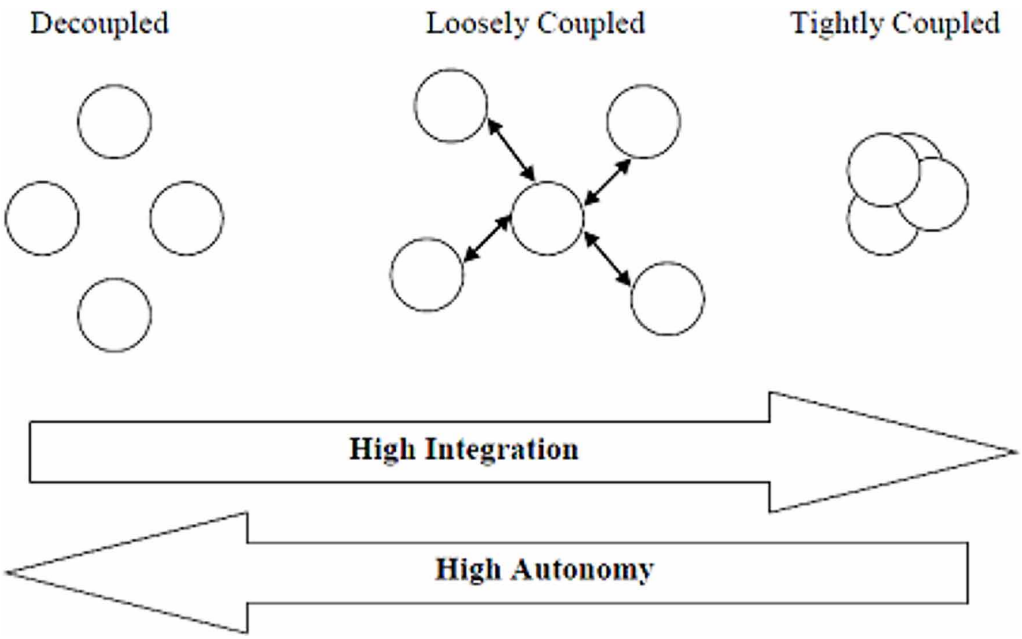
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We believe that with the adoption of the loose coupling approach, it could be possible to realize the required characteristics of the new MAS organizational model, Figure 3 demonstrates this belief. The loose coupling paradigm can be used to form light relationships between the collective level and the individual level from three perspectives: abstraction, behavior, and approach. The abstraction perspective concerns the relationship between the micro and the macro views of the complex system. The behavior perspective concerns the individual agents' behaviors and the whole system organizational behaviors. Further, the approach perspective concerns the transparency between the new model and the application domain. The problem now is how to realize the loose coupling paradigm between these perspectives.

There are many ways to realize loose coupling paradigm within MAS:

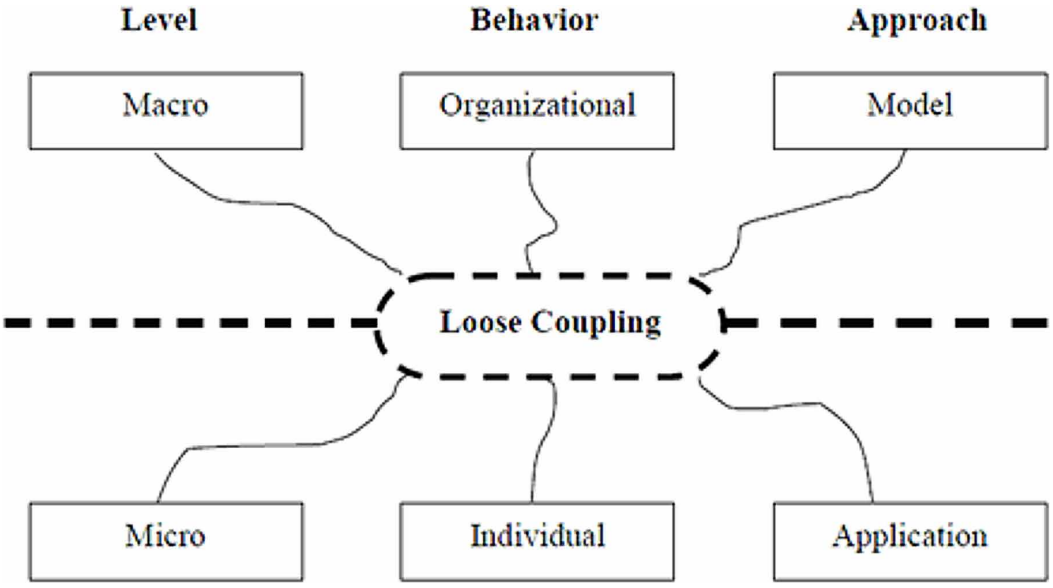
- **Modularity:** The degree to which a system's components may be separated and recombined. In industrial design, modularity refers to an engineering technique that builds larger systems by combining smaller subsystems;
- **Implicit Agents' Roles:** Different from related MAS organizational models (i.e., AGR, and MOISE) which used the role organizational construct explicitly (this technique is a pure OCMAS approach and contradicts with the ACMAS approach), the new model should use the role concept implicitly so that no organizational constraints on the individual agents are predefined;
- **Service Orientation:** A design paradigm for computer software in the form of services. The principles of service-orientation design stress the separation of concerns in the software. Applying service-orientation results in units of software partitioned into operational capabilities, each designed to solve an individual concern. These units are described as services;

Figure 2. Classes of systems coupling



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Figure 3. Loose coupling as a solution



- **Separation of Concerns:** A design principle for separating a system into distinct sections, such that each section addresses a separate concern. The value of separation of concerns is simplifying development and maintenance of computer applications;
- **Asynchronous Communication:** The exchange of messages, such as among the hosts on a network or devices in a computer, by reading and responding as schedules permit rather than according to some clock that is synchronized for both the sender and receiver or in real time. It is usually used to describe communications in which data can be transmitted intermittently rather than in a steady stream;
- **Indirect Communication (i.e., blackboard):** Communication through a shared space (blackboard) instead of direct message exchange.

In the design of the new MAS organizational model, the above-mentioned techniques for realizing the loose coupling paradigm will be used to make the new model more general and transparent for designing diversity of modern real-life agent-based systems. The next design steps continue the design process of the new MAS organizational model based on the loose coupling paradigm and its popular techniques.

Step 2: Spectrum of Entities Relationships

Step 2 presented in this subsection concerns the investigation of the relationships among real-world entities and identifies what can be called the key relationship, which can be exploited to engineer and design complex adaptive MAS to obtain its full power. We consider this step as the most important one because it gives us the core idea and theory of the new MAS organizational model. The relationships between real-world entities can be classified into four main classes aligned horizontally from left to right forming a spectrum contains four classes of entities relationships, as shown in Figure 4 and described as follows:

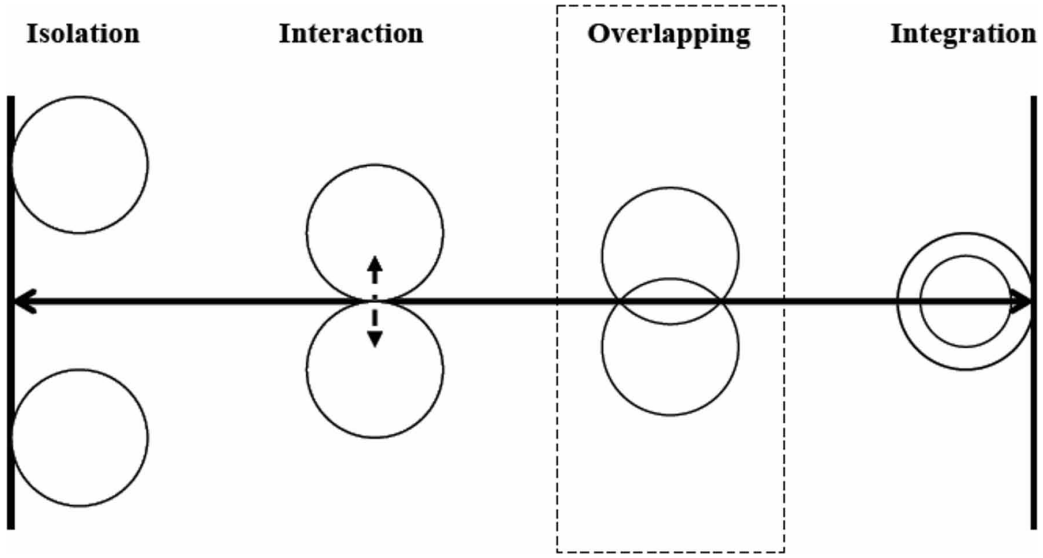
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- **Isolation:** Class in which entities are isolated from each other and have no any type of interaction (decoupled components);
- **Interaction:** Class in which entities interact together to achieve their own goals or a global common goal (the interaction can be logical by message passing or physical actions);
- **Overlapping:** Class in which higher order entities (i.e., groups of agents) coincide partly so they can save communication overhead and share or exchange resources, activity, or information;
- **Integration:** Class in which entities coincide completely together to become one.

The Isolation class (the extreme left end) can't fit with our modern world, where everything is connected to everything and complex, distributed activities and rapid progress are its dominant characteristics. Therefore, it is not a feasible or a preferred type of the entities relationships. The Integration class (the extreme right end) is not always the case in real world and to some extent it contradicts with the concept of autonomy because it is not logical to say that everything is contained inside another thing. The Interaction class is familiar in our real world, for instance, humans' interaction where there is a common language between two or more humans enables them to transfer their internal states, information, desires, etc., to each other. Also, by possessing the ability to interact, humans are able to coordinate to achieve shared goals.

From the other hand, the interaction class is individual-directed and doesn't reflect the structural level of the whole society. The Overlapping class contains systems where higher order entities such as human groups have some shared activities. For instance, consider two human groups each of them contain a number of humans and there are some humans who are members of both groups in the same time, so that they have the ability to interact with the members of the two groups. Thus, it is possible to say that the interaction class is implicitly included in the overlapping class, but it is not only concerning individual interactions (intra) but also concerning group interactions (inter).

Figure 4. Spectrum of entities relationships



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Step 3: Why is Overlapping the Adequate Relationship?

Table 1 provides a comparison between the entities' relationships classes; they are assessed according to their support to important characteristics such as autonomy, heterogeneity, modularity, application feasibility, and generality. The isolation class can be considered as the passive class, it lacks any features except heterogeneity. Conceptually it represents the components with the highest autonomy degree, but practically, it is not the case because it includes passive components that have no control even to change themselves and have no capability to interact with other components in the same system.

The application feasibility of the isolation class is very low because the main trend of our modern and future real-world is concerning communication and interaction and in which everything is connected to everything. Further, this class doesn't support modularity (the degree to which system components can be separated and recombined). The reason is related to the assumed missing connection between things which results in the missing sense of the word; system components are separated but never combined, as a result this class is not feasible to model real world applications. Finally, this class cannot be used to describe every pattern found in our real world, so it is not general. The interaction class supports all the characteristics except generality. Further, it is not a general scheme in our real world because some real-world paradigms and patterns are not reflected in this class, as an example, sharing of objects is not reflected in this class. This class can be considered as an enhanced view of the isolation class. The integration class is feasible enough to be adopted for some real-world applications (especially those problems which have a recursive nature) but it is not general enough to model all types of them. The overlapping class is the intermediate class; it implicitly contains the strengths of the other classes. The important attribute of this class is its generality because it can be used to model every pattern in our real world and even in the whole universe. To explain, it is said that our world is a small village; other people said that it is a global village, in the sense that the incidents in one part of the world affect the other part of the world. In fact, some of the incidents affect the whole world whereas some of them are long lasting in the same environment such as the atomic bomb dropped on Hiroshima in Japan by the Americans, still has its effect in that environment till now.

For the purpose of this research we imagine our world as a framework for countries overlapping, no country can live isolated from the rest of the world, each country imports and exports goods and even cultures. Also, each country has an embassy in each of other world's countries (this is a type of overlapping behavior). That leads us to conclude that our world survives based on its countries overlapping relationships. If you meditate the nature, the world, and the whole universe you will discover that the overlapping paradigm is widely exist. For instance, a human business organization contains many overlapping activities among its sectors. Also, the Internet is full of overlapping behaviors and activities (i.e., overlapping networks).

Table 1. Comparison between the classes of entities relationships

	Autonomy	Heterogeneity	Modularity	Feasibility	Generality
Isolation	High	High	Low	Low	Low
Interaction	High	High	High	High	Low
Integration	Low	Low	High	High	Low
Overlapping	High	High	High	High	High

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Further, space is discovered to contain many overlap patterns (i.e. parallel universes). Modeling real world applications using approaches and models that match or at least similar to those applications, nature will guarantee the understanding of their complex behaviors and evolution and that will facilitate their engineering. Therefore, it will be a good idea to design the new MAS organizational model based on the overlapping relationships among similar higher order entities (i.e. universes, worlds, and organizations of agents), these entities should be the first-class concepts in the proposed organizational model, which can be described as the dynamic organizational model for agent organizations (or higher order entities in general) overlapping.

Step 4: Who can Overlap within MAS?

This section tries to deeply investigate the overlap concept and answers the question of: who can overlap within MAS? The overlap concept means sharing of something and agents are the lowest abstraction entities in MAS so they are rigid and compact entities that can't overlap. Agents can only interact together to achieve some local or global goals (see Figure 5-a). On the other hand, organizations of agents (i.e., groups of agents) can overlap and share individual agents, as shown in Figure 5-b. Let's denote agents as (A_1, A_2… A_n) and denote organizations as (O_1, O_2… O_m). Also, let's denote an agent A_i that belongs to an organization O_j as $A_{j.i}$. In Figure 5-b, O_1 overlapped with organization O_2 and agent $A_{2.2}$ that belongs to O_2 is the shared object between the two organizations.

The proposed MAS organizational model (we named it NOSHAPE as will be shown later) assumes three levels of higher order abstractions (Universes, worlds, and organizations). Agents are the target of the overlapping relationships between these abstractions; they are the lowest shared objects. The overlapping process dynamically reshapes the complex MAS for agents to interact. In other words, it structurally prepares the working environment for agents to interact. This implicitly means that agents are supposed to belong to organizations, it is not allowed for an agent to be located independently outside of any organization. In other words, for two agents to interact they must belong to the same organization. Further, the overlap of organizations necessitates the overlap of their worlds and the overlap of worlds necessitates the overlap of their universes. All the entities used in the proposed organizational model are presented in Table 2, and Figure 6 provides the abstract view of the proposed organizational model.

In the proposed NOSHAPE MAS organizational model, a MAS is considered as a collection of organizations (an organization can be seen as a group of agents) are able to overlap with each other to share or exchange dynamic agents. Based on the real-world application size, the MAS that engineered based on the proposed NOSHAPE model (let's call them NOSHAPE MAS) can be classified as follows:

- **Ultra-Large-Scale MAS:** Multi-Universe, Multi-World, Multi-Organization (MMM) multi-agent systems;
- **Very-Large-Scale MAS:** One-Universe, Multi-World, Multi-Organization (OMM) multi-agent systems;
- **Large-Scale MAS:** One-Universe, One-World, Multi-Organizations (OOM) multi-agent systems.

Before providing more complex overlapping examples, let us design a general denotation for entities naming. Table 3 provides a general denotation of the NOSHAPE entities. The first row in the table represents the complex case, where all the NOSHAPE higher order entities exist. It is the case, where there are Multiple-Universe, Multiple-World, and Multiple-Organization in the system-to-be. We abbreviated

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Figure 5. Agents only interact but organizations can overlap

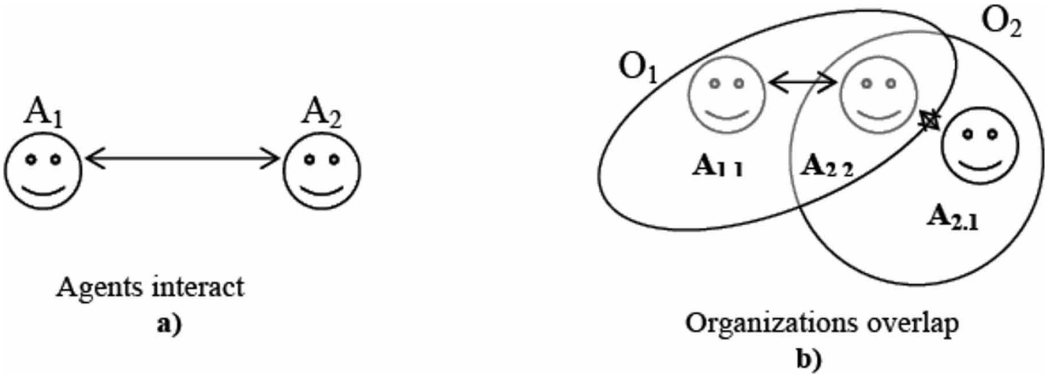
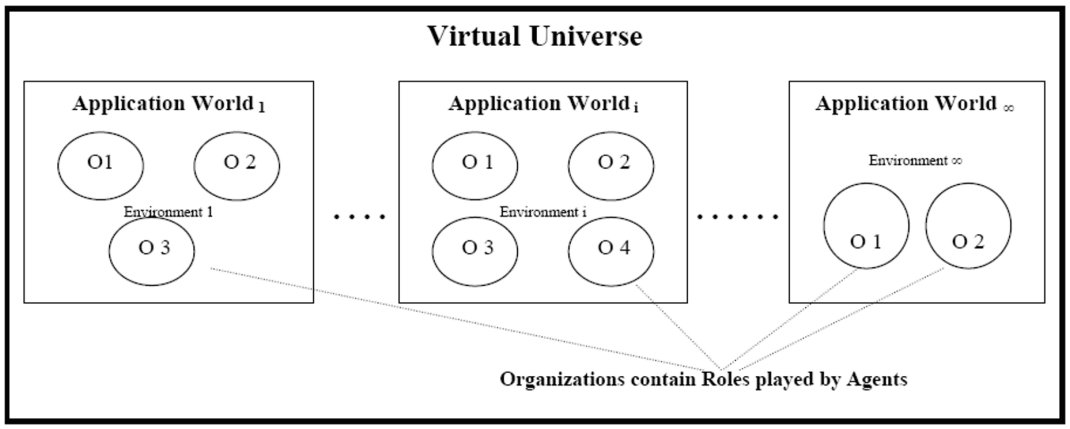


Table 2. Entities modeled in the new proposed organizational model

Abstraction Level	Description	Concrete Example
Universe	The collection of all virtual worlds	Internet
World	A collection of organizations	Web Application
Organization	A collection of Roles	Workspace
Roles	Abstract citizens of organizations	Agents Types
Agents	Actual citizens of organizations	Agent 1, Agent 2,

Figure 6. Abstract view of a virtual universe such as the Internet



this case as (MMM). The second row in Table 3 represents the case of one-universe, multi-world, and multi-organization applications (abbreviated as OMM). And the third row represents the one-universe, one-world, and multi-organization applications (abbreviated as OOM). These three cases are actually the OCMAS face of the proposed NOSHAPE model. The last row in the table represents the case where there are no any NOSHAPE higher level entities and it is the case where only the ACMAS viewpoint is adopted, in this case the considered application is not a NOSHAPE one but it is a traditional MAS

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Table 3. NOSHAPE denotation

	Universe (U)	World (W)	Organization (O)	Agent (A)	
MMM	U_u	$W_{u.w}$	$O_{u.w.o}$	$A_{u.w.o.a}$	OCMAS
OMM	--	W_w	$O_{w.o}$	$A_{w.o.a}$	
OOM	--	--	O_o	$A_{o.a}$	
OOO	--	--	--	A_a	ACMAS

*Where: u, w, o, a =0, 1, 2, 3, 4…

that concerns only the individual agent interactions and behaviors without explicitly concerning the organizational level. We abbreviated it as (OOO) for one-universe, one-world, and one-organization. Note that for the overlapping to take place, there must be two or more of similar higher order entities (i.e., two organizations).

Now after demonstrating the general structure of the proposed NOSHAPE MAS organizational model, let us see two more complex examples. Like the NOSHAPE organizations which can dynamically overlap and share individual agents, other higher order entities such as worlds of organizations can overlap together too, but in this case, it is logical and more adequate to let them share complete organizations. An illustrative example is shown in Figure 7, which presents two worlds W_1 and W_2 live in one universe U_0 and each of them contains a number of organizations that themselves contain agents. Because there is only one universe in the system, we omitted the universe subscript, see Table 3. As shown in the figure, the world W_1 overlapped with the world W_2 and accordingly W_1 shares organization $O_{2.3}$ which belongs to W_2. Also, in the organizational level, it is clear that organization $O_{1.2}$ which belongs to world W_1 overlapped with organization $O_{2.3}$ which belongs to W_2 and the shared objects (agents) are only $A_{2.3.1}$. Inside W_2, $O_{2.2}$ overlapped with organization $O_{2.1}$ sharing agent $A_{2.1.1}$. It must be pointed out here that the condition for two agent organizations belonging to two different worlds to overlap is that their worlds must overlap first. Let us denote an organization O_1 belongs to W_1 as $O_{1.1}$, and similarly lets denote an agent A_1 belongs to an organization O_1 which itself belongs to a world W_1 as $A_{1.1.1}$ (as demonstrated in Table 3). Therefore, the agent system shown in Figure 7 is a MAS of the type OMM and contains one universe (U_0). So, it can be symbolically represented as follows.

The MAS = $\{U_0\}$ where:

$$U_0 = \{W_{0.1}, W_{0.2}\} = \{W_1, W_2\}$$

because there is only one universe (U_0) the universe subscript is omitted:

$$W_1 = \{O_{1.1}, O_{1.2}\}$$

$$O_{1.1} = \{A_{1.1.1}, A_{1.1.2}\}$$

$$O_{1.2} = \{A_{1.2.1}, A_{1.2.2}\}$$

$$W_2 = \{O_{2.1}, O_{2.2}, O_{2.3}\}$$

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$O_{2.1} = \{A_{2.1.1}, A_{2.1.2}, A_{2.1.3}\}$

$O_{2.2} = \{A_{2.2.1}, A_{2.2.2}\}$

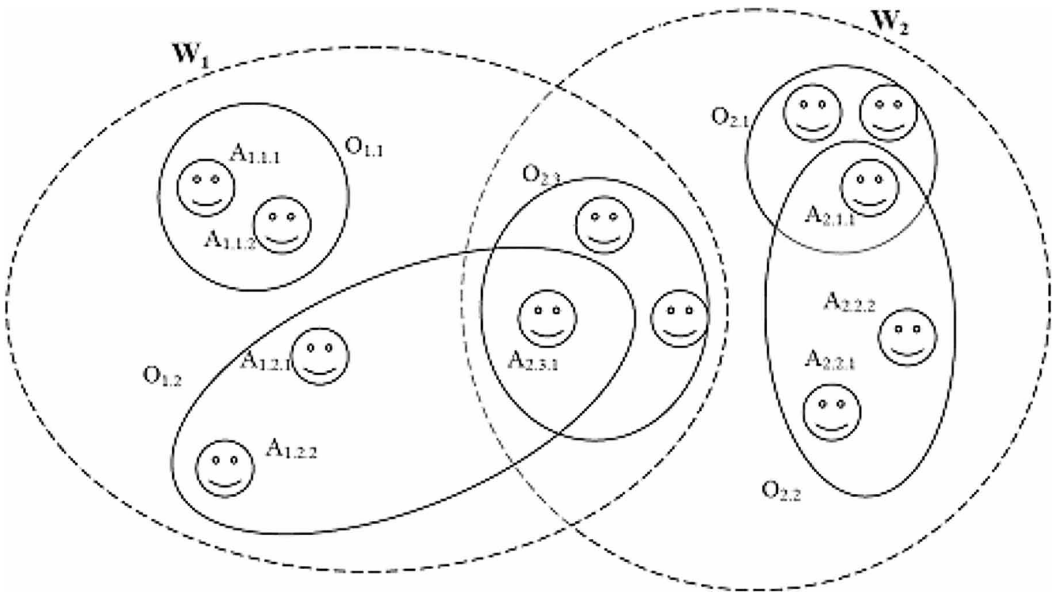
$O_{2.3} = \{A_{2.3.1}, A_{2.3.2}, A_{2.3.3}\}$

That is the current system structure and the overlapping relationships can be represented as follows:

- W_1 overlapped with W_2; or
- W_2 overlapped by W_1;
- $O_{1.2}$ overlapped with $O_{2.1}$; or
- $O_{2.1}$ overlapped by $O_{1.2}$;
- $O_{2.2}$ overlapped with $O_{2.1}$; or
- $O_{2.1}$ overlapped by $O_{2.2}$.

In this example, we consider an organization as a workspace inside a larger application modeled as a NOSHAPE world (i.e., application world). An application world can be considered as a large-scale distributed agent-based system. Assume that this application world is a web-based application in the sense that it works through the Internet. Then, what about the Internet itself, is it possible to imagine it as a very large entity comprises a very large number of application worlds like the one presented in Figure 7? Let's call this type of very or ultra-large-scale entities as NOSHAPE Universes. Thus, a NOSHAPE universe is a higher order entity contains worlds each of them contains a set of organizations. The presented example comprises three universes: U_0, U_1, and U_2. The universe U_1 is overlapped with the universe U_0 and the shared object is world $W_{0.1}$. This higher level universal overlap is a necessary condition for the overlap of worlds $W_{1.0}$ and $W_{0.1}$ which belongs to universes U_1 and U_0 respectively. Also, the overlap

Figure 7. Worlds of organizations can also overlap



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of $W_{1.0}$ and $W_{0.1}$ is a necessary condition for the overlap of organizations $O_{1.0.3}$ and $O_{0.1.2}$. Agents, which are the target shared objects, are not shown in the figure of the sake of simplicity. Therefore, the agent system shown in Figure 8 is a MAS of type MMM and contains three universes (U_0, U_1, U_2). It can be symbolically represented as follows.

The MAS = $\{U_0, U_1, U_2\}$, where:

$U_0 = \{W_{0.0}, W_{0.1}\}$

$W_{0.0} = \{O_{0.0.0}, O_{0.0.1}, O_{0.0.2}, O_{0.0.3}\}$

$W_{0.1} = \{O_{0.1.0}, O_{0.1.1}, O_{0.1.2}, O_{0.1.3}, O_{0.1.4}\}$

$U_1 = \{W_{1.0}\}$

$W_{1.0} = \{O_{1.0.0}, O_{1.0.1}, O_{1.0.2}, O_{1.0.3}\}$

$U_2 = \{W_{2.0}, W_{2.1}\}$

$W_{2.0} = \{O_{2.0.0}, O_{2.0.1}, O_{2.0.2}\}$

$W_{2.1} = \{O_{2.1.0}, O_{2.1.1}, O_{2.1.2}\}$

Note that in this very complex example no subscripts are omitted. The overlapping relationships can be represented as follows:

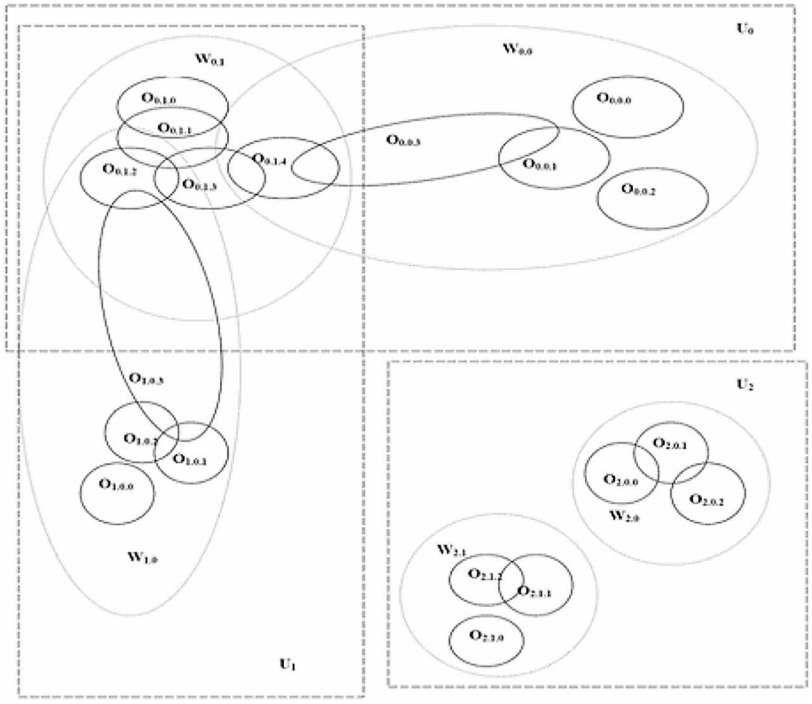
- U_1 overlapped with U_0; or
- U_0 overlapped by U_1;
- $W_{0.0}$ overlapped with $W_{0.1}$; or
- $W_{0.1}$ overlapped by $W_{0.0}$;
- $W_{1.0}$ overlapped with $W_{0.1}$; or
- $W_{0.1}$ overlapped by $W_{1.0}$;
- $O_{0.0.1}$ overlapped with $O_{0.0.3}$; or
- $O_{0.0.3}$ overlapped by $O_{0.0.1}$;
- $O_{0.0.3}$ overlapped with $O_{0.1.4}$; or
- $O_{0.1.4}$ overlapped by $O_{0.0.3}$;

Step 5: Biomimicry (Inspiration)

This section tries to find an answer to the question of: how to dynamically overlap? We are looking for a way to enable a higher order MAS entity (i.e., agent organization) to dynamically (in run-tine) overlap with other agent organizations to adapt the environment dynamic changes. It is possible to specify the overlap relationships between agent organizations in design-time (statically) but this approach will not achieve the required system adaptivity. The dynamic overlap mechanism adopted within the proposed model is

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Figure 8. Universes of Worlds of Organizations of Agents can also overlap



bio-inspired! We called the proposed organizational model as NOSHAPE (No Shape), as we inspired it from Amoeba which is a unicellular organism that doesn't have a definite shape. Cells are the building blocks for all life forms. Unicellular means that Amoebas have only one cell for their entire body. The inside of an amoeba is a jellylike fluid called cytoplasm. Bits of food and other materials float around in the protoplasm. For us, the important part of an Amoeba is the Pseudopod (pronounced as "sudopod"). The Pseudopod is used to help the Amoeba to move, and also to eat. It is a part of the Amoeba's body that it can stretch out and pull itself with. Or, to eat, Amoeba stretches out the Pseudopod, surrounds a piece of food, and pulls it into the rest of the Amoeba's body as shown in Figure 9. Moreover, Amoeba reproduces (makes more Amoebas) by a process called binary fission, this means that one Amoeba can split in half making two identical new Amoebas. Also, Amoeba is social and in case of starvation it aggregates with other Amoebas forming slugs. Slugs are a multi-celled organism able to travel rapidly and efficiently from place to place where it can find food. The proposed NOSHAPE MAS organizational model imitates the Amoeba structural and functional behaviors creating an organization (or any higher order entity) that can be seen as an artificial amoeba. Therefore, the NOSHAPE organizational dynamic behaviors inspired from Amoeba can be described as follows:

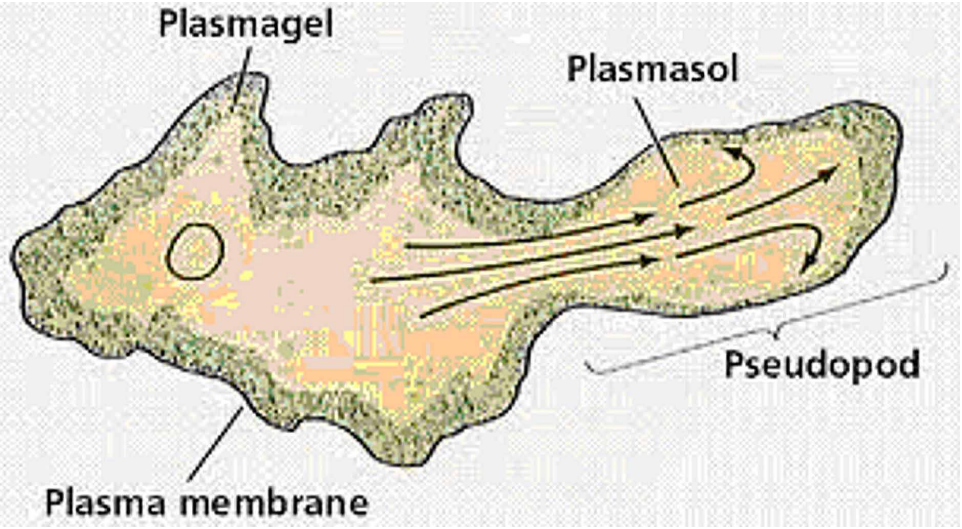
- **Expand:** In case an organization finds a need to overlap with another organization in the world, it should expand first to the required organization then it asks the required one to overlap with her;
- **Overlap:** After the initiator organization succeeds to expand to the destination organization, it executes the overlap structural behavior to overlap with the destination organization to share some or all of its dynamic roles (agents);

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- **Partition:** After the overlapping relationship between two organizations is established, the overlapped (the responder or destination) organization may decide to partition (split) itself into two parts, one part contains the shared subjects and the other contains the remaining of the overlapped organization, the decision to partition is a local decision of the overlapped (Destination) organization;
- **Merge:** After the partition process takes place, the emerged orphan partition should be merged with the overlapping (the initiator) organization;
- **Shrink:** The overlapping organization may decide to shrink to its home space either after the partition process takes place or after the required joint activity finished. If the shrink process is preceded by a partition process then the agents contained in the emerged partition (now merged with the overlapping organization) will be automatically moved to the overlapping organization home space (as they are supposed to be mobile agents);
- **Home:** When triggered the overlapping organization repeals its overlapping relationships with other organizations and shrinks itself from all other spaces to its home space;
- **Retire:** The organization can be retired (separated from the system) by the system administrator for many reasons (i.e. for maintenance).

The reason to decompose the organization dynamic structural behavior into some discrete micro behaviors is to break down the problem into simple steps that are easier to conceive, understand, program, maintain, and control. But it is possible to bypass most of these structural behaviors and only use three of them, Overlap/Home/Retire, but in this case the organizations are supposed to share the dynamic roles (agents) without exchanging them.

Figure 9. Amoeba stretches out to move



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Step 6: The Overlap Mechanism

This section answers the questions of when to overlap. Figure 10 demonstrates the possible agent-organization relationships, as shown in Figure 10-a, an individual agent searches for a suitable organization and asks to join it to achieve its own goals. But in Figure 10-b the situation is reversed, an organization searches for an agent to give it a role to play inside it and the result will be achieving the organization goals. The proposed organizational model adopts the later technique shown in Figure 10-b. We argue that this technique is better because the organization has more global view than individual agents so letting the organization selects the suitable agent is a feasible and effective way to achieve the organization goals. The overlap relationships can be specified by the designer in design time and used in run-time without change until the MAS terminates, but this approach is not adequate for open and complex application domains which are required to be adaptive able to change dynamically (in run-time) according to the context. Inspired from Amoeba, a higher order entity such as an organization should be able to change its overlap relationships as a result of the activities of its internal agents. As shown in Figure 11, which represents an application world consists of two organizations and an organization initiated an overlap relationship with the other one. Let's call the organization which initiates the overlap process as the overlapping organization, and the organization which responds to the overlap request as the overlapped organization. The example presented in Figure 11 considers the case when the overlap process modeled as two steps Home/Overlap.

Figure 10. Types of agent-organization relationships

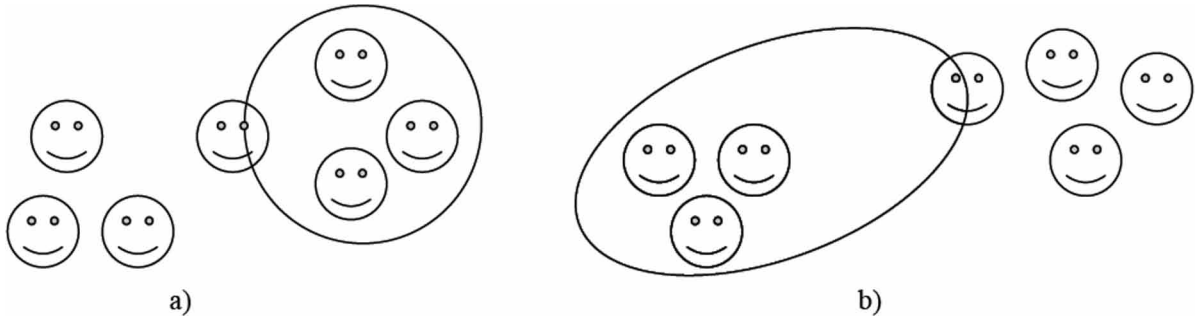
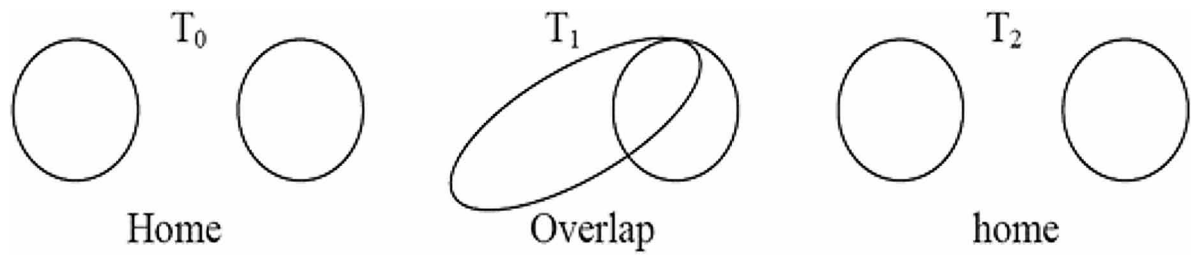


Figure 11. An organization dynamically overlaps with another one



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Another more complex example is shown in Figure 12 in which an application world comprises four organizations each contains a number of individual agents. The system starts at the initial time (T_i) with no inter-organization relationships but as time goes and at T_{i+k}, the system structure has been changed and the overlapping relationships have been established among system organizations as a result of each organization lower level interactions and/or environment changes. The overlap process is initiated by an organization according to the activity of its internal agents. The organization does this to satisfy the requirements of its internal agents to be able to satisfy the global organization goals. It is assumed that the agents inside an organization can easily find each other and interact together without the need for higher level adaptation (i.e., through a local yellow page service). But in case an agent can't find another agent that provides a certain service to interact with, it has to trigger the need for an overlap process to let the organization globally finds the required agent. Based on the above discussion, we are going to propose the internal structure of a NOSHAPE organization. Figure 13 presents the anatomy of a NOSHAPE organization, the figure illustrates the organization contents gradually from higher abstraction level (left) to the lower one (right). As shown in the figure, the organization is divided into two parts; the first one is the static part which contains static roles which are responsible of the management of the organization structure. An example of a static role is the global supervisor (GS) which can be considered as the organization structure controller; it concerns the inter-organization interactions and manages the overlap and the other dynamic behaviors relative to other organizations. The second part of a NOSHAPE organization is the dynamic part which contains dynamic roles (agents), which are responsible of the application domain functional activities. Dynamic roles (agents) can have many types (depending on the application domain); to free the global supervisor from caring directly about functional dynamic agents, it's possible to assign a local supervisor (LS) to each type of dynamic roles. The responsibilities of the local supervisor could be, (1) creating the required dynamic agents and configuring them, (2) monitoring the dynamic agents health/performance and applying dynamic load balancing algorithms on dynamic agents, (3) recreating dead dynamic agents and reconfiguring them, (4) receiving triggers from dynamic agents and bypass them to the global supervisor (the organization controller), (5) assigning new added environment resources to dynamic agents.

The two parts of the organization interact together through triggers such as Trigger-Required-Joint-Activity (TRJA), Trigger-Finished-Joint-Activity (TFJA) and so on, (as will be demonstrated later). Figure 13.c shows that the organization dynamic part contains many dynamic agents (DAs) with different types and each type is supervised by a local supervisor (LS). The figure also shows two other components, the Agent Management System (AMS) and the Directory Facilitator (DF). Each organization is assumed to contain these two important services. The AMS has the responsibility of creating agents, removing agents, naming of agents, etc, it provides the white page service inside the organization. The DF provides the yellow page service inside an organization where the system agents advertise their services to enable other agents to find them. Figure 14 illustrates how the adaptation triggers exchanged between the functional activity level (agents) and the organizational level (organization). What we need to emphasize here is that the global dynamic reorganization is excited by the organization internal functional activities (dynamic roles activities) in a bottom-up top-down way as shown in Figure 15, this happens endogenously without external intervention and this complies with the requirements of self-organization. As shown in the figure, it is not necessary to pursue the whole stack of dynamic reorganization as it could be sufficient to satisfy the organization functional activity with one, two, or (the worst case) with three (higher level) dynamic reorganization processes. For instance, if the two organizations are situated in the same world then inter-organization reorganization is enough. But if they are situated in two different

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Figure 12. Overlapping of organizations of agents

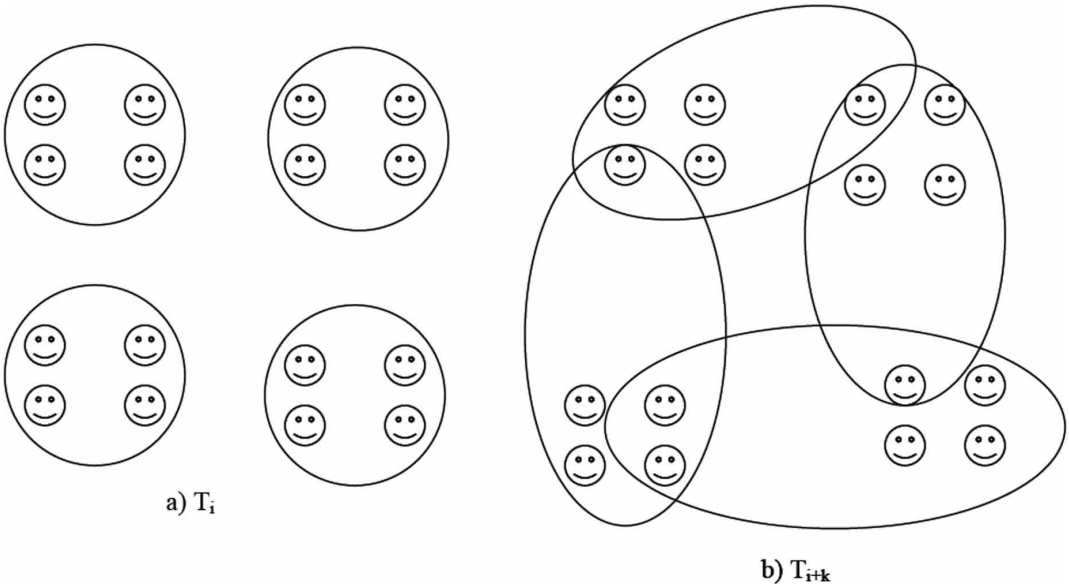
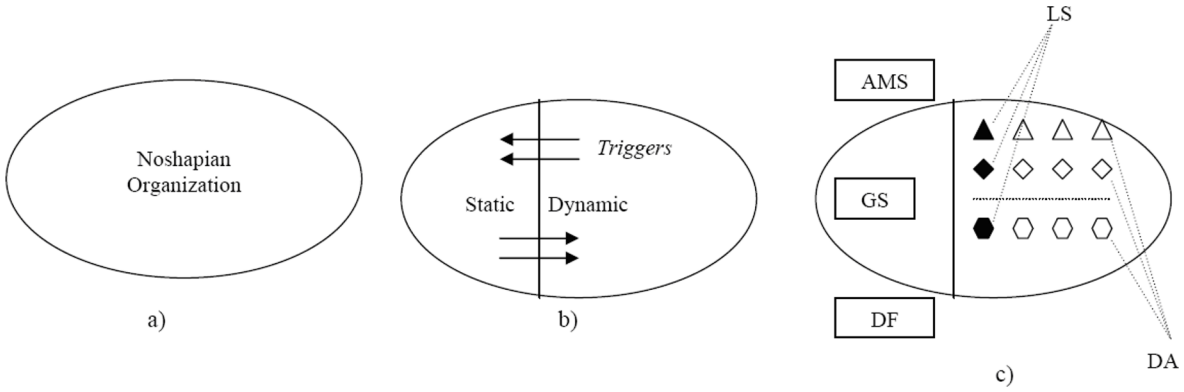


Figure 13. The anatomy of a NOSHAPE organization



worlds in the same universe then inter-organization reorganization is required which itself requires inter-world reorganization before it can be executed (suppose that the two worlds are not already overlapped). Furthermore, if the two worlds are situated in different universes, then inter-organization reorganization is required which itself requires inter-world reorganization which itself requires inter-universe reorganization to be executed (also suppose there are no already established overlapping relationships among similar entities). This means that there are a set of preconditions for each higher order entity dynamic reorganization (dynamic behavior) to be executed as will be shown in the next section.

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Figure 14. Basic triggers between organization structure and activity levels

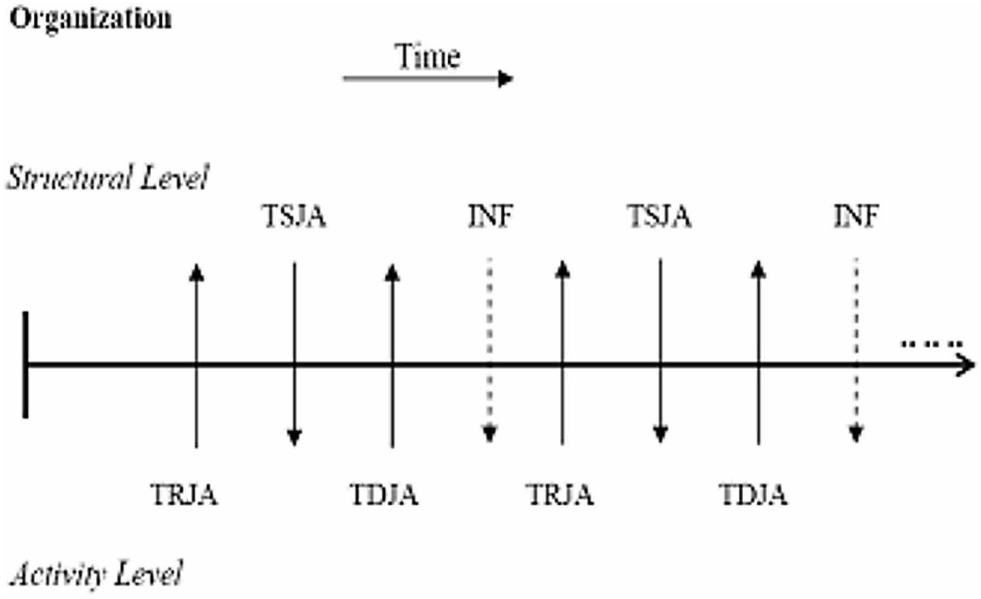
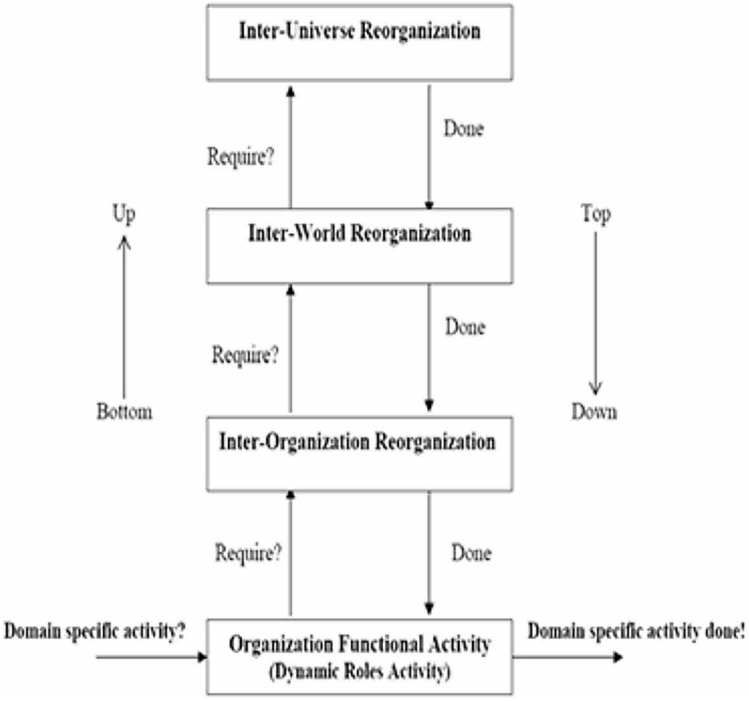


Figure 15. Stack of dynamic reorganization



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Step 7: The Computational Modeling

The philosophy of the proposed NOSHAPE organizational model is to consider the agent organization as an explicit and static entity that has a set of dynamic structural behaviors. In other words, the agent organization is something tangible and has a personality, it comes to existence when the system starts and continues to exist until the system terminates. Moreover, new organizations can dynamically join the system in run-time. Thus, an agent organization is similar to an agent; it's autonomous, reactive, proactive, and social. The NOSHAPE organizational model tries to integrate both of the organizational perspectives: the static and the dynamic perspectives for the sake of stability, flexibility, and robustness. This section tackles the proposed NOSHAPE model computationally; the next subsection provides the general meta-model of NOSHAPE.

NOSHAPE Meta-Model

Figure 16 shows the NOSHAPE Meta-Model (its basic class diagram) in UML (OMG, 2015). That vision of a real-world application as a framework for entities (i.e., organizations) overlapping in addition to the Amoeba inspired me the basic ideas of the NOSHAPE dynamic organizational model, which can be considered as a starting point of a new OCMAS research direction concerns the overlapping of MAS higher order entities producing what can be called as NOSHAPE MAS. What can be read from the NOSHAPE Meta-Model shown in Figure 16, can be summarized in text as follow:

1. The NOSHAPE organizational model assumes three higher levels of abstraction, the universe level which comprises an infinite number of worlds, the world level which comprises an infinite number of organizations, and the organization level which comprises an infinite number of roles (static or dynamic) played by agents;
2. Entities in the same abstraction level (i.e. organizations) can overlap together to share their lower level entities;
3. Each higher order entity possesses a number of dynamic structural behaviors forming the inter-entity (i.e. inter-organization, inter-world, and inter-universe) relationships; examples of such structural behaviors are Expand, Overlap, and Shrink, etc.;
4. Each higher order entity is situated in a local environment and also can share remote entities environments (i.e., can access remote resources) through the overlapping concept;
5. An organization contains roles which played by agents. The NOSHAPE model assumes two types of roles, static roles which concern the structural aspects of the organization, and dynamic roles which concern the functional aspects (domain specific);
6. Static roles are specific to each organization as they monitor continuously and manage the current structural context of the organization. Static roles cannot be shared, cannot be exchanged, and cannot be moved, example of organization static roles is the Global Supervisory (GS) role which can be considered as the structural controller of the organization;
7. On the other hand, the organization dynamic roles can be shared, exchanged, and moved from one organization to another. Further, the dynamic roles handle the domain specific tasks; they embody the actual capabilities and abilities of the organization. The dynamic roles are dynamic in the sense that they can be dynamically created; removed, configured, etc. example of dynamic roles is the Worker Agents (WAs) for executing domain specific tasks inside organizations;

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8. The dynamic roles fire functional Triggers and send them to static roles to translate these triggers to structural behaviors to satisfy dynamic roles needs and requirements by finding particular remote dynamic roles to interact with;
9. Entities structural dynamic behaviors can be realized as interaction protocols between these entities. Structural interactions are pursued by the organization static roles;
10. Each organization has an environment contains a set of resources such as databases, legacy systems, etc. Resources are the non-agent entities; they are used or consumed by dynamic roles to pursue the organization functional activities;
11. It is important to know that, static roles are not considered as the representatives of an organization to the outside world, they only concern restructuring or reorganizing of the system so local dynamic roles can find remote dynamic agents to directly interact with to be able to accomplish their assigned functions. This viewpoint is compatible with the separation of concerns principle which is a familiar principle in software engineering.

Representation

This subsection tries to propose a notation to represent the NOSHAPE MAS. Two types of notation artifacts are proposed, Venn diagrams and line graphs. Venn diagram is adequate for representing the overlapping relationships between organizations situated inside one world. However, if the number of organizations is large using Venn diagrams will be very complex. On the other hand, line graphs are simple, clear, and scalable, so they can be used to represent the overlapping relationships within complex NOSHAPE MAS. Figure 17 shows an example of a world comprises four organizations (A, B, C, D) initially separated from each other (Time 0) but as time goes the overlapping relationships among them are dynamically established (Time i). So, every point of time we look at the system we may find different established overlapping relationships. Figure 18 shows the same example but this time in line graph. The advantage of Venn diagrams is that they can be used to represent not only the overlapping relationships among organizations but also the other relationships such as Expand, Shrink, etc, can be visually represented in contrast to line graphs which can only be used to represent the overlapping relationships between organizations. According to the graph theory terminology (McKee, 1999), the line graph can be considered as the intersection graph of the Venn diagram which represents the organizations overlapping relationships.

The NOSHAPE model can be considered as a dynamic MAS organizational model for higher order entities (i.e., organizations) overlapping. The goal of the overlapping among organizations is to share their dynamic roles (agents). Figure 19 provides an example scenario in a world comprises two organizations (A, B). Initially the world is in its state 0 in which each organization is situated in its home space (a in the figure). As a consequence of organization, A working environment change, organization A decided to overlap with organization B, so A executed the action Expand to reach organization B (this may be implemented using an appropriate interaction protocol) (see b in the figure). Then A asks B to overlap with her and A specifies the range of agents required for the overlap. If B accepted the overlapping request from A, the overlapping process starts and the required activity (the reason of the overlap) takes place for a period of time (c in the figure). After the required activity of overlapping finish, A and B negotiate to terminate the overlapping and this negotiation may result in a partitioning process to take place to organization B, because A finds that it needs some of B's dynamic roles (agents) and B finds

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Figure 16. The NOSHAPE complete meta-model

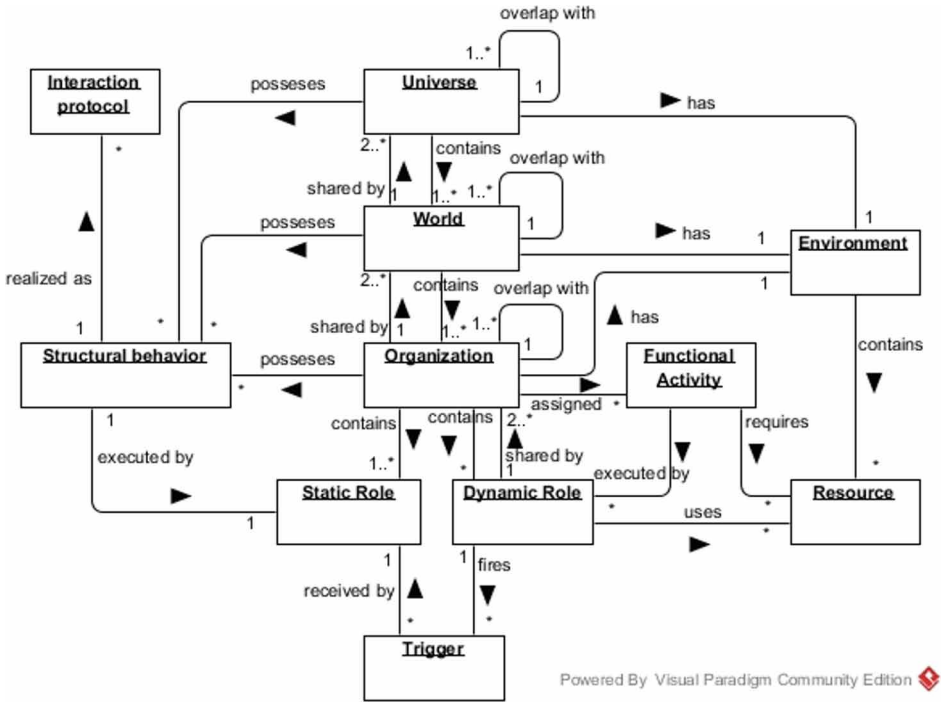
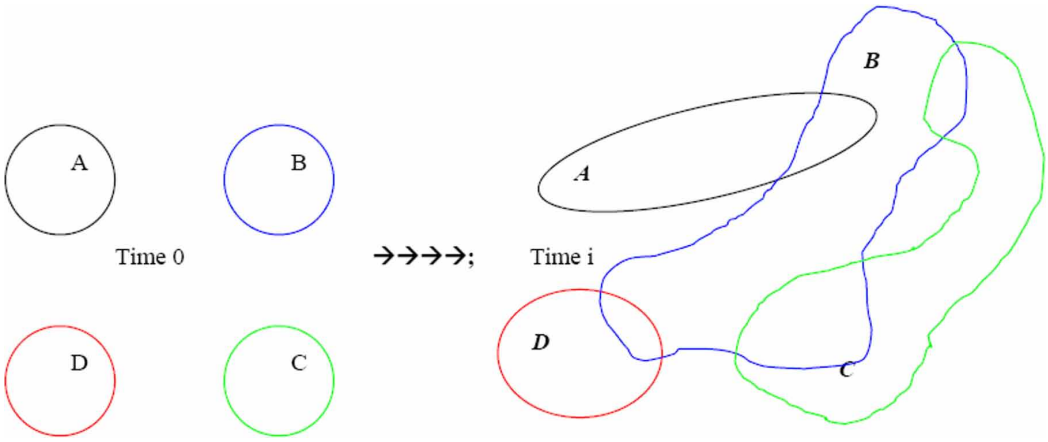


Figure 17. Vein graph showing the dynamic organizations overlapping



that it doesn't need these resources for a while (d in the figure) the partition process followed by a merge process to merge the B's emerged partition with A. Then A decides to shrink to its home space as the overlapping with B is terminated and it starts a shrink process (e in the figure).

The Shrink process includes moving the partitioned dynamic roles (agents) from B's home space to A's home space (mobile agents). Finally, organizations A and B return to their final states where each one is completely situated in its own home space (f in the figure) as shown now A becomes bigger as it contains more agents, its own agents and some of B's agents. As shown in the figure, starting from

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Figure 18. One-dimension line graph as another representation of the example in Figure 17

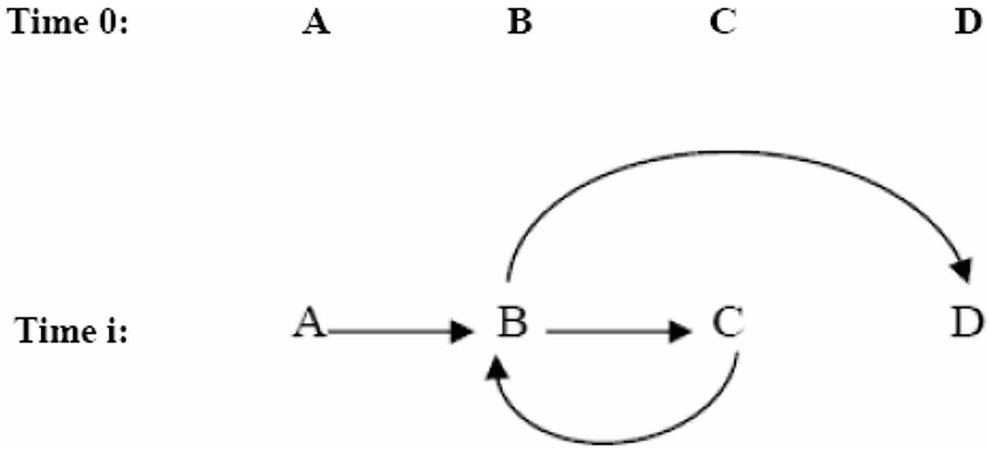
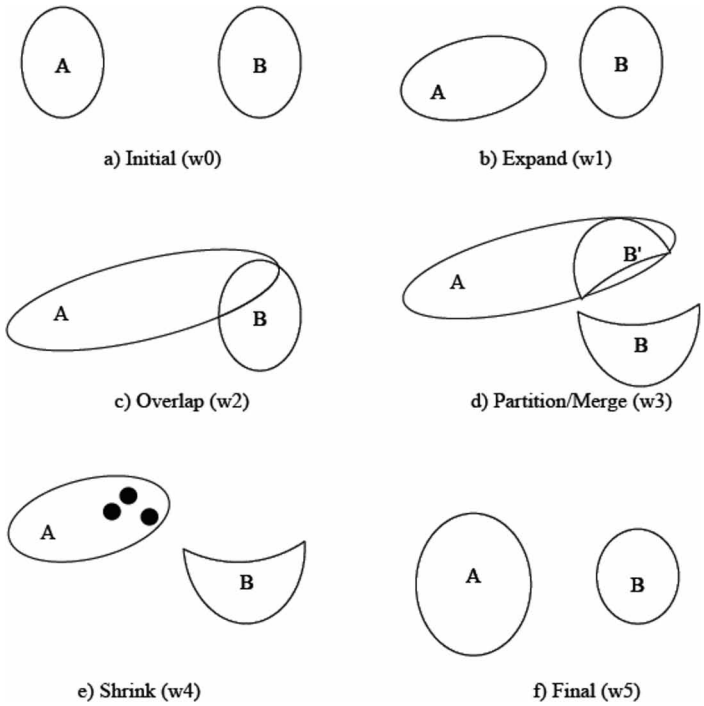


Figure 19. NOSHAPE organizations dynamic behaviors (ordered steps)



the initial world state (w0) we have five other possible worlds (w1-w5), the transition among those possible worlds happens sequentially in the forward direction. In another scenario, w3 and w4 may not happen, in this case the overlapping between organization A and B will persist until the required activity of organization A ends, in this case A will shrink to its home position (w5) without any change in its contents and structure unless there is a need for new structure changes according to its local home space environment. If there is no any change in A's local home space we might expect that (w5) will

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be equivalent to (w0). Note that by (wi where i>=0) we mean the world (w) state over time and not a different world in the universe. Note that we will use the word world to mean both one of the infinite number of worlds in a universe, and at other times to mean an individual world state over time (possible world), they will be distinguished according to the context.

Formal Representation

This section is dedicated to semi-formally representing the proposed NOSHAPE organizational model. The higher order entities that a NOSHAPE MAS might compose of can be arranged as follows from top to down:

Universe* --> World* --> Organization* --> Roles*

Therefore, a definition of each on these concepts can be stated as follows:

Definition 1: A Universe is a higher order entity comprises an infinite set of worlds have the ability to overlap together according to their internal activity.

Definition 2: A World is a higher order entity comprises an infinite set of organizations have the ability to overlap together according to their internal activity.

Definition 3: An organization is a higher order entity comprises two types of roles, static roles and dynamic roles. Static roles concern the structural (organizational) behaviors of the organization and dynamic roles concern the organization functional activity.

Definition 4: Static roles are the organization roles that concern its structural dynamic behaviors. They are static in the sense that they are fixed and have a long-term behavior. They cannot be shared, moved or removed. They are the roles responsible of executing the organization structural behaviors relative to other organizations.

Definition 5: Dynamic roles are the real engines of an organization. They are responsible of executing the functional activities of an organization by interacting locally together or remotely with other foreign dynamic roles.

Definition 6: Agents are the real citizens of a NOSHAPE organization. They play roles (static or dynamic) inside the organization and interact together to achieve their objectives and the organization objectives.

Definition 7: A NOSHAPE MAS is a system of one or more universes, each contains one or more worlds, each contains two or more organizations, and each contains a set of static roles and a set of dynamic roles.

Although the intended plan for the proposed NOSHAPE model for MAS dynamic reorganization is to make it more general by addressing real world applications with a wide range of scale (MMM, OMM, and OOM) but this chapter concerns only the OOM NOSHAPE MAS which is the case of One Universe-One World-Multi-Organization MAS or the case of large-scale MAS-based applications. This means that we will ignore the abstraction concepts higher in order than organizations (specifically universes and worlds, which will be left as a future work). Formal specifications are mathematically based techniques whose purposes are to help with the implementation of systems and software. They are used to describe a system, to analyze its behavior, and to aid in its design by verifying key properties of interest through

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rigorous and effective reasoning tools. Formal models force us to make assumptions plain, and admit a rigorous examination of what predictions the model does and does not make (K. Konolige, 1986). These specifications are formal in the sense that they have syntax, their semantics fall within one domain, and they are able to be used to infer useful information (Wikipedia, 2015). Fisher (Fisher, 2005) pointed out that many advocate the use of formal logic as a way to represent the behavior of both individuals and organizations, since it provides an unambiguous notation whereby logics can be designed for many scenarios and where formal properties of logical descriptions are well understood. In particular, choosing the appropriate logic provides a level of abstraction close to the key concepts of the software. In this chapter, we will not provide a complete formal model for the proposed NOSHAPE MAS organizational model; this issue will be left as a future work too. Instead, we will provide a semi-formal simple model to make the NOSHAPE model clear and easy to understand. Therefore, we are going to propose a symbolism to semi-formally explain and describe the NOSHAPE model. The proposed symbolism is shown in Table 4.

As shown in the table, we assigned a name and a symbol (operator) to each NOSHAPE dynamic structural behavior; each symbol can be used as a behavioral operation or as a predicate, for instance the dynamic behavior Expand, can be formalized as follows:

Name: Expand
Operator: »
Behavior example: A » B, which means that organization A executes the behavior Expand to organization B as a necessary step prior to the execution of the behavior Overlap with B.
Predicate example: »(A, B), which asks does organization A overlapped with organization B or not, the answer will be True or False. The negate of the predicate is, ¬»(A, B). Moreover, the » operator can be used as a unary operator (only in predicates) i.e. »A asks if A is expanded currently to any other organizations.

Table 4. Symbolism for NOSHAPE organizations dynamic behaviors

Operator	Name	Example	Description	Preconditions
→	FTI	beh1→beh2→→beh3	Finite Time Interval Between behaviors.	
»	Expand	A, B: Organizations A » B	Organization A expands itself to Organization B	¬»(A, B) ∧ ¬₪(A, B)
«	Shrink	A, B: Organizations A « B	Organization A shrinks itself from organization B	»(A, B) ∨ ₪(A, B)
₪	Overlap	A, B: Organizations A ₪ B	Organization A overlaps with organization B	»(A, B) ∧ ¬₪(A, B)
∞	Partition	A, B: Organizations B':= B ∞ A	Organization B partitions relative to organization A	₪(A, B)
Θ	Merge	A, B: Organizations A Θ B'	The partitioned part of organization B merged with organization A	∞(B, A) ∧ B' ⊂ B
¤	Home	A: Organization ¤ A	Organization A is in home space (position)	¬»A ∧ ¬«A ∧ ¬₪A ∧ ¬∞A ∧ ¬ΘA
®	Retire	B: Organization ® B	Organization B retired and isolated from the system	¤B
NOB	NOB	NOB	No operation behavior when a transition between two states happens as a result of time flow.	True

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Preconditions: Describe the necessary preconditions that must be satisfied in the current world state to execute the dynamic behavior Expand which are: ¬»(A, B) ∧ ¬₪(A, B), this means that organization A is not already expanded to organization B and organization A is not already overlapped with organization B. The other behaviors can be treated in the same way.

The question now is how to implement those organizational (structural) dynamic behaviors? A possible way to do that is by modeling them as interaction protocols (IP). Therefore, we will have to design an interaction protocol for modeling each of the NOSHAPE structural behaviors such as:

Expand/Overlap/Partition/Merge/Shrink/Home/Retire

An interaction protocol defines the possible sequences of messages that interacting agents must follow in order to achieve their goals (Paurobally, 2003). Each interaction protocol has an initiator and a responder and is associated with a Trigger Condition (TC) which represents a need to pursuing a particular dynamic behavior (interaction protocol). This sequence can be expressed as the following formula:

$$\text{Current State} \rightarrow TC \rightarrow B \rightarrow \text{Next State} \rightarrow \ldots\ldots \quad (1.0)$$

where, Current State represents the current world state including the current organization relationships with other organizations. The Next State represents the expected world state after executing the dynamic behavior *B* as a response to the trigger condition *TC*. The Next State might be a transition to a new world state or maintaining the current world state, the former case is when the responder organization accepts the pursuing of the dynamic behavior and the later case is when it refuses to pursuing it (as it is an autonomous entity and has control on its behaviors), in the later case the initiator organization might wait for a period of time then it could try to initiate the dynamic behavior again. A sequence of organization dynamic behaviors and activities form what can be called as a scenario. Figure 20 provides sample scenarios to illustrate the effect of the NOSHAPE dynamic behaviors in different cases, for instance a triggered dynamic behavior might fail to be pursued so the initiator should keep trying to pursue the dynamic behavior until it is satisfied (the responder entity accepts to pursue the behavior) as shown in (a) in the figure. Another case is when the responder entity accepts to pursue the dynamic behavior from the first time (b in the figure). (c) in the figure shows a sequence of transitions between possible worlds starting from world state (ws_1), as shown the transition from ws_1 to ws_2 and from ws_3 to ws_4 satisfied from the first time, but the transition from ws_2 to ws_3 failed firstly then satisfied in another attempt and so it needed more time to be satisfied as indicated by (→→→). Following formula (1.0), we can represent the scenario in Figure 20.c in text form as follows:

$$ws_1 \rightarrow TC_1 \rightarrow B_1 \rightarrow ws_2 \rightarrow TC2 \rightarrow B_2 \rightarrow ws_3 \rightarrow TC_3 \rightarrow B_3 \rightarrow ws_4$$

A Trigger Condition (TC) is the conjunction of the organization structural state and the organization functional activity state. Organization structure state describes the current shape of the organization including its overlapping and other relationships with other organizations. The organization functional activity state describes the current domain specific activity. Let TRJA, TFJA, and TSJA be defined as follows for two organizations A and B:

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TRJA= Triger_Required_Joint_Activity (A, B)

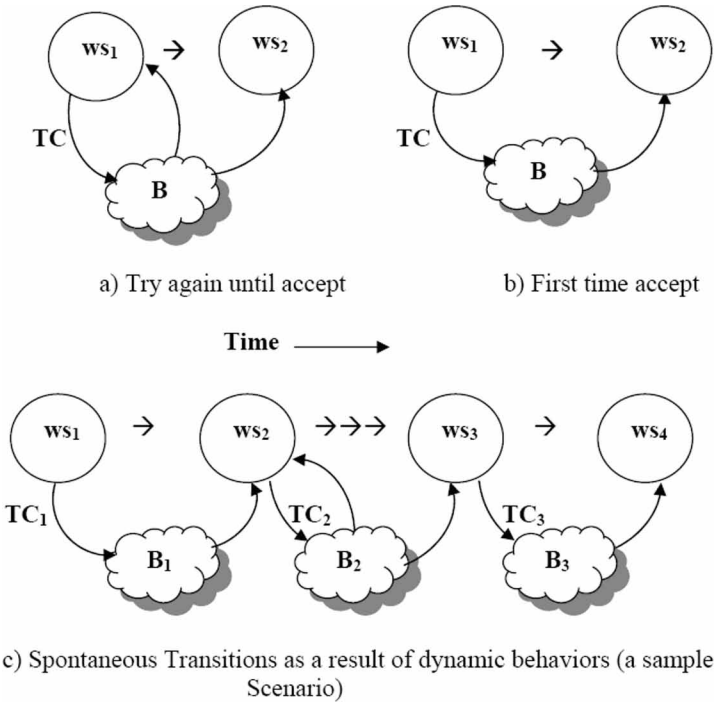
TFJA = Triger_Finished_Joint_Activity (A, B)

TSJA=Trigger_Start_Joint_Activity (A, B)

These are the basic trigger conditions that can be used in conjunctions with other predicates to build complex ones. Other trigger conditions can be designed as required. Figure 21 shows an example scenario for a world containing two organizations A and B. The figure is divided into three parts; the top one illustrates the possible world states using Vein diagrams augmented by a formal description of the world state using the proposed symbolism shown in Table 3. The second part (middle) in the figure shows the transitions among world states as a result of pursuing the organizational dynamic behaviors (the world states modeled as circles, the dynamic behaviors as clouds, and the transitions as directed arrows labeled with the trigger of the transition. Finally, the bottom part shows the semi-formal representation of this scenario using formula (1.0). The example scenario shown in Figure 21 illustrates only the agents sharing within a NOSHAPE MAS, and it doesn't contain the dynamic behaviors Partition and Merge which are used when agents exchange is required.

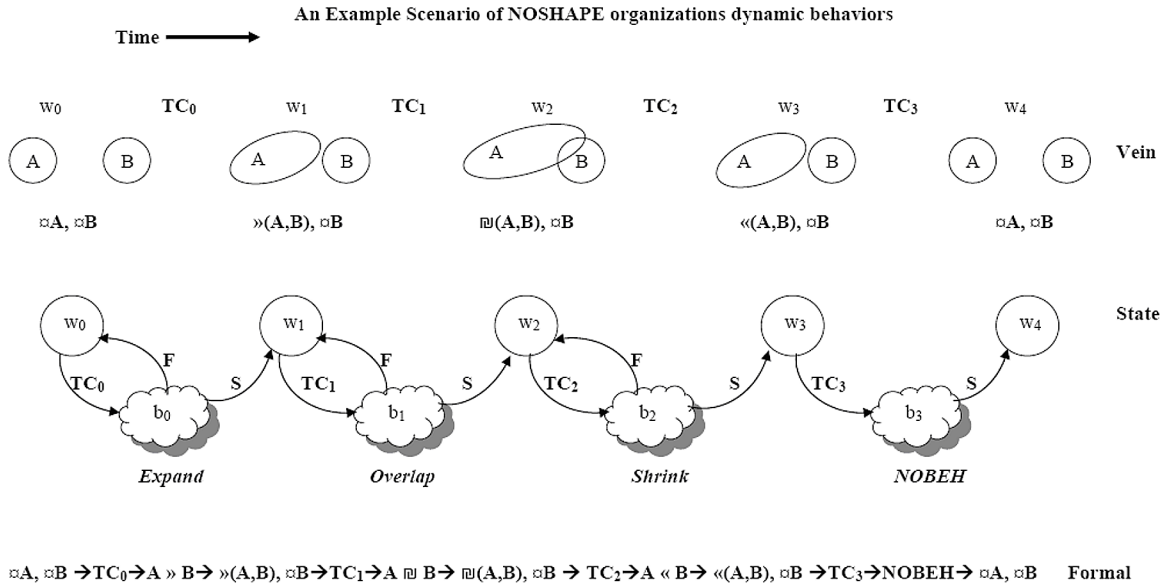
As we decided to realize the NOSHAPE dynamic behaviors as interaction protocols, each interaction protocol might be created by the aggregation of primitive speech act per-formatives. We drew from Huget et al. (Huget, 2001), who proposed a semi-formal specification language dedicated to interaction protocols. Also, he proposed a protocol description language based on the combination of components

Figure 20. Dynamic behaviors cause transitions between possible worlds; (WS: World State, TC: Trigger Condition, B: Behavior)



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Figure 21. An example Scenario 1 illustrates roles sharing in NOSHAPE



called micro-protocols corresponding to sets of per-formatives which represent pieces of an interaction and he call this language CPDL (Communication Protocol Description Language) in order to combine these micro-protocols into whole interaction protocols. We extended this language with the proposed symbolism (see Table 3) to describe NOSHAPE dynamic behaviors. According to Huget a CPDL well-formed formula looks like (see Figure 22), where:

- α denotes the state the agent is in prior to firing the formula;
- β denotes the state it will arrive in once the formula has been fired;
- {b ∈ B}* represents the guard of a formula. Such a guard is a conjunction of first-order predicates that needs to be evaluated to true in order for the formula to be used;
- B is the set of the agent's beliefs;
- The loop predicate aims at handling loops within a formula. Its argument is a conjunction of predicates. It loops on the set of micro-protocols involved in the formula while it evaluates to true.

Therefore, the scenario presented in Figure 21 can be represented semi-formally using the CPDL language as follows (where, TRJA, TFJA, and TSJA are the sample trigger conditions defined before):

1. ¤A∧ ¤B, TRJA(A, B) ∧ ¬»(A, B) ∧ ¬₪(A, B), loop (¬»(A, B)) → A » B, »(A, B) ∧ ¤B
2. »(A, B), TRJA(A, B) ∧ »(A, B) ∧ ¬₪(A, B), loop (¬₪(A, B)) → A ₪ B, ₪(A, B) ∧ ¤B
3. ₪(A, B) ∧ ¤B, ₪(A, B) ∧ TSJA(A, B) ∧ TFJA(A, B), loop (¬₪(A, B)) → A » B, ¬₪(A, B) ∧ »(A, B) ∧ ¤B
4. ¬₪(A, B) ∧ »(A, B) ∧ ¤B, ¬TSJA(A, B) ∧ TFJA(A, B) ∧ ¬¤A, loop (¬¤A) → A « B, ¤A∧ ¤B

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Figure 22. CPDL well-formed formula

$$\alpha, \{b \in \mathcal{B}\}^*, loop(\bigwedge p_i) \mapsto \text{micro-protocol}^*, \beta$$

The modeling of the NOSHAPE dynamic behaviors as micro-protocols by the aggregation of a number of FIPA per-formatives (FIPA, 2002) can be modeled as follows (where O_1 and O_2 are two NOSHAPE organizations), as shown in Figure 23. The other NOSHAPE structural behaviors (i.e., Overlap, Shrink, Partition, Merge, etc.) can be modeled in a similar way. Note that the NOSHAPE dynamic behaviors or interaction protocols are executed by the organization global supervisory (GS). On the other hand, organization domain-specific interactions and behaviors interactions can be analyzed and designed using a familiar AOSE methodology such as Gaia methodology. That is because this chapter concerns only the conceptual view of NOSHAPE and abstracting away from the detailed design and implementation issues (execution algorithms).

DISCUSSION AND FUTURE TRENDS

The complexity, large scale, and physical distribution of future real-life applications impose new requirements and demands on the approached used for their development. The software development methods need to be evolved to cover the new demands and requirements. The Manifesto for Agile Software Development (ASD) published in 2001, is considered as an important step towards realizing that goal (Larson, & Chang, 2016). The ASD manifesto focuses on the individuals and interactions over processes and tools and provides the adequate methods for developing future real-life applications. MAS are not an exception, and new approaches, models, and techniques need to be proposed to guarantee the continuity of their adoption in future. This chapter provides a novel approach for dynamically reorganizing MAS.

Figure 23. Modeling NOSHAPE organizational behaviors as interaction protocols

Name: Expand
Behavior: $O_1 \gg O_2$
Semantics of the parameters:
O_1: Sender
O_2: Receiver
S: O_1's Required Services
A: O_2's Responsible Agents
Definition:
Request (O_1, O_2, S).inform (O_2, O_1, A) | refuse (O_2, O_1)
CPDL: $\square O_1 \wedge \square O_2$, $TRJA(O_1,O_2) \wedge \neg\gg(O_1, O_2) \wedge \neg\wp(O_1, O_2)$, $loop(\neg\gg(O_1, O_2)) \rightarrow O_1 \gg O_2$, $\gg(O_1,O_2) \wedge \square O_2$
Semantics: organization O_1 needs to expand to organization O_2

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The proposed NOSHAPE model considers a multi-agent system as a system composed of two abstraction levels: micro and macro. The micro level is represented by the individual agents and the macro level is represented by higher order abstraction (modeling) entities such as agent organizations, worlds, and universes. The loose coupling paradigm enables to decouple the two levels for the sake of generality and transparency and also enables the adoption of both MAS engineering viewpoints: ACMAS and OCMAS. Thus, the NOSHAPE model adopts a hybrid approach for modeling agent-based systems. To realize this hybrid approach and in contrast to present MAS organizational models such as AGR (Ferber, 2004) and MOISE (Hannoun, 2000), MACODO (Weyns, 2010), NOSHAPE uses the role concept implicitly without predefined patterns of interactions and activities. This approach enables the developer of the MAS to follow the ACMAS viewpoint under the umbrella of the OCMAS viewpoint.

Further, the NOSHAPE model can be considered as a coordination model for agents' interactions within MAS. It transforms the lower level agents' activities into triggers then into global structural changes. In other words, according to the organization lower level agents' activities, some global inter-organizational interactions emerge. The lower level agents can be designed to be unaware of the global system structure or the globally emerged interactions. That is compiled with the ACMAS viewpoint in which system organization is an emergent phenomenon results from individual agents' interactions.

Also, NOSHAPE decouples the behaviors of individual agents from the organizational behaviors so that individual agents concentrate on their functional goals without caring about the organizational aspects (the familiar separation-of-concerns principle). Further, NOSHAPE decouples the considered application from the organizational model. In other words, most of current organizational models use the role concept for the developer to abstractly design the system agents before implementing them and this is a key characteristic of the OCMAS viewpoint and it makes the applications highly dependent on the organizational model, this approach prevents those applications which are adequate to be developed based on the ACMAS viewpoint from being realized.

The NOSHAPE model tries also to combine the static and dynamic behaviors in the system-to-be. Firstly, the designer designs the system with the OCMAS viewpoint in his mind and takes advantage of this approach in decomposing the global system goals into a set of autonomous cooperative organizations (i.e., groups) able to overlap together to share and exchange their roles (agents). Also, the explicit use of the organization abstraction helps reducing the overall interactions and as a result decreasing system complexity. From the other side, the organizational level has no direct control on the individual agents; it just prepares the adequate context for them to pursue their functional goals (in run-time). The system structure and organization can be dynamically changed to adapt environment changes and individual agents' interactions.

The proposed NOSHAPE model provides a way for individual agents to find suitable foreign (remote) agents to interact with to achieve their goals. The autonomy of individual agents can be defined as required by the designer; the proposed model doesn't impose strict or tight rules or constraints on individual agents. It just helps them to achieve their functional goals in a transparent way, all what is required from the individual agents is to discover the non-cooperation situations (i.e., missing services) and fire triggers to static roles, then they can go ahead doing other functionalities until the non-cooperation situation resolved as a result of the adaptive behavior (structural change) of the higher order entities.

Because the importance of mobile agents dramatically increases with time, the NOSHAPE model assumes that the dynamic agents located in a NOSHAPE organization can move from their organization to another one under the precondition that their organizations are overlapped together. If we succeed to

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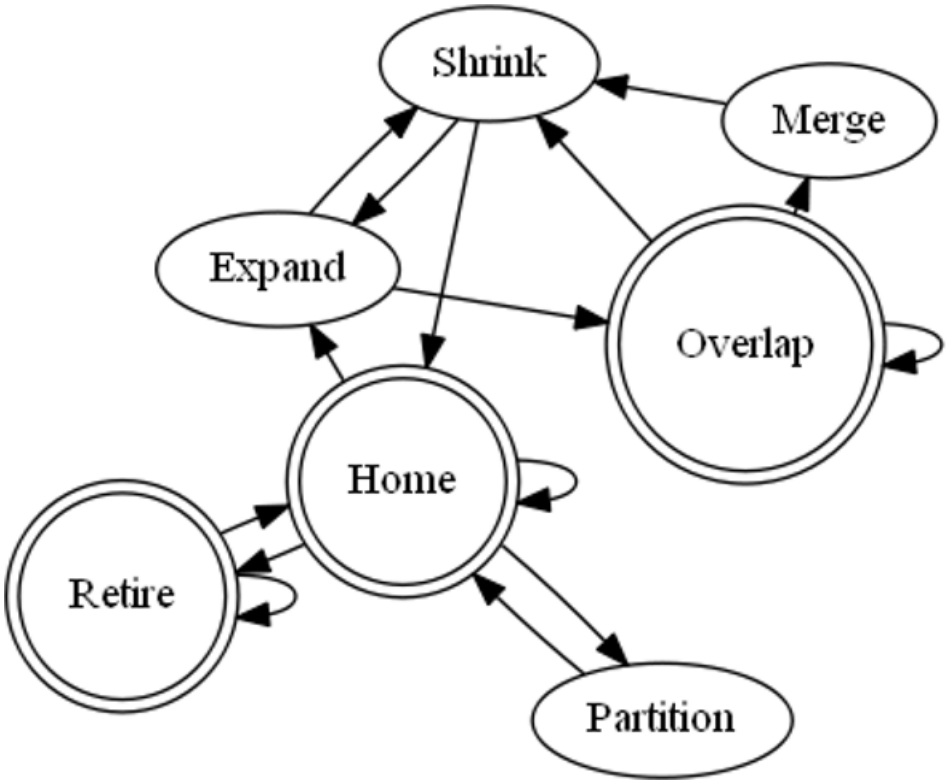
make the overlap operation secure by using trust and reputation based security techniques in addition to other hard security approaches and techniques, agents' mobility can be a very powerful way to reduce systems complexity and efficiency.

IMPLEMENTATION PERSPECTIVE

Figure 24 shows how the organization dynamic structural behaviors (relative to another organization) can be modeled and implemented as a non-terminating Finite State Machine (FSM).

The figure represents the reference FSM adopted for realizing the proposed model. The figure also shows the transitions between the structural states (Home, Expand, Overlap, Partition, Merge, Shrink, and Retire). The transitions between structural states are being fired by the internal exchange of triggers inside the organization between the structural (static) and functional (dynamic) parts. Also note that the Retire state is triggered by the system administrator (i.e., for maintenance). Note that the reference machine presented in Figure 24 will be instantiated inside the organization GS agent for each other organization included in its address book. In this sense, each FSM can be considered as the model of the organization state relative to a particular acquaintance organization. It is supposed that the FSM runs continuously as long as the organization it is hosted by is in the online state (not in the Retire state which represents the offline state). The transitions between the FSM states are functions of the current

Figure 24. Implementing the structural changes as states in a FSM



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world state and the current active triggers inside the organizations. Moreover, the proposed reference FSM contains seven states, four of them are transient or intermediate and three are attractors. The four transients are {Expand, Shrink, partition, Merge}, they are intermediates. From the other hand, the three attractor states are {Home, Retire, and Overlap}; they can stay running for long time depending on the active triggers. Again, a NOSHAPE organization is supposed to have one FSM of this type for each organization included in its address book.

CONCLUSION

This chapter presents our recent research efforts to conceptually and informally design a hybrid MAS organizational model that combines both of the ACMAS and OCMAS viewpoints. Combining these two viewpoints is the source of novelty that we are looking for relative to present MAS organizational models which adopt only one viewpoint for modeling and designing MAS. By combining the ACMAS and OCMAS viewpoints, the proposed NOSHAPE organizational model provides a general organizational model compared to present models. Our mission is not finished yet and still there are many aspects and perspectives need to be tackled for increasing the maturity and popularity of the NOSHAPE. Our future research activity will focus on the applicability of NOSHAPE for developing different types of real-life applications (industrial or non-industrial) and also the adoption of NOSHAPE for coordinating mobile agents because of the expected importance of them within future large-scale and complex real-life applications.

This chapter described conceptually the proposed NOSHAPE MAS organizational model. The future work will be tailored to providing an operational (implementation-directed) view of the NOSHAPE model. Also, it is intended to provide more applications of the NOSHAPE model within industrial and non-industrial domains. Further, it is intended to use the NOSHAPE model as a coordination model for mobile agents within real-life applications. Still, it is required to propose a trust-based security approach for NOSHAPE MAS. And also, it is intended to propose a development methodology for developing MAS based on the proposed NOSHAPE organizational model using FIPA-compliant platforms.

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Chapter 15
Can Social Dynamics Be Channeled from Offline to Online Communities?
Commitment, Compliance, and Cooperation from Microfinance to Crowdfunding

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ABSTRACT

As alternative source of financing, microfinance and crowdfunding organizations are increasingly relying on commitment, compliance and cooperation among individuals, groups, and communities. In considering the extraordinary growth of the market for microfunding and microlending in recent years, this article aims to investigate a number of important questions. Can the conventional rule of social collateral applied to group lending be replicated in online crowdfunding? What are the institutional, social and organizational requirements in order to transpose the social collateral model of solidarity and responsibility to heterogeneous online crowdfunding and microlending platforms? What would be the implications for borrowers and lenders in terms of group compliance, collaboration and cooperation? By highlighting the differences and similarities between microfinance and crowdfunding structures, the article seeks to provide a broad comparative framework for analyzing different patterns of behavior in communities, organizations and networks that engage in crowdfunding and microlending activities.

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INTRODUCTION

Three types of reasons have been suggested to explain the state of being unbanked: lack of basic and financial literacy; high level of transaction costs to provide, monitor, and support lending activities; and the poor's inability to provide collateral to reduce risks related to information asymmetries (Armendàriz & Morduch, 2005). Considering the small size of the loans, conventional banks simply do not think it is worth the risk or the high cost of appraising the loan (Akula, 2010). In addition, the inability of the poor to provide financial collateral leads to their exclusion not only from most economic activities, but restrain their integration in social groups. The majority of unbanked populations are located in underdeveloped countries (Chaia et al., 2009).

Microfinance institutions platforms curate and organize the financial sourcing and inclusion by designing control mechanisms and reinforcing conformity rules. Microfinance provides credit to entrepreneurs and business owners who lack access to traditional banking services due to the absence of financial collateral. By strengthening social ties among individuals, microfinance institutions (MFIs) leverage social (groupal) collateral to replace conventional asset-based collaterals. For doing so, MFIs reinforce group conformity rules within social arena. The Grameen Bank in Bangladesh (Yunus, 2003) demonstrated how engaging social groups could deal with the unbanked problem. The key contribution of Muhammed Yunus was to overcome the asset-based collateral barrier by encouraging members to support each other for the financial risks associated with individual loans. Members' commitment toward peers reduces the cost of carrying out economic transactions and oversight.

With the expansion of information technologies, individuals explored the possibilities of transmitting offline opportunities online. Crowdfunding, like microfinance, relies on the willingness and commitment of groups, rules of compliance among individuals to encourage cooperation within social networks and interest groups for addressing the investment needs of those who have limited access to financial collateral. Crowdfunding carries out via online platforms different forms of financing including credit, donation, equity, and reward. While, crowdfunders may be viewed as lenders and investors who provide financial backup to a wide array of borrowers, yet the question remains whether the rules of traditional group lending and social collateral can be applied to the online crowdfunders? Can the innovative principle of social lending, its managerial practices and organizational dynamics be transposed to the virtual world of Internet?

The transposition from offline to online is not evident because members in offline group know each other while those in online groups have no previous acquaintance (Boxenbaum & Battilana, 2005). It should be noted that conventional social groups and internet-based groups are formed differently. In the case of conventional offline groups, members generally share cultural codes, comply by common rules and behave with a greater degree of homogeneity and predictability. In the case of the internet-constituted groups and online communities, individuals come together from different social and economic horizons, engage in virtual interactions without knowing each other personally, but showing the desire to engage in mutually beneficial economic and social ventures.

In this perspective, we distinguish between "Ex-Ante" communities, who host individuals who are born and grown in the community, and "Ex-Post" communities that coalesce purposefully and operate on the Internet platform. We seek to shed further light on the importance of social ties and the pivotal role of networks in diffusing and translating the economic and social missions of the groups and crowds. Placed

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within the context of social networks that amplify social interactions, we investigate the collaborative and cooperative nature of group members and crowds who comply with the norms, rules and practices of microlending and crowdfunding. The organization and the functioning of communities is affected by networks' configuration and members' ability to comply with pre-designated goals and common objectives. Consequently, understanding the dynamism of social collateral is crucial not only as a solution to the problem of the unbanked, economically poor and marginalized populations, but also as a source of inspiration for the fast growing social and peer-to-peer lending activities on the Internet. We believe that group pressure and compliance in the case of offline conventional groups can be equally applied to online microlending and crowdfunding.

We begin by reviewing the literature related to peers' pressure, conformity rules and compliance dynamic. A particular emphasis is placed on the nature of social ties and social embeddedness that shape social relationships. By comparing microfinance and crowdfunding, we will explore individual and crowd engagement in both offline and online contexts. Social lending cases within different socio-economic and cultural contexts will highlight the pivotal role of communities of interest and networks in accelerating social interactions. Our findings on offline and online group lending will be presented in the final section of this paper along with a discussion of theoretical underpinnings and managerial implications. In conclusion we will make suggestions for future research.

CONFORMITY AND COMPLIANCE: A LITERATURE REVIEW

It is important to explore the concept of group conformity in order to identify the determinants and dynamism of the social influence - changing one's perceptions, opinions, and behaviors in response to real or imagined pressure from others. A vast corpus in social studies, in particular sociology and psychology has scrutinized the concept of group, its different forms, constituents and internal dynamism. Here we emphasize on reference groups, identified as influential persons or group of people who are referred to as a standard or frame by members and exert influence on members' attitudes and behaviors. Primary reference groups are to be distinguished from the secondary ones. The former is an intimate social aggregation with face-to-face interaction where members exhibit similarities in belief and behavior (Witt & Bruce, 1972) while the latter is a less influential on thought and behavior (War & Reingen, 1990). The reference groups are believed to be either formal or informal. Formal groups are characterized by defined, often written, rules and a known list of members and requirements for membership. Informal groups are less structured and based mainly on friendship and interest. Though their norms can be stringent, they seldom appear in writing, the effect on behavior can be strong if individuals are motivated by social acceptance. Reputation is a mechanism to secure good conduct and often prevents cheating even where formal enforcement does not exist (Klein, 1997).

The desire of an individual to fit with a reference group leads to conformity - defined as changing one's perceptions, opinions, or behaviors in response to real or imagined pressure from others. It can be realized by acceptance and compliance. Conformity by acceptance occurs when an individual actually changes his or her beliefs, values and actions in the direction of a group norm. It presumably occurs when the rewards exceed its costs (Homans, 1961). Conformity by compliance may result from acting upon the request or wishes of a group without accepting all its beliefs or behaviors. Obedience is an extreme case of compliance where the individual follows the orders of an authority.

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But, why would individuals decide to comply with community rules at the expense of their own freedom? In most cases, conformity to peers' rules and norms respond to a greater need to satisfy one's cognitive, affective and conative goals. Individuals try to minimize rejection by conforming to group norms (Asch, 1951; Venkatesan, 1966; Ross et al., 1976).

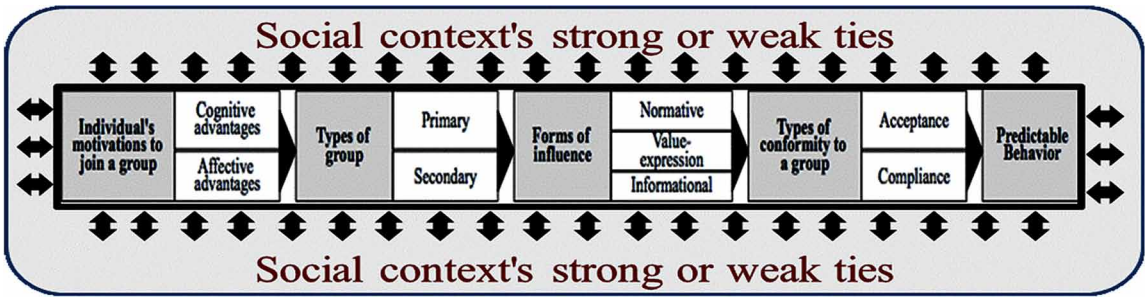
Reference groups stimulate compliance and influence on individual behaviors and decisions in three different ways: normative, value-expressive and informational. Normative influence occurs when individuals have to alter their behaviors or beliefs to meet the expectations of a particular group. Value-expressive influence occurs when individuals subjectively associate with people who are admired and respected. Informational influence occurs when people who have difficulty assessing objects and events accept insights and comments by members of a group (Calder & Burnkrant, 1977) as credible and needed evidence about reality (Burnkrant & Alain, 1975).

Assadi & Ashta (2014) indicate how groups create predictable behavior. However, based on the preceding discussion on social network, we can see that social ties influence the predictable behavior in different stages: they may influence the individual's motivation to join a group, the type of group, the forms of influence as well as types of conformity to a group. Figure 1 therefore extends their model of the sociological analysis of group influence on individual behavior and provides our conceptual framework of group-individual interactions.

Two conditions must be present for people to comply: The influencing agent should have the ability to reward or punish for (non) compliance; and, the ability to monitor the compliance or failure to comply. If the person privately accepts the influence, the agent's ability to reward or punish the person and to maintain surveillance is unnecessary because the behavior is internalized, and consistent with the person's private beliefs. Group members conform more when working for a common goal rather than individual goals, presumably because they believe that deviance on their part will be punished more severely.

In the marketing literature, many authors have considered the role of conformity among consumers as a key driver in brand/user relationships (Escalas and Bettman 2005, Muniz Jr and O'Guinn, 2001). More recently, escapism has been opposed to conformity and it is posited that some consumers may become brand loyal because of their motivation to break away (escaping) in contrast to others who do so because of their motivation to conform (conforming) (Labrecque et al., 2011). Xia et al. (2012) underline the positive impacts on product attitudes and purchase decisions in two ways: directly by conformity with peers and indirectly by reinforcing product involvement. Martin and Johnson (2008) suggest a theoretical framework of ethical conformity for firms by considering the role of normative expectations held by societal constituents.

Figure 1. How groups create predictable behavior



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GROUP COMPLIANCE WITHIN SOCIAL NETWORKS

Group compliance influences the process of change and innovation initiated by individuals who belong to a community or operate within a social network. The Actor-Network Theory (ANT) (Callon et al. 1986; Callon, 2001; Law & Hassard, 1999; Latour, 2005) provides a useful tool for analyzing the nature and extent of actors' involvement in creating and designing a variety of social events. Ideas and systems such as social collateral and crowdfunding platforms constitute the 'relational materiality' of such events. Each event entails its distinct translation process, showing how a powerful idea can transform agents' action into one that can develop its own agency. In the case of social collateral, borrowers and lenders have been brought to engage in novel forms of cooperation, requiring the need to conform to new social realities. It should be noted that the ANT early roots go back to ethnographic studies that focused on scientific creation within science laboratories (Callon, 1986; Latour, 1987; Law 1987; Law & Hassard, 1999; Latour, 2005).

Actor-network theory seeks to explicate how networks can strengthen "informal affinities" beyond the institutionalized ties in offices, factories, hamlets and parishes. As such, ANT expounds the translation process [as opposed to Granovetter's idea of diffusion] of ideas according to which social events emanate from and are shaped by social relations. The translation process highlights the importance of social interactions and the role of networks in creating and reinforcing social bonds and raising community awareness. Networks coalesce around purposeful missions and as such, help to explore and exploit market opportunities, diffuse knowledge and reinforce social capital. A significant research corpus has highlighted the importance of social capital and its link to social institutions and economic outcome (Putnam at al. 1993; Fukuyama, 1995; Portes, 1998). Family and community networks affect an individual's access to credit institutions. In a longitudinal study on credit access and social networks in Indonesia, Okten & Osili (2004) show that family and community networks have a larger impact on credit awareness of new credit institutions than the established credit sources. This is the case of crowdfunding and microfinance communities who build social ties with the objective of funding socially valuable and economically viable projects. In the absence of appropriate socioeconomic contexts and actor's motivations, networks cannot sustain long-term goals. Group coalitions operate within complex inter-personalized networks that reflect the multiplicity of individual and community goals and objectives (Scott, 2000; Freeman, 2004; Van Dijk, 2006, Castells & Cardoso, 2006).

The study of the patterns of interactions and power relations provides further insight as how individuals and communities are brought to cooperate and (co)evolve. Yunus's collateralization mechanism of group pressure has been instrumental in deepening and broadening group and peer-to-peer interactions. By foregoing the (tangible) social collateral required by the traditional banking system, the Grameen Bank provided a more innovative collateralization mechanism through group lending. Yunus realized that the commitment and cooperation at the bottom of the social pyramid can lower the default risk, and consequently reduce the transaction cost of lending to the poor. As a social innovator, Yunus realized that the use of social collateral can curate and transform social ties to enhance trust at the bottom of the social pyramid and help create and sustain human capital. Similarly, the primary benefit of crowdfunding consists of reinforcing social endowments that emanate from empowered crowds. Network trust is measured by mapping the degree of reciprocity, (a)symmetry, bridge and transitivity and clusterability among actors that operate in a network (Granovetter, 1973, 1974).

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While ANT is primarily concerned with sociotechnical controversies, it can shed light on the process of social embeddedness resulting from group creativity, collaboration and cooperation in a variety of social phenomena, including microlending and crowdfunding. The rise of information and communication technologies and the 2.0 Web have had a direct bearing on social networks as the direct and indirect relationships (e.g. diads, triads, subgroups, …) that result from their development. The use of the Internet as a general purpose technology has enabled lenders and borrowers to share knowledge and diffuse information by building and exploring social ties among within different social groups. Weak ties can be immensely powerful in fostering relations between individuals and organizations embedded in social networks (Granovetter, 1973, 1974). Weak ties can potentially accelerate the innovation process by providing access to untapped sources of economic wealth. In contrast, access to capital and financial sources may not lead to enhanced organizational and firm performance if owners of capital cannot engage in business and social innovation (Bradley et al., 2012). This point is corroborated by empirical research that highlights the fact that strong social ties do not necessarily improve the chances of loan repayment (Abbink et al., 2006). Microlending and crowdfunding networks are likely to provide mutual incentives to peers who engage in social and economic ventures.

When comparing offline microfinance and online crowdfunding models, one should pay attention to the mechanisms by which group members engage in an array of socially innovative and economically sustainable ventures. Examples provided by participative finance and social collateral should be viewed as social translation mechanisms that enable actors and networks to accelerate the process of social change.

As structured networks and independent actors, crowds and social groups provide an interesting field study in comprehending and transposing the social network analysis and actor-network dynamics. The transition from offline microfinance communities to online crowdfunding platforms where agents and communities interact, orchestrate, curate and influence the decision-making process is of paramount importance in understanding the transposition conundrum. Microfinance institutions and crowdfunding platforms are brought to diffuse and translate knowledge and collective learning by engaging actors and networks with or without a pre-existing business context (Boxenbaum & Battilana, 2005). While those involved in offline transactions know and trust each other due to earlier acquaintances, those who engage in online transactions constitute weak social ties that may or may not gain further momentum. Individuals, social communities and interest groups act differently depending on the way they apprehend norms, codes and rules of an existing game. Communities with deep acquaintance (e.g. families and business partners) share cultural codes and rules whereas social groups with weak ties must devise new norms and common rules. Any innovation attempt at organizational, social, micro or macro level has a direct bearing on the actors and networks who affect, in turn, the innovation dynamics. It is therefore important to investigate the origin, process, outcome of innovation triggered by individuals, crowds and networks.

As we have previously mentioned one should distinguish in the case of social collateral between ‘ex-ante’ condition defined as born and grown communities and ‘ex-poste’ condition resulting from intentionally created communities. The study of offline and online microfinance institutions and crowdfunding platforms provide the opportunity to review the impact of peers, groups and communities on compliance and conformity rules. Microfinance and crowdfunding activities unfold over different levels of the social pyramid and represent different dimensions of the social innovation. It may not be easy to grasp the confusing dictum of social actors since there are too many of them who emerge and disappear within any given network. Yet, microfinance and crowdfunding networks provide a particularly useful

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framework for studying and analyzing the (co)evolution of social actors and actants (e.g. entrepreneurs, microfinance institutions, nonhuman factors such as online platforms) who are capable of (co)constructing socially innovative and economically sustainable projects.

COMPLIANCE AND COOPERATION SCHEMES IN SOCIAL LENDING

To avoid aversions and moral hazard, institutional lenders often avoid borrowers with no records or collateral. Now, social collateral may provide a solution to this problem. But how can a group function as a social collateral? And why should its members comply?

To provide insights, we adopt the inductive method of case study for comprehension (Stake, 1995) and responses to the questions such as "how and why" rather than "what" or "how should" (Yin, 1994). For a recent example of application of such an inductive study, see Amit and Zott (2002). Our review of literature provided us with a structured observation guide of factors of compliance to analyze cases such as rotating savings and credit (ROSCA), solidarity group lending and cooperatives. We then look at online lending website Kiva (non-lucrative) and Zopa (lucrative) to see which features of group pressure are being adopted.

In a social lending process, members of a group guarantee each other's loans in absence of financial collateral. Social lending groups reduce the lender's credit risk at least for three reasons. In social lending groups, future credit extensions depend on reimbursement of the current loan. In other words, if anyone misses a payment, no one else in the group could receive a loan. As a result, it is in the interest of each member to be grouped with reliable team mates rather than with risky ones (Ghatak, 1999). In addition, members have all interest to monitor each-others' projects and settlement behaviors to ensure the sustainability of the group (Armendáriz de Aghion, 1999). Finally, borrowers don't want to "lose face" amongst their community by falling behind on payments. They even sometimes turn to loan sharks or family to find additional funds to ensure reimbursements. In this way adverse selection problem is mitigated and default risks are reduced (Armendàriz and Morduch, 2005).

Muhammad Yunus (2003) considered that the threat of the whole group not getting a loan was enough to instigate others in the group to put pressure and to pay for the defaulting member. According to the Grameen Bank's lending model, borrowers organize themselves into groups of five, for example. Two members receive their loans. If they honor installments on time, new loans are followed four or six weeks later to two other members, and so on. But if any member of group defaults on a loan, then all members are denied access to future credit. Any borrower who defaults is visible to the entire community and this circumstance imposes a sense of shame which represents a strong disincentive especially in small rural communities. In an alternate perspective, each member has a responsibility to the group and it is this social responsibility of the individual that is being exploited in the microfinance social innovation. Moreover, group work and weekly installments give the customer and the MFI (microfinance institution) the added benefit of discovering the problem early. Finally, customers are often expected – prior to loan provision – to deposit a small amount of money in a reserve fund that is used in case of credit default.

In Bolivia, lending groups are comprised of self-selected communities of 20 to 40 members who typically include families and friends and operate within a distinct geographic zone. MFI loans are conditioned by financial collateral that covers personal belongings and a request for regular loan repayment. The members are responsible collectively and the failure to meet the repayment terms will result in member exclusion (Vik, 2010).

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An experimental study in South Africa and in Armenia (Cassar et al., 2007) researched whether it was the social relational aspect of group lending (ties, social exclusion), the information aspect (selection based on private information) or the control aspect (joint-liability contract) that was more important in determining superior group performance. It was found, in both countries, that group members provide bigger loans than the societal average, and are therefore more trusting. It found that social capital in the form of personal trust between individuals through prior ties and social homogeneity within groups has a positive effect on borrowing group performance. In contrast, it was found that social capital as measured by simple acquaintanceship with other individuals or an individual's general trust in society has little effect on group performance. It is possible that social homogeneity may be providing an informational content also. When members don't pay back, others are also tempted not to pay back, but if the defaulting member is helped out in emergencies, he is more likely to reciprocate since he becomes more trusting.

Offline Models: ROSCAs, Cooperatives, and Mutualist Banks

Different forms of group lending have been experienced in different cultures and different periods.

Rotating Savings and Credit Associations (ROSCA) are composed of members who agree to meet for a predetermined period of time with the objective of carrying out saving and lending activities. ROSCA members are required to make monetary contributions on the basis of pre-established selection, enforcement and conformity rules of selection and switch status as borrowers and lenders (Bouman, 1983). In a study conducted in a village in Cameroun, where half of the adult population was enrolled in a ROSCA, it was found that members had no kinship ties. Although there was no written contract among the ROSCA members, default rates proved to be relatively low (Etang et al., 2011).

The principles and characteristics that have led to the success of ROSCAs are equally present in cooperative organizations (Taylor, 1972). These principles include reliance on savings, self-regulation and governance, local promotion and outreach, collateralized lending, and limited liability. It is noteworthy that cooperative banks date back to late 19th century, when early credit union banks began to deploy their services in Western countries. Early KASAS in the former Soviet Union, as well as other cooperatives and credit unions in Eastern Europe operated in a similar way (Pytkowska, 2006).

The basic principles of credit cooperatives include open and voluntary membership, self-assistance, transparency and control of members' resources, sharing of facilities with a flexible and reliable reimbursement mechanism with the objective of safeguarding financial stability, encouraging cooperation among cooperatives, boosting employment and performance in rural areas and improving production quality (Baltača & Mavrenko, 2009). Large cooperatives operate in a similar way as microfinance institutions. This is the case of Bank for Agriculture and Agricultural Cooperatives (BAAC) in Thailand which provides financial services to farming groups (Mutua et al., 1996). Recent banking regulations in Europe have imposed more stringent control mechanisms on credit cooperatives and their financial operations.

Many cooperatives are involved in solidarity missions. This is the case of the organization of Catholic Relief Services established in Bulgaria and the Self-Employed Women's Association (SEWA) established in 1972 in India, both of which extend small loans to unbanked populations who lack social collateral. Recent studies in Nigeria have demonstrated that membership in the Obazu Progressive Women's Association has brought significant improvement in women's work environment. Marx and Seibel (2012) found that Nigerian cooperatives that function in a similar way as ROSCAs obtain 2.5 times better monthly contributions, 8.3 times higher entrance fees and 6.3 times higher income. While giving out larger volumes of loans (4.8 times more loans) at greater frequency (8.4 times more) (Marx & Seibel,

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Table 1. Compliance mechanisms in offline microfinance and social lending model

Source of Group Pressure		ROSCA	Group Lending	Cooperatives
Motivations for joining group	Cognition-based	To save and get lump sum earlier than individually possible, Lump sum consumption	To borrow	Many economic motivations, Especially operational cost reduction and increasing sales
	Affection-based	High impact of previous affiliation: in small groups they know each other	High impact of previous affiliation: small group size	Mutual understanding, respect and dependence, reduced impact of previous affiliation with increased size, even though a federative structure may increase impact
Group typology	Primary or. secondary origin	Primary and secondary	Primary/Secondary Previous ties help in building trust	Secondary
	Formal vs. informal group	Informal, no written formal contract	Informal within the group, formal with MFI	Formal
Forms of influence	Normative (rules)	Implicit	Explicit and implicit	Mainly explicit, and some implicit
	Value-expression	Solidarity	Entrepreneurship/ Independence	All shared purposes
	(Shared value)			
	Informational	Strong or medium ties	Medium or Weak ties. Loan officers and other group members give advice to borrowers.	Weak or no ties. Money management skills are required, need to find out about the expected viability of the projects
Group conformity	Acceptance	Willing to be integrated socially	Willing to be integrated socially and professionally	For having access to money
	Compliance	Fear of exclusion	Fear of exclusion and possible penalties	Fear of penalties
Motivation and monitoring process	Carrot/Stick	Social exclusion, possible penalty in some ROSCAs	Perspective of bigger loan in the future No loans to other is one doesn't repay., group exclusion	Strong penalties for defaults, perspective of bigger loan in the future
	ability to monitor	High because of proximity and repayment in public	By group members' taking over and repayment in public	By requiring physical collateral or demonstrating regular savings

2012). Nigerian and West African cooperatives show improving performance (Seibel 2012, pp vii-viii, Lawal, 2012; Nzekwe, 2012). These results have been confirmed by other studies on cooperatives in West Africa, Latin America and South Asia (Ashta et al., 2010, Ouédraogo and Gentil, 2008, Marx and Seibel, 2012, Seibel and Thac, 2012). As microcredit organizations and credit cooperatives expand and allow more participants to join in, they deepen and broaden the scope for microfinance operations.

Traditional lending groups operate both in rural and urban areas and are used by those who cannot afford to have a bank account or repay the loan in full. The time life of the groups varies from weeks to months or even years depending on geographic zones and countries. Lending groups force members adopt a rigorous 'work and repay' discipline ensuring mutually benefiting group behavior. As friends, relatives

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and colleagues, group members interact, cooperate and comply on the basis of trust and reciprocity. While member relationships tend to be informal, the terms of business agreement; nature and objective of activity, the amount of initial loan and its repayment terms, the person in charge of the project, number of recipients and beneficiaries, peer meetings and commitments are formally defined (see Table 1).

The nature and extent of social ties affect the organization and development of ROSCAS and cooperatives as well as the relative effectiveness and group lending. Table 2 provides an understanding of the impact of social ties on the social lending models that have been studied in ROSCAs, social groups and cooperatives.

Peer-to-Peer and Online Social Lending Groups

Online crowdfunding and microlending platforms reached a total of 5 billion dollars' worth of investment in 2013 with an annual growth projection of 10% over the next decade (Massolution Annual Report 2013). Online social networking sites were initially designed to exchange texts but gradually moved in the direction of interactive transactions as a result of rapid deployment of online applications and Web 2.0 technologies (Okleshen & Grossbart, 1988). Online communication channels tend to be less inhibitive because people feel free to express their opinions (Fischer et al., 1996, Kuan, 1996, Bain & Company, 2009).

Among the early comers to online social networking one can refer to early bulletin boards and chat rooms, Six Degrees and Livejournal who began their activities in 1997 and 1999 respectively (Burt, 2010). The advent of broadband powered by new technologies turned the early online communities into audiovisual platforms (Watkins, 2009). The first big hit for broadband-based online community was Friendster followed by social media pretenders MySpace and Facebook in 2003. A number of online business and social platforms have emerged as the new millennia bonanzas. These communities are characterized by several features. Online communities operate though virtual relations rather than face-

Table 2. Impact of social ties on social lending models

Typology of Social Tie	ROSCA	Group Lending	Cooperatives
Origin	• Members come together to form a rotating savings and credit association for a predetermined period of time • Weak ties among members	• Members join the community in order to be able to have access to micro loans under predefined borrowing terms • Communities show trust through family and friendship bonds	Members engage in voluntarily actions and comply with flexible and reliable rules when defining borrowing and reimbursement mechanism
Process	Monetary contribution of all members is based on a pre-established selection mode that strengthens their social ties	Group lending is used as social collateral and a mechanism for empowering individual borrowers through collective engagement	Open and voluntary engagement boosts solidarity, enhances financial stability and cooperation among the cooperative members
Expected Impact	• Self-regulation and greater reliance on ROSCA members for local outreach • Governance mechanisms are reinforced through collective action	Greater confidence and self-reliance result from collective engagement and social commitment	• Reliance on common rules and objectives enhances trust and leads to economic and social performance • Governance mechanisms are reinforced through collective action

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to-face direct contact (Okleshen & Grossbart, 1988). As a result, communication in virtual communities tend to be less inhibited since peers' identity remain anonymous and users feel less pressured by face-to-face contact (Fischer et al., 1996, Kuan, 1996). Online commuters do not radically alter their habits and social bonds and instead look for peers who connect, interact, and share information and insights on similar matters. A strand of research opposes the claim that virtual communication makes people more isolated and finds instead greater bonds and compliance among community members (Comley, 2008).

However, Paul Martino, an entrepreneur who launched Tribe, an early social network, believed that the quality of interpersonal connections on such networks might considerably decrease if people do not dare to dump former friends or to reject unwanted friend requests from casual acquaintances. Therefore, the power to ex-communicate a member from a group may be an important factor of the sustainability of online communities. It is worthwhile to mention that an online community is not always created by organizations for promoting connections with their two-sided users-clients (Rocher & Tirole 2006). They are also increasingly created by independent individuals for mutual dialogs and interactions. Brown et al. (2002) have found that on-line communities (such as chat rooms, bulletin boards, and product review pages) increase the value for users and therefore the "stickiness" of the Web site. Their study of 40,000 consumers' visits to Web sites shows that users of community features generate two-thirds of the Web sites sales despite accounting for only one-third of the visitors. Users who contribute product reviews or post messages visit these sites nine times as often as nonusers do, remain twice as loyal—and buy almost twice as often. Even users who read but don't contribute to community exchanges are more frequent visitors and buyers (Brown et al. 2002). A particular online community is created to ease interactions and transactions between peers. The most familiar case of this type is eBay. The business model behind this type has been widely studied and coined under the names such as "market maker" (Mahadevan, 2000) or "exchange facilitator" (Assadi, 2004). There are now P2P lending sites that facilitate loan transactions by directly connecting lenders and borrowers online (Galloway, 2009).

Peers have always lent money to each other. This model is now replicated on the Internet. Beginning in 2005, P2P social lending websites have emerged as a credit alternative to the conventional financial and banking institutions. Hulme and Wright (2006) believe that "social lending" is becoming increasingly and seriously rival to the traditional mainstream financial services because it embraces the social trends that are definitional of our age. The P2P social lending websites represent a specific category of market makers or exchange facilitators. These are essentially platforms which use different kinds of Web 2.0 technologies (Ashta & Assadi, 2009) to permit connections and interactions between investors and/or lenders (or good doers) and the potential borrowers, unbanked and micro-entrepreneurs.

P2P lending platforms vary in mission and status. Some connect peers directly; others engage third-party intermediaries. Some are not-for-profit; other not lucrative. Some fix interest rates according to historical credit records; others leave it to the loan partners. The most noticeable difference between the P2P social lending websites is arguably their legal status; not-for-profit as embodied by the US based Kiva and the lucrative ones such as mainly Zopa, but also Prosper and LendingClub. Kiva operates as an international operator, transferring funds from US based individuals to the rest of the world through the local Microfinance Institution. On Zopa, borrowers can get a loan from lenders who have money to invest and looking for ways to get higher profits than the bank's offers. Despite differences, they all have a common denominator which is the factor of trust between peers who meet only on the Internet (Galloway, 2009): Borrowers share information about their personal and financial characteristics; and lenders decide whether to trust and contribute to their loan requests or not.

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Within this sector, social communities also play a significant role. While usefulness of credit score as a predictor of creditworthiness and default behavior is repeatedly confirmed, some studies empirically show that belonging to online groups increase both the chances of getting a loan (even for borrower with poor credit records), and that of reimbursing them (Iyer et al., 2009b, Ryan et al., 2007).

Herzenstein et al (2008), have investigated the determinants of funding success on Prosper.com, an online P2P lending platform. Their study shows that the effects of demographic attributes such as race and gender are very small in comparison to those of borrowers' financial strength and their ability to list and publicize the loan. Their research confirms that social affiliation increases the probability of obtaining loans at competitive rates even for borrowers who do not possess a bankable profile.

Problems of debt or low credit scores can be overcome by social affiliation with highly rated groups, endorsements or friends' support. Affiliation with Trusted Groups not only doubles the probability of getting a loan request fully funded, but also, establishes the scenario for borrowers with a priori non-bankable profile to get a loan with reasonable rates. However, people affiliated with Open Groups, where anybody can join, do not easily get a loan, and lenders are more skeptical (Herrero-Lopez, 2009). Online social lending groups significantly lessen the asymmetric information problems which represent a potential hazard for lenders. In fact, in absence of borrowers' true credit scores, lenders can infer creditworthiness of borrowers through the soft information provided in the peer-based listing (Iyer et al., 2009a). "Soft" information such as friend endorsements and friend bids within the social networks can compensate the lack of "hard" information, like actual credit score on borrower risk (Freedman & Jin, 2008). Berger and Gleisner (2009) demonstrate that the recommendation of a borrower on the P2P lending platform Prosper.com significantly improves his/her credit conditions.

More recently, Lenddo.com has found innovative mechanisms of linking the giving of loans and credit scores to the capacity to form groups with offline friends and relatives, including family members and co-workers. The networks' scores increase or decrease according to the behavior of members. Thus, Lenddo has transposed the offline group to an online platform. Virgin Money (USA) was the first website that enabled direct P2P lending between relatives and friends. As formerly stated, we have considered the cases of Kiva and Zopa. In addition to the status differences, it is worthwhile to mention that Zopa is actually P2P, while Kiva links the lenders to a MFI. The individual borrowers on Zopa may fear losing their credibility rating, while institutional borrowers may have less fear in this regard. Table 3 represents the summary of our cases studies.

FUTURE RESEARCH DIRECTIONS

Future research will provide further insight as to how microfinance and microfunding communities can achieve social and economic goals through different cooperative schemes that encompass more novel modes of curation and compliance across network boundaries. It is equally important to consider different geographic zones as well as specific market and nonmarket factors when studying the formation of online and offline networks. The analysis of a growing number of microfinance and crowdfunding organizations, Djanggis in Cameroon, Likelembas in Congo, Susus in Ghana, Xitique in Mozambique, Arisan in Indonesia, Chit Funds, milaap, and Micrograamin India, Tontines in Cambodia, Wichin Gye in Korea; Tandas in Mexico and Lenddo in the Philippines will provide a comprehensive framework for measuring the strength of social dynamics in fighting social exclusion within different socioeconomic and cultural contexts.

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Table 3. Compliance mechanisms in online microlending and crowdfunding models

Source of Group Pressure		Kiva	Zopa
Motivations for joining Group	Cognition-based	Sharing information and insights on borrowers and on lending process Reducing the asymmetric information	Sharing information and insights about borrowers (for lenders) and lending offers (for borrowers) Reducing the asymmetric information
	Affection-based	Relating to and sympathizing between lenders, Self-expression	Relating and sympathizing between lenders, Self-expression
Group typology	Primary or secondary origins	Secondary (formed ex post by social oriented individuals)	Secondary (formed ex post by independent and "anti-big", "free formers")
	Formal vs. informal group	Formal (defined in terms of use)	Formal (defined in terms of use)
Forms of influence	Normative (rules)	Explicit	Explicit
	Value-expression (Shared value)	Focus on social goals and issues	independent and interpersonal initiatives
	Informational	No ties. Knowing entrepreneurial projects (for lenders)	Weak or no ties. Knowing entrepreneurial projects (for lenders) and lending offers (for borrowers)
Types of conformity	Acceptance	By adhering to social causes	For enjoying better interest rates, higher for lenders, lower for borrowers
	Compliance	Self-expression	By fear of losing credit rating, coercive actions
Motivation and monitoring process	Carrot/Stick	Do good and do well	Continuous access to higher returns (for lenders) and cheaper loans (for borrowers)
	Ability to monitor	Moderate checking of lenders online. Low checking of borrowers because the monitoring role is delivered to the partner MFIs. Field audits by volunteer Kiva fellows.	Strong: payments and repayments are checked, shown on the platform Augmented probability of getting loans even for borrowers with unattractive profiles

CONCLUSION

This chapter provides a framework for evaluating and comparing sources of compliance commitment and cooperation associated with offline social lending and online microfunding business models. Microfunding organizations mobilize financial resources through peer-to-peer relationship in conformity with group-led rules and norms of social collateral. While social collateral is a familiar and common notion in the literature of microfinance, the determinants of its functioning for monitoring and controlling individual and group behavior have not been fully explored in the literature. Social collateral has proven to be not only an efficacious solution to the problem of the unbanked, but also a source of inspiration for the fast growing peer-to-peer lending and crowdfunding operations on the Internet.

By exploring and exploiting a growing web of social interactions, crowdfunding offers equity, credit, donation and reward-based opportunities to a wide array of investors. The development of social media and communities of interest has been closely associated with the advent of the Internet as a general purpose information and communication technology. The use of Web 2.0 applications has broadened and deepened social relations and accelerated the formation of numerous business webs driven by network ubiquity. In ubiquitous business networks, people know and trust each other and are dedicated to common

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goals and sharing rewards. Trust, engagement, transparency and accountability reduce the transaction cost of carrying out business transactions. Peer monitoring, cooperation and compliance enhance trust among members in both offline and online communities. This is the case of many crowdfunded and microfinanced ventures in which trust and engagement accelerate business innovation and social dynamics.

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KEY TERMS AND DEFINITIONS

Community: The term conveys both traditional notion of people who reside in local proximity and neighborhood sharing a common cultural and historical heritage, and popular meaning of social ties and solidarity among people who share similar norms and values. Many researchers have developed concerns about the adequacy of the concept for analytical purposes, and suggested new ideas such as social network for studying the patterns of social integration. Here, we define community for the sake of research studies as a social group whose members share common values and recognize the strong bonds of belonging.

Conformity: Conformity is the adaptation of an individual's behaviors and attitudes to a reference group's norms. This adaptation often requires changing one's perceptions, opinions, or behaviors in the perceived desired direction of the group, and in response to real or imagined group pressure. Conformity leads to uniformity of behavior among the members of a group. Individuals comply with a group's norms at the expense of their own freedom when the rewards of compliance exceed its costs. Individuals might comply without accepting all the values of a group. Obedience is an extreme case of compliance where an individual completely complies and abandons other aspects of his/her self-identity.

Crowdfunding: Crowdfunding is not really new. It is an updated version of a traditional fundraising process. It involves a mechanism for obtaining funding by soliciting and collecting small contributions for specific projects from a large number of backers. Church or civic groups used to raise money to build schools or hospitals within communities. With the Internet, that local group extends to the world. A project initiator can thus launch an open for collecting small amounts of money from a large number of people (crowd). The crowdfunding platform accommodates one or more types of fundraising between project initiators and contributors: credit-based crowdfunding, donation-based, equity-based and reward-based crowdfunding.

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Microfinance: To most, microfinance means providing poor entrepreneurs with small loans (microcredit) for their productive activities. However, in a broader –and more accurate- sense, microfinance refers to providing low-income households access to basic financial services such as loans, savings, money transfer and insurance. While the modern microfinance is symbolized by Muhhamed Yunus, founder of Grameen (rural) bank in 1976, who started the initiative by giving out a loan of $27 to 42 women in a village in Bangladesh, the movement of microfinance dates back to Jonathan Swift who commenced microcredit within the Irish Loan Funds in the 1720s, Friedrich Wilhelm Raiffeisen who initiated the village-bank movement in Germany reaching two million farmers by 1901, Alphonse Desjardins who encouraged "Caisse Populaire" movement in Quebec, or even the traditional trust groups in different cultures all around the world.

Social Collateral: Collateral is a guarantee pledged by a borrower to a lender until the loan is paid back. There are two types of collaterals for securing a loan. Conventional asset-based collateral is based on debt record, income, and property. It can be seized in the case of default. Formal financial institutions use this kind of collateral to decide if they grant a loan or not. Social collateral refers to group guarantee. It is based on group pressure, frequent visits, risk of public shame, peer monitoring, promise of future credit, and the collective makeup of payment if one member defaults. In a microfinance context, where there is little or no asset for pledging a loan, potential borrowers form groups, usually with acquaintances and neighbors, to secure loans. The system of cooption reinforces the mutual confidence among members. Some microfinance institutions, however, prefer to adopt selection techniques based on an assessment of the individual.

Social Innovation: Novel, transformative, and sustainable solutions that chiefly aim to meet social problems such as climate change, disease, discrimination, and poverty. Solutions, generally interdisciplinary, collaborative, and market-based, tend to deliver economic prosperity, environmental sustainability and social solidarity. The value thus created is primarily for society rather than for profit maximization.

Social Tie: Individuals not only belong to social groups, they also relate to each other through social ties. These ties can connect people from different groups. The strength of a tie is a function of the amount of time, the emotional intensity, the intimacy (mutual confiding), and the reciprocal services. Social tie might be strong, weak, or absent. It is believed that weak social ties are the major driver of the social embeddedness and the transmission of information through the related networks. Novel information tends to flow more through weak ties because friends in the circles of strong ties actually possess and know it.

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Chapter 16
Plan for Prevention of Risks of Corruption and Related Infractions: The Application of FMEA Methodology

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ABSTRACT

This chapter presents the results of the application of the Failure Mode and Effects Analysis methodology, within the scope of the Organisational Risk Management Plan, in the Municipal Division of Contract Works and Concessions of Oliveira de Azeméis City Council of the metropolitan area of Porto located in the north of Portugal with an area of approximately 164 Km2 and a few more than 20,000 inhabitants. The application of this methodology establishes a bridge between risk management and the Plan for Prevention of Risks of Corruption and Related Infractions, describing the application of this methodology and referring how the levels of severity, occurrence and detection of a specific failure, which are essential in the implementation process. Once the application of this methodology is understood, an example of its implementation for the management of risk in the contract works service of the Municipality of Oliveira de Azeméis is also provided.

INTRODUCTION

The public organisations are subject to strong pressures due to the need for a constant updating, the growing complexity inherent to the introduction of new procedures and technologies, and due to a greater involvement of citizens. These pressures may cause failures in the internal control system, exposing organisations to a high number of risks, such as corruption and related infractions, which are unexpected,

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inopportune, and which can also reach large proportions. Thus, organisations should identify and assess the risks which threaten their activity in order to implement control mechanisms to mitigate them, without hindering the accomplishment of objectives and the sustainability of the organisation (Pinho, 2014).

The Portuguese municipalities have been focused on identifying and validating risks associated with corruption and related infractions, and have been developing adequate control mechanisms to prevent them, through the creation of the PPRCRI, recommended by the Council for Prevention of Corruption, through recommendation Nº. 1/2009 of 1st July. The creation of the Plan for Prevention of Risks of Corruption and Related Infractions (PPRCRI) should take into account that risk management, associated with any organisational activity, is essential to ensure its success, considering that an ineffective risk analysis can lead to non-detected failures which may have a considerable impact on the organisational performance and outcomes. However, the above recommendation does not include any guiding methodology, and thus, this task is left up to the team responsible for the creation of the PPRCRI. Having identified this failure, the authors propose, in this work, to adopt the methodology Failure Mode and Effects Analysis (FMEA) for risk management while developing the plan.

The authors will apply this methodology specifically to the contract works service of Oliveira de Azeméis City Council, a council of the metropolitan area of Porto located in the north of Portugal with an area of approximately 164 Km^2 and a few more than 20,000 inhabitants. This service is usually integrated in the Municipal Division of Contract Works and Concessions and exists in all the remaining Portuguese municipalities, transferring considerable amounts of funds and affecting many and varied local interests. In this study, the effects, the causes of occurrence, and the risk priority numbers (RPN) will be identified, taking into account the risk management standard of the Federation of European Risk Management Associations (FERMA), FMEA methodology (Pinho, 2014), and the guide suggested by the Portuguese court of auditors (see Appendix 1).

The European Risk Management Standard - FERMA provides guidelines to identify risk which is always associated with any public or private organisational activity. Considering that this risk results from events which can produce either positive artefacts (opportunities for continuous improvement) or negative artefacts (threats to the good performance of the organisation), the authors can assume that the organisational risk profile is made up of two components: a component with positive risk profile and another with negative risk profile (FERMA, 2002; Santos, 2009).

The risk management (RM) should systematically assess or predict all risks inherent to past, present or future organisational activities as well as include the organisational culture of the organisation through adequate procedures and good practices established by the management bodies. From the organisation strategic vision the RM should also identify the tactical and operational objectives, thus promoting the efficiency of the operations regarding all organisational levels. So that the RM effectively contributes to mitigate the risk it is essential to use adequate methodologies and/or techniques. FERMA (2002) suggests some tools which can be adopted by the organisations for this purpose, mainly: the analysis of threats; fault tree and FMEA.

The FMEA methodology was developed in 1949 by the US Department of defence with the aim to assess the impact of failure occurrence on their systems/equipment. However, from 1988 onwards, it started to be used in several enterprises such as *Chrysler, Ford* and *General Motors*, among many others, as part of their quality assessment programmes in different projects and processes (Matos & Milan, 2009).

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CORRUPTION AND RELATED INFRACTIONS

Governments in general and the Portuguese government in particular have been focused on ensuring that the management of public money, values and heritage meets the principles of public good. Thus, the Council for Prevention of Corruption was created through Law Nº. 54/2008 of 4th September passed by the National Assembly, with the aim to contribute to the prevention of corruption and related infractions recommending the rules to be respected in the development of the PPRCRI. Regardless of the nature of the entities, these plans should identify, regarding all their areas and/or departments, the risks of corruption and related infractions, and the measures which can prevent these and mitigate their occurrence, with special emphasis on the internal control mechanisms and the definition of the individuals responsible for their management. These entities should develop an annual report about the plan implementation and execution (Martins, 2010).

This is an overall concern that has benefited from the increasing attention paid by several world leaders. Thus, a thorough assessment has been made in cases of corruption of different types. Internal control is important mainly due to the high number of non-financial and financial transactions which may be propellers of corruption. GRIEC (2007, p. 11) defines corruption as "any lawful or unlawful act or its omission, (...) against undue receiving or promise of any reward for themselves or a third party", i.e. crossing the red line which separates the public interests from the private ones (Sousa, Larmour & Hindess, 2009).

Related infractions are another type of crime which may also damage the good functioning of organisations and the markets where they operate, with the ultimate goal of obtaining an undue advantage. An example of this is the misuse of powers, embezzlement, economic participation in business, concussion, influence peddling and bribery (GRIEC, 2007; MOA, 2012). Thus, the PPRCRI aims to identify not only the signs which may increase corruption but also the mechanisms which exist or that, when implemented, can prevent and/or mitigate behaviours and attitudes which may increase the risk of corruption (GRIEC, 2007).

As corruption hinders the increase of gross national income as well as the governance performance (Aidt, 2009), and since it has been proven to be a global phenomenon, it is necessary to implement global prevention measures. In general, it is important to strengthen the vital role of society in this combat, raising awareness as to its supervisory role (Sousa, 2011; Lima, 2011). Only in this way will it be possible to fight corruption, monitoring the decision-makers' actions and controlling the efficiency of governance (Cunha, Serra & Costa, 2012). However, for an effective prevention of corruption and related infractions there is the need for a pro-active, transparent and objective action by all the stakeholders and by the entities governance bodies (Lima, 2011). Concerning the Portuguese municipalities, the authors can already find a few internal auditing offices made up of people who are external to the services regarding the provision of municipal services. Regardless the fact that the countries have different realities, Khan (2006) and the OECI - CPLP (2011) consider that the measures to fight corruption should involve the settlement of agreements and international conventions of combat to corruption; governmental laws amendments and repeals; promotion of public transparency; reduction of bureaucracy; promotion of legality; integrity and ethics in the organisational behaviour; optimisation of information and internal control systems; improvement of work teams between the criminal police and the governing entities; setting-up of an external entity against corruption in order to guide prevention actions of corruption in the public sector; and development of management and corruption prevention plans.

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RISK AND RISK MANAGEMENT

Regardless the place where we are or what we are doing, there is always risk connected to our regular activity, and this may have a personal or professional impact (Stamatis, 2014). Thus, risk, is always underlying any organisational activity, since several events or situations are likely to occur, can create opportunities to gain competitive edge or threats which pose obstacles to its success (FERMA, 2002). Thus, the occurrence of an event with negative impact, representing a negative risk profile, requires managers to come up with solutions which aim to minimise it. On the other hand, the events which represent positive risk profiles represent opportunities which favour the accomplishment of the organisation's objectives, through procedures for continuous improvement, culminating in added value (COSO, 2007).

The RM is a core process of the strategic management of any organisation, allowing the systematic observation of risks inherent to its activity. Its main objective is to identify and assess the most significant risks and to develop and implement adequate procedures/mechanisms which minimise them so that the performance of all activities of the organisation is sustainably increased (AIRMIC, Alarm, & Irm, 2010). Hence, its added value is related with the possibility of implementing efficient controls, according to the impact of the identified and assessed risks, which acceptably reduce the risks, contributing to ensure the fulfilment of applicable laws and regulations, preventing damage to the reputation and sustainability of the organisation.

So that the RM process is effective and provides adequate support to the decision-making processes of the bodies, it should integrate that same process and be part of the organisation's culture and practices, adapting these to its business processes (CRA-SP, 2009). This process starts with the creation of an organisational role, which can ensure the consistency and control of the organisation and all intervenients (FERMA, 2002), integrating a model which allows the identification and assessment of organisational risks, namely those which should be mitigated first. As can be verify, the identification and assessment of the organisational risks will allow their prioritisation and enable that the procedures/mechanisms of internal control are focused on the control points of high criticality (Cicco, 2006).

The RM generates different types of relevant information, allowing the management bodies to gain awareness of the limitations/failures which exist in the organisational structure, and thus be able to rigorously control the existing risks.

So that all this process of risk identification, assessment, and validation can be effective, regular audits must be performed to ensure respect towards applicable policies and the legal framework, and to assess the organisational performance in order to identify opportunities for improvement (positive risks profile) or that internal control mechanisms which are adequate for the activities of the organisation should be implemented (negative risks profile), thus ensuring that these are known, understood and used (FERMA, 2002).

APPLICATION OF FMEA METHODOLOGY

As aforementioned, this chapter is related to the use of FMEA methodology, one of the methodologies suggested by the European Risk Management Standard to support the process of risk management associated with the contract works service of the Municipality of Oliveira de Azeméis (MOA), concerning the development of its PPRCRI. The MOA includes this plan in another wider plan, named: Organisational Risk Management Plan (ORMP).

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The FMEA methodology is an analytical technique which allows ranking severity, occurrence and detection of a certain failure (Moura, 2000), through a quantitative scale, defined by the team responsible for the development of the PPRCRI. The use of this scale allows to prioritise the control points and to develop the needed actions, aiming to reduce risk associated with the respective control point, systematically managing the human and material resources available for this purpose. In this specific case the authors will consider a scale of 1 to 10.

Once the scale is defined and, according to this same scale, the rankings of severity (see Table 1), occurrence (see Table 2), and detection (see Table 3) are determined, the authors adequately fill in the record sheet of FMEA methodology (see Appendix 2) with the respective information. This record sheet should be updated from time to time, keeping compliance with possible changes made to the organisational structure. The team responsible for the development of the PPRCRI should define the frequency of the updates to the record sheet.

The use of FMEA methodology typically comprises 3 phases: (1) qualitative analysis; (2) quantitative analysis and (3) record analysis and corrective actions. In the qualitative phase the authors make a selection of the organisational unit/division/office or service, object of implementation of the methodology. Next, the auditing team is built. This team will then perform a qualitative analysis listing for each activity the potential failure modes associated with possible causes and respective systems of detection and prevention as well as the estimation of their effects and consequences. In the quantitative phase, the likelihood of occurrence and detection of a potential failure and the severity of its effects on the process under analysis are evaluated, leading to the calculation of the RPN ranking. Finally, the phase of record analysis and corrective actions corresponds to the analysis of the aforementioned rankings and to the recommendation of the corrective actions which should be put into practice. For failures with RPN equals to or greater than 100, the auditing team should discuss improvement actions with the heads of the service in order to reduce the likelihood of occurrence and/or increase the likelihood of detection. In the following sub-sections can be seen the tables which have been created for the severity, occurrence and detection rankings, using a scale of 1 to 10, and which have been used to fill in the record sheets used for the risk management related to the PPRCRI (see Appendix 2).

The column concerning severity (see Appendix 2, column 14) should be filled in with values obtained in compliance with the information displayed in Table 1. Severity is an assessment of the seriousness of the effect that the potential failure may have on the business processes in case of occurrence.

The column corresponding to occurrence (see Appendix 2, column 16) should be filled in with values obtained in compliance with information displayed in Table 2. The occurrence is related to the likelihood of a certain failure to occur.

The column concerning detection (see Appendix 2, column 18) should be filled in with values obtained in compliance with information displayed in Table 3. The detection ranking is related to the capacity of current controls (column 17 of the record sheet, Appendix 2) to detect the causes of failure.

The cross-linking of the severity and occurrence rankings allows us to regard the risk as minor, moderate, major or critical, according to the weighing done between the rankings, which will determine the risk criticality level, Figure 1. According to the risk level can be used colour cues, for example the green for a low risk level, yellow for a medium risk level, orange for a high-risk level and red for a critical risk level.

Similarly, the cross-linking of the criticality matrix with the detection ranking allows us to label the risk as desired, acceptable, marginal and unacceptable, Figure 2. Thus, the green colour is usually assigned to desired risk, the yellow to the acceptable risk, orange to the marginal risk and red to the unacceptable risk.

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Table 1. Severity ranking, adapted from Santos (2009) & Quality-One International (2011)

Impact	Criteria: Severity of Effects in the Process	Rank
Hazardous without warning	Strong dissatisfaction with the nature of the failure, which may not be in compliance with the laws and regulations in force and will result in major damage.	10
Hazardous with warning	Dissatisfaction with the nature of the failure, which will result in major damage.	9
Very high		8
High	It may result in dissatisfaction with the nature of the failure, causing damage.	7
Moderate		6
Low	The nature of the failure can cause minor damage	5
Very low		4
Minor		3
Very minor	The nature of the failure is secondary, and may not be detected.	2
None		1

Table 2. Occurrence ranking, adapted from Santos (2009) & Quality-One International (2011)

Impact	Criteria: Likelihood of Occurrence	Rank
High	High likelihood of occurrence	10
Moderate	Moderate likelihood of occurrence	9
		8
		7
Occasional	Occasional likelihood of occurrence	6
		5
		4
Remote	Remote likelihood of occurrence.	3
		2
Low	Low likelihood of occurrence through preventive control	1

After the FMEA methodology has been implemented, it shall become a tool of daily use. As aforementioned, the record sheets should be reviewed from time to time as there are constantly changes in the conditions of a system, product, process and/or service which may alter the initial conditions and which have also served as a basis for the implementation, and thus consistency is lost.

The use of FMEA methodology requires the users to understand and know how to fill in the record sheets, and, therefore, the content of each field of the record sheet is explained in Appendix 4. The application of FMEA methodology to each organisational unit should be done by respecting the following steps when filling in the record sheet (see Appendix 1 and 3):

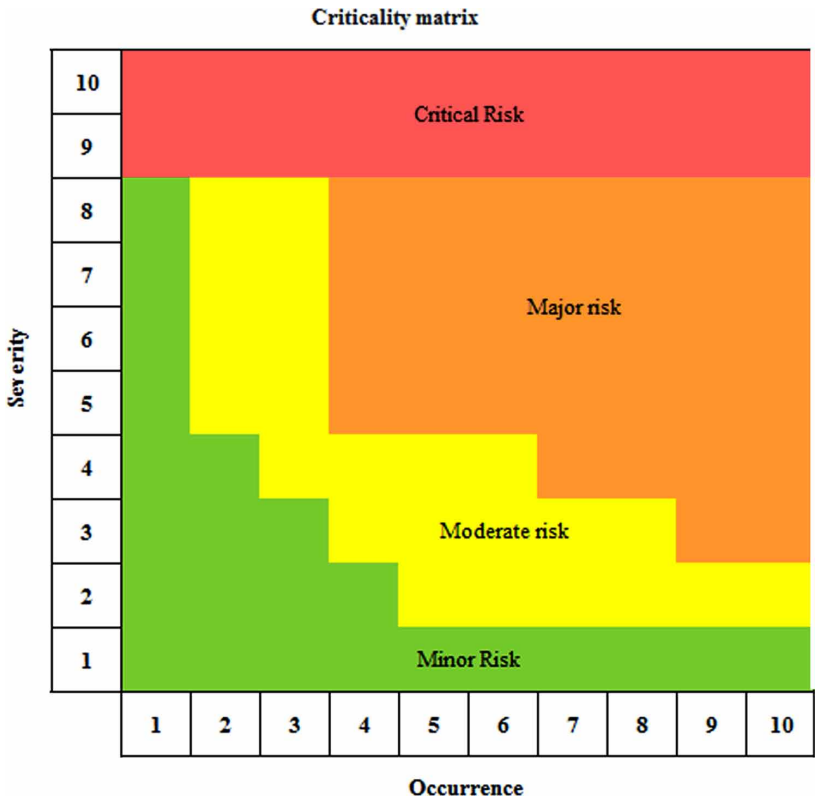
- Comprehensively analyse the process, identifying all its phases;
- Identify how the performance of these functions can cause failures;
- Identify the consequences of each failure;

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Table 3. Detection ranking, adapted from Santos (2009) & Quality-One International (2011)

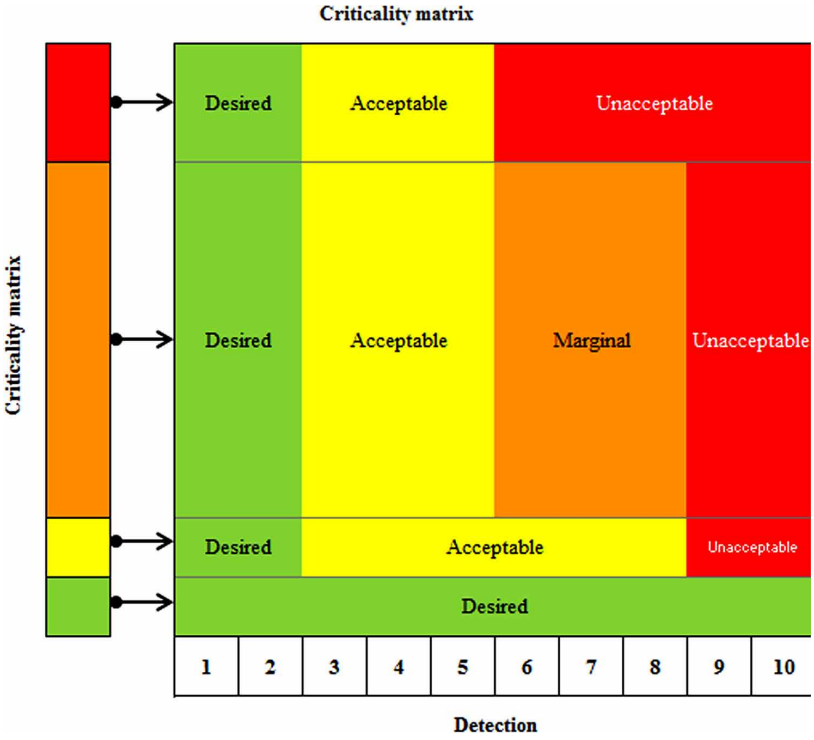
Detection	Criteria	Criteria: Likelihood of Detection by Process Control	Rank
Null	Absolute certainty of non-detection	The process control will not and/or will not be able to detect the cause of a potential failure; or it does not exist.	10
Very Remote	The control may not detect it	Very remote possibility of the process control to detect the cause of a potential failure.	9
Remote	Low likelihood of the control to detect it	Remote possibility of the process control to detect the cause of a potential failure.	8
Very Low	Low likelihood of the control to detect it	Very low possibility of the process control to detect the cause of a potential failure.	7
Low	The control may or may not detect it	Low possibility of the process control to detect the cause of a potential failure.	6
Moderate	The control may or may not detect it	Moderate possibility of the process control to detect the cause of a potential failure.	5
Moderately high	Control is very likely to detect it.	Moderately high possibility of the process control to detect the cause of a potential failure.	4
High	Control is very likely to detect it.	**High possibility** of the process control to detect the cause of a potential failure.	3
Very high	The control will almost certainly detect it.	**Very high possibility** of the process control to detect the cause of a potential failure.	2
Very high	The control will detect it	The control **can detect** the cause of a potential failure.	1

Figure 1. Adapted from Quality-One International (2011)



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Figure 2. Adapted from Quality-One International (2011)



- Identify the causes of each failure;
- Assess severity of each effect;
- Assess each failure regarding its frequency or likelihood of occurrence;
- Identify the most critical factors;
- Assess the impact of the recommended actions in the processes.

The main objective of this methodology, according to Matos and Milan (2009, p. 979) consists in "emphasising the minimisation of the likelihood of failure occurrence and its effect" and thus, some of its advantages can be identified, as follows:

- Improvement of quality and safety of products and services;
- Improvement of the corporate image and its competitiveness;
- It can increase the levels of customer satisfaction;
- It can reduce the cost and time of developing products;
- It can aid diagnostic process; and,
- It allows the establishment of priorities to implement corrective actions (Matos & Milan, 2009, p. 979).

The FMEA methodology is clearly efficient when applied to the analysis of factors which cause a failure in a single system. However, there are not only advantages. There are also disadvantages, such as:

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- Difficulty in applying this methodology to complex situations, which involve several functions that can lead to different procedures in order to achieve the objective of the methodology;
- The level of significance of the effect of any failure may be difficult to minimise due to the need for thorough knowledge of the different procedures and the service characteristics.

The authors should also emphasise that human error and the environmental effects are usually the most common mode and/or failure taken into account in this methodological analysis (Stamatis, 2003).

EXAMPLE OF IMPLEMENTATION

In this section is given an example of application of FMEA methodology to the risk management of a municipal service, namely the contract works service of the MOA. This service was chosen due to its risk level, identified as high, as this is a service with a great financial impact considering expenses for the municipality and also because it is a service in which the good practices are strongly based on the fulfilment of the legal procedures, mainly the code of public contracts, which can facilitate the method application process (Pinho, 2014). This option was also influenced by the results of a semi-structured interview which was carried out with the objective of obtaining an overview of the application and monitoring of the ORMP of MOA (the ORMP includes the PPRCRI) as well as of the importance assigned to it concerning RM. The interview aimed to determine if the PPRCRI is being implemented and its level of importance, and to assess if the adoption of RM methodology, specifically FMEA method, is important for the improvement of the municipal RM. The interview was also analysed by the audit office, which corroborated the acceptance of the use of FMEA methodology in risk management.

In this implementation potential failures of risks of corruption and related infractions were identified in contract works service of MOA and, based on this identification, the effects, causes of occurrence and RPN were determined, as can be verified in Appendix 4. The sequence of the work done was the following: 1) creation of flowcharts showing the legal procedures; 2) identification and characterisation of potential failures inherent to the existing risks, their causes, prioritisation of risks according to their severity, occurrence and detection rankings; 3) development of a proposal for a risk management plan to be integrated in the ORMP of MOA, including FMEA methodology; 4) presentation of the PPRCRI record sheet to the internal audit office, so that the necessary adjustments and improvement suggestions can be made; 5) performance of an internal audit to the Municipal Division of Contract Works and Concessions (MDCWC), using FMEA method; and finally, 6) analysis of the results obtained with the audit performed.

The flowcharts were drawn in compliance with the legal and regulatory framework in force and were then analysed by the head of MDCWC and were also reviewed based on the work instructions defined by that service, in accordance with its specificities. The local power has work procedures based on specific flowcharts, regarding each phase of the contracts, and with high information specificity. Thus, the different stages of the contract works service were identified to allow the identification and detection of possible failures to be, then, registered in the PPRCRI record sheet. The flowcharts depict the different phases of procedures, with the specificities which may occur in each of them, identifying the investigation procedures of each works contract. These flowcharts will allow the identification of potential negative risks inherent to the defined procedures.

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Once the flowcharts were completed, in a second phase, the risks were then identified, assessing the potential failures in MDCWC. As the risks identified with a high level of criticality were already identified in the ORMP, the processes associated with these risks were taken into account when filling in the PPRCRI record sheet, giving support to the internal audit procedures, which, in a very interactive way, rectify and identify new risks whenever necessary. Then followed the association of mode, effect, cause and potential failure mechanism(s) for each identified risk, and the presentation of an RM proposal to be included in the ORMP.

After the aforementioned association and the proposal were made, the PPRCRI was developed, being readjusted to FMEA method, having all the information included in the current PPRCRI of the ORMP. This information is related to the contract works service and was transferred to the PPRCRI record sheet with the necessary adjustments, and the effects and causes inherent in the failures identified in this service were then defined. However, and because some actions had previously been defined in the ORMP, that information was also taken into account in order to identify the effects and causes, and a new PPRCRI was created for the MDCWC as seen in Appendix 4. This new PPRCRI was given to the heads of the internal audit office of MOA so that they could give their opinion, suggest any adjustments and validate the scales of the used rankings. Thus, all the work behind the application of FMEA methodology was verified and validated by the heads of the internal audit office of MOA so that it could reflect the reality of MDCWC.

The work carried out by the internal audit team focused on the verification of compliance with the procedures adopted by the organisational units in accordance with the action plans defined for the implementation of ORMP. In addition to this verification, the auditing made to the service of contract works and concessions also aimed to apply FMEA method, assessing severity of failures, likelihood of occurrence and if the detection means were effective in order to assess whether severity, occurrence and detection rankings assigned by the auditing team were adequate.

This was followed by the auditing analysis aiming to establish actions which minimise risks. The auditing team noticed that the values obtained for the RPN obtained show that the MDCWC has a low likelihood of failure, as the values range between 12 and 200, in a scale of 1 to 1000. Therefore, it can be concluded that the levels of failure detection are desired and acceptable. From the analysis made to the rankings of risk prioritisation, no procedures with major risks were identified. However, point 3.4.1 (column of PPRCRI recommended controls, Appendix 4) presents an RPN of 200, greater than the remaining procedures. Although it is a comfortable situation, the auditing team suggested contract works service to review all the procedures regarding the works contracts in order to reduce the occurrence of possible failures, and to increase their detection with more internal controls. They also recommended filling in the checklist at the beginning of the procedure in order to ensure a high detection by all internal control mechanisms defined for the contract works.

The application of FMEA methodology, in the MDCWC of MOA was successfully carried out, allowing us to successfully conclude, concerning the similarity of this process in the many Portuguese municipalities, the possibility of implementation in the contract works services of other Portuguese municipalities. This service is cross-cutting to all municipalities, as it is guided by legal and regulatory procedures defined for the public contracts. Given the fact that all the municipalities have to develop a PPRCRI every year, the authors have concluded that it is possible to apply FMEA methodology in the municipal PPRCRI, with its own adjustments according to the reality of each area/service.

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CONCLUSION

The recent scandals which have gone public in Portugal and which may represent situations of corruption and related infractions have revealed the existence of weaknesses in the mechanisms of management which are associated to it. Thus, the present study is of utmost importance, as it is necessary to consider the risks in all phases/procedures in the public organisations. In this work, as aforementioned, the authors introduce a methodology, FMEA methodology, which has been internationally tested, to identify and assess the risks of PPRCRI, focusing on the Portuguese municipalities.

It is to consider that there are several limitations concerning the organisational risk management. Thus, it should be highlighted that risk is intrinsically related to the future performance of organisations, which is always difficult to predict in a rigorous way. Another limitation to be mentioned lies in the assumption that risk management ensures the efficiency of the control mechanisms to be implemented. The authors should take into account that not all events are simple to control because they can occur in different contexts and with different objectives (COSO, 2007).

The application of FMEA to the contract works service of MOA allowed the identification of the effects and causes of occurrence of potential failures, an aspect that has not been mentioned in any document so far. The awareness of these two items allows us to have a clearer idea of what can happen if failure occurs, and therefore effectively identify the RPN. This method also allows to assess quantitatively and qualitatively the procedures of risk assessment, as it enables us to view the most significant risk in each service and through the colour associated to it, being red and orange the colours used for more significant risks, thus allowing to improve the efficiency of their management. From all FMEA record sheets it is possible to see the risks/failures which need to be taken into account first, therefore making it easy for the auditing team to define the actions to recommend.

After the audit was concluded, FMEA methodology allowed the auditing team to detect the RPN and to facilitate mitigation of risk connected to different business processes, through internal control mechanisms. It also allowed the assessment of risk inherent to activities developed in MDCWC, according to three dimensions: severity, occurrence, and detection. In addition, it enabled the identification of the effects and causes brought about by potential risks which may be connected to different business processes.

The study conducted allowed to conclude that MDCWC has a low likelihood of failure occurrence because it has a low RPN, as mentioned in *APPLICATION OF FMEA METHODOLOGY*. However, there are potential failures identified with a very high level of severity, in case they occur. Hence the auditing team recommends that the service adopts internal control mechanisms in order to reduce the occurrence and increase the detection level of these failures.

As a result of the work carried out, the authors could verify that FMEA methodology can be successfully integrated in the PPRCRI of any Portuguese municipality, complying with recommendation Nº. 1/2009 of 1st July. This applies as it was possible to identify the risks, propose measures/controls which allow the prevention of occurrence and also identify the heads of both the team responsible for the implementation of FMEA methodology and contract works service (the service under analysis). It should be highlighted that there was no negative reaction by the contract works service and that there was a meaningful collaboration by the heads of the service, which is a relevant fact for the conducted research. Thus, the authors believe that the adoption of this method in most public entities will not cause negative reactions, which usually hinder the implementation of risk management processes. Therefore, it will contribute to prevent and minimise occurrence of potential actions of corruption and of related infractions.

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The authors should also point out that success in the implementation of this methodology can be achieved if the service/area where FMEA is going to be applied is known in advance. Moreover, it is important to be aware that a comprehensive analysis of the work procedures should be performed, and that sometimes this may be time-consuming. However, after applied, it facilitates all the planning process of internal auditing to the PPRCRI, as it prioritises the most significant risks and, thus, allows the establishment of priorities when defining the actions to recommend.

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KEY TERMS AND DEFINITIONS

Contract Works: Included benefits and obligations for both sides in a similar way to any contract between a client and a supplier.

Council for Prevention of Corruption: The Council for Prevention of Corruption (CPC), created by Law No 54/2008 of 4 of September, is an independent administrative institution with a nationwide mandate for the prevention of corruption and related infractions.

Failure Mode and Effects Analysis (FMEA): Was one of the first systematic techniques for failure analysis and it has been applied in various sectors both sales of products and/or provision of services.

Gross National Income: is defined as the sum of value added by all producers who are residents in a nation.

Municipal Services: Services produced directly by a municipality using an in-house workforce.

Municipality: As defined by the 1976 Constitution of the Portuguese Republic, the municipality is the second-level administrative subdivision of Portugal.

Negative Risk Profile: transactions behaviour responsible for risk situations.

Plan for Prevention of Risks of Corruption and Related Infractions: This Plan, was based, as recommended by Council for Prevention of Corruption (CPC), complying with recommendation from July 1st, 2009 and identifies the main areas which may potentially be subject to acts of corruption, as well as the ensuing risks and the controls set forth by the organisation in order to mitigate these.

Portuguese Court of Auditors: As defined by the 1976 Constitution of the Portuguese Republic is defined as "the supreme body, which examines the legality of public expenditure and rules on the accounts which the law has ordered to be submitted to the Court".

Positive Risk Profile: expected transaction behaviour.

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APPENDIX: PHASES OF RISK ANALYSIS (GUIDE SUGGESTED BY THE PORTUGUESE COURT OF AUDITORS)

Table 4. Guide developed by the Court of Auditors, corresponding to the mentioned phases of risk analysis

Methodology of Risk Analysis		
Analysis Itinerary	**Analysis Criteria**	**Questions**
Definition of context	Strategic Operational	• What are the organisation's activity areas and characteristics? • What are its missions and aims?
Risk Identification	Date Area Description	• What can happen? • How can it happen? • When can it happen? • Is there opportunity for improvement?
Risk Analysis	Likelihood Seriousness of the Consequence	• What are the causes for the occurrence of risk? • What are the effects if the risk occurs? • Is the risk strategic or operational? • How can these effects be reduced?
Risk Assessment	Major Moderate Minor	• What are the risk prevention measures? • What is the operational efficiency? • What results from the comparison of costs and benefits of risks?
Development, Treatment and Control of Risk	Avoid Prevent Transfer Accept	• Should the risk-generating activity proceed, or should it not / or not • As can be reduce/control the likelihood and consequences of occurrence? • Is it possible to fully or partially delegate the activity or risk effect to a third party, by means of contacts, partnerships, insurance, etc.? • Is the risk acceptable in relation to the cost/benefit it is associated to? • Have there been any organisational improvements?
Plan Monitoring, Review and Update	Every year Every semester	• What is the frequency of the Monitoring of the Impact of Risk? • How effective is the Review of Risk? • Was there any change in the risk priority number?
Communication and consultation	Information Release	• Who is affected? • Who needs to know? • Who should be responsible?

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Table 5. Record Sheet

| **Potential Failure Mode and Effect Analysis** | | |

Table 6. Description of pprcri record sheet

FMEA number (1)	It refers to the number of the FMEA document that can be used for traceability.
Department (2)	Refers to the name and number of the department, OU and/or organisational subunit under analysis.
Organisational Unit (3)	
Organisational Subunit (4)	
Person responsible for the process (5)	Fill in with the name of the person responsible for the process.
FMEA Date (6)	Date when the initial FMEA was compiled and date of its last review.
Created by (7)	Fill in with the name and department of the delegate responsible for FMEA.
Key Date (8)	Original date as timing for FMEA completion. It should not exceed the audit release date.
Mission (9)	Brief description of the OU mission.
Main Activities (10)	The main activities of the OU should be described as briefly as possible. This includes description of all procedures, because they give rise to potential failures.
Activity (11)	Describe briefly the activity process to be analysed; Refer the necessary requirements (specification).
Potential Failure (12)	The potential failure means the way that the process would potentially fail in meeting the requirements of the activity. It should be assumed that the failure may happen, but it will not necessarily happen.
	For each activity operations list the potential failures, according to the type of process.
Potential Effect of Failure (13)	The potential effect of failure will be the consequence of failure in the activities.
	Describe the effects of failure from what can be observed.
Severity (S) (14)	Severity is the assessment of the seriousness of the effect of the potential failure mode. Severity is only applied to the effect and should be rated on a scale of 1 to 10 (or other).
Potential Cause(s) and Mechanism(s) of Failure (15)	The Potential Cause of Failure is defined as the way the failure could occur, described in a way it can be adjusted or controlled.
	List, as thoroughly as possible, all the mechanisms/causes of failure possible for each potential failure. If a cause is exclusively connected to a failure, i.e. if the adjustment or control of this cause has a direct impact on the cause, so this part of the FMEA is complete. Meanwhile, many causes are not mutually exclusive and to adjust or control these causes, the main factors should be determined and among these, the ones which can be easily controlled. The causes should be described in a way that makes it possible for the preventive measures to be related to the pertinent causes.
	Only the specific failures should be listed. Unclear and generic sentences should be avoided.
Occurrence (O) (16)	Occurrence is the likelihood of a specific mechanisms/cause to occur. It should be rated on a scale of 1 to 10 (or other).
	Only the occurrence connected to the failure should be considered for this ranking, and the failures of the current process controls should not be considered.
	The only way to effectively reduce the occurrence ranking is to remove or control one or more mechanisms of failure by changing the procedure.
Current process controls (17)	The current process controls are descriptions of controls which can detect or prevent as much as possible, the occurrence of failure. These controls can be process controls. The assessment can occur during the operation, or in following operations which can detect the failure of this operation.
	There are three types of Control of Process /Characteristics to consider, which are: • Prevention of occurrence of cause/mechanism or mode/effect of failure, or reduction of its occurrence ranking. • Detection of cause/mechanism and promotion of corrective action, and • Failure detection.
	The suggested approach is to use first the control type (1), when possible; secondly, use the control type (2); and third, use the control type (3). The initial occurrence rankings are affected by the control type (1), when they are included as part of the objective of the activity. The initial occurrence rankings are based on the current controls type (2) or type (3), when the process being used represents the objective of the process.

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Table 6. Continued

Detection (D) (18)	Detection is an assessment of likelihood that the process control will detect the cause of the failure mode. It is ranked on scale of 1 to 10 (or other). It should be assumed that the failure occurred and, in this way, assess the «current controls». It should not be automatically assumed that the detection ranking is low due to the low occurrence, but assess the capacity of the controls of the process in detecting a low frequency of the failure or prevent it from occurring in the process.
Risk Priority Number (RPN) (19)	The Risk Priority Number is the result of Severity (S), Occurrence (O) and Detection (D) Rankings.
	RPN = (S) x (O) x (D)
	It is a risk measure of the process. This number should be used to prioritise the process deficiencies. The RPN ranges between “1” and “1000”. For high RPNs the auditing team should concentrate on reducing the calculated risk through corrective controls. On the whole, special attention should be given when severity is high, independently of the resulting RPN.
Recommended controls (20)	Corrective actions should be proposed for items which are critical and have high RPN.
	Every time the effect of a potential failure represents a threat to the activity, corrective actions should be taken in order to prevent this failure through controlling or removing the causes.
	The need for implementing corrective actions which are positive, specific, with quantifiable outcomes, recommending actions for other activities and monitoring all recommendations, should be enhanced. A well planned and well developed FMEA will have little value if the corrective actions are not implemented. It is the responsibility of the heads of the affected OUs to implement effective monitoring programmes to take all recommendations into consideration.
	The following actions should be taken into account:
	In order to reduce the likelihood of occurrence, process reviews are recommended. Statistic surveys can be performed in order to gather important information for the prevention of deficiencies and continuous improvement of the process.
	The only way to see the severity ranking reduced is to change the process.
	To increase the likelihood of detection, reviews must be implemented in the process. Commonly, the improvement of means of control only adds costs to the activity and is ineffective in the improvement of quality of the process. The increase in the frequency of inspection should only be used as a temporary action. Permanent corrective actions are needed. Changes in the current system of control can be implemented to increase this likelihood. Meanwhile, emphasis should be given to actions for prevention of deficiencies (reducing occurrence) and not only to the increase of their detection.
Responsibility and Timing (21)	Fill in with the OU or the responsible for the recommended control with the respective timing for execution.
Actions taken (22)	After an action has been implemented, a brief description about it and the implementation date are registered.
Actions Results (23)	After the corrective control has been identified, the severity, occurrence and detection resulting rankings are rated and registered. The resulting RPN is calculated and registered. If no actions are taken, the field “Resulting RPN” and the corresponding columns are left blank.
	All the resulting RPNs should be critically analysed and, if there is need for additional controls, items 20 to 23 will be repeated.
Monitoring	The responsible for the process must ensure all recommended actions were executed. FMEA is a dynamic document which should always reflect the last update to the process, as well as the last actions implemented, including those carried out after the procedure has been started.

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Table 7. Plan for prevention of risks of corruption and related infractions

PPRCRI – Failure Mode Analysis - Works									(1) **FMEA nº**	1			
									Page	1	**of**	3	
(2) **Department**	205	Municipal Department of Public Maintenance, works, Mobility and Equipment.											
(3) **Organizational Unit**	20501	Municipal Division of Works and Concessions (MDWC)											
(4) **Organizational subunit**	-												
(5) **Head os the OU**	Responsible for MDWC			(6) **FMEA Date (init.)**					1-Dez-2013	**(Rev.)**	4-Bbr-2014		
(7) **Created by**	DMAIPSI team						(8) **Key date**		7-Abr-2014				
(9) **Mission**	Support the policy of investments and of municipal public works, by means of a contract, in the different modalities, of works, concessions and/or public-private partnerships, ensuring training, execution and supervision of contracts.												
(10) **Main activities**	a) Coordinate, plan, organise and control the start and execution of all processes connected to **investments and of municipal public works**, by means of a contract, in the different modalities, of works, concession and/or public-private partnerships, according to the options of the plan and the Multiannual Investment Plan, in compliance with the guidelines from above;												
	b) Collect data and carry out technical and/or cost/benefit studies to support the prior decision of **releasing procedures of works, concession and/or public-private partnerships**;												
	c) Promote and ensure mechanisms of monitoring, control and supervision of Municipal works carried out under works contracts, including the related **works projects of third parties, concessions and public-private partnerships promoted by the municipality**;												
	d) Manage, ensure and keep the registration of municipal works, equipments and infra-structures updated, including **treatment plants and water and sewerage networks**, with the objective of providing data, and unit and production costs to other Departments or Flexible Organisational Units, mainly for municipal inventory purposes;												
	e) Ensure, in the framework of the obligations of the Municipality as owner of work and in the context of contract works, the **planning, organisation and coordination of procedures and tasks** which promote safety, hygiene and health during execution of construction works;												
	f) Plan the needs inherent to the fulfilling of its mission and competences/functional activities, as well as to **control the budget of its cost centre/ Organisational Unit**, according to instructions defined and received from above;												
	g) Promote, plan and monitor the plants for prevention of risks in their various facets, in the OUAF areas of action, in close collaboration with the Municipal Department of Systems and General Internal Auditing;												
	h) Promote the polity of m**unicipal quality and continuous improvement** of the service;												
	i) Perform tasks and procedures which are determined by **law, regulation or decision/higher order**.												

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Table 8.

(11) Activity	(12) Potential Failure	(13) Potential Effect(s)/ Consequence(s) of Failure	(14) SEV.	(15) Potential Cause(s) and Mechanism(s) of Failure	(16) OCO.	(17) Current Controls of the Procedure	(18) DET.	(19) RPN	(20) Recommended controls	(21) Responsibility and Timing	(23) Actions Result				
											(22) Actions Taken	S	O	D	RPN
1.Procedures and involvement in controls of specialised services: - Formation of contract; - Execution of contract	Wrong or incomplete procedures.	Occurrence of illegalities in the procedure.	8	Inadequate and/or insufficient information.	5	**1.1.**Demand for declaration of interests.	1	40	**1.1.1.**Adoption of the "Declaration of Interests" defined by the Executive Board, to be formalised by the intervenients when they start their participation in the contractual procedures, when any change in circumstances occurs.	MDWC. Implement.	The declaration is adopted in all procedures and is registered in a monitoring chart. Evidence: I/535/2012.	5	5	5	125
			8	Lack of justification and/or decision from above.	4	**1.2.**Structured system of assessment of needs.	3	96	**1.2.1.**The need for contracting specialised services will be justified through service information taking into account assessment of existence and availability of qualified technicians as well as the necessary adequate equipment and means for the intend purpose.	MDWC. Implement.	Registered in a monitoring chart. Currently done in the proposal of the city council meeting. Evidence: I/51705/2012	5	4	4	80
.			8	Inadequate and/or insufficient information. Influence of decision from above.	6	**1.3.**Database of potential supplies, including criteria/ reasons for selection and the specific work area.	3	144	**1.3.1.**Maintenance of a Chart/ Table containing the "selection criteria" and the "specificities" for the following supplies: Supervision of contract, works; Coordination of Safety in Construction Works; Reports; Studies and Trials.	MDWC. Implement.	Chart/table filled in.	8	4	1	32

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Table 8. Continued

2. Works Planning.	Incomplete planning.	Non-compliant works.	7	Without budget and legal framework. Null procedures due to suppliers.	8	**2.1.**Prior identification by the Executive Board of the priority and budget ceiling of all required projects.	7	392	**2.1.1.**Existence of Decision/ Deliberation of the Executive Board, before releasing tender for works, making reference to priority and budget of works.	MDWC. Implement.	Existence of a Requirements Plan, EFP and MIP. Annual EFP approved. Economic and financial balance measures defined for the year. Monitoring chart which ensures that no works procedure is released without FEFP and AFA	10	2	2	40
			7	Non-compliant information.	4	**2.2.**Maintenance of the system of information regarding the portfolio of works: typification, scope of the project, valuation, expected timing/execution.	6	168	**2.2.1.** Maintenance of the Chart/ Table containing typification, scope of the project, valuation, expected timing/execution of the projects that exist in DEM, updating it every three months in the 1st week immediately after the trimester it refers to. This is to be sent to the Executive Board so that mainly the priorities and the budget framework can be defined.	MDWC. Implement.	The chart/ summary of works was replaced by EFP and by the Economic and financial balance measures + monitoring chart of the financial framework. Existence of the order that allows the construction work.	10	2	2	40

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Table 8. Continued

3. Works contracting.	Non-compliance with legislation.	Works are not implemented. – Inadequate process. – Financial consequences. – Non-compliance with the municipal/ service obligations.	8	Lack of justification by the competent body.	6	**3.1.**Demand for declaration of interests.	1	48	**3.1.1.**Adoption of the "Declaration of Interests" defined by the Executive Board, to be formalised by the intervenients when they start their participation in the contract procedure, when any change in circumstances occurs .	MDWC. Implement.	The declaration is adopted in all procedures and registered in a monitoring chart. Evidence: I/535/2012.	5	5	5	125
			8	Database with insufficient information.	4	**3.2.**Structured system for assessment of needs.	2	64	**3.2.1.**The contracting of works will be grounded in the Decision/ Deliberation of the Executive Board foreseen in 2.1.1.	MDWC. Implement.	Existence of a Requirement Plan, EFP and MIP. Annual EFP approved. Economic and financial balance measures defined for the year. Monitoring chart which ensures that no works procedure in released without FEFP and AFA.	10	2	2	40

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Table 8. Continued

			8	Non-compliance with the legislation in force.	2	**3.3.**Database of potential supplies, including the criteria/reasons for selection and specific work area.	4	64	**3.3.1.**Maintenance of Chart/Table containing the "Selection criteria" and the "specifications" for the building contractors.	MDWC. Implement.	The objective is to collect information which can support the decision making from above. Evidence: chart/ table filled in.	10	2	2	40
			8	Unexpected and non-priority additional works.	4	**3.4.**Expect to provide a system of internal control to ensure that: *contractual terms are legal; *the contract terms are in accordance with the law and the tender specifications; *the contracts is clear and accurate, with no mistake, ambiguities, gaps or omissions which may lead to increase of contractual costs and postponing of execution timing;	5	160	**3.4.1.**Maintenance of the "checklist" with the registration of compliance with public contract specifications.	MDWC. Implement.	Ok. Evidence: Compliance form with the specifications of public tenders. Checklist 08-2013 for each work.	10	5	4	200

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Table 8. Continued

Table 8. Continued

			8	Unexpected and non-priority additional works.	8	**3.5.**In works, if there are "additional works": *Verify if these are "new works" and if the legally provided assumptions for their existence were observed, mainly the "unexpected nature"; *These works cannot be technical or economically kept apart from the contract if there is no serious inconvenient for the owner of work or, despite separable, if they are extremely necessary for the completion of the construction work; *Demand for evidence of circumstance, attaching documentation.	5	320	**3.5.1.**Existence of technical/legal information to support contracting of "additional works" taking into account the applicable legislation.	MDWC. Implement.	Table of additional works/ errors/ omissions. Recommendation: the control should be developed in order to strengthen the controls to comply with the legal limits for this type of works. Fill in with the value of information (additional works/ errors/ omissions).	8	7	2	112

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Table 8. Continued

4.Control of execution of works.	Insufficient internal/ external supervision.	No equity, Financial consequences. Non-compliance with the contract.	6	Inadequate and/or insufficient information.	2	**4.1.**Separation and turnover of supervisory functions – detailed map of the supervised construction works – construction work; contracted entity; type of construction work; start date; completion date; supervision team.	2	24	**4.1.1.**Maintenance of the Chart/Table of supervised construction works identifying the construction work, the contracted entity, the type of work, start date; completion date; and supervision team.	MDWC. Implement.	Table of separation and turnover of supervision teams.	6	2	1	12
			6	Lack of time necessary to deliver documents required by law.	2	**4.2.**Implementation of internal control mechanisms which prove evidence of equity in procedures and which allow foiling the tracking of situations of no equity.	3	36	**4.2.1.**Maintenance of the Chart/Table containing the parameters/functions resulting from the supervision of construction works, and the registration of their compliance.	MDWC. Implement.	Ok. Table of verification of equity of supervision procedures. Recommendation: Insert a column for observations to be used when the criterion "justification" is not met.	6	10	1	60

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Chapter 17
Application of FMEA to Study the Risk Perception of SMEs Throughout the ERP Adoption Life Cycle

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ABSTRACT

In this paper, the authors have tried to validate the risk perception of ERP adoption in SMEs using Failure Modes and Effects Analysis (FMEA). The work significantly contributes to the existing body of ERP adoption knowledge to the SMEs. Foremost, an ERP adoption life cycle addressed to SMES comprising of five distinct phases is proposed. Second, a well-laid out inventory of risk factors have been identified. Third, FMEA is applied to understand, validate the risk perception of respondents on ERP adoption in SMEs. Exploiting the ERP System, Inadequate financial management, Lack of Owners' Commitment, Ineffective communication with users and change in project scope are the top five highest perceived risks based on the risk perception number (RPN). The process centric approach to system implementation through FMEA also prescribes pertinent recommendations to the stakeholder ecosystem to proactively defend against vulnerabilities during the ERP adoption life cycle.

INTRODUCTION

One of the significant contributions of the information technology domain has been the evolution and revolution of enterprise systems. They carry on a pivotal role in the integration of the core business processes, thereby ensuring real-time information processing, transparency, standardization, and accuracy and minimize duplication of data. Shanks et al., (2003) stated that ERP acts like a central nervous

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system of the human body because it connects and affects the whole of the system. Though enough evidence is put down to highlight the significance of ERP practically not many organizations have had success in ERP adoption. Many surveys have found disappointing and disastrous implications of ERP (Trimi et al., 2005). Many researchers and practitioners have placed and analyzed several factors regarding ERP adoption. The ERP initiative is a costly matter for many organizations and hence decisions on ERP adoption is an outcome of many iterations of assessing the purpose, mission, maturity, status on the organization's growth and growth expectations, and so on ERP implementation has proved to be quite risky and complex, which has resulted in failure for many organizations (Hajilari et al., 2017; Zeng et al., 2015; Chan et al., 2012). Most of the common ERP software is packaged ones and poses threats, if the modules do not integrate easily with the business operations. The effect of misalignment can sometimes be so severe that it may result into complete shutdown of the company. To avoid such failures in ERP implementation, it becomes very essential to understand the perceived risks related to the implementation and operation of ERP systems (Wright and Wright, 2002; Davenport, 1998). **S**ome companies have succeeded in implementing ERP systems, while other companies have failed in this regard, illustrating that ERP systems are complex and risky to implement and operate in companies. Perceiving and understanding the risk factors related to the implementation and operation of ERP systems could have a positive impact on the success of these systems. There is a lot of excitement among the SMEs about ERP adoption due to the fact that technology adoption can enhance competitiveness and drive business growth (Gunasekaran et al., 2011). The limitation of ERP adoption in SMEs is multi-dimensional. There are exogenous and endogenous factors that are contributed by all the 5Ms namely men, money, machines, materials and methods. Structure and organization reasons backed by the paucity of adequate knowledge and availability of financial resources have always been cited as the major inhibitor for ERP adoption in SMEs (Buonanno et al., 2005). The result, SMEs are unable to withstand the complex implementation methodologies, advanced process modelling and reengineering techniques before the 'as is – to be' gap is analyzed (Kramer et al., 2016). SMEs will need a failure mode analysis of ERP adoption, which is simple, transparent, yet rich and most importantly sync with their business terminology and practices.

Therefore, our principal motive is to explore and recommend a technique which enables organizations to perceive and understand risk factors in order to make ERPs more successful and reduce the failure of their implementation and operation (Mukwasi and Seymour, 2015). To realize our motive, we have explained and analyzed the application of Failure Mode Effect Analysis (FMEA) to systematically approach and address the risk perception and potential pain points along the ERP adoption life cycle in Small and Medium Enterprises (SMEs).

LITERATURE REVIEW

In this section, we discuss the risk assessment process in the existing literature and explain its relevance to ERP adoption projects in SMEs. Ricciardi, (2004) identified that risk perception studies have invariably been a matter of interest and many written reports have been undertaken in a diversity of research domains namely anthropology, psychology, psychometrics, social sciences and engineering. Surveys also have conveyed away the emotions of people in terms of their beliefs, attitude, knowledge, societal, commercial enterprise and cultural dimensions towards risk. Risk perception has been defined thoroughly by several researchers. The subjective assessment of the probability of a specialized type of accident

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happening and how concerned we are with the consequences (Sjöberg, 2000). Pidgeon, (1998) states that risk perception is "the wider social or cultural values and dispositions that people adopt towards risk". Ciancanelli et al., (2001), Palmer, (1996) say that person's risk perceptions are influenced by their social networks and culture.

Risk perception about ERP adoption can be viewed from varied dimensions. The risk perception will depend upon how an exposure is treated with a probability of success and failure (O'Leary, 2002). From the works of Wiegers (1998) we can understand that risk perception can be stated as a problem of data compatibility if happened or probable to happen can cause a loss of time and the monetary value related with them. To draw meaningful inferences from risk perception in an ERP adoption, some subjects have also worked not only on the identification of risks, but also in judiciously categorizing along the adoption lifecycle (Huang et al., 2004). The SMEs have a comparatively shorter scalar chain compared to their larger counterparts. Perception of risks differs from person to person, firm to firm and industry to manufacture because of the subjective nature of such perception (Jamshidi et al., 2015; Nelson, 2004).

PHASES OF ERP LIFECYCLE

The ERP initiative from conceptualization to retirement journeys through various phases, participated by key stakeholders, multiple operation and body processes, varied features, relevant performance metrics and an extensive scope of outcome possibilities (Aloini, 2009). From the existing research works on an ERP life cycle, it is found that the life cycle is explained are multiple, incomplete, overlapping models. The popular ERP adoption life cycle models widely found is given in Table 1.

After examining all the selected ERP adoption life cycles, it was found that a careful scrutiny and analysis should be done before finalizing the ERP adoption lifecycle for SMEs in this inquiry. It should be clearly noted that the primary motive of this research paper is to identify and create an assessment model for risks during an ERP adoption life cycle in SMEs and NOT to comment or critically evaluate the existing methodologies of ERP adoption life cycle. To defend the assessment model creation a simple, yet convincing definition of ERP adoption is necessary. Consequently, this research identifies certain critical levels, namely relevance (focus on SMEs considering their nature, size), simplicity (phases should be self-explanatory, easy to read), comprehension (should be all-encompassing), continuity (should cover end-to-end journey of ERP) which are reckoned for the intentions of re-adjusting the existing models to customize and create the ERP adoption phases for SMEs (Snider et al., 2009; Upadhyay et al., 2010; Dixit and Prakash, 2011; Haddara, 2011). Grounded along the above premise for SMEs the following five distinct phases were identified for use in this research. These are Planning, Acquisition, Implementation, Usage and Extension. Table 2 brings out the relevance of the new model to the existing ones.

Several researches mention about cases of risk associated with ERP implementation. Table 3 presents a summary of the related works on ERP risks and possible causes along the different stages of the ERP adoption life cycle.

After the risks are identified and categorized, we used FMEA (Failure Modes and Effect Analysis) method to perform risk assessment.

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Table 1. ERP Implementation Methodologies

Creator	Code	Name of the Lifecycle Model	Code (No. Of Phases)
Kwon and Zmud (1987)	A	6-phase model comprising of *Initiation, Adoption, Adaptation, Acceptance, Routinization,* and *Fusion*	*1-6*
SAP (1996) (referred from Bruges, 2002)	B	5-phase model comprising of *Project preparation, Business blueprint, Realisation, Finalisation, Go live and support continuous change* (ASAP methodology)	*1-5*
Deloitte Consulting (1998) cited from Aloini (2009)	C	3-phase model comprising of *Pre-implementation, Implementation and Post-implementation* phases	*1-3*
Esteves and Pastor (1999)	D	6-phase model comprising of *Adoption, Acquisition, Implementation, Evolution and Maintenance* and *Retirement*	*1-6*
Ross and Vitale (2000)	E	5-phase model comprising of *Design, Implementation, Stabilization, Continuous improvement* and *Transformation*	*1-5*
Markus and Tanis (2000)	F	4-phase model comprising of *Project Chartering* (Phase I), *The Project – Configuration and Rollout* (Phase II), *Shakedown* (Phase III), and *Onward and upward* (Phase IV)	*1-4*
Ernst and Young (referred from Bruges, 2002)	G	5-phase model comprising of *Value-proposition, Reality check, Aligned approach, Success dimension* and *Delivering value* (The Total Solution)	*1-5*
Deloitte and Touche (referred from Bruges, 2002)	H	5-phase model comprising of *Scoping and Planning, Visioning and Targeting, Redesign, Configuration, Testing and Delivery* (The Fast Track Workplan)	*1-5*
Aloini et al., (2007)	I	3-phase model comprising of Concept (strategic planning and selection), Implementation (deployment, integration and stabilisation), Post-implementation (progress and evaluation)	*1-3*
Peslak et al., (2007)	J	4-phase model comprising of *Preparation and training phase, Transition phase, Performance and usefulness phase* and *Maintenance*	*1-4*
Gateway (referred from Motiwalla and Thompson, 2014)	K	5-phase model comprising of *Preparation, Identification, Vision, Solution* and *Transformation* (Rapid-Re)	*1-5*

Table 2. ERP Adoption Lifecycle Model for SMEs – Reconciliation Table

Phases of Adoption	Reconciliation with existing methodologies
PLANNING	A1, B1, C1, D1, E1, F1, G1, G2, G3, H1, H2, I1, J1, K1
ACQUISITION	A2, B1, C1, D2, F1, I2, J2, K2
IMPLEMENTATION	A3, B2, B3, C2, D3, E2, E3, E4, F2, G4, G5, H3, H4, H5, I3, J2, K3, K4
USAGE	A4, A5, A6, B4, B5, C3, D4, D5, E5, F3, G5, I4, J3, J4, K5
EXTENSION	B5, C3, D5, F4, I4, J4, K5

FAILURE MODES AND EFFECT ANALYSIS (FMEA)

Failure Modes and Effects Analysis is a systematic and proactive method for recognition of failures before they take place and preventing the system of assessing and judging the relative impact of different failures. It is a routine that matches each item in a system, takes into consideration how that item can break and then sees how that failure will affect the organization. FMEA includes a review of the steps in the process, failure modes, failure causes and failure effects (Carbone and Tippett, 2004, Greene and

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Table 3. Table showing categories of risks

No.	Life Cycle Phase	Potential Failure Modes (Risks)	Related works
1	Planning (P)	Lack of Owners' Commitment (P1)	Huang et al., 2004; Sumner, 2000; Wright and Wright, 2001; Mehrjerdi, 2010; Lewandowski et al., 2013; Bharathi et al., 2012;
		Ineffective communication with user (P2)	Huang et al., 2004; Sumner, 2000; Aloini et al., 2007; Parr and Shanks, 2000; Mandal and Gunasekaran, 2003; Finney & Corbett, 2007;
		Inadequate financial management (P3)	Malhotra and Temponi, 2010; Aloini et al., 2007; Plant & Willcocks, 2007; Finney & Corbett, 2007.
2	Acquisition (A)	Lack of adequate technology infrastructure (A1)	Poba-Nzaou et al., 2014; Peng and Nunes, 2010; Song et al., 2011; Méxas et al., 2013; Bharathi and Parikh, 2012.
		Inadequate knowledge on ERP product and vendor selection (A2)	Yazgan, et al., 2009; Haddara, 2011; Sledgianowski, et al., 2008; Karsak, and Özogul, 2009.
3	Implementation (I)	Inadequate project management knowledge (I1)	Sumner, 2000; Kale et al., 2010; Khaparde, 2012; Bharathi et al., 2012;
		Inefficient ERP Project Leadership (I2)	Velcu, 2010; Aloini et.al, 2007; Dixit and Prakash, 2011;
		Change in project scope (I3)	Adam et al., 2011; Basu et.al, 2012, Iskanius, 2009; Ganesh and Mehta, 2010.
		Insufficient and inefficient training (I4)	Basu et.al, 2012; Zouaghi and Laghouag, 2012;
4	Usage (U)	Failure to justify ERP in business operations (U1)	Amid et al., 2012; Haddara, and Zach, 2011; Iskanius, 2009; Mirbagheri, et al., 2013.
		User resistance (U2)	Deng and Bian, 2008; Equey, and Fragnière, 2008; Bharathi et al., 2012; Amid et al., 2012; Hustad and Olsen, 2012;
		Lack of top management motivation for users (U3)	Marsh et al., 2014; Teittinen et al., 2013; Salmeron, & Lopez, 2010; Salajegheh, et al., 2011;
		Exploiting the ERP System (U4)	Ruivo et al., 2014; Zach et al., 2014; Ravasan and Mansouri, (2014); Ozlen, 2012; Pramod et al., 2014.
5	Extension (E)	Misalignment of business processes integration with supply chain partners (E1)	Tatoglu et al., 2016; Muscatello, et al., 2016 Shatat and Udin, 2012; Jayaram et al., 2014; Rajendran and Elangovan, (2012).
		Losing business due to not adopting technology (E2)	Beijsterveld and Groenendaal, 2015; Iris and Cebeci, 2014;

Bitar, 2015). The primary use of FMEA is to prevent problems associated with system, product and process, before they happen. It aids in cost reduction by identifying improvements early in the growth cycle. Some researches show that FMEA has created more robust processes by prioritizing tasks that decrease the risk of failure (Rhee and Ishii, 2003). FMEA is done with the purpose of evaluating the system, processes and design (Hassan et al., 2007).

With a high chance of success in performance and safety, it provides a documented method for extract. A documented uniform method of assessing potential failure mechanisms, failure modes and their impact on system operation, resulting in a list of failure modes ranked according to the seriousness of their system impact and likelihood of occurrence. FMEA is a cost-effective tool for maximizing and documenting the collective knowledge, experience, and insights of the engineering and manufacturing community (Neagoe and Martinescu, 2010; von Ahsen, 2008). Standardized format for communication across the disciplines and provide logical, sequential steps for specifying product and process areas of

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concern (Johnson and Khan, 2003). FMEA is one of the popular techniques to identify and prioritize the risks that are perceived to be critical for failures. This design technique is widely used to systematically explore and probe the potential failure of a system from both a product as well as a process perspective. It takes a robust approach for holistically examining the failure drivers and their likely effects on the operation of a system (Segismundo and Miguel, 2008). FMEA is devoted to design the reliability of the chosen system. The main objective of FMEA is to prevent abnormal failures affecting end-user performance and to facilitate proactive decision making for the top management. It is known as a risk management method targeted to plug unacceptable errors that may aggravate customer dissatisfaction (Zafiropoulos and Dialynas, 2005). Some of the demonstrated outcomes of FMEA include higher product/process reliability, predicable and manageable product/process modifications, enhanced planning and execution, sustained process improvements, cost competitiveness and gap reduction between customer expectation and project deliverables (Shirouyehzad et al., 2011).

METHODOLOGY

This research includes both secondary data analysis (literature based) and survey-based empirical research techniques. The questionnaire solicited responses from 35 respondents who are subject matter experts in end-to-end ERP implementations. They belong to two major categories, namely, consultants (functional as well as technical) and practicing managers who had the experience of being ERP core team members. The practicing managers, belonged to SMEs affiliated with industry associations like Auto Cluster Research and Development Institute, Auto Component Manufacturers' Association, Auto-component Small Industries Associations and the Confederation of Indian Industry. The survey instrument consisted of two sections, namely the first general question relating to the respondents' current affiliation, total experience, ERP experience, FMEA knowledge and the nature of experience. The second section of the survey instrument comprised of FMEA questions. The descriptive statistics are presented in Tables 4 to 8 below respectively.

Table 9 and 10 presents the cross-tabulation between FMEA knowledge and period and nature of ERP experience of the respondents.

It is found that 65% and 75% of the respondents with 5-10 years and more than 10 years of work experience had prior knowledge about FMEA which is a welcome sign with regard to the appropriateness of respondents to the study. Interestingly, we also find that 61% of consultants and 77% of the ERP core team members of the manufacturing industry had prior knowledge about FMEA.

Table 4. Current Affiliation of the respondents

Current affiliation	Frequency	Percent
IT Industry	21	60.0
Manufacturing Industry	14	40.0
Total	**35**	**100.0**

Table 5. Work Experience of the respondents

Work Experience	Frequency	Percent
10-15 Years	21	60.0
15-20 Years	9	25.7
More than 20 Years	5	14.3
Total	**35**	**100.0**

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Table 6. ERP Experience of the respondents

ERP Experience	Frequency	Percent
5-10 Years	23	65.7
More than 10 Years	12	34.3
Total	**35**	**100.0**

Table 7. FMEA Knowledge of the respondents

FMEA Knowledge	Frequency	Percent
Yes	24	68.6
No	11	31.4
Total	35	100.0

Table 8. Nature of ERP Experience of the respondents

Nature of ERP Experience	Frequency	Percent
Consultant	22	62.9
Core Team Member	13	37.1
Total	35	100.0

Table 9. FMEA Knowledge vs. ERP Experience

FMEA Knowledge * ERP Experience Cross tabulation		ERP Experience		Total
		5-10 Years	More than 10 Years	
FMEA Knowledge	Yes	15	9	24
	No	8	3	11
Total		23	12	35

Table 10. FMEA Knowledge vs. Nature of ERP Experience

FMEA Knowledge * Nature of ERP Experience Cross tabulation		Nature of ERP Experience		Total
		Consultant	Core Team Member	
FMEA Knowledge	Yes	14	10	24
	No	8	3	11
Total		22	13	35

ANALYSIS AND DISCUSSION

To identify the root causes of the risks, it is necessary to segregate them under several categories and then apply appropriate measures to prevent them. As said earlier, the risks have been separated under the five different stages of ERP adoption. Table 11 shows the segregation of risks along with their severity (SEV), occurrence (OCC) detection (DET) ratings as well as the risk perception number (RPN) which is given as SEVxOCCxDET.

The risk of exploiting the ERP system is perceived the highest by the respondents based on the risk perception number. All the three risks relating to the planning phase of ERP adoption are perceived as high. Table 12 presents the ranking of the risks based on the RPN.

Three out of the top five highest perceived risks are covered in the planning phase. This implies that the SMEs are yet not matured enough to see the significance of ERP from a strategic investment perspective.

Having arrived at the risk perception, values and their rankings, we proceed to discuss the implications on the five phases of ERP adoption in SMEs. We analyze the failure mode effects by means of a well-defined template sourced from the Lean Six Sigma Academy (Bezoek – Lean Six Sigma Tools Template at http://leansixsigmatools.nl/sixgma-toolset/fmea-template). In Table 13, the syncing of the FMEA template with the risk perception during ERP adoption life cycle phases is shown. In the FMEA parlance, we specify the following for analysis and treatment purposes.

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Table 11. FMEA Criticality Values & Risk Perception Number

Life Cycle Phase	Risks Code	SEV Mean	OCC Mean	DET Mean	RPN
Planning	P1	10	5	8	400
	P2	8	6	8	384
	P3	9	7	8	504
Acquisition	A1	9	5	6	270
	A2	8	5	4	160
Implementation	I1	8	7	5	280
	I2	7	6	4	168
	I3	9	5	7	315
	I4	8	7	4	224
Usage	U1	5	6	8	240
	U2	8	8	3	192
	U3	8	6	6	288
	U4	8	8	8	512
Extension	E1	6	6	4	144
	E2	6	5	7	210

Table 12. FMEA Ranking based on Risk Perception Number

Code	Ratings			RPN
	SEV Mean	OCC Mean	DET Mean	
U4	8	8	8	512
P3	9	7	8	504
P1	10	5	8	400
P2	8	6	8	384
I3	9	5	7	315
U3	8	6	6	288
I1	8	7	5	280
A1	9	5	6	270
U1	5	6	8	240
I4	8	7	4	224
E2	6	5	7	210
U2	8	8	3	192
I2	7	6	4	168
A2	8	5	4	160
E1	6	6	4	144

Table 13. Syncing FMEA Template with Risk Perception of ERP Adoption

Key Process Step or Input (What is the Process Step or Input?)	The five phases are listed
Potential Failure Mode (In what ways can the Process Step or Input fail?)	The risks identified under each phase of the ERP adoption life cycle is presented here
Potential Failure Effects (What is the impact on the Key Output Variables once it fails (customer or internal requirements)?)	The impact of risk in each phase of ERP adoption is narrated here.
SEV	The numerical values from the responses
Potential Causes (What causes the Key Input to go wrong?)	The 'as-is' status of the SMEs with regard to the preparedness and/or maturity in each phase of ERP adoption is explained here.
OCC	The numerical values from the responses
Current Controls (What are the existing controls and procedures that prevent either the Cause or the Failure Mode?)	The existence of practices or procedures if any is stated here.
DET	The numerical values from the responses
RPN	The product of (SEV x OCC x DET)
Actions Recommended (What are the actions for reducing the occurrence of the cause, or improving detection?)	The 'to-be' status and the recommendations to realize the expectations are explained here.
Resp. (Who is Responsible for the recommended action?)	The stakeholder or combinations of stakeholders who can drive the 'to-be' recommendations are referred here.

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The explanation of FMEA in all the five phases is presented in Tables 14 to 18 given in the appendix. The following paragraphs explain the major risk perception in each phase and prescribe the remedial measures to be conveyed by the key actors of the SME stakeholder-ecosystem.

Table 14 presents the FMEA results for the planning stage of ERP adoption. From among the three elements that interpret the risk perception in the planning stage, the highest risk perception based on the RPN score of 504 is related to inadequate financial management in ERP investments. The SMEs severely lacks the knowledge around the cost components, funding options and ROI of an ERP initiative. Without proper understanding of the ERP investments the respondents perceive ERP implementation can be a menace to the SME's financial solvency. It is recommended that the top management and the core team clearly internalize the KPIs relating to ERP investments and also relate some of the key financial ratios like solvency and turnover ratios to the pre and post ERP environments.

The second phase of ERP adoption, which is the acquisition phase is explained through the FMEA table given in Table 15. Lack of adequate technology infrastructure is perceived to be the highest risk contributor based on the RPN score of 270. This risk is a major impediment to the ERP acquisition strategies of the SMEs. They live with duplication, inaccuracy and redundant reporting structures. They continue to use a mix of manual and outdated software application and predominantly follow a people-centric process approach. The IT Officer in consultation with a reliable ERP consultant should prepare a comprehensive document of awareness about the benefits that can be accrued out of effective and centralized business process consolidation. Also, an audit of the current condition and future prospects of the IT infrastructure should be led to deliberate and define the road map for a strategic IT enablement in the system.

The implementation phase of ERP adoption comprised of four risk factors the FMEA details of which are presented in Table 16. Change in project scope with an RPN score of 315 is perceived as the highest risk. Since SMEs are very cautious in their approach to technology, they constantly tend to root for the ERP functionalities towards their legacy system rather that pushing them to the ERP prescribed working environment. In other words, they tend to resort to unplanned and unprecedented changes to the ERP scope, thereby delaying the time to go live. The respondents opine that the chief reason being the fear of losing their legacy operating environment and certain preserved pieces of excellences if any. The SMEs does not conduct adequate business process reengineering to analyze the as-is and the to-be process enhancements. The respondents have urged that a detailed and thorough analysis of the existing and the expected functionalities should be considered. They stressed the need for striking equilibrium between customization and default configuration settings of the ERP system. They also called for a synergistic approach from several stakeholders like the consultant, IT officer, top management and the core team.

In the penultimate phase of ERP adoption, which is the usage phase, we find that from among the four factors, exploiting the ERP system has a very high RPN score of 512 (please refer to Table 17). This is perceived to be one of the severe obstacles to ERP success. The respondents warned that exploiting the ERP system will contribute to various undesirable consequences like critical data loss, users distrust and eventually losing the sanctity of the ERP working environment. The respondents opined that the major reason being that the SME do not have well documented ERP usage policy which embeds the user authorization and access control rights and guidelines. Likewise, it is mentioned by the respondents that the SMEs are poor in information security practices. It is commended to the IT officers, departmental heads and users to get together and bring out a well laid out usage manual that integrates information security policies, particularly addressing within the ERP precincts so as to close up an unwanted exploitation of the ERP system.

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The final stage of ERP adoption is extension phase the analysis of which is shown in Table 18. This is comparatively a newer phase for SMEs because they have not yet technologically matured to seamlessly incorporate their core business procedures with their supply chain partners in the auto-component manufacture. Losing business due to not adopt the technology is perceived as the major challenge for SMEs by the respondents. This situation has pushed from the structure of the auto-component manufacture. While the large original equipment manufacturers (OEM) are concentrated at the center, the suppliers to the OEMs are in multiple tiers. The SMEs is majorly located in the outermost tiers. Several SMEs directly supplies to their larger counterparts. The big players are state-of-the-at ERP-enabled and call for high levels of process standardization and integration in the supply chain. The challenge for SMEs is how to meet such high levels of expectations of the large scale buyers. Due to stiff competition in the Indian auto-component market large scale buyers prefer SMES which have already implemented ERP while those which have not are vulnerable to losing their business. Hence the respondents have rated high with an RPN score of 210 for the risk of losing business due to non-adoption of information technology.

CONCLUSION AND SCOPE OF FUTURE WORK

To summarize, our work contributes significantly to the existing body of knowledge to the ERP adoption in SMEs. The contributions are multi-fold. Foremost, our work defines a clear ERP adoption methodology exclusively addressed to the SMEs by referring to the best practices from a broad diversity of authors. Second, we present a comprehensive and relevant inventory of risks to be considered at each phase of ERP adoption, which are carefully selected from the existing literature on ERP research for SMEs. The third and the most important contribution is the application of FMEA methodology to risk analysis. While a vast majority of research studies has already brought out inventories of success factors, we have addressed the ERP adoption from the standpoint of risk perception by not only listing the risks but also developing a methodology to assess the risk perception of the respondent group. The application of FMEA methodology is a unique contribution because we think that given the awareness of FMEA to manufacturing SMEs using this methodology the SMEs will be capable to better connect ERP adoption methodologies. Though, the approach to ERP risk perception is unique given the context of SMEs, the findings corroborate with the already available literature. In future it is planned to exhibit our approach and backing to the SME industry association to broaden the visibility and confidence of ERP adoption in SMEs.

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APPENDIX

Table 14. FMEA Chart for PLANNING PHASE

Item Name:	ERP Adoption Life Cycle: Risk Perception of SMEs	FMEA Team:		XXXX & YYYY		Prepared by: FMEA Date (Orig): May, 2015		XXXX (Rev.): July 2016		
Process Step or Variable or Key Input	**Potential Failure Mode**	**Potential Failure Effects**	**SEV**	**Potential Causes**	**OCC**	**Current Process Controls**	**DET**	**RPN**	**Actions Recommended**	**Responsibility**
What is the process step?	**In what ways can the Process Step, Variable, or Key Input go wrong? (chance of not meeting requirements)**	**What is the impact on the Key Output Variables (customer requirements) or internal requirements?**	**How Severe is effect to the customer?**	**What causes the Key Input to go wrong? (How could the failure mode occur?)**	**How frequent is cause likely to Occur?**	**What are the existing controls that either prevent the failure mode from occurring or detect it should it occur?**	**How probable is Detection of cause?**	**Risk Priority # to rank order concerns**	**What are the actions for reducing the Occurrence of the cause, or improving Detection? Should have actions on high RPN's or Severity of 9 or 10.**	**Who's Responsible for the recommended action? What date?**
Planning	Lack of Owners' Commitment	Postponing the ERP adoption decision	10	Lack of interest ERP ERP treated cost and not as investment Power-centric approach by the Owners	5	None (There is no clearly defined set of parameters/indicators)	8	400	Accelerate awareness on ERP benefits to the SMEs, Conduct forum/ meetings to share success stories, awareness about end-to-end support for ERP adoption	Industry Partners, SME Associations
	Ineffective communication with user	No transparency for users along the organizational hierarchy	8	Information flow is passive Decision Making is reactive No formal channels for information flow from decision makers	6	None (There is no clearly defined set of parameters/indicators)	8	384	Communicate early and timely, Prepare communication plan, Include key stakeholders to elicit their expectation	Top Management and core team
	Inadequate financial management	Threat to financial solvency and liquidity	9	Lack of understanding the components of costs in ERP (Capex & Opex) Lack of awareness on available financing options Lack of knowledge on ROI on ERP	7	None (Adhoc and limited to an introductory meeting by the owner/ director on the ERP initiative)	8	504	Understand the components of TCO, clarity about relating KPIs from where ERP benefits can be tracked, Training to top management on CAPEX & OPEX of ERP, Definition and calculation of key financial ratios that can be used as KPI for quantifying ERP benefits	Top Management and core team

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Table 15. FMEA Chart for ACQUISITION PHASE

Item Name:	**ERP Adoption Life Cycle: Risk Perception of SMEs**	**FMEA Team:**		**XXXX & YYYY**		**Prepared by: FMEA Date (Orig): May, 2015**		**XXXX (Rev.): July 2016**		
Process Step or Variable or Key Input	**Potential Failure Mode**	**Potential Failure Effects**	**SEV**	**Potential Causes**	**OCC**	**Current Process Controls**	**DET**	**RPN**	**Actions Recommended**	**Responsibility**
What is the process step?	**In what ways can the Process Step, Variable, or Key Input go wrong? (chance of not meeting requirements)**	**What is the impact on the Key Output Variables (customer requirements) or internal requirements?**	**How Severe is effect to the customer?**	**What causes the Key Input to go wrong? (How could the failure mode occur?)**	**How frequent is cause likely to Occur?**	**What are the existing controls that either prevent the failure mode from occurring or detect it should it occur?**	**How probable is Detection of cause?**	**Risk Priority # to rank order concerns**	**What are the actions for reducing the Occurrence of the cause, or improving Detection? Should have actions on high RPN's or Severity of 9 or 10.**	**Who's Responsible for the recommended action? What date?**
Acquisition	Lack of adequate technology infrastructure	Duplication, inaccuracy and redundant reporting structure.	9	Outdated, disparate state of current IT systems Transaction processing and consolidation manually Lack of expertise on identifying, scrutinizing & selection of ERP.	5	None (Only an IT officer is responsible for system and network administration)	6	270	Create an awareness on the benefits of Business Process Integration, study the existing IT compatibility of the SMEs, Identify and understand the areas for integrating information flow	IT Officer/ Manager & ERP Consultant
	Inadequate knowledge on ERP product and vendor selection	SMEs are vulnerable to exploitation from external or third party vendors	8	No or little knowledge about SaaS/Cloud models No study on ERP fitment to own organization No knowledge on vendor capability analysis No audit on success rates implementation and support No due diligence study on vendor	5	None (Only proprietary products are marketed alongside SME fairs and exhibitions). Awareness through their larger supply chain counterparts and OEMs	4	160	Evaluating the Implementation Vendor Analysis, Cost Benefit Analysis Role of consultant SMEs Process Owners' interaction	Consultant, IT Officer/ Manager, Top Management, Finance & Purchase Managers

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Table 16. FMEA Chart for IMPLEMENTATION PHASE

Item Name:	**ERP Adoption Life Cycle: Risk Perception of SMEs**	**FMEA Team:**		**XXXX & YYYY**		**Prepared by:** **FMEA Date (Orig): May, 2015**		**XXXX** **(Rev.): July 2016**		
Process Step or Variable or Key Input	**Potential Failure Mode**	**Potential Failure Effects**	**SEV**	**Potential Causes**	**OCC**	**Current Process Controls**	**DET**	**RPN**	**Actions Recommended**	**Responsibility**
What is the process step?	**In what ways can the Process Step, Variable, or Key Input go wrong? (chance of not meeting requirements)**	**What is the impact on the Key Output Variables (customer requirements) or internal requirements?**	**How Severe is effect to the customer?**	**What causes the Key Input to go wrong? (How could the failure mode occur?)**	**How frequent is cause likely to Occur?**	**What are the existing controls that either prevent the failure mode from occurring or detect it should it occur?**	**How probable is Detection of cause?**	**Risk Priority # to rank order concerns**	**What are the actions for reducing the Occurrence of the cause, or improving Detection? Should have actions on high RPN's or Severity of 9 or 10.**	**Who's Responsible for the recommended action? What date?**
Implementation	Inadequate project management knowledge	No equilibrium of cost, effort and time	8	Confusion over the formation of the core-team Interdepartmental rivalries No clear-cut performance monitoring and evaluation mechanisms	7	None. A senior employee from Production or Purchase department is designated as the lead for ERP. Only macro level indicators like revenue/profit growth expected is fixed.	5	280	Motivate project management training to sensitize the top management and ERP project team about expectation-realization gaps and trade-offs.	Top management, core team and consultant.
	Inefficient ERP Project Leadership	No accountability for ERP implementation. ERP project gets orphaned.	7	Lack of clarity and knowledge in identifying and prioritizing Wrong selection of people as process owners to support implementation	6	None	4	168	Clearly define the indicators to measure the stages and outcomes of ERP adoption. If possible during critical stages of the project, relieve the project lead and his team from their functional routine.	Top management, Functional heads
	Change in project scope	Delay to go live due to unplanned and unprecedented changes. Risk of losing best practices and legacy pieces of excellence.	9	No gap analysis Inadequate BPR Unplanned changes in scope of the project	5	None	7	315	Clarity in segregating what is to be retained from legacy system, if any. Identify the need and extent of customization during gap analysis. Recommend a SOP for change management	Consultant, IT Officer/Manager, Top Management and Core team
	Insufficient and inefficient training	Negative buy-in of ERP among users.	8	Improper training calendar. The trained resource is incapable of giving transitional training resulting in increased dependence of implementation partner or consultant. Non/less participation by users	7	None	4	224	Prepare clear schedules for training with the reference to time, user-group and duration. Encourage transitional training to reduce dependence of external consultants. Link ERP training participation to their performance appraisal indicators.	Consultant, IT Officer, Functional Heads, Selected end-users

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Table 17. FMEA Chart for USAGE PHASE

Item Name:	**ERP Adoption Life Cycle: Risk Perception of SMEs**	**FMEA Team:**		**XXXX & YYYY**		**Prepared by: FMEA Date (Orig): May, 2015**		**XXXX (Rev.): July 2016**		
Process Step or Variable or Key Input	**Potential Failure Mode**	**Potential Failure Effects**	**SEV**	**Potential Causes**	**OCC**	**Current Process Controls**	**DET**	**RPN**	**Actions Recommended**	**Responsibility**
What is the process step?	**In what ways can the Process Step, Variable, or Key Input go wrong? (chance of not meeting requirements)**	**What is the impact on the Key Output Variables (customer requirements) or internal requirements?**	**How Severe is effect to the customer?**	**What causes the Key Input to go wrong? (How could the failure mode occur?)**	**How frequent is cause likely to Occur?**	**What are the existing controls that either prevent the failure mode from occurring or detect it should it occur?**	**How probable is Detection of cause?**	**Risk Priority # to rank order concerns**	**What are the actions for reducing the Occurrence of the cause, or improving Detection? Should have actions on high RPN's or Severity of 9 or 10.**	**Who's Responsible for the recommended action? What date?**
Usage	Failure to justify ERP in business operations	Core business activities will struggle with workflow and process related inefficiencies. Lead to delay or cancelled fulfilments	5	Less usage of ERP functionalities No periodical review of ERP usage	6		8	240	Ensure that core processes like sales/billing, procurement, payroll etc., are strictly conducted through ERP. Generate department-cum-user specific log reports on ERP usage	Departmental heads and IT Officer
	User resistance	Aversion towards ERP. Decline in Employee performance leading to low productivity	8	No formal process for user-comfort review Using shortcuts outside the ERP system to complete tasks Insufficient training Fear of losing efficiency	8	None	3	192	Conduct periodical feedback of ERP user s' satisfaction, training requirements and pain points. Directives for data processing and reporting structure only through ERP. Take employee efficiency into confidence	Top Management, Departmental heads and IT Officer
	Lack of top management motivation for users	Low ERP morale, Sense of burden, abstinence from ERP use.	8	No user encouragement Lack of trust in ERP User impatience Lack of users' confidence	6	None	6	288	ERP usage linked to performance appraisal indicators. Appreciate and recognize active users. Gospel the good word through the active employees	Top Management, Departmental heads, Personnel Manager & Users
	Exploiting the ERP System	ERP sanctity lost. Threat to critical business data. Distrust in ERP system.	8	No ERP usage policy in place Lack of clarity authorization and access control rights Poor information security practices.	8	None	8	512	ERP usage manual must in place. Clearly define role-based authorization and access control rights. Create an information security policy for the organization as a whole and ERP usage in particular.	Departmental heads and IT Officer & Users

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Table 18. FMEA Chart for EXTENSION PHASE

Item Name:	**ERP Adoption Life Cycle: Risk Perception of SMEs**	**FMEA Team:**		**XXXX & YYYY**		**Prepared by:** **FMEA Date (Orig): May, 2015**			**XXXX** **(Rev.): July 2016**	
Process Step or Variable or Key Input	**Potential Failure Mode**	**Potential Failure Effects**	**SEV**	**Potential Causes**	**OCC**	**Current Process Controls**	**DET**	**RPN**	**Actions Recommended**	**Responsibility**
What is the process step?	**In what ways can the Process Step, Variable, or Key Input go wrong? (chance of not meeting requirements)**	**What is the impact on the Key Output Variables (customer requirements) or internal requirements?**	**How Severe is effect to the customer?**	**What causes the Key Input to go wrong? (How could the failure mode occur?)**	**How frequent is cause likely to Occur?**	**What are the existing controls that either prevent the failure mode from occurring or detect it should it occur?**	**How probable is Detection of cause?**	**Risk Priority # to rank order concerns**	**What are the actions for reducing the Occurrence of the cause, or improving Detection? Should have actions on high RPN's or Severity of 9 or 10.**	**Who's Responsible for the recommended action? What date?**
Extension	Misalignment of business processes integration with supply chain partners	Mismatch and delay in replenishment and fulfilment schedules. Additional time, cost and effort.	6	No clarity about what processes to be interfaced Mismatched business strategy with technology strategy Very less involvement by SMEs in supply chain decision Less bargaining power of SMEs No collaborative planning by SMEs with their large buyers	6	None	4	144	Identify and monitor the performance of certain touch points like replenishment lead time (RLT) and Available to Promise (ATP) quantities and dates in the integration process between the SME and its larger counterparts. Realignment of processes and identify the inequalities of information flow efficiency due to technological imbalances. Solve the compatibility issues in web-interfaces of large buyers with the ERP system of SMEs	Functional Heads, IT officer of the SME and the counterpart
	Losing business due to not adopting technology	Competitive pressures.	6	Pressure from large customers (OEMs) Lack of support from large buyers	5	None	7	210	Explore and update leaner technology adoption models like cloud.	Top Management

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Chapter 18
Towards a Framework to Improve IT Security and IT Risk Management in Small and Medium Enterprises

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ABSTRACT

In this article, an IT risk management (ITRM) framework for small and medium enterprises (SMEs) is designed and evaluated. The framework's objective is to provide an uncomplicated and accessible ITRM approach primarily aimed at SMEs without a dedicated ITRM. The framework combines essential elements from three leading (IT) risk management frameworks: COBIT 5 for Risk, ISO/IEC 27005:2011 and M_o_R. The framework was developed by employing a design science research methodology for social artefacts and evaluated in two healthcare SMEs. The ITRM framework itself was assessed as comprehensible and potentially useful. Simultaneously, over-arching IT governance issues prevented the immediate framework implementation in the two cases. IT management researchers can draw on this article's findings to better understand the role of the social context in SMEs to achieve an effective practical impact. Practitioners in SMEs can draw on the current state of the framework for an initial ITRM implementation or to increase their current ITRM approaches' maturity.

1. INTRODUCTION

This paper's goal is to design and evaluate an IT risk management (ITRM) framework that is better suited for small and medium enterprises (SMEs) than existing comprehensive ITRM frameworks such as the ISO/IEC 27005:2011 or COBIT 5. The literature often describes the SME sector as vibrant and growing (Levy & Powell, 2005) and – at least within the European Union (EU) – as the backbone of the

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economy (Wymenga, Spanikova, Barker, Konings, & Canton, 2012). Whereas the authors acknowledge that SMEs are commonly defined as having 250 employees or less (Australian Government, 2014; European Commission, 2014; U. S. Census Bureau, 2014), they do not limit themselves exclusively to this quantitative, and somewhat arbitrary, characteristic (Osteryoung & Newman, 1993). Instead, somewhat larger organizations are also included as long as they exhibit typical SME characteristics, particularly regarding the way they have institutionalized their IT management (ITM).

Here, Welsh and White (1982, p. 18) make the point that "a small business is not a little big business", i.e. SMEs function and need to be managed in a fundamentally different way than large enterprises. The key differences in SMEs' ITM include 1) emphasising personal leadership rather than abstract management frameworks and 2) that formal measuring and controlling instruments are less important than achieving transparency to inform decision-making and foster communication with managers within and beyond the IT organization (Drechsler & Ahlemann, 2016). SMEs also tend to have a low number of ITM personnel – perhaps only even 'involuntary IT managers' (AMI Partners, 2013).

Operating a business always incurs risks, and if SMEs' business models or their internal processes are reliant on information systems and technology, managing the corresponding IT risks (including IT security threats) are as important for them as they are for large enterprises. The Information Systems Audit and Control Association (ISACA) defines IT risk as the "business risk associated with the use, ownership, operation, involvement, influence and adoption of IT within an enterprise" (ISACA, 2015, p. 56) and thus includes the need for IT security management (ITSM). Therefore, ITRM and ITSM are important tasks for SMEs, since they often do not have the necessary financial reserves to overcome crises caused by severe incidents that an effective ITRM and ITSM could have prevented. Moreover, owing to the SMEs' importance for an economy, the wide-spread occurrence of IT risks in and IT security threats to SMEs may even have severe consequences for an entire economy, which the recent series of ransomware attacks ("Locky", "WannaCry", and others) showed (Pencavel, 2016). Moreover, the increasing digitalization of entire industries will not only increase SMEs' dependency on IT, but also the relevance of ITRM and ITSM.

Simultaneously there is consensus in the literature that only a small percentage of SMEs undertake RM on the corporate level and even, if they do, they only consider a few selected aspects (Britzelmaier, Häberle, & Landwehr, 2015; Hölscher, Giebel, & Karrenbauer, 2006, 2007; Verbano & Venturini, 2013). The same applies for ITRM and ITSM in SMEs (Sadok & Bednar, 2016). One contributing factor for the lacking RM in SMEs are poorly tailored approaches that do not take the special requirements of SMEs into account, but merely try to scale down existing large enterprise approaches for SME purposes (Altman & Sabato, 2007; Stroeder, 2008). Consequently, SMEs do not often adopt management frameworks they perceive as complex or costly to implement (Laporte, Alexandre, & O'Connor, 2008; O'Connor & Coleman, 2009). Hence, none of the three most common RM / ITRM frameworks (COBIT 5 for Risk, ISO/IEC 27005:2011 and Management_of_Risk) seems particularly well suited to institutionalize effective ITRM and ITSM in the SME context. The same applies to existing predominantly technically-oriented ITRM or ITSM solutions, as SMEs would have neither the managerial awareness for the necessary decision-making to introduce these solutions nor the necessary expertise available to effectively implement and maintain these solutions.

Consequently, this paper's main goal is to design an ITRM framework that is more suitable for the SME context than the existing frameworks. The designed ITRM framework is evaluated ex-ante (Pries-Heje, Baskerville, & Venable, 2008) by means of an interview study with the managers of a small and a medium enterprise in the healthcare industry who would be responsible for deciding whether to adopt

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the ITRM framework in their SME. The interviews contribute implications for the framework's implementation, but also novel insights into the SME context regarding the interrelation between the ITRM on the one hand and enterprise risk management, quality management, business-IT alignment, and IT governance on the other hand.

The goal of achieving effective ITRM and ITSM is therefore approached from a predominantly managerial and social point of view. The high-level security policy that results from the framework's application sets the stage towards 1) identifying and establishing suitable processual and technical ITRM and ITSM solutions as well as 2) corresponding changes to individual and organizational risk and security management practices (Sadok & Bednar, 2015). In other words, these new or changed individual, organizational and technological practices are to be developed and anchored in a changed wider social context, whose establishment and change the ITRM framework seeks to facilitate during its adaption and implementation.

The paper is structured as follows: In the second section, the paper's research methodology is outlined. The third section contains a high-level depiction of the ITRM framework's initial version. In the fourth section, the framework is evaluated and implications for its subsequent implementation are discussed. In the fifth and sixth sections, this paper's findings and limitations, respectively, are discussed. The seventh section contains a conclusion and an outlook. Note that, due to space restrictions, a more detailed literature review and a more detailed assessment of existing ITRM and ITSM approaches and frameworks are omitted. For the purposes of this paper, neither would yield substantially greater insight than given so far in the Introduction.

2. RESEARCH METHODOLOGY

Solving an identified, concrete real-world problem – such as the lack of ITRM and ITSM frameworks suitable for SMEs – calls for a design science research (DSR) approach (Gregor & Hevner, 2013; Hevner, March, Park, & Ram, 2004). The goal is to develop an artificial entity – called an artefact – that can contribute to solving the identified real-world problem and that needs to prove its usefulness or utility in its application. Artefacts are designed, evaluated, and refined in cycles (Hevner, 2007). Here, the artefact is the ITRM framework for SMEs. Artefacts can be designed on an abstract level and then be tailored to specific application contexts or, alternatively, to a specific context and generalized afterwards (Iivari, 2015). Owing to SMEs' idiosyncratic nature, the authors follow the former approach to achieve the largest wide-ranging impact and set out to develop an abstract ITRM framework that can be (and, in fact, most probably will need to be) adapted to an SME that wants to establish or improve its ITRM and ITSM.

This ITRM framework is a social artefact for a managerial audience and is thus developed by following a DSR approach to design such social artefacts (Drechsler, 2013). A key difference between this approach and DSR aimed at developing technical IT artefacts is that it focusses on the artefact's conceptual relevance (Nicolai & Seidl, 2010) first. In other words, the focus lies on guiding and inspiring managerial action, before instrumental relevance — the actual artefact utility — can be achieved. This focus can be achieved by developing an object design (van Aken, 2004) – the ITRM framework itself – and a corresponding implementation design. The implementation design should outline 1) how to achieve conceptual relevance with the decision-makers (= people responsible for the ITRM in SMEs) and 2) how to adapt the abstract object design to these decision-makers' particular organizations. By doing so, the apparent paradox of developing a single ITRM framework that can be potentially useful for a large

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number of SMEs with an idiosyncratic nature can be resolved. The ITRM framework is therefore designed and evaluated on the conceptual level and subsequently allows individual instantiations and adaptions to the special needs of individual SMEs, instead of claiming to be a generalized ITRM approach.

Moreover, it is not expected that the framework artefact will *cause* a solution upon its implementation. Instead, the idea is to achieve a positive resonance on the individual level (Drechsler, Hevner, & Gill, 2016) for the framework's adoption and to inspire and guide future ITRM and ITSM-related decision-making. On the organizational level, the framework's purpose is to trigger path-dependent (in case of existing nascent ITRM and ITSM approaches) or, alternatively, path-creating change processes (Pandza & Thorpe, 2010) within a particular SME towards establishing effective ITRM and ITSM practices, which may or may not be supported by technology.

In this paper, a first cycle of artefact design and evaluation is documented that leads to an alpha version of an ITRM framework as well as documented implications for its implementation. The ITRM framework is designed based on requirements (cf. Section 'Requirements for the ITRM framework' below) that take the common state of the RM and the ITM in SMEs into account (as outlined in the Introduction) as well as on the 'essence' of common RM and ITRM frameworks (COBIT 5 for Risk, ISO/IEC 27005:2011 and Management_of_Risk). Thus, the framework is conceptually built from the ground up and only includes those elements from the extant common frameworks that the authors deem to be necessary to fulfil the identified requirements and its purpose, in order to keep the framework as simple as possible while retaining its utility.

The authors subsequently subjected the designed ITRM framework to practitioner feedback by conducting semi-structured interviews with the chief information officer (CIO) of a medium-sized German hospital (350 employees overall, but only 2 IT employees employed as 1.5 FTEs) and the chief executive officer (CEO) of a German pharmacy with seven employees overall and no dedicated IT personnel. Note that the hospital's number of employees exceeds common SME limitations (250 employees, cf. the Introduction), but the size and characteristics of its IT organization are very much in line with ITM organizations in SMEs. The authors selected these evaluation contexts, because they represent archetypical instances of medium and small enterprises in an IT-reliant industry (healthcare) in which incurred IT risks, such as IT security breaches or extended downtimes, may not only affect the enterprise severely, but also profoundly influence human lives and well-being.

The first author performed the interviews in person and focused on the following aspects: 1) the general organizational context, 2) the employed IT and how it is managed, 3) the existing RM and ITRM practices, and 4) the evaluation of the ITRM framework. In this fourth interview phase, the interviewees were asked to estimate the value of the designed ITRM approach, whether and to what extent they were familiar with the suggested techniques and concepts, where they expected threats and problems related to their organizational context, who would be responsible for the implementation and continual execution of the ITRM process within the framework, and whether they regarded the application of the ITRM framework in their SME to be generally conceivable and possible. An examination of the local IT facilities and the employed ITRM practices complemented the interviews to validate the statements.

3. DESIGNING THE IT RISK MANAGEMENT FRAMEWORK FOR SMES

In this section, the designed ITRM framework as well as the underlying requirements are documented.

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3.1. Requirements for the ITRM Framework

As previously shown in the Introduction, there is consensus in the literature that limited personnel and financial resources as well as lacking know-how and suitable guidance often hamper the RM in SMEs. Consequently, suitable ITRM approaches have to take these limitations into account. Since "a small business is not a little big business" (Welsh & White, 1982), a simple scaling-down of the ITM frameworks for large enterprises is not advisable (Drechsler & Ahlemann, 2016) and therefore not pursued in this paper. In addition, limited SME resources do not allow the analysing of different risk frameworks to select the most important techniques (Henschel, 2008). Instead, the ITRM framework is built from the ground up. Established good practices and techniques from existing RM and ITRM frameworks are carefully selected and integrated. To counteract the perception of a framework being overly costly to employ, a suitable ITRM framework has to generate a tangible benefit, even if there is no extant enterprise-wide business or IT strategy planning approach.

Moreover, the ITRM process within the framework needs to be performable besides having to perform other tasks, because one cannot assume that SMEs have a dedicated risk manager – especially in the IT department. However, SMEs managers are often reported as having a high level of risk awareness and knowledge of the risks that their companies face, but it is simultaneously said that they rarely document their knowledge or the risk treatment steps that they take (Henschel, 2008). The framework should therefore foster the explication and documentation of existing, but tacit, risk knowledge.

However, increased risk assessment formalization leads to additional challenges, because SMEs are usually unable to draw on in-depth IT and business management know-how and specialist support (Islam, Tedford, & Haemmerle, 2006), which prevent the easy application of even seemingly simple techniques such as Balanced Scorecards (Henschel, 2008). In addition, as findings regarding software engineering (Laporte et al., 2008) and project management (O'Connor & Coleman, 2009) indicate, SMEs often reject frameworks perceived as complex or costly to implement. Therefore, the ITRM framework needs to be self-containing and to capture 'the essence' of existing frameworks and techniques, while retaining simplicity and accessibility. In order to be considered suitable, SMEs' limited resources should be able to manage the selected techniques easily. In particular, this should not require special software tools, as such software usually exceeds the expertise available within SMEs and they are often not willing to invest in such tools (Leopoulos, Kirytopoulos, & Malandrakis, 2006).

Consequently, the framework needs to enable its users (business or IT managers and perhaps other IT or even non-IT personnel) to strike a balance between the effort they are willing and able to invest in the ITRM and the immediate benefits they will receive. The ITRM framework's scope should therefore be adjustable to each SME's specific situation and should also allow its scope to be expanded over time – for instance, when newly enacted regulatory requirements have to be met, a newly discovered threat to the SME's IT needs to be countered, or an RM certification is required. Moreover, the framework needs to be easy to understand and accessible to allow even untrained practitioners to gain an insight into and a deeper understanding of the ITRM. Ultimately, the overall objective of the ITRM framework for SMEs is to provide them with a solid basis for IT-related RM.

3.2. Framework Design

All high-level RM process steps of all three of the common (IT) RM frameworks (COBIT 5 for Risk, ISO/IEC 27005:2011 and Management_of_Risk) fit the four following processes:

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1. *Establish or refine the ITRM context and scope*: including the initial definition or refinement of enterprise objectives, assessment criteria, responsibilities, and stakeholder goals.
2. *Assess risks and develop IT risk profile:* including, for instance, risk identification, risk analysis, risk evaluation and prioritization as well as policies for documentation and communication.
3. *Develop and execute IT risk treatment plan*: including risk treatment options such as risk avoidance or risk acceptance.
4. *Communicate and monitor IT risks, improve IT risk management*: an overarching process that includes, for instance, guidance for effective and efficient communication, guidance for risk indicators and measures as well as suggestions on how to link and improve all ITRM processes.

These four processes constitute the underlying foundation of the ITRM framework (Figure 1). The first three processes (the dark gray boxes in Figure 1) are divided further into steps (in italics within the gray boxes). Also included are proposals for sample techniques for each process (the light gray boxes on the lower right area of each of the three dark gray boxes) – based on the recommendations given by the underlying frameworks – that can be employed within the respective process steps and that the authors deem to be sufficiently easy to use in a SME context.

Note that the overall ITRM process is cyclical to highlight the RM's continuous nature. Any iteration beyond the first will typically require fewer resources than the initial one, while continually enhancing the ITRM effectiveness. Space restrictions prevent us from describing each process and the corresponding steps in this paper in greater detail.

4. FRAMEWORK EVALUATION

In this section, the results of the ITRM framework evaluation in two SMEs in the healthcare industry are described. First, their current ITRM state is summarized as the backdrop for the subsequent evaluations of the ITRM framework itself and the additionally gained insights for an actual framework implementation.

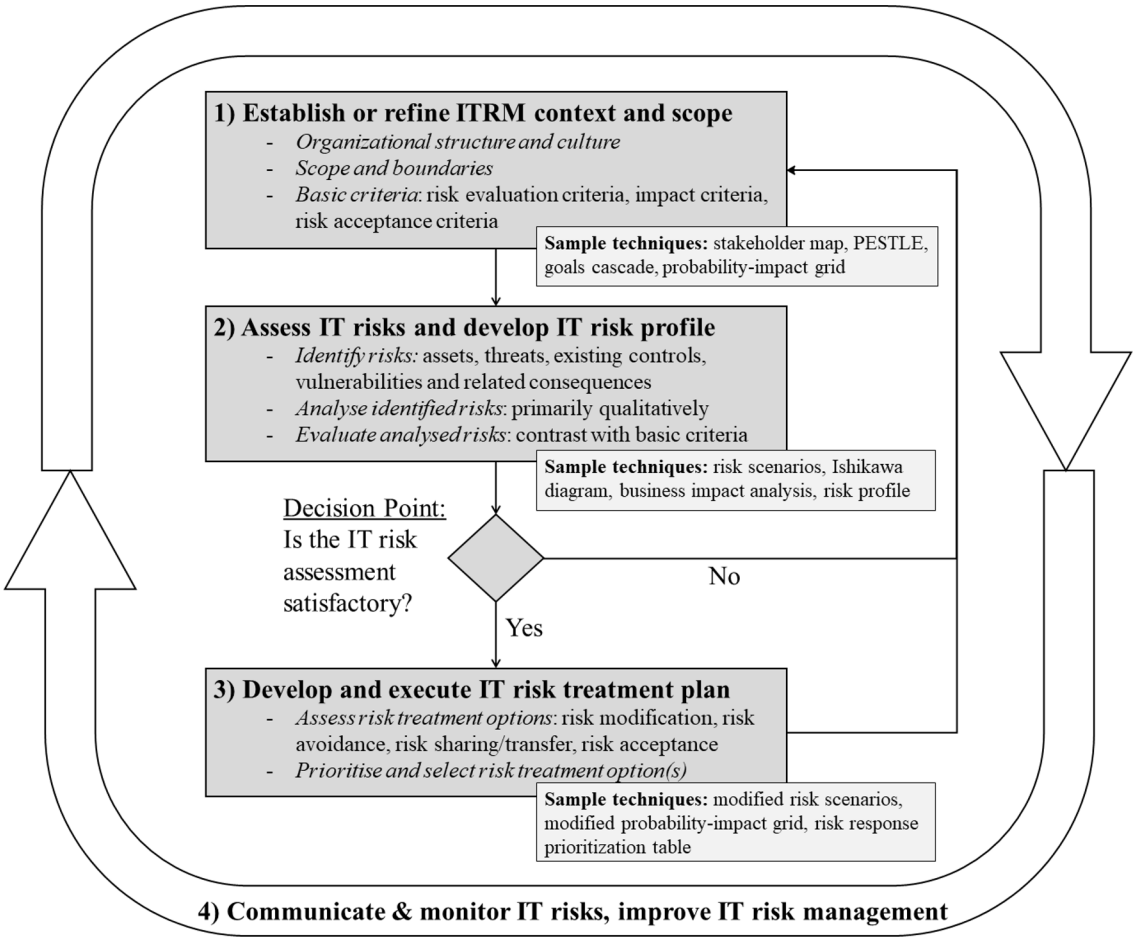
4.1. The IT Risk Management As-Is State

In general, the interviews show that neither of the evaluated SMEs practise formal RM – neither within the IT department nor enterprise-wide. Nevertheless, both SMEs' interviewees claim that they can define their most important risks – IT-related as well as general risks. In terms of their IT, the hospital CIO primarily fears severe IT infrastructure failures, while the pharmacy's CEO stresses that the threat that the private customer data stored within their information systems could be made public is especially grave. Despite this realization, neither SME analyses these risks systematically. The hospital CIO primarily justifies the lack of a formal ITRM system and plans to implement such an approach by pointing out that there are no legal regulations requiring this, the additional effort that doing so would require as well as his personal belief that his previous 20 years in the hospital IT department have not shown the necessity for such steps. Additionally, neither of the interviewees controls their external IT service providers explicitly. Combined, all these facts reveal many potential risk events.

While neither SME practises formal RM, the evaluated pharmacy has an ISO 9001:2008 certified quality management system (QMS). In Germany, pharmacies' legal regulations currently require a QMS, although it does not have to be externally certified. The CEO states that, after being forced to implement

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Figure 1. The ITRM framework for SMEs



a QMS by these regulatory requirements, he realized that it was actually sensible for his organization. In contrast, the hospital CIO mentions that the implementation of a formal QMS had already been discussed several times, but that no decision had yet been made.

Despite the absence of a formal ITRM, both the evaluated SMEs have some isolated IT security policies in place; these restrict, for instance, the use of private devices such as USB flash drives and the internet for non-work-related purposes. The hospital CIO nevertheless acknowledges that various employees do not comply with this agreement and use their own USB flash drives and the internet for non-work-related purposes. Furthermore, he mentions that he lacks the power in the hospital's hierarchy to issue binding instructions to, for instance, the medical director.

These examples highlight the importance of an explicit risk communication approach, as suggested in the ITRM framework. Although several risks have already been identified, the risk treatment and communication processes have specifically been found to be lacking, while the absence of harmful risk events and security breaches in the past can be attributed to sheer luck.

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4.2. ITRM Framework Evaluation

Before the practitioners' evaluations of the newly designed ITRM framework are described, note that neither could compare the provided ITRM framework to an already implemented formal ITRM approach. Simultaneously, they stated that they possessed at least some theoretical RM knowledge. Further, the QMS implemented in the pharmacy enabled its CEO to easily understand the ITRM framework's process orientation.

The first finding is that both practitioners agree that the newly designed ITRM framework is generally applicable to their SMEs and that the chosen detail level is suitable. Both interview partners are already acquainted with, for example, the suggested risk scenario technique and use it in a simplified form. They are, of course, familiar with Office programs such as Word and Excel, which directly enables them to use several of the suggested ITRM methods, because the designed ITRM does not explicitly require the use of RM-specific tools. Nevertheless, the pharmacy CEO directly requested more guidance that describes the concrete procedures and provides examples of good implementation practices. Such requests were anticipated, because the ITRM framework is designed to be abstract, while the concrete implementation requires individual process and method adoptions (cf. the 'Research Methodology' section), which may include tailored and detailed guidance.

Moreover, the interviewees mentioned several immediate benefits they could achieve by implementing the designed ITRM framework for SMEs. Both appreciate the presented ITRM approach being based on an ISO/IEC standard, the ISO/IEC 27005, as they are both familiar with the ISO and the pharmacy is already ISO 9001:2008 certified. Thus, especially the pharmacist expects continuity between the different ISO standards, which would allow a facilitated adoption of the ISO 27005. The continual and overarching risk communication process was mentioned as another benefit. The CEO of the pharmacy expects his employees to demonstrate an increased sense of responsibility. The hospital CIO points out that the ITRM framework offers a suitable and structured approach to improve the efficient identification of IT-related risks and security issues. He additionally emphasizes that the suggested risk treatment options (see Figure 1) are very useful, because the hospital does not currently consider risk treatment activities on such a detailed level. Such a differentiated risk treatment would enable the organization to individually assess risks as either opportunities or threats in order to attain an acceptable residual risk level.

Both interviewees mention the benefit of an efficient identification of IT-related risks in terms of the temporary or permanent loss of key knowledge bearers. Owing to the emphasis on personal leadership over impersonal management systems in SMEs (Drechsler & Ahlemann, 2016), the risk of losing knowledge bearers is typical for SMEs. The pharmacy CEO states that there are no concrete regulations concerning his unplanned absence, which would currently cause the pharmacy's temporary closure. Further, if one of the two IT employees of the evaluated hospital were to leave, this would mean a substantial loss of tacit knowledge. Users of the ITRM framework would notice this risk and they could ensure that a more detailed risk assessment and subsequent treatment were undertaken, taking the shape of, for instance, formal documentation or emergency plans.

4.3. Implications for a Future ITRM Framework Implementation

In contrast to the two practitioners' largely aligned responses concerning the ITRM framework itself, their responses concerning a potential implementation of the presented ITRM framework differ substantially. Owing to his enterprise's small size, the pharmacy CEO would not implement the provided framework

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solely for ITRM, but for an enterprise-wide RM. He regards the designed ITRM's generic nature as suitable and promising, even for an enterprise-wide approach. Besides this potentially expanded scope, the possible coupling to the existing QMS (or, perhaps, other established management systems) is another implication to consider in a future ITRM framework implementation design.

In contrast, the hospital CIO could well imagine an implementation to address IT-related risks, but would not actually do so without legislation or his CEO requiring this. Given the backdrop of the generally challenging financial and resource-limited situation of his hospital, he cannot see the benefits of the ITRM justifying the additional effort. He also states that his informal RM has succeeded in the last 20 years and it is better to "never touch a running system". Additionally, he argues that every formal approach entails additional bureaucracy and can unnecessarily complicate easy matters. Since the hospital does not have any kind of QMS or another comparable management system implemented, it cannot draw on additional process documentations. The hospital CEO would therefore have to make the final decision to implement an ITRM approach, perhaps on the grounds of their CIO's recommendation. Moreover, the effective execution of such a decision may require additional resources such as IT personnel, especially since 1.5 FTE IT employees serve an enterprise with 350 employees. A future implementation design would therefore have to consider gaining top management support first by addressing the IT governance, IT alignment and financial issues before an ITRM process can be considered.

5. DISCUSSION

The ITRM framework contributes to the ITRM and ITSM literature in several ways. First, the ITRM framework itself constitutes this paper's main practical contribution. The ITRM framework was evaluated in two typical settings – a small and a medium-sized enterprise in the healthcare industry – by means of expert interviews. In both settings, the proposed ITRM was evaluated positively in terms of achieving conceptual relevance – guiding and inspiring managerial action (Nicolai & Seidl, 2010) – and, therefore, in terms of its potential utility. The practitioners particularly acknowledged the benefits of a formal documentation and risk communication, which would allow both SMEs to treat risks in a more mature way compared to the status quo. They also appreciated an orientation towards an ISO/IEC standard.

Moreover, the evaluation demonstrated how the ITRM framework fulfils the requirements derived in the section 'Requirements for the ITRM framework' above. These requirements include the possibility to integrate the ITRM into existing planning approaches (through communication or, for instance, by coupling it with an existing QMS), to generate an own tangible benefit (as confirmed in the interviews), to explicate the existing tacit risk knowledge (as fostered by techniques that includes documentation in scenarios or tables), its low resource requirement (by focussing on essential activities and techniques as well as through its inherent scalability), its independence of tools other than office software, and its general accessibility even by non IT or RM experts (as confirmed in the interviews). Simultaneously, the interviews highlighted several – and differing – implications for the framework's implementation. The interviews demonstrated that well-received suggestions to implement a formal ITRM approach in SMEs were not as such sufficient to disperse all the related reservations. The findings underline the benefits of considering an implementation design as a separate artefact – an artefact that does not exist yet. The practical contribution therefore needs to be regarded with this limitation in mind.

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Second, in Gregor and Hevner's (2013) design science research contribution matrix, the ITRM framework constitutes an improvement. A new solution is designed for a known problem (poor ITRM and ITSM in SMEs) by appropriating extant ITRM and ITSM knowledge and creating a novel framework tailored to the SME context. The solution therefore constitutes a type VIII research contribution (Mandviwalla, 2015). In contrast to existing ITRM frameworks, the newly designed framework specifically suits SMEs' requirements by distilling essential ITRM and ITSM elements from established good practices, with the aim that SME practitioners do not have to deal with highly complex approaches or techniques. These would be necessary if their SMEs were to implement a comprehensive ITRM based on one of the established frameworks.

Third, this paper also contributes to a more differentiated understanding of the relationships between ITRM, IT governance, business-IT alignment and quality management in the SME setting: In the case of the pharmacy, which turned out to be too small for a separate IT-related RM approach, the CEO highlighted the possibility of the framework's utilization as an enterprise-wide RM framework. In other words, there is a particular configuration of small enterprises without any dedicated IT personnel where the ITRM and ITSM is essentially inseparable from general business RM. The corresponding business-IT alignment takes occurs in the mind of a single business executive who is also responsible for the RM. Moreover, the pharmacy case illustrated the close relation between quality and risk management as well as how an established QMS can foster a subsequent introduction of an ITRM approach (see also Heduschka (2006) and Henschel (2008)). In an even more abstract perspective, this example illustrates that one existing management system in an SME can potentially foster another's introduction.

The hospital, on the other hand, was evaluated as potentially benefitting from a dedicated ITRM approach. However, the CIO stated that there was no interest in implementing such an approach. To overcome the organizational inertia, the hospital CEO would have to intervene and, potentially, provide the IT department with additional resources. This prerequisite not only illustrates the close relationship between the business-IT alignment, the IT governance and the ITRM, but also the typical shape this relationship can have in an SME. Without alignment on the CEO level, where the strategic IT governance of the hospital seems to be effectively located, the hospital's ITRM and ITSM cannot be expected to advance substantially.

The fourth contribution is to provide an example that contradicts the findings in the literature that there is a positive correlation between an enterprise's size and the extent of its formalized RM (Britzelmaier et al., 2015; Henschel, 2008), as evident by the lack of interest in any formal ITRM implementation despite the hospital's size (350 employees), which even exceeds a typical SME's boundary (250 employees). In both cases, the implications for the ITRM framework's implementation lie beyond the ITRM and ITSM scope, highlighting the afore-mentioned other (IT) management-related areas' interconnection with the ITRM and the need for a holistic perspective as a prerequisite to introduce and establish an effective ITRM.

The fifth contribution is a methodological one: The findings illustrate the benefit of taking a design science research perspective beyond artefact-centrism and beyond a focus on immediate utility to an artefact's immediate application context. As the implications for the ITRM framework's eventual implementation highlight, introducing effective and sustainable ITRM and ITSM into a SME is less a matter of the adoption of the framework as a social artefact (let alone of a technical one) in a narrow sense. Instead, the framework itself turned out to be merely a catalyst to start a discourse for identifying relevant audiences (hospital CIO vs. the CEO, …) and the most suitable scope (ITRM vs. enterprise-wide RM, ITRM vs. IT governance, …) to trigger a future organizational change process towards adopting ITRM.

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The paper's sixth and final contribution is the uncovering of the limited usefulness of commonly accepted quantitative measures regarding delineating between small and medium enterprises and large ones when focusing on ITRM-related matters. Whereas the hospital exceeded the employee count of medium-sized enterprises by 40% (350 to 250 employees), its IT organization merely consisted of 1.5 FTE employees and it exhibited clear characteristics of SMEs' typical ITM practices (Drechsler & Ahlemann, 2016).

6. LIMITATIONS

The six afore-mentioned contributions need to be seen against the backdrop of the research's inherent limitations. Since the evaluations were only ex-ante evaluations before any implementation had taken place, there is no demonstration yet of actual utility for the ITRM framework artefact, or its superiority to existing (or non-existent) ITRM and ITSM practices in SMEs. Here, it is necessary for further research to establish meaningful criteria for utility prior to an introduction of the framework to a particular SME that can adequately capture the difference or impact the framework makes on ITRM and ITSM practices. One particular challenge here is to account for the nature of RM and SM, which only become effective in preventing risks from occurring and do, in an ideal (= risk-free) world, not necessarily contribute any value per se. The evaluation would also have to account for possible unwanted side-effects, such as overconfidence of being protected against IT risks and IT security threats just by following established processes, or an over-emphasis on IT security over other aspects of IT use (such as business value contribution). Currently, the evaluations are also only limited to two instances of SMEs in a single industry in a single country, therefore limiting the generalization potential of this paper's findings within and beyond the German healthcare industry.

There is also as yet no corresponding implementation design that can guide the ITRM framework's adaption and adoption. The evaluations' rich findings – which are even more notable when considering that they only stem from two evaluation instances – indicate that such an implementation design may ultimately be the more important artefact to achieve a high practical impact in the sense of a substantially increased ITRM and ITSM effectiveness in more than one SME. Such an implementation design would need to demonstrate conceptual relevance (to trigger and guide actual organizational change processes towards improved ITRM and ITSM practices) as well as instrumental relevance (as in achieving an actual and sustained improvement in effective ITRM and ITSM practices).

Lastly, on a more fundamental level, the question remains whether the idiosyncratic nature of SMEs – as already illustrated by, again, merely two evaluation instances – is at all compatible with a process framework-oriented and therefore artefact-oriented approach, even if the framework is designed from the ground up (as opposed to being scaled-down from extant and more comprehensive frameworks) and designed to be as uncomplicated and accessible as possible, while retaining a high level of potential utility for the SME context.

7. CONCLUSION AND OUTLOOK

In this paper, an ITRM framework tailored to the SME context was designed and evaluated. While no actual implementation of the framework has yet taken please, it was nevertheless possible to derive several concrete implications for future research within and beyond the selected project scope based on

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the insights from the two evaluation cases. While the ITRM framework itself can be left as it is for a first concrete implementation, any future implementation needs to take several aspects beyond ITRM, ITSM, and even ITM into account, namely issues related to IT governance, business IT alignment, other existing management systmes, and organizational change management. After the development of an initial implementation design, an obvious task for further research is the adjustment and application of the framework in one or more concrete instances of SMEs to demonstrate actual utility and to refine the framework or the corresponding implementation design.

Beyond the scope of improving ITRM and ITSM effectiveness in SMEs, this paper's findings highlight the need to further the attention in DSR towards designing for change and transformation, in order to achieve not only practical relevance, but actual impact through research (Drechsler & Hevner, 2016). Here, one possible source to inform the conceptual and methodological DSR foundations is the well-established socio-technical approach in IS (Bednar & Welch, 2005; Checkland, 1999; Welch & Sadok, 2016), where the emphasis in the past has been less on what DSR would call an artefact, but more on the change and transformation-related aspects of enacting IT-related change in organizations.

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Chapter 19
Adoption of Online Marketing for Service SMEs with Multi-Criteria Decision-Making Approach

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ABSTRACT

This chapter attempts to fill in the gap of evaluating the viability of adopting online marketing for small and medium enterprises (SMEs) in service industries. As SMEs are generally characterized by shortage of resources, the use of online marketing strategies is apparently difficult. However, the current landscape of competition among SMEs in a global market economy prompts the necessity of adopting online marketing. With these, the decision-making process of SMEs in this area becomes complex and the decisions must integrate complex and interrelating criteria and constructs in order to provide a more holistic solution. Thus, this work adopts a multi-criteria decision-making (MCDM) method particularly the analytic network process (ANP) in order to evaluate the practicability of using online marketing for service SMEs. It becomes highly relevant as it provides significant insights to decision-makers in SMEs regarding the use of online marketing strategy. The contribution of this chapter lies in the application of MCDM in evaluating viability of online marketing in service SMEs.

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INTRODUCTION

On a global scale, small and medium enterprises (SMEs) are growing and are expected to compete strategically. In the U.S., SMEs are categorized according to the number of employees and asset size; particularly with less than 250 employees and annual sales of not more than US$ 50 million (Barad and Gien, 2001; Gonzalez et al., 2012). In the Philippines, SMEs are those enterprises that have 10-199 employees with Php 3 million to Php 100 million asset size (Jumamil-Mercado, 2013). SMEs have been a significant sector in economic development and are essential in generating employment (Harvie and Lee, 2005). A decade ago, Harvie and Lee (2005) estimated that 70% of new jobs creation in Southeast Asia came from SMEs. Across domain literature, SMEs are considered crucial in employment generation, output and export growth, poverty alleviation and better distribution of wealth (Asasen et al., 2003; Harvie, 2008). In the Philippines, SMEs play a vital role in "rural industrialization, development and decentralization of industries, creation of employment opportunities and more equitable income distribution, use of indigenous resources, earning of foreign exchange (forex) resources, creation of backward and forward linkages with existing industries, and entrepreneurial development" (Jumamil-Mercado, 2013). They are considered vital in dispersing new industries to the countryside and stimulating gainful employment (Jumamil-Mercado, 2013). Around 70% of non-agricultural employment was contributed by SMEs in the Philippines (Harvie and Lee, 2003). SMEs are known to be labor-intensive such that they generate jobs in the locality where they are situated (Jumamil-Mercado, 2013). This setup gains relevance in developing countries such as the Philippines. SMEs are quick in assimilating new design trends, developing contemporary products, and bringing them to the marketplace ahead of the competition (Jumamil-Mercado, 2013). This promotes SMEs as the seedbed for the development of entrepreneurial skills and innovation can make an important contribution to regional development programs (Department of Trade and Industry, 2008).

The trend of present economic progress demands businesses to compete more strategically, especially that various firms struggle to think of viable solutions in addressing customer needs. Implications of these requirements brought firms to gauge more on how to maintain and increase a good standing relationship with other businesses. This triggers fundamental questions to businesses the location, the time, and the components of the target market. The key to answer these questions relies largely by the appropriateness of the marketing tool carried out by SMEs. Coming up with a good marketing strategy attracts more customers and introduces the market with the products that firms can offer. For instance, firms seek to gauge into marketing program in order to promote their product and services through various strategic marketing implementation. This could be pursued with the use of traditional marketing and online marketing.

The widespread use of the internet across the globe highlights communication and mobility between buyers and suppliers. In this regard, online marketing has gained increasing attention over the past decade or so and has helped overcome the barriers of several business-related communications. As internet users carry out more active roles as expected, online marketing increases visibility of firm's profiles and products, and thus, it becomes an arguably good avenue for marketing and advertising. However, with the cost of pursuing online marketing which is a relevant issue in SMEs and the conditions that govern a geographical area, the decision of pursuing online marketing is certainly nontrivial that requires attention and focus. This decision of whether or not to implement online marketing strategy becomes complex due to the presence of several factors which oftentimes constitute inherent relationships. This decision domain exposes a multi-criteria decision-making (MCDM) problem.

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The use of MCDM methods is widely accepted in current literature. Coulter and Sarkis (2005) adopted the ANP evaluating web or internet media advertising strategies. Wu et al. (2010) utilized an integrated ANP-TOPSIS in evaluating a marketing strategy for the hotel industry. Wang and Tzeng (2012) applied the combination of DEMATEL, ANP and VIKOR methods in evaluating customers' satisfaction through brand marketing in electronic manufacturing firms in Taiwan and concluded that value pricing yields as the most important factor in brand marketing strategies. Furthermore, Tsai et al. (2011) applied similar approach with DEMATEL, ANP and VIKOR methods in evaluating web-based marketing for air transportation industry. Similarly, Chiu et al. (2013) proposed a hybrid MCDM method involving DEMATEL, ANP and VIKOR to improve e-store business. Yang and Chang (2012) combined means-end chain and fuzzy ANP to explore customers' decision processes in choosing product bundles.

In this chapter, a decision model that depicts the intricacies of real-life decision-making assessing the viability of online marketing in SMEs is developed. An Analytic Network Process (ANP), developed by Saaty (2001), is used to handle the decision-making problem. ANP is used due to the multi-criteria nature of the problem where criteria exhibit overarching dependence relations. The goal is to come up with a decision of implementing online marketing strategy in SMEs from complex relations of several factors which include online marketing, traditional marketing, technology, and criteria. A case study in the province of Cebu which is located in central Philippines is carried out in this work. The contribution of this chapter is the development of a decision model that assesses the viability of implementing online marketing in SMEs.

BACKGROUND

The trend of current modernization underlines the use of technology and promotes intensified but positive rivalry of business sectors on which strategy formulation must be of high regard. There are factors to consider in obtaining the advantage of using online marketing and knowledge of these factors becomes increasingly important. In addition, the motivation behind departing from the traditional marketing to online marketing must be made clear and plausible. The role of the decision-maker is to ensure the viability of the marketing strategy. Current competitive scenarios require strong foundation in product promotion and implementation. In order to gain an understanding and perception of both traditional and online marketing strategies, this section provides the benefits and challenges of each strategy.

Traditional marketing utilizes strategies such as direct sales, TV, radio, mail, print advertising and promotional materials. The advantage of this approach is that traditional methods may be the only means of reaching a particular group of the market. For instance, if the firm is interested in targeting a group of farmers in a remote area, online marketing may not be appropriate. Furthermore, a person-to-person selling strategy of traditional marketing may be the most effective way for a particular time and place. In addition, there is something to be said about handling a customer some tangible printed material they can read at their convenience. However, challenges of traditional marketing include: expensive and cost prohibitive, difficulty in tacking results, requires technical help from outside the firm and is forced upon the customer.

Online marketing promotes and advertises the products and services through the use of the internet. Through instant leverage of wide marketing spectrum, organizations can build qualified potential customers and take business development to a much higher opportunities than the traditional one by utilizing such strategies like website creation, search engine optimization (SEO), banner ads, social media, pay-

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per-click advertising and email marketing. Some of the advantages of online marketing include: results are more measureable, decisions can be based on using real data and qualitative results, ability to drill down into demographics to accurately reach its target market, social media as essentially the word-of-mouth marketing based on personal experiences, inexpensive data and results are available immediately, accessible to any size business, and the ability to build direct relationships with the customers using social media and communities. However, the main downfall of online marketing is that it relies heavily on customers being highly interactive on the internet. Online marketing often demands time to continuously create, edit, approve and publish contents. Comments in several platforms must be responded to and sites and pages must be well maintained.

Thus, the challenge for businesses is in assessing the viability of adopting online marketing strategy. The assessment is highly nontrivial due to several factors that must be considered in the decision-making process. This complexity is further enhanced by taking SMEs into consideration with meager resources and lack of economies of scale. The assessment process becomes a multi-criteria decision-making (MCDM) problem and requires the adoption of MCDM methods. In this area, several previous studies reported the adoption of MCDM approaches in online marketing domains. Coulter and Sarkis (2005) developed a media selection model using ANP with internet/media advertising as one of its alternatives. Yang and Chang (2012) combined means-end chain and fuzzy ANP to explore customers' decision processes in choosing product bundles. Wu et al. (2010) provided an integration of ANP and technique order preference similar to an ideal solution (TOPSIS) as a five-step decision support to assess marketing strategies. Wang and Tzeng (2012) combined DEMATEL with ANP and VIKOR method to verify the interrelationships of brand marketing and then to identify the best strategy. Tsai et al. (2011) proposed an effectiveness evaluation model for web-based marketing of the airline industry which is an integration of marketing mix, i.e. the 4Ps, and website quality. Chiu et al. (2013) proposed a hybrid multi-attribute decision-making (MADM) model which combines linking the DEMATEL, DEMATEL-based Analytic Network Process (DANP), and VIKOR in the creation of marketing strategies of e-store business. Ocampo and Promentilla (2016) utilized the ANP in developing a sustainable manufacturing strategy which is an integration of both manufacturing strategy and sustainability. A review of literature shows that ANP was used in related studies; however, there were no studies which dealt with ANP in determining the viability of online marketing for service SMEs. One of the major issues that must be addressed is the interrelationships between traditional marketing, digital marketing, technologies, audience, and cost which are critical factors in adopting an online marketing strategy.

ANALYTIC NETWORK PROCESS (ANP)

ANP is the general theory of analyzing complex decision problems wherein analytic hierarchy process (AHP) is a special case (Saaty, 1980). AHP considers a decision problem with linear hierarchical structure while ANP extends this into a network of interdependent components. AHP/ANP is grounded on its three basic features: modeling system's complexity, measuring on a ratio scale and synthesizing as presented by Promentilla et al. (2008). See Table 1 as described by Promentilla et al. (2008).

Using pairwise comparisons and judgments, local priorities in ANP are computed in similar to how local priorities in AHP are generated. Unlike other MCDM methods, ANP captures both qualitative and quantitative criteria in an analytical decision model with components that are interrelating. Figure 1 represents an example of the form of the network structure used in a particular decision-making process.

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Table 1. The main basic characteristics of AHP/ANP

Functions/Features	AHP	ANP
(1) Structuring system's complexity	One-directional hierarchical structure with the assumption of mutual dependence of elements	A non-linear network structure of interdependence and feedback. Hierarchy, a linear structure, is a special case
(2) Measuring on a ratio scale	Local priorities derived from pairwise comparison matrices	Local (or initial) priorities derived from pairwise comparison matrices
(3) Synthesizing	Global or overall priorities from hierarchic composition or additive synthesis	Overall (or final) priorities from supermatrix calculations

Adopted from Promentilla et al., 2008.

Figure 1. A sample network structure and its corresponding supermatrix
Promentilla et al., 2006.

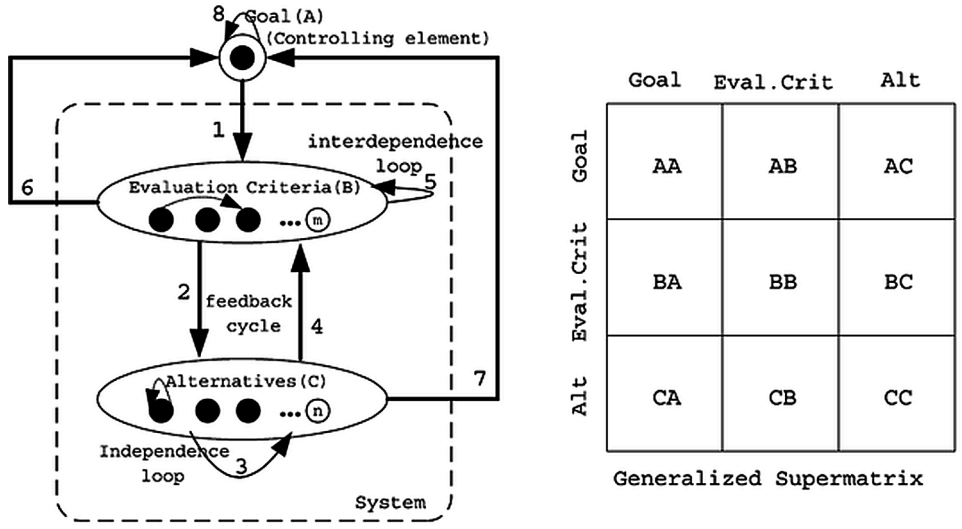


Figure 1 shows a hierarchical network or a hiernet which is a digraph. The goal is composed of a single element and it controls the criteria and the alternatives components as represented by arcs 6 and 7, respectively. These arcs allow the network to be a strongly connected digraph in order to form an irreducible supermatrix (Saaty, 2001). Arcs 1 and 2 are unilateral hierarchical dependence. Arc 4 represents a feedback loop which means that the alternatives also depend on the elements of the criteria component. Arc 5 represents an interdependence loop which means that each element of the criteria component is interrelated with some or all of the elements in the component. Arc 3 is an independence loop which means that the alternative depends only on itself. In this digraph, the direction of the arrow or arc determines the dominance of the elements of the component to other elements of another component or being dominated by other elements of another component. When an arc is pointing to a component (Arc 1 and 2), it means that the elements of that component influence the elements of the component from which the arc is emanating. The construction of the supermatrix is detailed in the reference books of the ANP, e.g. Saaty (2001).

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CASE STUDY: VIABILITY OF ONLINE MARKETING IN SMALL AND MEDIUM ENTERPRISES – CENTRAL PHILIPPINE SCENARIO

A case study was conducted in Cebu City where majority of the business firms in central Philippines is located. The economic stability of Cebu City is known to be the next of the busiest enterprises in the Philippines. Cebu is less than 2% of the entire Philippines in terms of surface area. Despite of its size, it accounts for 4.9% of the total population and 10% of the exports. It also has more than one million tourists, which means that about half of the visitors of the country choose to come to Cebu.

Cebu has a large population which means that it could support a good number of small and medium enterprises (SMEs). In fact, long before the last population count in 2007, Cebu had already close to 3,000 SMEs with estimated assets of about Php 5.5 billion (around US$ 122 million), sales of Php 12 billion (around US$ 266 million) and total employment of about 180,000 workers (Fajardo, 2010). The Department of Trade and Industry of the Philippine government Cebu provincial office established the Small and Medium Enterprises Development Council – Cebu (SMEDC-Cebu) and was formally organized in February 21, 1996 by virtue of a law otherwise known as the Magna Carta for Small Enterprises. It was created to effectively spur the growth and development of SMEs throughout the country by way of facilitating and closely coordinating national and local efforts to promote the viability of SMEs.

These service industries were selected as they are still emerging industries on the use of online marketing. Although a handful companies on these industries are currently engaging on online marketing, in general, their orientation is still primitive. Target firms range from small to medium enterprises. Out of ten respondents, two of them belong to medium enterprise and the rest were from small enterprises. In this approach, specific category of firm is irrelevant as long as these firms have not fully engaged in online marketing. Respondents had to be owners or marketing managers of these SMEs who have adequate information and experience in making critical business decisions. Based from previous works, these respondents were sufficient to draw relevant findings. This had to be taken from a point of analytic generalization described by Yin (1994) as opposed to widely adopted statistical generalization. Unlike statistical generalization where the selected sample describes the population, analytic generalization aims to develop, strengthen, or contest a theory. Thus, this study did not intend to describe all service SMEs but to provide findings related to the use of online marketing. Table 2 shows the profile of case respondents.

Thorough literature review has been conducted to identify literature gaps. Literature review was divided into two parts. The first part focused on the review of online and traditional marketing literature. The second one highlighted the review on several MCDM methodologies that attempted to address a complex decision problem. Further on the study, it noticed that current literature lacks assessment of the viability of online marketing for SMEs. This is a significant issue as it provided guidelines for SMEs on choosing whether or not online marketing is appropriate for them taking into account several components in decision-making. It also found out that ANP is the most appropriate tool in handling complex decisions. Thus, this work focused on applying ANP to assess the viability in using online marketing for SMEs.

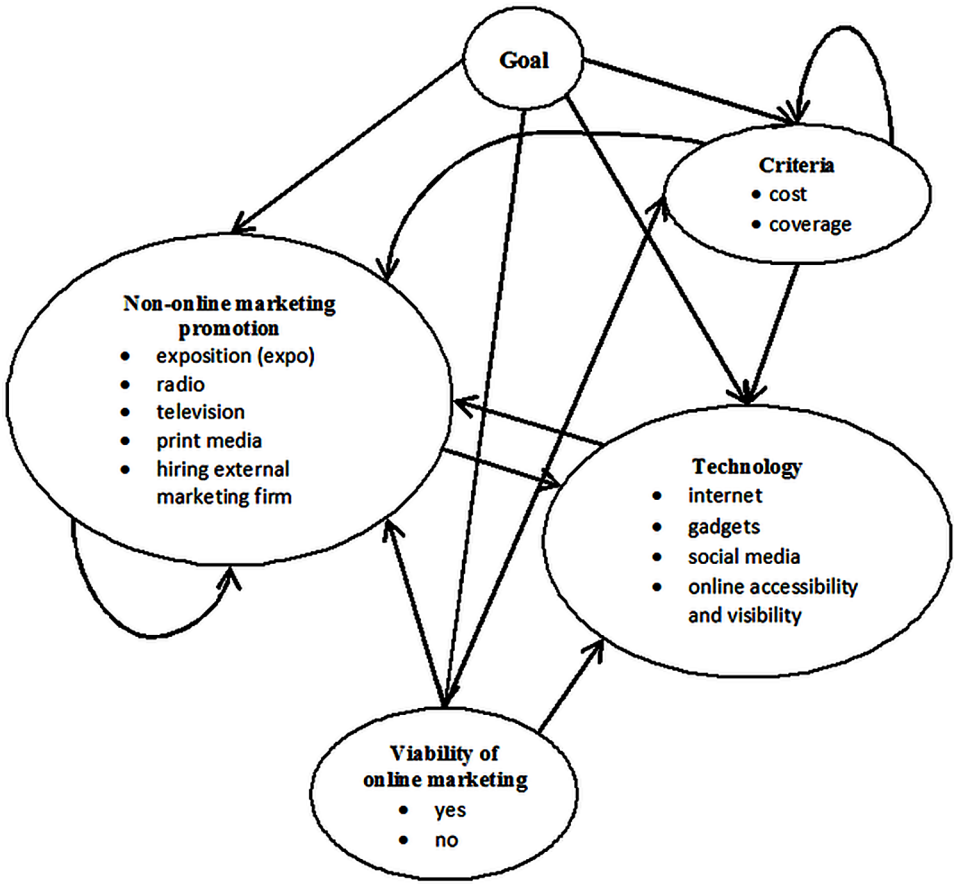
A survey questionnaire was formulated to collect adequate data from respondents involved in the study such as SMEs and decision-makers. The questions in the questionnaire were based from the operational model developed in Figure 2. Ten sets of questionnaires were disseminated to respondents in an administered manner. The survey questionnaire enables the respondents to perform pairwise comparisons in the context of the ANP.

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Table 2. The profile of SMEs under consideration

Respondents	Type of Industry	Workforce Size	Asset Size (Million Php)	Classification
Coffee Dream	food and beverage services	100 - 120 crews	40-60	medium
Gilnaks Food Industries	accommodation and food service activities / food manufacturing	13 workers	8	small
Prime Nurselink Review Center	training services	11 staffs	7	small
Claire's Bakeshop	accommodation and food services activities	10 workers	4	small
88DB Phils., Inc.	advertising services	90 employees	100	medium
iRepublique	wholesale and retail trade	10 workers	3	small
Masaji Oriental Spa	spa services	12 therapists	5	small
Verlan Lending Inc.	lending investor services	10 staffs	7	small
Berdin's Firecrackers	pyrotechnics services	12 workers	8	small
Sofia Store	mini groceries services	10 crews	3	small

Figure 2. Decision model on the viability of online marketing for SMEs



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Table 3. Codes used in the study

Code	Decision Components and Elements
G	Goal (component)
O	Online marketing (component)
O1	yes to online marketing
O2	no to online marketing
T	Technology (component)
T1	internet
T2	gadgets
T3	social media
T4	website
C	Criteria (component)
C1	cost
C2	coverage
N	Non-online marketing promotions (component)
N1	expo
N2	radio
N3	television
N4	print media
N5	external marketing firm

The objective of this work in general is to guide SMEs in their attempt to implement online marketing strategy. There are five components or cluster in the digraph. These are the goal, criteria, non-online marketing promotion, technology, and viability of online marketing. Figure 2 shows the goal as a main controlling element with interdependencies with the rest of the components. This model was verified by the case respondents. To facilitate easy recall and ease of presentation, a coding system was provided in this study. Table 3 presents the codes of each element in the decision model.

Table 3 presents identified clusters or decision components with their corresponding codes. Goal, technology, criteria, and non-online marketing promotions are coded with G, T, C and N, respectively. The sub-criteria are coded in a way that shows reference from their parent criterion. For instance, the elements under component criteria are coded as C1 and C2. Likewise, other decision components and elements were coded similarly.

METHODOLOGY

In general, the proposed method in determining the viability of online marketing for SMEs can be described in the following steps:

1. *Decompose the decision problem into a network.* This has been made in a form of wide-ranging review of literature with identification of gaps. It has been established from the review that previous

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studies failed to identify the viability of online marketing for SMEs. It was also found realized that the problem requires an MCDM approach, particularly ANP, because of the interdependencies and the number of factors that must be present in the decision model. From this, five decision components were recognized which are the goal, criteria, non-online marketing promotions, technology and alternatives. The interdependencies of these components were structured as shown in Figure 2.

2. *Elicit pairwise comparisons based from the network model developed in step 1.* A questionnaire was developed and distributed purposively to all identified respondents. The questionnaire in itself was prepared to allow pairwise comparisons among elements of the decision network. A supervised survey was implemented so that questions raised by the decision-makers (respondents) would be clearly and promptly assisted. This approach enabled the decision-maker to re-examine the pairwise comparisons matrices if in case the decisions are inconsistent. In eliciting pairwise comparisons, generally the question being asked is: "Given a control element, a component (element) of a given network, and given a pair of components (or elements), how much more does a given member of the pair dominate the other member of the pair with respect to the control element?" (Promentilla et al., 2006). The Saaty's Fundamental Scale (Saaty, 1980), shown in Table 4, was utilized to compare the elements pairwise. Pairwise comparisons matrices were generated with a reciprocal characteristic. For instance, comparing C1 and C2 with respect to G has a ratio scale of 5, then comparing C2 and C1 must have a ratio scale of 1/5 as the reciprocal of 5. Local priority vectors were computed using equation (1); consistency ratios are checked using equations (5) and (6).
3. *Compute the local relative weights obtained from the pairwise comparisons processes in step 2.* The input to the supermatrix of a hierarchical network depends on the presence and type of dependencies described in the digraph. The eigenvector method is one of the popular methods used to quantify the relative dominance of the elements from pairwise comparison matrices. Saaty (1980) proposed the following eigenvalue formulation to obtain the desired ratio-scale priority vector (or weights) w of n elements:

$$Aw = \lambda_{max} w \tag{1}$$

Table 4. Saaty's fundamental scale

Rating	Definition	Explanation
1	Equal importance	Two elements contribute equally to the objective
2	Weak	between equal and moderate
3	Moderate importance	Experience and judgment slightly favor one element over another
4	Moderate plus	between moderate and strong
5	Strong importance	Experience and judgment strongly favor one element over another
6	Strong plus	between strong and very strong
7	Very strong or demonstrated importance	An element is favored very strongly over another; its dominance demonstrated in practice
8	Very, very strong	between very strong and extreme
9	Extreme importance	The evidence favoring one element over another is one of the highest possible order or affirmation

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where A is the positive reciprocal pairwise comparisons matrix, λ_{max} is the maximum (or principle) eigenvalue of the matrix A. λ_{max} can be computed using the following formulations:

$$Aw - \lambda_{max} w = 0 \tag{2}$$

$$(Aw - \lambda_{max} I)w = 0 \tag{3}$$

$$A - \lambda_{max} I = 0 \tag{4}$$

Equation 4 yields a polynomial of λ to the degree n and the largest root of the polynomial is the λ_{max}. For consistent judgment, $\lambda_{max}=n$, otherwise, $\lambda_{max}>n$. The measure of consistency of judgment is measured through the Consistency Index (CI) and Consistency Ratio (CR). The Consistency Index (CI), as a measure of degree of consistency, was calculated using the formula

$$CI = (\lambda_{max} - n)/(n - 1) \tag{5}$$

The consistency ratio (CR) is computed as

$$CR = CI/RI \tag{6}$$

where RI is the mean random consistency index (see Alonso and Lamata (2006) for values of RI). Acceptable CR values must be less than 0.1. Decision-makers were asked to repeat the pairwise comparisons for CR values greater than 0.1.

4. *Aggregate expert judgments.* Corresponding pairwise comparisons from SMEs decision-makers were then aggregated into a matrix where each element consists of aggregated judgment elicited by all decision-makers. The aggregation process requires determining the geometric mean of all elicited judgments. To compute the aggregated value, it is said that for each pairwise comparison matrix, a total of k number of samples was taken which corresponds to k number of decision-makers. To aggregate judgment of these decision makers, a geometric mean method is used as prescribed by Saaty (2001). Aggregation using geometric is described as follows,

$$X_{ij} = \left(\prod_k x_{ij}^k \right)^{1/k} \tag{7}$$

where X_{ij} is the aggregate score of comparing row element i and column element j in any pairwise comparison matrix, k is the number of decision-makers or assessors and x_{ij}^k is the score of the kth decision-maker of comparing row element i and column element j in a given pairwise comparisons matrix.

5. *Populate the initial supermatrix with the relative weights from step 3.* Global priority ratio scales or priorities can be obtained based on the synthesizing concept of the supermatrix. By raising the matrix to large powers, the transmission of influence along all possible paths defined in the decision structure is captured in the process (Saaty, 2001). The convergence of initial priorities (stochastic

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matrix) to an equilibrium value in the limit supermatrix provides a set of meaningful synthesized priorities from the underlying decision structure (Promentilla et al., 2008). Saaty (2001) assured that as long as the supermatrix representation is a primitive irreducible matrix derived a strongly connected digraph, the initial supermatrix will converge to a limit supermatrix. Each column of the limit supermatrix is a unique positive column eigenvector which corresponds to the stable priorities from the limit supermatrix and can be used to measure the overall relative dominance of one element over another in a network structure (Promentilla et al., 2006).

RESULTS

An illustrative decision model, presented in Figure 2, is carried out in the case study. The decision problem consists of goal component, non-online marketing component with five elements, the technology component with four elements, criteria component with two elements and lastly, the alternative viability of online marketing with two elements. Note that the given framework is not only limited to the number of factors but could extend to sufficiently large number of components and elements. The structure of the decision problem must agree with reliable information obtained from related studies and from practical experience of field experts.

There are seven types of pairwise comparisons carried out in the study. First, pairwise comparisons are done on the outer dependence of the elements of non-online marketing promotions, criteria, technology, and viability of online marketing with respect to the goal. Second, pairwise comparisons are done on the dependence among the elements of the criteria component. Third, pairwise comparisons are done on the dependence relationships of non-online marketing promotion component towards criteria elements. Fourth, pairwise comparisons are done on the independence of non-online marketing promotions elements. This is due to the interrelationships on the factors influence by the component. Fifth, pairwise comparisons are done on the dependence relationships of the elements of the technology component towards criteria component. Sixth, pairwise comparisons are done on the feedback loop between non-online marketing promotion and technology components. Lastly, pairwise comparisons are done on the dependence relationships of the elements of non-online marketing promotion, criteria and technology components towards the elements of the viability of online marketing component. Note that only upper triangle of the matrix is filled out as the lower triangle represents the straightforward reciprocal of the upper triangle. For succinctness, all pairwise comparisons in all types and in all experts could not be presented in this chapter due to the large amount of space requirement. Nonetheless, aggregated pairwise comparisons matrix of each type is shown here for discussion. The decision model in Figure 2 served as the basis for pairwise comparisons among components and elements.

An aggregated pairwise comparison of the first type is shown in Table 5. The question being asked in Table 5 is like this: “From non-online marketing promotions component, comparing expo (N1), radio (N2), television (N3), print media (N4), and external marketing firm (N5), which one more dominates the goal (G) and by how much?”. The resulting eigenvector or priority vector together with the maximum eigenvalue and consistency ratio CR are shown in Table 5.

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Table 5. Aggregated pairwise comparisons comparing non-online marketing elements with respect to the goal

G	N1	N2	N3	N4	N5	e-Vector
N1	1	0.8272	0.7410	1.2821	1.8015	0.1983
N2	1.2089	1	1.4140	1.1962	2.1689	0.2534
N3	1.3493	0.7071	1	2.3246	2.1946	0.2642
N4	0.7800	0.8360	0.4300	1	2.8772	0.1849
N5	0.5551	0.4611	0.4560	0.3476	1	0.0993

$\lambda_{max} = 5.143$, CR = 0.032

Table 6 shows an aggregated pairwise comparisons matrix of the relative importance of the elements in the criteria component with respect to the goal. The question being asked in Table 6 is like this: "Comparing cost (C1) and coverage (C2), which one more dominates the goal (G), and by how much?". The resulting eigenvector as well as the maximum eigenvalue and the consistency ratio CR value are reported in Table 6.

Table 7 shows the aggregated pairwise comparisons of the third type. The question being asked in Table 7 goes this way: "Comparing expo (N1), radio (N2), television (N3), print media (N4), and external marketing firm (N5), which one more dominates cost (C1), and by how much?" The resulting eigenvector or priority vector with consistency ratio CR are shown in Table 7.

Table 8 shows another type of aggregated pairwise comparisons of the elements in the non-online marketing promotions component. The question being asked in Table 8 goes this way: "From non-online marketing promotions component, comparing expo (N1), radio (N2), television (N3), print media (N4), and external marketing firm (N5) elements, which one more dominates the goal (G), and by how much? The resulting eigenvector with the maximum eigenvalue and consistency ratio CR are shown in Table 8.

Table 6. Aggregated pairwise comparisons comparing elements of the criteria with respect to the goal

G	C1	C2	e-Vector
C1	1	1.5337	0.6053
C2	0.652	1	0.3947

$\lambda_{max} = 2.000$, CR = 0.000

Table 7. Aggregated pairwise comparisons of comparing non-online marketing promotions with respect to criteria

C1	N1	N2	N3	N4	N5	e-Vector
N1	1	0.7042	0.8424	0.7499	1	0.1545
N2	1.4200	1	1.7731	1.8684	2.2442	0.2912
N3	1.1871	0.5640	1	3.1867	3.1867	0.2807
N4	1.3335	0.5352	0.3138	1	3.1533	0.1751
N5	1	0.4456	0.3138	0.3171	1	0.0985

$\lambda_{max} = 5.345$, CR = 0.078

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Table 8. Aggregated pairwise comparisons of comparing non-online marketing elements with respect to the goal

G	N1	N2	N3	N4	N5	e-Vector
N1	1	0.5493	0.5887	0.6335	0.9390	0.1275
N2	1.8206	1	1.5060	3.1366	2.2180	0.3230
N3	1.6986	0.6640	1	3.4418	3.0840	0.2965
N4	1.5784	0.3188	0.2905	1	2.4210	0.1500
N5	1.0649	0.4509	0.3243	0.4131	1	0.1030

$\lambda_{max} = 5.266$, CR = 0.060

Table 9 shows another pairwise comparisons of the fifth type. The question being asked in Table 9 is like this: "Comparing internet (T1), gadgets (T2), social media (T3), online accessibility or otherwise known as website (T4), which one more dominates coverage (C2), and by how much?" The resulting priority vector with the maximum eigenvalue and consistency ratio CR are reported in Table 9.

Table 10 and 11 show another type of pairwise comparisons in a form of feed-backing from non-online marketing promotions (N) component to the technology (T) component. The question being asked in Table 10 is like this: "Comparing expo (N1), radio (N2), television (N3), print media (N4), hiring external firm (N5), which one more dominates the element internet (T1) of the technology (T) component, and by how much?" In respond to the feedback of the element internet (T1) to elements of non-online marketing promotions (N), the question being asked in Table 11 is like this: "Comparing internet (T1), gadgets (T2), social media (T3), online accessibility and visibility (T4), which one more dominates the element expo (N1) of the non-online marketing promotions component, and by how much?" Again, the eigenvector is computed together with the maximum eigenvalue and consistency ratio CR are shown in Tables 10 and 11.

Table 12 shows another aggregated pairwise comparisons of the last type on the dependence of technology (T) with respect to the element yes to online marketing (O1). The question asked in Table 12 is like this: "Comparing internet (T1), gadgets (T2), social media (T3), and online accessibility and visibility (T4), which one more dominates the element yes to online marketing (O1), and by how much?" The resulting eigenvector or priority local vector with maximum eigenvalue and CR are likewise presented in Table 12.

Table 9. Aggregated pairwise comparisons of comparing the elements of technology component with respect to the criteria

C2	T1	T2	T3	T4	e-Vector
T1	1	2.0998	1.0481	1.1487	0.3052
T2	0.4762	1	0.5863	0.5863	0.1540
T3	0.9541	1.7056	1	1.1233	0.2815
T4	0.8706	1.7056	0.8902	1	0.2594

$\lambda_{max} = 4.003$, C.R. = 0.001

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Table 10. Aggregated pairwise comparisons of non-online marketing with respect to technology

T1	N1	N2	N3	N4	N5	e-Vector
N1	1	0.5065	0.5065	0.4427	1.1962	0.1230
N2	1.9744	1	0.933	1.6719	2.6531	0.2774
N3	1.9744	1.0718	1	1.9512	2.3771	0.2911
N4	2.2587	0.5981	0.5125	1	2.4464	0.2067
N5	0.8360	0.3769	0.4207	0.4088	1	0.1017

$\lambda_{max} = 5.073$, C.R. = 0.016

Table 11. Aggregated pairwise comparisons of technology with respect to non-online marketing

N1	T1	T2	T3	T4	e-Vector
T1	1	2.3618	1.2821	1.1487	0.3235
T2	0.4234	1	0.4023	0.572	0.1328
T3	0.78	2.4856	1	0.9936	0.2800
T4	0.8706	1.7482	1.0065	1	0.2638

$\lambda_{max} = 4.016$, CR = 0.006

Table 12. Aggregated pairwise comparisons of technology with respect to online marketing

O1	T1	T2	T3	T4	e-Vector
T1	1	2.7305	1.6438	2.2036	0.4138
T2	0.3662	1	1.6141	2.2505	0.2474
T3	0.6084	0.6196	1	2.0560	0.2116
T4	0.4538	0.4443	0.4864	1	0.1272

$\lambda_{max} = 4.150$, CR = 0.056

These local eigenvectors were plugged into their respective locations in the supermatrix. By assigning G, C, T, N, A of goal, criteria, technology, non-online marketing promotions and viability of online marketing components, respectively, a generalized supermatrix of the decision-making as shown in Figure 2 can be drawn. Local priority vectors obtained from the pairwise comparisons are populated in the generalized supermatrix. The initial supermatrix (unweighted) is presented in Table 13. After populating the supermatrix with the local priority vectors, a column stochastic supermatrix is obtained which is dome by obtaining column sums and dividing each element with its column sum. Table 14 provides the column stochastic supermatrix.

The column stochastic matrix in Table 14 is raised to large powers in order to obtain limiting supermatrix. When the supermatrix converges to its Cesaro sum (Saaty, 2001), column values become identical. Each column represents the principal right eigenvector or the global eigenvector of the supermatrix. Table 15 shows the limiting supermatrix with the global eigenvector.

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Table 13. Initial (unweighted) supermatrix

	G	O1	O2	T1	T2	T3	T4	C1	C2	N1	N2	N3	N4	N5
G	1	1	1	1	1	1	1	1	1	1	1	1	1	1
O1	0.688	1	0	0	0	0	0	0	0	0	0	0	0	0
O2	0.312	0	1	0	0	0	0	0	0	0	0	0	0	0
T1	0.399	0.414	0.294	1	0	0	0	0.377	0.305	0.324	0.277	0.383	0.312	0.422
T2	0.256	0.247	0.244	0	1	0	0	0.118	0.154	0.133	0.128	0.160	0.170	0.157
T3	0.183	0.212	0.247	0	0	1	0	0.244	0.282	0.280	0.318	0.264	0.305	0.253
T4	0.163	0.127	0.216	0	0	0	1	0.261	0.259	0.264	0.278	0.192	0.214	0.169
C1	0.567	0.668	0.514	0.596	0.561	0.515	0.526	1	0	0	0	0	0	0
C2	0.433	0.332	0.486	0.404	0.439	0.485	0.474	0	1	0	0	0	0	0
N1	0.198	0.161	0.085	0.123	0.175	0.116	0.117	0.155	0.110	0	0	0	0	0
N2	0.253	0.328	0.259	0.277	0.252	0.295	0.251	0.291	0.251	0	0	0	0	0
N3	0.264	0.259	0.373	0.291	0.265	0.243	0.261	0.281	0.346	0	0	0	0	0
N4	0.185	0.154	0.166	0.207	0.189	0.200	0.228	0.175	0.188	0	0	0	0	0
N5	0.099	0.099	0.117	0.102	0.119	0.146	0.143	0.099	0.106	0	0	0	0	0

Table 14. Column supermatrix

	G	O1	O2	T1	T2	T3	T4	C1	C2	N1	N2	N3	N4	N5
G	0.200	0.200	0.200	0.250	0.250	0.250	0.250	0.250	0.250	0.500	0.500	0.500	0.500	0.500
O1	0.138	0.200	0	0	0	0	0	0	0	0	0	0	0	0
O2	0.062	0	0.200	0	0	0	0	0	0	0	0	0	0	0
T1	0.080	0.083	0.059	0.250	0	0	0	0.094	0.076	0.162	0.138	0.192	0.156	0.211
T2	0.051	0.049	0.049	0	0.250	0	0	0.030	0.038	0.066	0.064	0.080	0.085	0.079
T3	0.036	0.042	0.049	0	0	0.250	0	0.061	0.070	0.140	0.159	0.132	0.152	0.126
T4	0.033	0.025	0.043	0	0	0	0.250	0.065	0.065	0.132	0.139	0.096	0.107	0.084
C1	0.113	0.134	0.103	0.149	0.140	0.129	0.132	0.25	0	0	0	0	0	0
C2	0.087	0.066	0.097	0.101	0.110	0.121	0.118	0	0.250	0	0	0	0	0
N1	0.040	0.032	0.017	0.031	0.044	0.029	0.029	0.039	0.027	0	0	0	0	0
N2	0.051	0.066	0.052	0.069	0.063	0.074	0.063	0.073	0.063	0	0	0	0	0
N3	0.053	0.052	0.075	0.073	0.066	0.061	0.065	0.070	0.086	0	0	0	0	0
N4	0.037	0.031	0.033	0.052	0.047	0.050	0.057	0.044	0.047	0	0	0	0	0
N5	0.020	0.020	0.023	0.025	0.030	0.037	0.036	0.025	0.027	0	0	0	0	0

The global priority vector was analysed on a component basis. Table 16 provides the ranking of elements per decision component. Note that each element in the supermatrix determines the influence or dependence of row component on column component. Shown in Table 16 are the raw global priority vector, and the distributive, ideal, ranking of elements according to their components. The raw column indicates the column values obtained from the limiting supermatrix found in Table 15. Distributive col-

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Table 15. Limiting supermatrix

	G	O1	O2	T1	T2	T3	T4	C1	C2	N1	N2	N3	N4	N5
G	0.279	0.279	0.279	0.279	0.279	0.279	0.279	0.279	0.279	0.279	0.279	0.279	0.279	0.279
O1	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048	0.048
O2	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022	0.022
T1	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100	0.100
T2	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
T3	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070	0.070
T4	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059	0.059
C1	0.105	0.105	0.105	0.105	0.105	0.105	0.105	0.105	0.105	0.105	0.105	0.105	0.105	0.105
C2	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081	0.081
N1	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028	0.028
N2	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050	0.050
N3	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052	0.052
N4	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035	0.035
N5	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020	0.020

Table 16. Global priority vector

Elements	Global Priority Vector			Rank
	Raw	Distributive	Ideal	
G	0.279	1	1	1
O1	0.048	0.688	1	1
O2	0.022	0.312	0.454	2
T1	0.100	0.358	1	1
T2	0.050	0.180	0.504	4
T3	0.070	0.249	0.696	2
T4	0.059	0.213	0.595	3
C1	0.105	0.566	1	1
C2	0.081	0.434	0.766	2
N1	0.028	0.152	0.545	4
N2	0.050	0.269	0.965	2
N3	0.052	0.279	1	1
N4	0.035	0.190	0.680	3
N5	0.020	0.110	0.394	5

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umn is computed by normalizing each element in the raw column with the component sum. Thus, each component in the distributive column has sum equal to 1. Ideal column is also computed by dividing each element in the distributive column with the maximum value in that column. Ideal column provides decision-makers pertinent information on the distance of a particular element to the ideal element, on a normal scale. Rank column which provides the rank of the element relative to the component is computed by assigning a rank order of the elements in a component in a descending fashion. Thus, large values in the distributive or ideal column are assigned with higher ranks.

DISCUSSION AND CONCLUSION

Ranking shows that with the given decision model, online marketing is viable in service SMEs. This implies that SMEs decision-makers must consider adopting online marketing strategies to promote their products and services. The magnitude of this priority as shown in the ideal rank is twice compared to its contrast of not adopting online marketing. In the technology component, internet is the most prioritized technology followed by social media, online accessibility, and gadgets with the least priority. In this context, this can be explained as follows. Decision-makers perceived internet as an enabling resource in promoting online marketing. Inaccessibility of firms and markets with the internet fails any online marketing program and initiatives. Thus, appropriate policies regarding internet accessibility and use must be in placed by the government, firms and other sectors in order to promote online marketing. Secondly, social media is considered as second from the top priority in supporting online marketing. This can be easily understood from the point of view of community's desire for greater communication and socialization. In this respect, SMEs and markets can divulge on feedback mechanisms towards better products and services. This can be observed as a growing number of firms, both small and large, which promote their products and services through social media. Online visibility, e.g. websites, is considered third in the list as it highlights the details of firms' profile, structure, programs, products and services. With respect to service SMEs, this approach seems to have been outperformed by internet and social media because these firms have not yet established their name and brand in the market and internet and social media are faster approaches to catch the attention of the market. While gadgets support mobility, these are heavily dependent on internet and social media in the context of online marketing. Thus, this is considered as the least priority.

In the criteria component, cost is more prioritized compared to coverage. This is relevant because SMEs have tighter financial constraints. They are also likely considering short term benefits over long term goals. Thus, any initiatives which entail considerable costs are usually brought to long discussion tables with firm's decision-makers. Thus, SMEs must optimize the use of online marketing by drawing out strategies that could possibly lower down associated costs. Lastly, considering the non-online marketing component, television, and radio are highlighted as relevant supports to online marketing as well as its relevant alternatives. These are relevant because these media cover wider coverage at a modest cost and maintenance. Hiring an external marketing firm is an unlikely strategy for SMEs as it entails additional investment which is a major constraint to most SMEs. As support media, carefully integrating this with online marketing could be a possible route for SMEs.

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Section 3
Tools and Technologies

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Chapter 20
Crowdfunding for Non-Profits: Opportunities and Challenges

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ABSTRACT

Crowdfunding has been applied to equity investments as well as in a preproduction consumer purchase model. Crowdfunding is projected to become a $US90-96 billion industry by 2025, and is being touted as a valuable tool for fundraising for charitable non-profits. For leading non-profits around the globe a critical question is whether charitable crowdfunding is a threat or an opportunity for them. This chapter demonstrates that charitable crowdfunding represents a powerful new fundraising tool for leading, start-ups and not for profit organisations. This discussion contributes to the financial knowledge, specifically in the online crowdfunding and non-profit organisations and concludes that non-profit organisations through crowdfunding has the potential to expand the donor base.

INTRODUCTION

Crowdfunding, a recent phenomenon of the contemporary not for profit marketplace, raises capital from an extensive online community of individuals, called a crowd. The funds obtained from the individual is usually small-to-medium (Ordanini, 2009). According to Mulvey, (2013), the non-profit sector can couple crowdfunding with social media to produce radical changes in the way nonprofits obtain funds. Crowdfunding has changed the dynamics of funding and has become the new avenue of fundraising for non-profits to do so social good (Hobey, 2014). Crowdfunding occurs on an information technological platform which directly links donors and requestors, resulting in a very effective fundraising method. In the contemporary marketplace environment, non-profit stakeholders should seriously analyze the potential of crowdfunding revenue raising and the financial contributions to the organization. Crowdfunding today has become so important that some researchers now consider crowdfunding for non-profit sector as important as what digital file sharing once was for in the music industry (Southin, 2013).

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This chapter examines crowdfunding as a phenomenon, applications and impact of crowdfunding as an additional source of revenue for nonprofits. Following the introduction, a background of crowdfunding is provided. A brief summary of the non-profit sector and crowdfunding explores recent trends that have made crowdfunding a significant opportunity for non-profits. Section four explores various regulatory changes that would be needed keeping in view the trends that are occurring in the nonprofit sector. The behavior of donors, aggregated increase in funding for not for profit organizations, legislation and taxation are discussed. This chapter generates knowledge in facilitating alternative revenue opportunities and concludes with

CROWDFUNDING PHENOMENON

Crowdfunding is an attractive alternative to traditional funding even for individuals. Crowdfunding is so popular that the campaign sponsors can achieve their funding goal in a very short period. It takes a lot of preparation before the launch of crowdfunding campaign to achieve funding goal. Sometimes, celebrity power can also help achieve funding goal. Take example of music legend Neil Young. He started his crowdfunding campaign and was able to achieve his $2.4 million funding goal in just one day (Ursery, 2014). For small businesses, crowdfunding is a great source of alternative funding. These businesses, musicians, and real estate are the major beneficiaries of crowdfunding (Hogue, 2015; Fisk et al., 2011). In 2014, more than 60% of small and medium businesses (SMBs) in USA alone were looking at alternative sources of funding including friends and family.

For not for profit organizations as well, there is enormous potential to secure financial resources and to leverage the power of the crowd to achieve organizational outcomes by using crowdfunding platforms, such as:

1. Kickstarter,
2. Fundly,
3. IndieGoGo,
4. Kiva,
5. Peerbackers,
6. Fundable.

The US Jumpstart Our Business Startups (JOBS) Act of 2011 allowed smaller investors to purchase shares of a company and some US states enacted their own legislation to allow exemption for intrastate crowdfunding. Several states (including Georgia, Michigan and Washington) were actively seeking actions to shape crowdfunding industry to suit today's needs (Ursery, 2014). The JOBS act allowed the use of small amounts of capital from a large number of individuals to finance a new business venture over the Internet.

Crowdfunding is an opportunity as well for both large and small non-profits. Specifically, crowdfunding is a powerful fundraising tool for nonprofits that can substantially increase the donor base for all nonprofits. It's easy for anyone living anywhere to set up a web page for his/her crowdfunding project and start soliciting donation from the crowd. There are however, few basic requirement that the initiator of the crowdfunding project must meet. These requirements relate to the crowdfunding platform the initiator will be using. First, the initiator must set a funding goal. A funding goal determines the amount of funds the initiator wished to receive. Second, there must be a timeline of the crowdfunding project.

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A timeline determines the possible number of days in which the funding goal can be achieved. Third requirement is the project pitch. A project pitch refers to the verbal and/or visual description of the crowdfunding project. Recent technological developments, especially web 2.0, has boosted crowdfunding. Now crowdfunding project initiators and donors can easily interact with each other e.g. by using social media. One great example is the 2008 US presidential election campaign. In this campaign, Barack Obama obtained 1 total of US$ 750 million in donation. Out of this amount, more than 50% came from donations whose individual worth was less than US$ 1000 (Glaser, 2010). During last decade, many crowdfunding platforms have emerged on the scene. One of the largest of these is the kickstarter.com.

Kickstarter

Kickstarter is a very large global community developed to support creative projects. Around the globe, more than 10 million donors have supported Kickstarter project. In July 2016, Kickstarter was running 108,651 successful projects. The successful project is the one that achieved its funding goal. These project raised approximately $2480 million worth of donations (Kickstarter, 2016). The basic model of Kickstarter is based on a reward for donation. Kickstarter solely operates in US.

Fundly

Fundly is another large online crowdfunding platform that operates exclusively for nonprofits and charities. Fundly only services U.S-based crowdsourcing campaigners and donors. Despite this limitation, by 2013, Fundly was running more than 3000 campaigns. These campaign raised more than US$ 300 million in donations (Fundly, 2013). Fundly charges a platform fee 4.9% + credit card processing fee 2.9 percent + $.30/transaction to set up a fundraising page (Fundly, 2016).

Indiegogo

Indiegogo (www.indiegogo.com) is one of the world's largest crowdfunding platforms. With social media integration, direct email, and announcement features users can easily spread the word, raise awareness, and increase funding. For 501c) 3) nonprofits and charities in the US IndieGoGo offers a 25 percent fee reduction (indiegogo.com, 2016). In general, this exemption is applied to not-for-profit organizations (scientific, charitable, educational, religious, etc.) that must be registered and verified by the US Government through the IRS. 501(c) (3) tax exemptions and deductions are only available in the United States. Besides these very large crowdfunding platforms, there are many other small-to-medium sized crowdfunding platforms for nonprofits such as:

1. **Causes**,
   Causes is a crowdfunding platform for GuideStar-verified 501(c) (3) nonprofits. Users can create a cause to support a nonprofit and integrate the campaign page with social media to mobilize their network to make donation.
2. **CauseVox**,
   CauseVox is an online crowdfunding platform that nonprofits can use to create customized fundraising websites for campaigns.

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3. **Crowdrise**,
   Crowdrise is an online crowdfunding platform that followers of nonprofits can use to create personal fundraising pages where their friends and family can donate.
4. **Giveffect**,
   Giveffect is exclusively for charitable crowdfunding where donations go directly to partner nonprofits (Chung, 2013).
5. **Donate Now**,
   Donate Now/Network for Good provides free and economical fundraising tools that nonprofits can use to obtain donations on their own websites and on social networks.
6. **DonorsChoose**,
   DonorsChoose is a platform that individuals can use to obtain donations for needy students.
7. **FirstGiving**,
   FirstGiving can be used by individuals to obtain online donations.
8. **Fundraise.com**,
   Fundraise.com can be used by both individuals and organizations to manage their online fundraising activities.
9. **FundRazr**,
   FundRazr is a social fundraising tool for both individuals and nonprofits.
10. **Givezooks**,
    Givezooks! Can be used by nonprofits to create custom online crowdfunding campaigns and integrate their campaign sites with social media to increase donor base.
11. **GoFundMe**,
    GoFundMe is a do-it-yourself online fundraising service for nonprofits.
12. Help Attack,
    Help Attack! uses social media to collect donations.
13. **Just Giv**e,
    JustGive (www.justgive.org) is crowdfunding platform where donors can give to nonprofit organizations through e.g. fundraising registries.
14. **Pay It Square**,
    Pay It Square is a crowdfunding platform to create customized fundraising pagesand collect donations online.
15. **Razoo**, and
    Razoo is a platform that individuals and organizations can use to create fundraising pages and accept donations.
16. **StayClassy**
    StayClassy is used by small- and medium-size nonprofits for online crowdfunding.

To evaluate how effective the crowdfunding for nonprofits can be, the hurricane Sandy is a good case example. Within days after Sandy hit USA, many affected individuals started crowdfunding campaigns on sites like GoFundMe and IndieGoGo. The response received by these campaigns was very impressive and many initiators reported that they received donations from donors completely stranger for them (Goldmark, 2012). The American Red Cross also set up two campaigns with the option of directly contributing. These campaigns raised about US$ 2 million (Goldmark, 2012).

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The scope of nonprofits crowdfunding can be easily judged by noting that American Red Cross collected US$ 178 million for Hurricane Sandy (American Red Cross, 2012a). Fundly (the largest non-profit crowdfunding platform) was able to raise US$ 305 million since its inception. In comparison, The American Red Cross' was able to generate of a revenue of $3.2 billion in 2012 alone (American Red Cross, 2012b). These examples make it clear that while nonprofit crowdfunding platforms are still in their nascent stages they have garnered attention for its success and become a novel approach of fundraising.

Many nonprofits have used crowdfunding successfully. Malaria No More is a campaign run by malarianomore.org to end malaria deaths. The campaign is run on causes.com and has 20,000 supporters. Ricky Martin, a Grammy award winning singer, human rights activist, launched a campaign to help combat human trafficking. The campaign had 21,000 supporters. Maria No More auctioned shirt worn by Andy Murray during his winning Wimbledon match to raise £10,000 (News, 2016).

The An Hour of Code for Every Student was initiated in December 15, 2014 at Indiegogo and was able to raise $5 million. The objective of the project is to provide every student in every school the opportunity to learn computer science at Code.org. Kids Company is a UK nonprofit that supports vulnerable children with various kinds of support including meals and clothing.

Kids Company became UK's innovation leader in fundraising after they raised more than £100,000 in a crowdfunding campaign run on Crowdfunder (Ratty, 2015). In USA, a young woman was fighting multiple life threatening diseases. The diseases put her into a situation where she needed a full accessible home; one in which she could move freely. Website Chive was inspired to feature Smith's story and in just 14 months, over 12,000 donors helped raise $US413,000 through the Hope for a Home campaign (Kim, 2015).

TRENDS FOR CROWDFUNDING IN NOT FOR PROFITS

The Demographics of Donors

Very little is understood about the demographic variables about crowdfunding donors. To gain insight into the demographic variables of donors and crowdfunding trends in nonprofit organization fundraising highlights how nonprofit organizations can capitalize on the opportunities provided through the crowdfunding platforms. An exploration of these trends can reveal the current strategic position of nonprofits to benefit from crowdfunding.

Nonprofits generate most of their revenue through government grants. However, for most non-profits individual donors are still a significant portion of the charity donors (Government of Canada, 2015; Fritz, 2015). In Canada, approximately one in five individual taxpayers made an average donation of $446 in the tax year 2010. According to Charity Navigator (Charity Navigator, 2016), charitable giving continued its upward trend in 2015. In 2015, as an estimated $373 billion was donated for charity. For the second year in a row, total giving reached record levels. During 2014 to 2015, donations for charity increased by more than 10%. In Canada, individual donors contributed 50% of the total amount of charitable donation in 2010.

More than two-third of charitable donations came from individuals aged 45 years and more. In 2010, the United Kingdom was the eighth most charitable nation in the world while the world's fastest growing major economies - China and India - rank among the least altruistic (Ramesh, 2010). Few notable characteristics of top donors included: aged 75 and over, widowers and widows, university graduates,

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and people with household income of at least $120,000. A glance over the demographic trends of donors reveals that most contributions come from same group of older and wealthy donors (Snipes & Oswald, 2010; Guy & Patton, 2013; Marx & Carter, 2014). This can be a problem for nonprofits of all sizes. With increase in population, the donor base remains stagnant. One particular demographic group of donors can be key for success in fundraising campaigns.

Crowdfunding for nonprofits can provide a distinctive solution to this problem. Since crowdfunding platforms to not release the demographic information of their donors, it is difficult to model demographic profile of crowdfunding donors. However, there is increased possibility that these users are technologically sophisticated and do not belong to the same old and wealthy demographic group of conventional donors (Gore & DiGiammarino, 2014; Belleflamme, Lambert, & Schwienbacher, 2013). Crowdfunding appears to be attracting newer donors. These are people who haven't given philanthropically before. However, in the early days of crowdfunding, it's not yet clear what demographics the fundraising method appeals to (The Canadian Press, 2012).

While there exist no clear picture of demographic profile of crowdfunding donors, one piece of information available is their average contribution amount. In 2012, the average amount of donation made at IndieGoGo was $76 (Indiegogo, 2012). It is probably safe to assume crowdfunding campaigns can attract smaller donations from a large group of donors. If this trend increases substantially, it can encourage nonprofits of all sizes to leverage this large base of online donors capable of making small donations. These donors would be the individuals who most probably would never have been accessed through traditional fundraising methods. Non-profits already tapping the conventional group of donors can tap this additional group of donors to add another revenue stream.

Behavioral Motivations of Donors and Non-Donors

The understanding of behavioral motivations of donors can supplement the nonprofit crowdfunding efforts. Nonprofits of all sizes can equally benefit from crowdfunding. A review of studies on behavioral motivations of donors suggests that many factors are responsible for people's decision to donate for charity including self-esteem, public recognition, satisfaction of expressing gratitude for one's own wellbeing, and relief from feelings of guilt and obligation (Hibbert & Horne, 1996; (Bennett, 2003; White, 2001; Wojciechowski, 2009; Gore & DiGiammarino, 2014; Belleflamme, Lambert, & Schwienbacher, 2013). Self-esteem and public recognition are two main behavioral motivations for donors to donate. That means nonprofit crowdfunding is in a unique position to capitalize on these two factors. Nonprofits can harness self-esteem by narrowing the cause of their crowdfunding campaigns and by making modest funding goals. To harness public recognition of the donor, nonprofits should link their crowdfunding campaign with social media platforms such as Facebook.

Bendapudi, Singh, and Bendapudi (1996) developed a model that explains the donors' behaviors towards charity. This framework outlines multiple factors divided into categories that influence donors' behavior towards charity. A nonprofit can shape the factors of source (i.e. the overall image conveyed by the nonprofit in their crowdfunding campaign), message (i.e. all the elements in the message used to convince the donor to donate), and request (i.e. the amount of help solicited for) to modify the frequency and volume of donors' behavior in their favor. In a study based on the analysis of data obtained from IndieGoGo, Evers, Lourenço, and Beije (2012) applied these drivers and found that most important success factors were setting an achievable funding goal and the number of comments on the page of crowdfunding campaign.

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To achieve greater success, fundraising campaign should have a short and positive pitch. Evers, Lourenço and Beije, (2012) found that the fundraising campaigns were able to gain more generous donations and achieve a large fundraising goal when they used campaign messages which praised potential donor's compassion and generosity. It appears that donors have a self-esteem motivation with a philanthropic drive and want to feel that their contribution made some significant difference in the lives of people who need help. This apparent donors' preference was reflected in the findings of Statistics Canada. Statistics Canada (Statistics Canada, 2010) found that donors felt most motivated to donate when they felt compassion towards people in need. Nonprofits focusing their pitches on a narrow cause can leverage this preference of donors. Nonprofits, such as World Vision, are already using this approach by running Adopt a Child program. Nonprofit crowdfunding campaigns can harness public recognition of donors though interconnectedness with Facebook and other social media platforms.

Smith, Windmeijer, and Wright (2012) analyzed a large dataset of donations made on behalf individual fundraisers. The donations were made through two websites (Justgiving and Virgin Money Giving) that both worked the same way. Fundraisers set up a web page on behalf of a nonprofit and then used social media to appeal to people for donation. Smith et al. also found that, on average, a £10 increase in the mean of past donations lead new donations of £3.60 more. Findings indicate that this crowding in occurs in nonprofit crowdfunding because the crowdfunding platform can be linked with social media so that a donor's network sees when they make a donation. Established charities like the International Red Cross and Red Crescent Movement capitalized on this and were able to get more than 129,000 likes on Facebook. This supporter base can also notify other people in their network when they donate. This social currency can quickly transform into charitable currency via crowdfunding (Southin, 2013).

Understanding Non-Donor Behavior

A survey of Statistics Canada (Statistics Canada, 2010) revealed that the most common reason for donors not giving more was that they could not afford to give more. Two other popular reason were that they were happy with what they had already given and that they had given money directly to people in need rather than to organizations. Another study found that Americans donated twice as much as individuals in other rich nations but many donors did not donate more because of various reasons such as they felt they had already given too much, they needed savings for themselves and family, they thought their donation was not large enough to make an impact, they poverty is inevitable, that their donation don't get to people in need, that eradicating poverty is the job of government only, people should solve their problems themselves, and that giving donation can lead to overpopulation (The Life You Can Save, 2016).

To appeal to non-donors, nonprofit crowdfunding campaigns should be narrow and personalized. One more issues is these non-donors negative perception of how organizations used their money. This negative perception can increase with age. This concern over efficiency of fund use is particularly relevant to crowdfunding. To overcome this concern, nonprofits should ensure that they get themselves registered with the relevant tax authorities and highlight it in their crowdfunding campaigns. When donors know that a nonprofit is registered, they know the risk of fraud is minimum because authorities know where a donation is going. In this aspect, established nonprofits are in a better position to take advantage of crowdfunding than the newly started nonprofits.

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MISSAPPROPRIATIONS OF CROWDFUNDING

Since crowdfunding has become a new and attractive source of financing, more and more stories are surfacing about the misuse of crowdfunding. On crowdfunding platforms, many campaigns are started with a story to appeal potential donors to donate. These stories may range from saving a cancer patient to help an infertile couple have a baby. Truth of such stories is difficult to prove. Several U.S. states have issued warnings for immense potential misuse of crowdfunding. One example is a crowdfunding campaign that was initiated by a women to raise funds for her breast cancer treatment. It appeared that this women used the funds generated for her breast augmentation that could have been done free of cost at some breast implant service providers (DocCheck News, 2012).

In another case, the Europe's biggest Kickstarter project, the Zano mini-drone ended up nothing. The project had 12,000 backers and raised £2.3m in funding. The project was started by Torquing Group, a business started by a self-taught engineer Ivan Reedman to build a marketable drone. The Zano project was cleverly marketed and a video was released that showed a drone was already developed but its performance was poorer than expected. This video excited so much interest in the project. Later it was discovered that video showed features of drone that were not operational at the time it was shot.

The Torquing's directors managed their business poorly and spent the Kickstarter money too freely. Kickstarter chose Zano as a "staff pick". The Zono project was one of the projects shortlisted by the tech news site Engadget for their best of CES 2015 award. All this happened even though the Torquing team could not demonstrate the drone flying at the show. The creators of the "Smarty Ring" raised about $US400,000 on Indiegogo without having to provide any background information on the team or the production company. They missed delivery dates but occasionally provided terse updates saying that they would deliver at some point. The most important lesson to be learnt is for crowdfunding platform providers. These crowdfunding platforms need to reconsider the way they deal with projects involving complex hardware, massive overfunding, or large sums of money (Cellan-Jones, 2016).

The current crowdfunding mechanisms provide little consumer protection. While crowdfunding platforms claim to use complex algorithms and automated tools to identify and investigate suspicious activity on projects it is caveat civitas. The platforms get bigger and delve into equity crowdfunding and crowdfunding audience is getting larger and more money is flowing to projects and sponsors with relatively limited information about them. For example, Altrius Management, a company that raised $25,000 on Kickstarter for a playing card game called Asylum designed by a Serbian artist. The company missed delivery dates and provided no updates. The company was sued by the state of Washington and sought restitution for donors and penalties for violating the state's consumer protection statutes.

In another case, Federal Trade Commission (FTC) charged Erik Chevalier for misuse of $122,874 he raised on Kickstarter for a board game called, "The Doom That Came to Atlantic City". The game was never delivered and Erik promised to refund the money but he never did. The FTC settled the matter with Erik by refraining him from future misrepresentations about crowdfunding and penalized him $111,000, though the penalty was suspended due to Chevalier's inability to pay. The FTC has launched a program called FinTech aimed at protecting consumers in crowdfunding projects. Still with no objective third party review/validation of the investment details presented, investing on equity crowdfunding platforms can be a very risky business (Cohen, 2015).

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REGULATORY REGIME

Tax Credit

Current tax incentives are limited to those taxpayers itemizing deductions or designating bequests. This structure leads to lost opportunities in higher levels of donations. A recent study indicates that tax deductibility encourages charitable giving at all levels of income (Enders, 2016). The regulatory regime needs many changes to support crowdfunding for nonprofits. In Canada, Imagine Canada (a large Canadian charitable organization) proposed 'stretch tax credit' to address the issue of limited number of conventional donors and encourage new and less wealthy donors to become philanthropists.

The Stretch Tax Credit is a proposal to increase the federal charitable tax credit on giving that exceeds a donor's previous highest giving level. The tax credit would increase from 15% to 25% for eligible amounts below $200, and from 29% to 39% for eligible amounts above $200. The broad objective of this proposed tax credit was to provide Canadians with an extra incentive to stretch their giving, as the proportion of Canadian tax filers claiming charitable donations is declining and the amount they collectively donate has gone down.

Research shows that more than half of donors would increase their giving if there were better tax incentives (Imagine Canada, 2016). The Canada's House of Commons Standing Committee on Finance endorsed this proposal (Imagine Canada, 2015) and submitted it for further consideration by the Finance Minister due to its potential to expand the donor base and the overwhelming support it had received from nonprofits and charities. Offering similar incentives worldwide to first time and small donors would assist crowdfunding's ability to increase donor base. All donors may not value tax incentive the same but we saw earlier that one major reason cited for not donating was the unaffordability. This reason, coupled with non-trust on nonprofits for their ability to utilize donations, tax credit can ensure charitable crowdfunding could significantly increase overall because donors can feel positively about their finances (Southin, 2013).

Crowdsourced Policing

The herding behavior can be encouraged by crowdfunding and there is inherent chances of fraud in crowdfunding projects (Hazen, 2012). To address the threat of fraudulent use of crowdsourced funds, it is important that tax authorities should initiate programs where citizens could inform them of any tax violations. In Canada, the Revenue Agency implemented an expended online crowdsourced Informant Leads program. This is an online system that citizens can use to report suspected income tax violations by organizations (Government of Canada, 2012).

Expansion of systems like these can enable citizens to report suspected fraudulent crowdfunding campaigns by individuals or nonprofits. Tax authorities could run campaigns to guide independent investigations conducted by people who find any suspect of fraudulent use of the funds. To extend their crowdsourced policing mechanism, tax authorities can provide online crowdsourced investigation of nonprofits to assure future donors that their funds will be used as promised. Use of social media can ensure getting prompt response from people and ensure the funds raised in response to onetime events such as disasters are administered properly (Schneider & Trottier, 2012).

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Crowdfunding Legislation

In many parts of the world, crowdfunding is effectively banned due to the extensive registration and disclosure requirements imposed on parties seeking to raise capital from the public. Some accredited investors (i.e. those who meet certain requirements for income and net worth) are exempted from these registration requirements. The growing crowdfunding industry has also highlighted a need for establishing frameworks through which can invest in a company's shares without being subject to traditional rules of publicly traded securities. These frameworks, such as US JOBS act, will permanently allow crowdfunding and shrink the regulatory burden for companies seeking to go public. At the same time, these frameworks will have broad implications for the capital markets and their participants, particularly CFOs.

The US SEC amended the Regulation A of the Securities Act of 1933 to provide tiers of crowdfunded businesses. Smaller businesses made up the first tier and had to fulfill specific documentation requirements, such as disclosures to the SEC staff prior to the offering as well as periodic disclosures. The larger companies were placed in second tier, were required to provide audited financial statements and subjected to stringent conditions with respect to the amount of company stock that investors who are not accredited can purchase. However, opponents of these favorable legislations for crowdfunding argue that the Internet-enabled fund raising brings so many risks. For example, the crowdfunding platform can be closed, failed or hacked. In these cases, there will be a significant loss of data and investment losses for crowdfunding investors. Another concern is that decreased transparency can greater risk of fraud and malfeasance.

The regulatory authorities may not have the resources or the time to effectively police these relatively small, localized securities offerings before they are sold to the public. Governments need to enact legislation so that these crowdfunding campaigns receive appropriate regulatory scrutiny to ensure investor protection. If these legislations are not in place, there is a danger that crowdfunding investors may undervalue the good companies against companies with inferior prospects or less transparency. Governments also need legislation that ensure crowdfunding campaigns do not misguide the non-professional and less-sophisticated investors. These less sophisticated investors are more likely to trade on pro forma earnings and tend to overestimate the stability of company's earnings (Gaynor, Morse, & Pevzner, 2015). The crowdfunding legislation also needs to take into account the corporate malfeasance (such as accounting fraud) that can significantly hurt crowdfunding. When companies raising capital through crowdfunding are subject to relaxed underwriting rules and less scrutiny, there is a high risk that non-professional investors can run into financial losses. Besides legislation, one remedy for this risk is the use of online communities. These communities can various parties to monitor and provide ongoing feedback for a crowdfunding project.

CONCLUSION

Crowdfunding is a relatively new phenomenon and at its early stages of development in the nonprofit sector. It has become an important source of revenue and fundraising for startups and nonprofit organizations. As an additional resource, crowdfunding can provide additional financial avenues for both large and small nonprofits. In the contemporary marketplace environment, non-profit stakeholders should seriously analyze the potential of crowdfunding revenue raising and the financial contributions that can be made to the organization.

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However, research on crowdfunding in not for profit organizations is just beginning to emerge. This chapter provided a snapshot to understanding crowdfunding and highlighted the emerging trends and opportunities that could benefit not for profit organizations in future.

Crowdfunding also addresses the issue of limited number of conventional donors available for funding nonprofits. Nonprofits can use their enhanced understanding of the behavioral motivations of donors and non-donors to take advantage of crowdfunding. There exists a level playing field for both large and small nonprofits with respect to crowdfunding.

However, to expand use of crowdfunding for nonprofits it is important that some changes should be made in the regulatory regime including the tax credit scheme and crowdsourced policing. These changes can help extend donor base and aggregate funding by them for nonprofit crowdfunding campaigns. Future search projects could be undertaken to:

1. Explore the impact of crowdsourcing taxation on not for profit organizations globally, comparing different taxation policies across countries.
2. Conduct a comparative analysis of internal organizational crowdfunding knowledge in large and small not for profit organizations would expand existing insights on organizational capacity exploit this contemporary financial resource as an alternative fundraising mechanism.
3. Examine online behavioral characteristics of donors who provide financial support for not for profit organizations through the online crowdfunding platform could be further investigated to enhance understanding of donor-non-donor support for the not for profit organizations that seek, and access financial resources through the crowdfunding online platform.

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KEY TERMS AND DEFINITIONS

Branding: Refers to aligning what an individual or firm want people to think about itself with what people actually do think about the individual or firm.

Business Plan: A business plan defines business goals, explain why they are attainable, and plans for reaching them.

Community: Refers to a group of people who share some common interest.

Crowdfunding Platform: Refers to a website used to develop and run a fundraising campaign.

Crowdfunding: Refers to raise funds for a venture using a large group of people.

Donor: Refers to a person who donates something, especially money to charity.

Non-Profit: Refers to an organization that uses its surplus revenues to further achieve its purpose or mission.

Recognition: Refers to public acknowledgement of person's status or merits.

Social Networking: Refers to the use of dedicated websites and applications for people interaction.

Sponsor: Refers to a person who pays for a specific item to be released.

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Chapter 21
Horizontal Crowdfunding Platforms:
Socio-Economic Impact and Exogenous/Endogenous System of Rules

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ABSTRACT

In recent years arose a multitude of crowdfunding platforms of different nature and with different goals. In this chapter some peculiar aspects of crowdfunding platforms will be examined, both in terms of their socio-economic impact and in terms of the exogenous and endogenous system of rules with which they interact. Crowdfunding is not governed exclusively by the rules of law and the regulations of the platforms that host it. Every campaign involves the construction of a community, with its specific rules, that are in part pre-established by the campaign creator and in part the result of the interaction of the community. However, these rules do not live in a closed set, building a case history to which the future campaigns will not necessarily have to conform, but with high probability they will use as a parameter. Although it is not possible to identify the rules that are common to all the crowdfunding campaigns, could be observed an evolution mostly harmonic between different campaigns with respect to the methods, the mechanisms of involvement and, of course, the rules.

INTRODUCTION

In recent years we have witnessed the spread of crowdfunding platforms of different nature and with different goals. In this chapter we will examine some peculiar aspects of crowdfunding platforms, both in terms of their socio-economic impact and in terms of the exogenous and endogenous system of rules with which they interact.

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A Major Distinction between Crowdfunding Platforms

Firstly, we can make a macro distinction with respect to the goals of the platforms, identifying three main categories: equity crowdfunding, donation crowdfunding and reward crowdfunding.

The first one is aimed at collecting investments around a business plan, recognizing to the (micro) investor a participation in the company. They have proven to be particularly useful for business in the start-up phase, a phase in which it is of vital importance to raise the necessary funds to cover the initial expenses. Furthermore, the road of equity crowdfunding does not necessarily represent an alternative road to traditional methods of raising venture capital. It rather belongs to an earlier stage, leaving the door open to further rounds of financing when the company is "more mature" and, therefore, more attractive for the investors (whether they are business angels or private equity funds, etc.).

However, we will not dwell here in a specific manner on the system of rules of equity crowdfunding, for at least three different reasons. The first reason is the lesser extent - both in absolute terms and in geographical terms - of equity crowdfunding with respect to other forms of crowdfunding, while the second reason is related to the intimate relationship between the rules of the crowdfunding platforms and the set of rules and structures that govern the corporate participation in the different Countries, and the third one is that several countries – as, for example, the United States - are structuring rules and regulations specifically for equity crowdfunding and investor protection, a regulatory process of great interest, but which will necessarily need some time to produce results and to influence the large-scale spreading of this funding model. Here - postponing to a more specific discussion the analysis of critical aspects and perspectives of equity crowdfunding - we will just hope for a system of shared rules regarding equity crowdfunding that allows to collect micro loans from different parts of the globe, without creating many small or large regional sandboxes that would weaken the characteristic of globality (to which we will return later) of the funds collected through the network, and the solidaristic-interested nature (we will also return to this important aspect) of crowdfunding.

Donation Crowdfunding Platforms and Reward Crowdfunding Platforms: Focus and Funding Models

Therefore, only the donation crowdfunding platforms and the reward crowdfunding platforms will be at the center of our investigation. More than of platforms it would be correct to speak of crowdfunding methods because it often happens that the same platform hosts both the donation campaigns and the reward campaigns, perhaps applying different commissions to the campaign creators (as for example the case of Indiegogo that through Indiegogo Life applies a commission of 0% to the personal fundraising campaigns and of 5% to the normal reward campaigns).

However, as above-mentioned, we will analyze these methods in relation to the attitude of the platforms to create communities and to the system of rules that they apply. In fact, despite the most obvious distinction between the two methods is tautological, that is the reward campaigns offer a reward, usually equated to the value of the offer, while the donation campaigns offer rewards that are purely symbolic - and, therefore, not comparable to the value of the offer - or they do not offer material rewards, limiting to consider as reward the same implementation of the project and, of course, the moral gratification for having participated in the campaign, the relationship between reward and donation will be the subject of a further in-depth analysis.

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In fact, we cannot just accept a schematic and rigid separation between the two methods. An aggregate of realities, which are very different between them, hides behind the expression donation crowdfunding: civic crowdfunding or crowdfunding based on geographical and emotional proximity, philanthropic crowdfunding and crowdfunding as a substitute for welfare. These three methods have in common, in addition to the information technology technicalities, a redistribution mechanism of individual wealth on a voluntary basis. But there are also several points of difference. Civic crowdfunding or crowdfunding based on geographical and emotional proximity, which can be an instrument activated by the public administration in order to carry out a project to promote the area and/or the fabric of the city, but which can also be seen as the initiative of one or more individuals aimed at overcoming the shortcomings (no matter whether political or economic) of the administration or at acting as a complementary activity with respect to the administration in a spirit of subsidiarity, necessarily brings with it the above-mentioned element of interested solidarity that both the proponent (campaign creator) and the backers have in common. This is the case, for example, if we consider the expansion or maintenance of a museum structure (it is possible to make the example, for all cases, of the use of crowdfunding by the Louvre in Paris for the conservation of its "Winged Victory of Samothrace" and for the acquisition of Lucas Cranach's "The Three Graces"), the implementation of a bike sharing service (this is the case of Kansas City) or of public works (as in the case of the +Poll campaign, an initiative to bring a floating swimming pool to the East River, on the Manhattan/Brooklyn banks, in New York City).

The case of those who finance a hospital in a distant area of the world (philanthropic crowdfunding) or who help to finance medical care or studies of an unknown person (crowdfunding as a substitute for welfare) is different. In these last two assumptions, in fact, the impact in the sphere of the campaign creator and the impact in the sphere of the backer do not coincide at all, the first one having a direct-material interest and the latter an ethical interest. Not even the objection that the backers might help to have a beneficial effect of psychological and/or social type, thing which is common to all types of philanthropy, including also the traditional ones, is sufficient to close the significant gap asymmetry of the interests of campaign creator and backers.

Therefore, this premise that for reasons of space fails to consider other experiences of sure interest and spread as the lending crowdfunding and the loan crowdfunding, as well as other forms of micro-patronage, is necessary to define the perimeter of the discourse relating to an in-depth analysis: reward crowdfunding platforms and, to some extent, donation crowdfunding platforms that have the characteristics (at least potentially) of the global fundraising and a solidaristic-interested nature prevailing in the proposed campaigns. To these requirements it should be added the horizontality of the platform, that is the availability of the same to host campaigns aimed at financing products or activities of different nature (we will return to the vertical and specialized ones in another chapter of the same volume). This additional requirement is aimed at identifying and describing the most possible homogeneous set of rules that is applied,

The homogeneity of the rules needs inevitably not to consider jointly, in this comparative analysis, platforms that apparently provide the same service, but that basically aggregate communities and sets which are profoundly different between them.

This does not mean that the generalist platforms do not aggregate communities, quite the opposite (approximately 12% of the campaign creators of Kickstarter launched more than a campaign - Kickstarter data March 24, 2015 - and 29% of the backers finance more than one project, for a total of 60% of the funds raised - Kickstarter data October 23, 2013), but it rather means that some communities know interactive methods that are very different with respect to the vertical and territorial platforms. But, as it has been said, we will return to this interesting aspect later.

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A main difference between the philanthropic oriented campaigns and the campaigns designed to achieve a service or product is the nature generally keep-it-all of the first ones and all-or-nothing of the second ones (some reward platforms, as Kickstarter, do not allow keep-it-all campaigns, while where both types of campaigns are permitted, as Indiegogo, relatively to the reward campaigns the percentage is 95% of all-or-nothing, against only 5% of keep-it-all. Data referred to the period 2008-2013). This aspect indicates a real disparity, which is not limited, as above-mentioned, to the different spirit that animates the campaign creator and backers, but it reaches the deep relational mechanisms underlying the campaign itself and, more specifically, it helps to determine the set of rules of the campaign.

THE SYSTEM OF RULES OF THE CROWDFUNDING PLATFORMS

In fact, the cardinal points of a campaign are: project, campaign creator's profile, duration and economic objective to be achieved. In the campaigns that we will consider these points represent a rigid set, a parallelepiped with pre-defined angles, precisely because of the first rule (which is, therefore, the real challenge of the campaign): that is to collect a certain amount of money in a given time frame. If the pre-determined figure is not reached, the all-or-nothing mechanism means that none of the offers is actually collected, due to the rule, fixed on the basis of a more or less arbitrary evaluation of the campaign creator on the minimum amount of funds required to implement the project, an arbitrary evaluation but that becomes a shared rule through the participation of backers to the campaign. Mr. Blue (the campaign creator) can assume that he can build the time machine if he collects $100,000, but there is nobody who certifies that this is the case. It may not be feasible at all, or feasible only with figures much higher or lower, or feasible at the current level of science and technology, but not with the skills of Mr. Blue. Mr. White, and Miss Orange and the other backers, participating in the campaign of Mr. Blue, decided not only to declare their interest in the project (and to participate economically to its implementation), but also to accept the premise on which Mr. Blue has based the project itself: what for the rest of the world can remain assumptions, becomes a real contract between the backers and the campaign creator. But this contract is subject to the achievement of the pre-determined economic objective. If it will not be possible to reach $100,000, the money of the backers will not be withdrawn and Mr. Blue will not receive it, thus dissolving the moral and legal obligation to build the time machine.

In particular, from the legal point of view and not only, the rules involved in crowdfunding of reward type are those that regulate generally pre-sale contracts: a deposit is paid for the purchase of a product not yet implemented, the contract will be finalized upon the occurrence of a pre-determined condition (the achievement of the economic objective according to schedule) and this will implicate the obligation for the backers to make the promised payment (but here there is the intervention of the main online payment methods, adopted by almost all platforms, which will make automatic and immediate this step at the positive end of the crowdfunding campaign) and, the most important thing, they will allow the campaign creator to implement the work.

In this way, both the campaign creator and the backers have to observe at least three distinct sets of rules: the exogenous one that regulates the agreements subject to a suspensive condition, and those that are endogenous to the crowdfunding platform, between which we can distinguish a set of general rules, valid for all campaigns hosted on a certain platform, and a set of specific rules, valid for the single campaign.

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They are all three sets of pre-determined rules, in the sense that even before the campaign starts they were explicit in their basic parts and, in good logic, will not change during the campaign. Relatively to the specific set of rules, for example, it is not possible to lengthen the duration of the campaign (and neither turn an all-or-nothing campaign into a keep-it-all campaign), nor to modify the economic objective nor to diminish the scope of the project.

It must be said that with respect to these parameters the platforms apply rules that can be defined passive at the beginning and rigid during the running phase of the campaign.

Generally, in fact, to accept or not a campaign the platforms do not evaluate neither the feasibility of the project, nor the attitude of the campaign creator to implement it, nor whether if the target set for the implementation is reasonable. They just make sure that the limiting criteria are respected, within which the campaign creator has great autonomy. But this autonomy is rigidly limited at the moment when the campaign becomes public and enters the fund collection phase.

In fact, the "forbidden campaigns" or not accepted campaigns are those that fall in a general definition with large approximation for Indiegogo:

Campaign Owners are not permitted to create a Campaign to raise funds for illegal activities, to cause harm to people or property, or to scam others. If the Campaign is claiming to do the impossible or it's just plain phony, don't post it. Users must comply with all applicable laws and regulations in connection with their Campaigns, including offering Perks and using Contributions. Campaign Owners shall not make any false or misleading statements in connection with their Campaigns. (Indiegogo Terms of Use, 2015)

while Kickstarter, after specifying "Kickstarter does not allow projects to fundraise for charity or offer financial incentives" (Kickstarter Creator Questions, 2015) prepares a list of activities and materials that are not allowed on the platform:

Item claiming to cure, treat, or prevent an illness or condition [..], contests, coupons, gambling, and raffles, energy food and drinks, offensive material, political fundraising, pornographic material, resale, drugs, nicotine, tobacco, vaporizers and related paraphernalia, weapons, replicas of weapons, and weapon accessories. (Kickstarter Prohibited Items, 2015)

To these it adds some rewards that may not be offered, even if they were related to accepted campaigns:

… genetically modified organism, alcohol, financial, money-processing, or credit services; financial intermediaries or cash-equivalent instruments; travel services (e.g., vacation packages); phone services (e.g., prepaid phone services, 900 numbers); and business marketing services. (Kickstarter Prohibited Items)

But it should be said that Indiegogo also integrates the above-mentioned rules in relation to the allowed campaigns with rules on rewards, and in particular:

… any form of security (as such term is defined in the Securities Act of 1933), any form of financial incentive or participation in any profit sharing, any alcoholic consumer products, any controlled substance or drug paraphernalia, any weapons, ammunition and related accessories, any form of lottery or gambling, any form of air transportation, any items promoting hate, discrimination, personal injury,

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death, damage, or destruction to property; or any items (a) prohibited by applicable law to possess or distribute, (b) that would violate applicable law if distributed, or (c) that would result in infringement or violation of another person's rights if distributed. (Indiegogo Terms of Use).

It should be noted that these lists can largely overlap each other while setting the boundaries of the field inside which "everything that is not forbidden is allowed", both platforms apply forms of control and both make use also of users' reports to find eventual violations of rules.

It is true that the major platforms promote certain campaigns as "featured", ensuring them so not only more visibility, but in general a feeling of trustworthiness of potential backers. This combination of images between the one of the platform and the one of the campaign, that is generally related also to the dissemination activities of the campaign through the social channels of the platform (Facebook, Twitter, etc.), follows rules but not necessarily coded, which can be related to several factors: the innovativeness of the proposal, the reputation of the campaign creator, the result that the proposal is having in terms of money and supporters, but that Is difficult to translate into an assumption of responsibility by the platform towards the project. For the platform of a "featured" campaign that although reaching the goal does not keep its promises (product not made or different from the description, or poor workmanship), the only negative effect could be a reputational damage for the platform itself.

Therefore, the generalist platforms essentially tend to present themselves as a passive tool, which hosts campaigns that fall in parameters not particularly strict, and which monitor some aspects relating to the conduct of the campaign, but not on what happens after the campaign, that is when the platform/tool is no longer the instrument for collecting pre-orders in exchange for promises of money. Moreover, the fee retained by the platform is quite low (both Kickstarter and Indiegogo provide a fee of 5% for campaigns in the United States) and this hardly could bind the platform to an action of control and verification that goes beyond the methods of implementation of the campaign or beyond a closed group of possible actions (e.g., violation of a copyright by the campaign creator), as specified in the Terms of Use of Indiegogo

Indiegogo makes no representations about the quality, safety, morality or legality of any Campaign, Perk or Contribution or the truth or accuracy of User Content (as defined below) posted on the Services. Indiegogo does not represent that Campaign Owners will deliver Perks or that Contributions will be used as described in the Campaign. Users use the Services at their own risk.

which adds that in case of disputes between campaign owners and contributors "Indiegogo is under no obligation to become involved in disputes between Campaign Owners and Contributors, or Users and any third party." This approach is common to Kickstarter, a platform that provides in its Terms of Use:

Kickstarter isn't liable for any damages or losses related to your use of the Services. We don't become involved in disputes between users, or between users and any third party relating to the use of the Services. We don't oversee the performance or punctuality of projects, and we don't endorse any content users submit to the Site. When you use the Services, you release Kickstarter from claims, damages, and demands of every kind — known or unknown, suspected or unsuspected, disclosed or undisclosed — arising out of or in any way related to such disputes and the Services. All content you access through the Services is at your own risk. You're solely responsible for any resulting damage or loss to any party.

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However, it is useful to note how the situation is evolving fast, especially in light of some negative experiences at the limit of the scam perpetrated through crowdfunding, some episodes that, if replicated on a large scale, could put at risk the element of trust that underlies the crowdfunding campaigns. As we have already seen, the relationship of trust is essentially always between campaign creator and supporters, not between supporters and platform. But this is not necessarily the perception of general public and, in fact, to support a project it is still necessary to connect to a particular platform, to create an account (becoming a user of the platform) and to make a payment - whether without immediate effects - on a page of the platform, accepting the rules of the platform itself. Therefore, it seems obvious that, quite rightly, the backer will put his trust also in the control activities carried out by the chosen platform.

Beside the four basic elements of a crowdfunding campaign (project, campaign creator's profile, duration and economic objective to be achieved), there are, however, other elements deserving to be taken into account. They differ from the previous ones because of their less characterizing and less rigid nature with respect to the campaign. For example, they can be inserted in an ongoing campaign, or can be changed, or can have a merely indicative function, or can be the result of a confrontation between campaign creator and backers.

Below we will try to make a (not exhaustive) list of these elements. The rewards are the first of them. The so-called reward levels correspond to the amount committed by the backers. They are essentially items which provide that a certain financial commitment of the backer matches a certain type of product or a particular service offered by the author. They can be primary rewards, that is the product that the campaign proposes to make, or secondary, that is gadgets related to the product, or opportunities to meet with the author, or a mix of primary and secondary rewards. To exemplify, in a campaign aimed at producing a music album, the CD of the album will be a primary reward, a message of thanks by the musician a secondary reward, the CD with a thank-you note by the musician will be a mixture of primary and secondary rewards.

However, the author may decide to include new rewards in the ongoing campaign, giving or not the possibility to those who have already supported the campaign to opt for a new reward, maybe paying the difference. It is not said that a reward for the same offered product/service is related to the same figure during the entire duration of the campaign. Returning to the example of the CD, the singer may decide to make available the CD for $15, but only for the first 100 supporters, then he may make available the CD for $20 only for a further 100 supporters, and then he may decide to make it available to anyone for $25 (we could make many examples in this sense, now it is a fairly widespread practice; not being able to list all of them here, I will only indicate as an example the campaign for LightBlue Bean+ on Kickstarter). In fact, limiting the availability of a level of a product related to the campaign, or the availability of that product to a given price, could be an important instrument in the hands of the campaign creator to attract early backers, supporters that already in the first hours of the campaign make their promise of payment. It should be remembered how it is useful so that a campaign is perceived as successful, to give the impression of being able to easily reach the goal. The backers, although the all-or-nothing mechanism protects them against the risk related to the failure of the campaign, prefer to contribute when it is reasonable that the goal will actually be achieved. Through this mechanism, vice versa, there is the dual effect of attracting early backers with a promise of economic savings (or now or more expensive) and more supporters having shown them that the campaign has a good response from the public.

But what are the rules that the campaign creator has to follow? Substantially two, the first one is a common-sense rule, that is, not to change a reward already entered (if the campaign creator says that there are 100 CD at $15, it would be good that he did not subsequently diminish the availability of the

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same level of price to 90 or he did not increase it to 110), while the second rule is that he does not betray the trust of the early adopters, making available later the same reward at a lower price, maybe at the end of the campaign to raise additional funds. We will return later to the fiduciary relationship between backers and campaign creator.

Another element of great interest is the inclusion of overgoals, that is further objectives with respect to the achieving of goals that may be announced during the campaign and that involve, if they will be reached, a further development of the project. The overgoals respond to a double need. On the one hand, they protect the campaign creator against controversies about how the funds raised in excess will be used, since it is true that if there is a surplus of collected funds this is due to a large number of orders, implicating, consequently, higher expenses. But it is equally true that the campaign creator must necessarily get some margin on each order to cover the costs of the project (it could be just the fee of the platform) and we could hypothesize that the costs for the implementation of the single reward will significantly decrease.

On the other hand, they maintain a high interest for the campaign in the backers and public, giving a further incentive to involve more the potential supporters and to create a larger audience.

While overgoals generally involve all the backers who supported a project, intermediate goals are less used, but no less important, being rewards that the campaign creator decides to grant to the supporters precisely when some intermediate objectives related to the funds that have hitherto been collected or to the relationship between the money raised and the time elapsed since the start of the campaign have been achieved. Usually these intermediate goals are not pre-announced. They do not add anything to the project (which at that time has not yet been financed) but integrate the description of the project, showing specific features (in the case of technology projects) or parts of the concept not made public until then.

The campaign creator can decide these elements (rewards, overgoals, etc.) unilaterally or together with the backers who, until then, have decided to believe in the project. This is the case, for example, of the campaign of Jide to finance Remix Mini, a computer with small dimensions and an affordable price, the first campaign created by Chinese campaign creators up to exceed one million dollars on Kickstarter. To decide the development of the project and some level of rewards the campaign creators have decided to make some real surveys between the backers. In other words, they have introduced explicitly some elements of democracy and bilateralism in the construction and development of their crowdfunding campaign. They were surely not the first ones to have done this, but can be considered a significant example for the size of the campaign, the number of people involved and the consultation methods that have been chosen.

In fact, the construction of the community is a central moment of a crowdfunding campaign. And it proves to be the crucial moment in our investigation on the setting of a system of internal rules in a crowdfunding campaign.

To simplify, it can be argued that the crowdfunding campaign is proposed to an indeterminate plurality of subjects, without any linkage with it strictly speaking, and that this plurality decides to participate under certain conditions. These conditions cannot be contracted because they have been pre-determined by the campaign creator. In this sense, the birthright of the community and its boundaries, are created by the campaign creator clarifying what the project is, what its goal implicates and what not until to achieve the economic objective. The campaign creator accepts as limit to his power to establish rules and conditions, the limits of the current legislation and the ones of the platform. But within those limits he may provide the rules and conditions that he considers the most useful, correct and appropriate. We will define this moment “unidirectional”.

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When a person decides to participate in the campaign, he joined the community of the campaign. Bragging rights. In part these rights will result from a self-restraint by the campaign creator, that is strictly part of the contractual synallagma which was originally proposed, but to some extent the subscriber will acquire a right to participate, to be informed, to communicate with the campaign creator, to ask questions, to give advice, to interact, using different forms and methods, with other backers that are part of the community. It should be noted how this process goes to build a set of other rules, expressed or implied, that together with the aforementioned rules define the overall framework of the life of the community built around the campaign. This moment can be defined as bidirectional (with respect to the relationship between the community and the author), and multi-directional (with respect to the relationship between the members of the community).

The person who chooses to support a campaign acquires the status of backer, that is of active member of a community of purpose, a community of purpose that has its first regulatory element in the unidirectional determinations established by the campaign creator, but then lives a democratic participatory life. We could dare a comparison that seems fitting to reflect the position of those who choose to enter the community. When a person gets the status of a citizen of a Country, with all probability that country has its own pre-existing Constitutional framework which that person has not helped to build. From then on, contributing to the civil and democratic life of that Country, the citizen will not only (or not exclusively) be a passive party in the process to establish the regulations and the system of rules of the country, that is he will get an active role. This does not means that the active role will be exercised in its entirety, for example, relying on the rights of which the person is a bearer, exercising the right to vote or participate in the political life, but it is a potential of which the citizen is the bearer. Similarly, the backer will simply wait that the project is finalized and his reward is packed, shipped and delivered, as if he had participated in a unique buying group. But he may also decide to participate without that nobody can stop him, at least until he respects the system of rules that was established.

However, this does not mean that all backers enjoy the same rights; if we look diachronically the evolution of a crowdfunding campaign we could note that a decision taken by the campaign creator and the backers a certain day affects those who decide to become backers the next day. However, those who decide to become backers do it accepting the conditions of the moment, without that this represents an imbalance. After all, returning to the example of the citizenship and democracy, two people that become citizens of a Country within a few days, the first one on the day before an important referendum and the second one on the day after the referendum, will be in a condition of inequality: the first one will participate in the referendum while the second one will not. But it is also true that they have both to adapt their future expectations (and their behavior as a consequence) to the result of the referendum and that, if the first one has had an active role and the second one has had exclusively a passive role, it is also true that the second person chooses to become a citizen already knowing the outcome of the referendum, while the first one, whether it is the preference for which he expressed his vote, must comply to what has been decided by the majority.

Therefore, it is evident that, considering a crowdfunding campaign as a process to establish a regulatory system and to define the structures of a community, the first one who participated has more chances to influence the choices of the community and the campaign creator.

But even in the case that the community is built around a democratic participation - and not forced - of the backers, it is equally clear that the expectations of each backer and more generally of all the backers are placed in the campaign creator and in his determinations, rather than in the community itself. In other words, the issue is to understand whether the campaign creator can be seen as a “primos

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inter pares" within the community, or whether he must be considered as an absolute monarch, in conditions to assign more or less margins for participation to the supporters of his project, but this margin of participation is only granted in order to meet a need of the sovereign, that is to motivate the backers to seek other backers to achieve the economic objective in time.

Moreover, even the economic objective, once reached, marks an asymmetry between those who receive money (the campaign creator) and those who pays money (the backers).

Giving a clear answer to this dilemma would be to deny the premise, that is how each crowdfunding campaign builds a peculiar set of rules and a community whose composition, interests and participatory attitude may vary significantly.

In fact, nothing prevents the campaign creator to minimize the interaction with the backers, limiting it to merely occasional communications on the progress of the project. Neither the issue of the participation and construction of a community in a communicative technicality, in an instrument that the campaign creator can use to better reach the goal can be solved. It would not be simply restrictive, but it would be, in my view, an incorrect evaluation. Of course, as we know, a significant part of the marketing tries, with always more sophisticated and effective techniques to create an involvement among the intended audience of the campaign, transforming it from an audience into real testimonials and to feed a word-of-mouth using gaming mechanisms and social networks, uniquely designed to spread the pre-determined advertising message.

If the assumption of the communicative technicality could be accepted, a crowdfunding campaign would be classified simply as a campaign of marketing and communication and, as such, it should be evaluated through the social and economic sciences that deal specifically with marketing and communication.

However, I think that it can be found at least a strong element of difference, so strong and central to become, in the light of a careful analysis, an element of divergence between a marketing campaign and a crowdfunding campaign.

The concept of moral property, as a legal and economic element, differs from the concept of ownership in the strict sense. The moral property of a crowdfunding campaign, or rather the result promised in the event of reaching the goal, does not belong to the campaign creator, but to the community constituted by the campaign creator and the backers. Without the backers the product, the specific product developed according with the proposed methods, could not exist. This creates a deep relationship that appears not only in the active involvement of the backers during the campaign (of which it is a prerequisite). The linkage is the moral reason with which the community identifies itself and at the same time is the condition of formal and substantial legitimacy of the participation to the crowdfunding campaign. A potential supporter might expect that other people finance the product so that he will enjoy it after the purchase, once available through the traditional channels. Or, if the product is not financed, he might expect to turn to other products to meet his own specific needs. He decides, instead, to get involved, to participate, not buying, or rather, not simply pre-buying a tangible good, but registering in his name a fraction of the moral property of that product.

The element of the sharing of the moral property, which is accepted by the campaign creator even before he can describe the product, the methods of implementation and before to be able to open to the public his campaign, distinguishes the crowdfunding and its inherent need to build a community. After all, it is based on an exchange. The campaign creator, owner of the potential property of the product/idea, provides the moral property in exchange for the feasibility of the same. He shares something to get something else in a mechanism of mutual exchange and mutual enrichment that creates relationships at different levels, some destined to manifest themselves in the material exchange as money for goods, others destined to precede this exchange and to survive to it once it has been perfected.

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Crowdfunding shows all the elements that belong to the sharing economy: an element of exchange, an element of reciprocity and the construction of relationships of mutual satisfaction.

Therefore, it is not correct to say that a crowdfunding campaign is animated by two separate interests, that is to raise money to implement the work and to receive a copy of it, but rather these two interests, which constitute the premise of the campaign, merge together into one common interest on the basis of that element of interested solidarity of which we talked about at the beginning. This interest is shared by the entire community.

While keeping in fact a distinction of roles, both campaign creator and backers have an active function, because it is mainly the activity of the latter that determines the success of a campaign. In fact, we focused until now on the activity of the backers within the platform and in the page of the campaign, but it is only one aspect of the activity of the backers.

Backers are called to share the news of the campaign, its evolution and its results. The campaign creator can certainly push them in this sense, but the solicitation is implicit and inherent to the crowdfunding, so much so that almost all platforms integrate sharing tools, which are mainly designed for the backers in the hosted campaigns. In fact, it is assumed that the campaign creator is not able to reach a large audience alone - that is if he had the economic means and/or media he would not undertake, with all probability, a crowdfunding campaign - and it is, therefore, up to the backers to share the message of the campaign, either through a message addressed generically to their contacts on the social networks, either through more specific business relationships with other people potentially able to sensitize a wider audience (e.g., influencers, journalists, bloggers, etc.).

We will not dwell here on the means of dissemination, although they are interesting and innovative, but we will focus on the mechanism of involvement in the relationship of trust existing between campaign creator and backers. As we have already seen, the relationship of trust is a relationship aimed at establishing the rules of a community and, as such, it has a value merely within the same community. When a person, who has become a backer adhering to that relationship and has contributed to its subsequent construction and explicitness, suggests a crowdfunding campaign to others, he actually suggests adhering to that relationship, becoming its guarantor. We return to the campaign for the time machine of Mr. Blue, the campaign creator. Mr. Yellow decides to adhere to the system of rules proposed by Mr. Blue, becoming in this way a backer. Shortly after joining it, Mr. Yellow suggests publicly that the time machines, once they are ready, will be shipped by airmail, an aspect that has never been specified before in the campaign. Many of the backers adhere enthusiastically and Mr. Blue takes note of this request, perceived as a need by the community, updating the description of the campaign. Since then, the shipping by airmail has become an integral part of the rules of the campaign as well as of the expectations of the community. However, when Mr. Yellow shares the campaign, he does not share his specific contribution to the campaign, neither in economic terms, nor in terms of the proposal, but the entire set of rules as they have been established since that time. So, Mr. Yellow adhered to the proposal of Mr. Blue, after receiving a message from Mr. Yellow, Miss Red decides to become a backer giving her trust to Mr. Yellow, who she already knows to have a good reputation, even before than to the community or to Mr. Blue, who is a totally unknown stranger for her.

In this way, therefore, reproposing the original relationship of trust, Mr. Yellow is not only a substitute for Mr. Blue, because he represents the entire community.

It could be objected that the mechanism is not so innovative, it is the traditional word-of-mouth that always, or almost always, determines the fortunes of restaurants, museums, gyms, hotels, etc. However, we can identify two elements in my opinion highly innovative. The first one is that when Mr. Yellow

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suggests participating in the campaign, he has not had the opportunity to try the product of Mr. Blue, therefore the relationship is based only on trust and what happens in the moment when Miss Red is also involved reproposes precisely the relationship of trust. The second element, in my view highly peculiar of crowdfunding, is the attitude of this mutual trust to create value. The community does not die with the end of the crowdfunding campaign and we have seen more than one case in which the community at the end of the campaign is transferred to other portals (social networks, etc.), but it has continued to be active, representing on the one hand a source of strength for future works of the campaign creator and on the other hand an aggregate and active group of individuals joined by an experience as well as by a strong common interest. To remain in this example, it is certainly possible that those who financed the time machine of Mr. Blue are interested then, a few years later, to the illustrated guide for travelers in the time that Mr. Purple proposes to implement, if he reaches his economic objective.

That is to say that aggregating people concretely motivated around an interest, and for it willing to invest, makes easier to find in the future funds for activities that are related to that interest, but we will return to this in detail in the chapter on specialized (or vertical) crowdfunding platforms.

The elements that I would like to highlight in this reconstruction are that crowdfunding is not governed exclusively by the rules of law and the regulations of the platforms that host it.

Every campaign involves the construction of a community, with its specific rules, that are in part pre-established by the campaign creator and in part the result of the interaction of the community. However, these rules do not live in a closed set, building a case history to which the future campaigns will not necessarily have to conform, but with high probability they will use as a parameter. Although it is not possible to identify the rules that are common to all the crowdfunding campaigns, we can observe an evolution mostly harmonic between different campaigns with respect to the methods, the mechanisms of involvement and, of course, the rules. The lowest common denominator of the crowdfunding campaigns is the sharing of resources aimed at achieving a common interest as the sum of two different interests; the pursuit of this common interest can be defined as the moral property of the work or product. This moral property does not lose its importance with the subsequent commercialization of the product in the same way that the community and the sense of belonging/identification do not disappear. In this manner the crowdfunding campaign creates value also for third parties, not because, and not only because, there is the implementation of something that did not exist before and that can meet the needs and requirements which had not been satisfied until then (crowdfunding is not, in fact, the only existing system to finance projects), but because of its nature, of its being able to unify communities that previously did not exist, communities that could be facilitators, in their area, of future projects, which may, but not necessarily must, pass through new crowdfunding campaigns.

It also represents a democratic, transparent and accessible validation system for the proposals of the campaign creators, through a system that rewards the usefulness and interest in a project and that, in theory at least, puts in a position to collect important figures campaign creators little known, but with a good idea - and an educational and professional background - which demonstrates that they are able to implement it, or at least to create a trust relationship in this sense.

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NOTE

To refer to systems of specific rules, we have taken into account the internal regulations of Kickstarter and Indiegogo platforms, both because they are globally widespread and because the level of complexity of the issues faced by the two platforms has allowed them to develop a comprehensive system of rules that is functional to their activities and has become a reference point for all the reward crowdfunding platforms, at least as regards the policy.

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Chapter 22
Vertical and Community-Based Crowdfunding Platforms

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ABSTRACT

If the inherent nature of the horizontal crowdfunding platforms makes the relationship between campaign creator and backers basically without intermediation of the platform, in the case of vertical platforms there are different and sometimes complex levels of intermediation. The vertical crowdfunding platforms can be considered more than a subset of the horizontal crowdfunding, as an independent system of relationships and rules which has in common with the horizontal crowdfunding a large part of the fundraising methods, but that is also profoundly different with respect to the aggregative procedures and the system of rules.

INTRODUCTION

Beside the above-mentioned horizontal platforms, a large number of specialized and local civic crowdfunding platforms have spread in recent years.

The specialized crowdfunding platform has in common with the generalist platforms the method and, in some ways, the approach to funding, even if there are more or less differences - depending on the platform that we are considering - with regard to the development of internal communities and the system rules which determines their daily lives.

We have seen the emergence of crowdfunding platforms exclusively dedicated to publishing, culinary art, music, wine, culture, cinema and many other specific interests. They are, in almost all cases, platforms of reward type, aimed at the implementation of the project, project of which some examples/copies will be sent to the supporters as a reward.

Not all platforms have a global vocation; in fact, the most of them combine the criterion of specialization with the one of territoriality. The common feature, in any case, is the verticality.

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In fact, if the inherent nature of the horizontal platforms makes the relationship between campaign creator and backers basically without intermediation of the platform, in the case of vertical platforms there are different and sometimes complex levels of intermediation. It could be argued that this distinction is not necessarily due to organizational reasons: the staff of a horizontal crowdfunding platform cannot certainly be omniscient, while it is likely that the staff of a vertical crowdfunding platform can boast strong and specific skills on the specific area of interest of the platform.

In reality, this argument would be quite insufficient to explain the real reason for the need to create platforms that are strongly vertical. Moreover, this need finds a correspondence in the choice of many campaign creators to rely on a vertical platform rather than on a horizontal platform.

For a correct examination we will have to compare the three different types of methods of fundraising through crowdfunding: with horizontal platforms, with vertical platforms and with self-hosted campaigns, that is campaigns hosted directly on a pre-existing website of the campaign creator or on a website created for that purpose.

In the horizontal and vertical platforms the campaign creator will count on no entry costs or almost non-existent fees while for a self-hosted campaign he will need to acquire the necessary technology, to enter into agreements with one or more payment systems (especially if the campaign involves the all-or-nothing method, a method according to which the payments of the backers are effectively collected only if the campaign reaches its pre-fixed goal), and also to establish a system of rules relating to the campaign, the payment management and the privacy of the backers. The economic advantage, on the other hand, is that on a platform (either horizontal or vertical) the campaign creator will have to pay a fee on the total amount of the campaign, while on his website, as it is reasonable to expect, there will be no fees to pay.

But the choice of the campaign creator to rely on a platform rather than another, or to prefer a self-hosted campaign is certainly not only due to an economic aspect.

Otherwise, there would be a race to the bottom of the fees of the different platforms, a race that could not obviously have a different ending than the survival of a single platform: the one with the lowest fees. However, the offer of crowdfunding platforms is going in a different direction, and the reasons for the effective failure of the *"*war of the fees*"* is, in my opinion, due to the different needs of the campaign creators, related to the different characteristics of the campaign creators themselves and their projects.

Which characteristics, in fact, orient the choice of a campaign creator? We start from the lowest common denominator: to fund a project. However, to do it, there are also other channels, while the peculiarities of crowdfunding, as we have seen in the chapter on horizontal platforms, is to build a community around a project and, through the community, to give the maximum possible visibility to the project, developing its potential in a context of constructive dialogue with the backers.

In other words, we need to recall the four basic elements of a crowdfunding campaign: project, campaign creator's profile, duration and economic objective to be achieved. On the basis of these elements it is established or, rather, it is possible to establish a relationship of trust between the potential supporter and the campaign creator. However, to establish the initial relationship of trust, it is necessary and preliminary an element of validation of the project. This does not mean the attitude of the project itself to be valid, but that it appears to the potential donor as valid. This process can take place, in the horizontal crowdfunding platforms and the self-hosted crowdfunding platforms, through three different elements: the potential backer may have the technical knowledge to define the proposed project as valid, the potential backer may deem necessary to fund that particular project, the profile and reputation of the campaign creator provide sufficient guarantees to the project.

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It is clear that the relationship of trust is based on the unknown, on the result of a promise, result that could be postponed at the end of the campaign and, in most cases, even several months after the end of the campaign. However, these three elements are generally sufficient, considered individually and even more combined with each other, to justify the participation in a campaign, validating at least the premises of the project.

But this does not implicate that all good projects can meet at least one of the three requirements. Vertical crowdfunding platforms compensate this lack, firstly - as we will see - aggregating communities with similar interests and, therefore, that potentially have strong technical knowledge in the specific area of the project, on the other hand - and above all - providing an independent validation element, express or implied.

In fact the most of the platforms of vertical crowdfunding evaluate project (and campaign creator's profile) even before that the campaign begins, in some cases granting or not hospitality to the project, in other cases ensuring or not the visibility on their platform. It is a rigid, or less rigid, barrier at the entry, which responds to two distinct needs: on one hand that potential supporters find a good quality and reliable proposal because it was already validated by the platform, on the other hand the same platform needs not to saturate its public with proposals of poor quality or that will hardly reach the pre-fixed goal (it must be remembered that the platforms, especially those that use the all-or-nothing model, receive their fee only upon successful completion of the campaign).

This selection at the entry, which is a first validation parameter of the project, is an intermediation element of the relationship between campaign creators and backers and, as we will see, it will not be the only one.

A feature common to different vertical crowdfunding platforms is precisely to provide services, boasting a specific knowledge of crowdfunding campaigns for a specific sector. These services can sometimes be optional, but most of the time they are inherent to the offer of the platform.

A service of great importance for the present discussion is the so-called campaign strategy service, that is the preparation of explanatory content of the project, of its methods and of the rules of the campaign. In this way, the platform meets two needs: the author's own need and the own need of the community of subscribers of the platform.

In fact, it is not at all certain that an author with a good idea is also able to communicate and build a series of promises around that idea for the potential supporters. For example, we can consider a writer who has a good project for a book, or at least a project for a book judged valid by the platform. It is not at all certain that he knows how to prepare his own crowdfunding campaign, nor it will be enough just to know the general rules of the platform for doing it. In fact, he could make a series of errors, in good faith, with the effect to ward off potential supporters, rather than to involve them in the project. He could, for example, omit an even hypothetical delivery date, or fix it as too remote in time, or not be available for dialogue and interaction with the backers or even not explain in sufficient detail the key elements of his manuscript, as well as he could not highlight the elements of his professional background and culture that make him the right person to write and publish that particular book. In meeting these needs the platform on the one hand will try to study the best strategy for that specific campaign, and on the other hand it will apply a set of rules and methods which, always through the campaign strategy service, have already been seen and experienced in other campaigns of the same platform. This aspect ensures strong homogeneity to the campaigns present on the vertical crowdfunding platforms and marks a profound difference with respect to the horizontal platforms.

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Therefore, in the horizontal platforms, as we have seen, each campaign develops a set of rules, while respecting the general rules of the platform, and around these rules aggregates its own community of backers, it matters little, in our reasoning, that all the backers contributing to the various campaigns of a horizontal platform will form the user base, in fact user base and community are two very different concepts. Users of a horizontal platform may be very heterogeneous among them with respect to their interests: it is not at all certain that persons who have funded a new model of backpack may then be interested in an innovative coffee machine. Indeed, there are the same opportunities as for anyone else. Nor those who have supported the campaign for the backpack will expect to find the same rules and procedures at the time to support the campaign for the coffee machine. For those familiar with social networks, it is easy to make a comparison with Facebook groups. The platform (Facebook) provides a number of possibilities and provides a set of rules. The groups hosted on Facebook, within the rules of the platform, may provide specific rules designed to lead at the best the discussions on their specific theme. Each group may, however, adopt special rules, while sharing the same frame.

Unlike the case of vertical platforms, where the supporter of a campaign may theoretically be interested in supporting any proposed campaign platform, and, therefore, if it is true that each campaign builds its own specific community, it is equally true that all communities are, in fact, a subset of the community of the platform. In other words, the community that aggregates a single campaign will be partly made up of people who have already funded other campaigns on the platform and partly of new supporters who will actually populate also the general community of the platform. Therefore, there is not a rigid boundary between the communities of the platform and the community of individual campaigns; in this way the individual campaigns will have an incentive, when not explicitly forced, to adopt rules that overlap each other, in which each member of the platform can easily recognize himself and that generate the same expectations. This does not exclude margins of customization of rules, but such customization must not affect the overall system of rules of the platform, or the system of rules and procedures that generally the campaigns of the platform adopt. We return to the example of the writer: who decides to fund the campaign for his book on a vertical platform will expect, if he has already funded a book earlier on that platform, the same methods of interaction with the author. Methods which may vary, mainly in the sense of being strengthened only if the specificity of the text requests to do it and the exceptional nature of that greater interaction is such that it is clear to all supporters and does not modify their expectations with respect to the platform.

To conclude this part of the reasoning, it seems a correct simplification to argue that in the horizontal crowdfunding the relationship of trust is mainly between campaign creator and backer, while in the vertical crowdfunding it is, instead, characterized as a trilateral relationship of trust between platform, campaign creator and backer. For this reason, the horizontal platforms will tend to give a good dose of freedom to the campaign creator in identifying the rules and procedures of his campaign, while the vertical platforms will aim as much as possible at maintaining homogeneous procedures and rules, not being satisfied only to define the scope of the rules, but building together with the campaign creator - or even replacing the campaign creator - the profile of the campaign. It is, therefore, a relationship explicitly intermingled, not only as regards the methods. Backer and campaign creator, in fact, expect that also the final product is the result of a relationship between platform and campaign creator, more or less invasive depending on the number and the type of services that the platform offers to the campaign creator.

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In other words, a project that is funded through a successful crowdfunding campaign on a horizontal platform will have taken a path of validation from the bottom, having found a certain number of backers willing to commit a certain amount of money. A project that is funded through a vertical crowdfunding platform, vice versa, will have obtained a double validation process: from the top with respect to the platform, from the bottom with respect to the backers.

But also in the specific relationship between campaign creator and backer it is possible to assist, in vertical crowdfunding, to a situation of co-creation that goes well beyond what has already been observed about the instruments of participation and internal democracy of horizontal crowdfunding campaigns.

In fact, being able to turn to a less heterogeneous audience and, of course, more vertical, the campaign creator cannot only record its desires and draw important information on how to enhance the project, but he can draw from the individual skills and experiences that will characterize a vertical crowdfunding campaign as a true moment of collective intelligence. In fact, the campaign creator can often find, among his backers, those willing to make available skills aimed at achieving the common goal of making feasible the final product. In this way, returning to the example of the book, our writer can find people willing to proofread, to carry out a thorough editing, to make the cover or the website of the author. Or, more generally, the writer could find some people willing to give advice not generically motivated by their personal taste or their desires, but rather on the basis of a specific knowledge of the target market.

It should be noted another important difference between the horizontal and vertical platforms precisely with respect to the target market. In fact the latter will, in all probability, be most frequented by market operators (and consumers), with the result that there will almost automatically be the passage of the project from a prototype for a community of supporters/early adopters, to the distribution in the target market.

We will explore more in depth the rules and procedures of the different platforms of vertical crowdfunding in the following paragraphs. As mentioned above, there are considerable differences between them, due to the specific field under consideration, their territoriality, some peculiar choices of their founders and, more generally, due to the fact that if the crowdfunding is still a young and, in some ways, unexplored field, the vertical crowdfunding being one of its expression will still need some time to reach full maturity.

CROWDFUNDING PLATFORMS FOR MUSICIANS

The most common vertical platforms include platforms to finance independent music, that is the musical productions that rather than use traditional methods to raise money, prefer to rely on fundraising from the bottom. It should be noted that a certain part of the music production in crowdfunding does not pass through the vertical platforms, and we will examine some platforms merely for illustrative purpose, aimed at comparing the rules and operational methods of the different platforms. In fact, it is not possible and it is not our aim, to provide an exhaustive list neither for music platforms nor for other platforms.

In particular, we will compare the models of PledgeMusic, Sellaband and MusicRaiser, platforms, that differ profoundly, despite having in common the crowdfunding and the verticality with respect to the music.

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PledgeMusic

PledgeMusic is a London-based platform, but it also has offices in New York and Boston, exclusively dedicated to music, although in its broadest sense (in fact, you can also finance concert DVDs, books etc., if they are related to music). It is a reward platform, in the sense that it accepts campaigns that recognize a reward to the supporters (basically the musical album that has been funded). It accepts campaign creators (musicians) regardless of whether they are signed record label artists or completely independent. It provides both of all-or-nothing crowdfunding methods, for the projects yet to be implemented and funded, and methods of keep-it-all campaigns, called pre-order, which allow artists to make their albums available for purchase before they are available on the market. This second model, which actually is not intended as a real crowdfunding, however, allows to international artists to participate in the platform, raising their profile and, ultimately, helping indirectly emerging artists. The fee, in both the cases, is 15%.

The platform does not provide a selecting mechanism at the entry ("You must evaluate, and bear all risks associated with, the use of any Content or any reliance on said Content, and in no circumstances will PledgeMusic be liable in any way for any Content or for any loss or damage of any kind incurred as a result of the use of any Content made available via the Service. You acknowledge that PledgeMusic does not pre-screen or approve Content, but that PledgeMusic shall have the right (but not the obligation) in its sole discretion to refuse, delete or move any Content that is available via the Service for any reason." fromTerms and Conditions, PledgeMuisc, 2015), nor provides special services to the artists, however, it advises to involve the public as much as possible.

In doing so the platform does not assume responsibility for the music produced by the artists nor with respect to the contractual obligation contracted between artists and audience ("PledgeMusic is under no obligation to become involved in disputes between Pledgers and Artists, or between Pledgers and any third party. In the event of a dispute, you release PledgeMusic, its officers, employees, agents and successors from claims, damages, or demands of any kind, known or unknown, suspected or unsuspected, disclosed or undisclosed, arising out of or in any way related to such disputes and our service. Artists are wholly responsible for fulfilling obligations both implied and stated in any campaign they create." from Terms and Conditions). However, the platform maintains a form of control on the effective delivery of the rewards to the backers, as we can read in the Payment Processing and Payout Details "Automated payments are executed as follows:

1. 75% of the target 15% PM (PledgeMusic nd) commission is released the Thursday after the funding finalizes. This equals 60% of the target amount (and accounts for all of PM's commissioned funds on the target amount).
2. 25% of the target is released the Thursday after the download portion of the campaign is released on PM. If PM is not sending this release, or there is no digital release product, a bespoke payment request needs to be justified to accounting in order for these funds to be allocated.
3. All remaining funds above the target amount 15% PM commission are released the Thursday (post a 2 week holding period) after all items have been marked as shipped and all outstanding questions have been answered and closed."

This expectation appears aimed at ensuring the credibility of the platforms and to protect against the eventual delays in the implementation and shipping of the work.

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The management of the rights of the artists is also interesting because, even if specifying that these rights remain available to the artists, the platform requires in Terms and Conditions:

Artist shall fully own all the intellectual property to all publishings and recordings they create through or result from their Campaign. Artist grants to PledgeMusic a non-exclusive, worldwide, royalty free license to reproduce, digitally distribute, and publicly perform the recordings (as well as any underlying musical compositions) created or contributed by the Artist as part of the Campaign via any means developed, owned, or controlled by PledgeMusic or its partners solely for the purposes of promoting the Artist's Campaign or PledgeMusic. Artist also grants to PledgeMusic a non- exclusive, worldwide license to (i) to reproduce, display and distribute any artwork, photographs supplied by the Artist, liner notes, metadata, track data lyrics and editorial content relating to the recordings, and (ii) to use the name (including professional name(s)), likeness, performances, photographs, and biographical material of each performer, producer, and songwriter featured on a recording, in connection with promoting the Artist's Campaign or PledgeMusic. Notwithstanding the foregoing, Artist acknowledges and agrees that PledgeMusic's business model may involve free promotional downloads and/or streams of recordings. (PledgeMusic, n.d.)

It is interesting to note that the types of behavior and interaction within the campaign are also closely regulated, providing a true "Code of Conduct", which is not reported only for reasons of space, tracing in a large extent, the rules of conduct and etiquette that every user, and in any case the users of a crowdfunding platform, should follow on the global network.

SellaBand

The mechanism proposed by Sellaband has many features in common and some element of distinction. Since from the introduction page of the site it is clear that Sellaband relies on the value of the community (the backers are called "Believers" in the front end and "project sponsors" in the policy) and on the experience of the platform in the sector.

However, the platform does not make quality control on the proposed campaigns, but it establishes a minimum funding target to the campaigns of € 3,000 and a maximum funding target of € 250,000. Like PledgeMusic, Sellaband also accepts both artists signed to record labels and independent artists. Sellaband accepts campaigns aimed at three separate targets "for music recordings, for promotion/marketing, for live concerts/ tours/festivals" (Sellaband, 2015) provided that they are always closely related to the world of music.

It is very interesting the role of Sellaband, which acts as "interface between you, the artist, and your investors, who are hereinafter referred to as project sponsors, and as the administrator for the invested money" (Project Financing Agreement Sellaband) and as such assumes a role which hardly could be called passive or mere tool. The maximum limit provided for campaigns is 12 months and is announced when the artist activates the project, even if "SellaBand can also determine final dates for achieving certain percentages, so-called milestones for the project financing goal", if these interim targets are not satisfied the project is de-activated (a kind of all-or-nothing made even more severe with regard to timing, however, this expectation is mitigated by the fact that the artist is allowed to increase or reduce the goal of the campaign before the goal is reached). Another peculiarity is that in the event of the successful conclusion of the campaign, the platform will retain 15% as fee, but will not directly transfer the rest to

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the author, in fact SellaBand "will rather pay the invoices authorized by the artist on his or her behalf for the experts in order to conclude the music project". It is an element of protection of the backer and also of the credibility of the platform, because if it is true that the artist can choose providers/technicians which he better prefers to finish his project, it is also true that the payment is handled by the platform. Consequently, the system is difficult to circumvent and the risks of a lost production of the album are low.

As regards the rights management, Sellaband specifies:

The artist may design his or her career freely and, according to this agreement, has the right to complete contracts with record companies, managers, agents or publishing houses. The artist retains 100% of his or her entire music rights

and also that

SellaBand will not assert any claims to the copyright, master right or other rights in connection with the music project.

The aspect related to rewards is particularly interesting, partly because the artist is obliged to include in the rewards:

A music download in connection with the music project at minimum. The artist may offer other benefits in the form of benefits in kind, which may also include CDs, T-shirts, concert tickets, etc. All offers are effective only after achieving the project financing goal and completing the music project", but also because it is provided a kind of economic reward for backers, through a mechanism configured as follows: "The artist may distribute offers to potential project sponsors about the purchase of project shares in the music project. This offer may contain a financial component and benefits in the form of benefits in kind. The financial component corresponds to a percentage of the possible profits which are generated in connection with the music project. This percentage share must be determined before activation of the music project. The artist has the right to increase this percentage share before the project financing goal is achieved […] If applicable, the project sponsors' participation in the profits runs throughout the entire duration of the project. For music recordings, this period is 5 (five) years and begins on the day of the publication of the music recording. The artist undertakes to distribute all net profits that are generated in connection with the project […] If the model for the participation in profits is used, the parties are obligated to provide each other with quarterly reports showing all gross and net profits in connection with the commercial exploitation of the music project. The parties have the right to mutually review the accounts and documents associated with the gross and net profits of the music project. (Sellaband, n.d.)

It is a model rather complex, involving the backers also from the economic point of view, in the destiny of the work, maintaining an active linkage that is not only moral but also related to material interests, even after the campaign for the implementation of the project has been funded. It could be drawn a parallel with the equity crowdfunding campaigns, in which the supporters become business partners, but I think it is more correct in this case to frame the backers as digital agents; in fact, they not only make possible the implementation of the musical project, with direct, contributions, but in all likelihood they will also determine its spreading and popularity, having the dual interest to spread something that they have helped to fund and with an economic return which could be potentially higher than the amount that they paid.

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Speaking of backers and their offerings, it should be noted that the all-or-nothing mechanism operates differently in comparison to other platforms, meaning that if it is an all-or-nothing standard for the artist (if he does not reach the goal by a certain date he does not receive anything), it is not possible to say the same for the backers; in fact, it is provided that "if the project financing goal is not achieved by the final date, all project shares are transferred into the project credit of the project (sponsors of the music project". In other words, funding is not lost, but is transferred to the user's credit, which will then in turn transfer it to another project that he likes.

As regards the services offered by the platform, it must be highlighted that it offers a support service - through a helpdesk - which offers to directly bring on the market the music funded through the platform ("if you want to we can arrange the global online distribution of your music via our partners like Amazon in the UK, USA and Germany, BOL.com in the Netherlands and The Orchard who make sure the music is available in all download stores like iTunes and eMusic") without making this road mandatory for the artist and offers a network of selected partners for several other services related to music production.

Musicraiser

The Musicraiser platform divides the offered services into three main categories: crowdfunding ("The Crowdfunding Service consents the Creator to collect from Users, so called raisers, the required amount of money to realize its Project; the Users, in fact, by disbursing an amount corresponding to the economic value of the chosen Reward will consent the Creator to reach the targeted objective"), wishow ("The Company offers, through the Website, the possibility to organize a music event, a festival or a concert, if the minimum amount of pre-sales is placed to Users. The event may be organized by artists, agencies, promoters, etc.") and pre-order ("The Pre-Order Services may allow the Creator

1. To sell his music album even f still in production (so called album pre-order);
2. To find alternative channels to sell tickets for an event, concert or music venue (so called ticket pre-order) (Musicraiser, 2015).

While crowdfunding and pre-order methods are essentially modeled on what has been seen about PledgeMusic (with the first one offering an all-or-nothing mechanism and the second one a keep-it-all), the wishow offers a hybrid model, offering a keep-it-all crowdfunding designed exclusively for the events, where the pre-fixed goal is not expressed in economic terms, but in number of tickets sold

The Creator must pre-determine the minimum number of tickets to be sold to organize the event. Once the threshold is reached, the tickets for the event may still be sold through the Website until the event date. In case of failure to reach the minimum number of tickets purchased by the Users, the Project will be deemed not realized.

As regards the projects, which are of course eligible only if strictly related to music, the platform reserves a controlling syndicate ("The Project and its profile, the Reward and its corresponding economic value may be subject to Company's assessment and control through discussions and/or verification of personal documentation") and, with regard to the events to be promoted through the wishow, the campaign creator will have to demonstrate to the platform that he received confirmation by the involved artists ("In case of Wishow Services the Creator must deliver to the Company satisfactory evidence of the relevant artist's acceptance to perform the live event on the chosen date.").

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The duration of the campaigns is exclusively established by the platform ("Project duration is decided by the Company only") and the artist will have to complete the project within one year from the end of the campaign ("The Creator must realize the Project and deliver the Rewards within 1 year from the end of the relevant campaign"). The all-or-noting mechanism is of classic type in the sense that the money is automatically returned to the supporters in the event of failure to reach the goal, unlike what has been observed with regard to SellaBand.

The most interesting aspects is related to the rewards, which are determined by the campaign creator, after approval by the platform ("established by the Creators, subject to the Company's prior approval"), not so much because their costs and the responsibility for their implementation are up to the author ("The Creator is fully responsible for the delivery of Rewards to the Users and shall bear any related costs"), a feature common to other platforms so far analyzed, as well as the rule of modest economic value of rewards ("Rewards are strictly non-monetary in nature, with little economic value and can no longer be modified once the Project is uploaded on the Website"), generally a characteristic inherent to the platforms of donation type, while the reward platforms usually provide rewards with an economic value quite similar to the amount committed by the backer.

Therefore, this is a platform that adopts an average criterion between the total opening to every proposal and a strict form of control, that is maintaining an approving judgment on the proposed campaigns, but at the same time not making selections and not taking responsibility for the campaigns

The Company makes no representations or warranties, express or implied, with respect to accuracy, completeness, authenticity, legality or decency of the contents and materials uploaded on the Website by the Users. [..] The Company is not responsible for missed delivery of the Rewards by the Creator, events cancellation or failure to deliver tickets in case such activities are performed by third parties.

Rights management is transparent and limited to the offered service, advertising and communication:

Musicraiser has no intellectual property rights on the Projects uploaded on the Website. However, the Creator grants the Company and others acting on its behalf, the right to use the contents, brands, logos or similar intellectual property […] The above rights, limited to the Project uploaded on the Website, are irrevocable, royalty free, transferable and with no territory limits. As effect, the Company shall use the materials uploaded and published by the Creator on the Website with the purpose to distribute them, create derivative works, visualize related products without sort of limitation.

The platform provides a fee of 15%, promises to invest in promotion of the hosted campaigns, offers a service to the artists/campaign creators for the creation of the campaign and the distribution of music funded through the Tunecore service.

As in the case of SellaBand, there is a specific network of partners for the music sector.

CROWDFUNDING PLATFORMS FOR WRITERS

Publishing is another area of great interest for vertical crowdfunding. We will here consider only two platforms, both in English, which have in common the verticality, but differ profoundly for goals and methods: Pubslush and Kickstarter.

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Pubslush

Pubslush is proposed as an open platform, in the sense that it does not make a selection at the entry (it only requires that proposals are "edited for spelling and grammar, and formatted properly" and that they do not impose unrealistic rewards) (Pubslush, 2015), specifically for writers who want to fund their own book through crowdfunding or who want to sell copies of their book before it is published through a pre-order mechanism.

On all aspects, two in particular appear to be of greater interest. The first one is the length of the crowdfunding campaigns, which have a deadline between 15 and 45 days (therefore, these campaigns are very short), the second one is the fee of 4%, which is lower not only than the standards of vertical platforms, but also than the ones of horizontal platforms - it should be noted that the fees of Kickstarter and Indiegogo are 5%).

Against a fee so accessible, the platform offers a series of packages upon payment, including promotional activities and publications, ranging from 50 to 1000 dollars, aimed at the success of the campaign.

It is a large list of activities, made possible by the verticality of the platform. However, it should be noted that in the keep-it-all crowdfunding campaigns there are immediate costs which have to be paid by the author, without being sure of achieving the goal (the risk, in this case, is asymmetrical between author and platform).

With respect to the copyright, Pubslush requires the writer a license limited to the needs of the campaign and platform

With respect to all Content, by submitting Content to Pubslush, you hereby grant to Pubslush, a worldwide, non-exclusive, royalty-free, sub- licensable, perpetual, irrevocable and transferable license to use, reproduce, adapt, publish, translate, distribute, prepare derivative works of, display, and perform the Content in connection with the Service and the business of Pubslush, and of its successors and assigns.

Pubslush boasts a rather large community, made up of writers, readers, publishers and partners in the publishing world.

Unbound

A different model is proposed by Unbound, a platform that accepts only crowdfunding campaigns aimed at the implementation, preparation and marketing of a book, strictly unpublished ("We cannot publish books which have been previously published or have been available to buy previously, even if the book is now out of stock or (in the case of self- publishing) you have stopped selling this yourself.") (Unbound, 2015). Firstly, the model differs because Unbound makes a selection of the proposed texts, through a selection process lasting about 6-8 weeks and it should be said that to participate in the selection the author must provide detailed information about himself and his work but the latter does not necessarily have to be already completed ("We do accept submissions for books which aren't yet written, but we would need to see evidence of the quality of your writing."). After passing the selection, the author will receive support for the creation of the campaign in all its aspects ("We need to get print estimates, work out the funding target for the project, sign a finished contract, shoot and edit the video and come up with a marketing plan before a project goes live").

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The campaign is designed to cover the costs "Our editorial team review all projects to determine the cost they will need to raise in order for Unbound to publish them. This varies depending on the type of project. The average cost for text only books is around £15,000 whereas illustrated, photographic books cost considerably more. The costing includes everything from copy editing, editorial, production, marketing and distribution into the trade") of the activities necessary for the publication, and once covered these costs the platform will share profits with the author ("Unbound shares 50% of all profits (after costs) with the author").

Consequently, it can be said that on a campaign with a standard duration of three months (but which can vary depending on the project's needs), the platform withholds 100% on the economic objective, holding then 50% on the amounts subsequently collected (moreover, the platform when asked whether there are provided advance payments for the author, has specified

The target of the project goes towards the producing of the book, so no advance is given as this makes the funding target higher. After the project reaches 100% and the book is published the profits are split 50/50 with the author and Unbound. So, although there is no advance authors do get all of the benefits of having their book published by a publisher and get more of the profits than with a traditional publisher.

It should be considered that the goal proposed to the public, particularly important considering the all-or-nothing model adopted by the platform, is expressed as "pledges" regardless of whether there are offers from 10 to 20 pounds, or 1000, and then not in relation to a figure to reach. If on the one hand this allows to evaluate the actual potential of readers of a book (and it will not be published a book with a few - but generous - supporters), on the other hand this could discourage supporters very motivated to donate more because to donate a larger amount would not achieve any practical benefit for the book and the writer.

The role of Unbound thus seems to be a hybrid between the role of a crowdfunding platform and a traditional publishing house ("We act as your publisher") drawing up a specific publisher-author contract, by reason of which the platform generally holds the publishing rights of the volume that has been funded ("When a project is published Unbound usually own the worldwide or English language rights, but this can vary on a project by project basis as this can be negotiated in the contract."), for which it will provide all activities necessary for its publication ("We edit and proof all of our titles using in house or freelance editors and proofreaders. This is arranged by the managing editor and production manager. We organise for the cover art and design work to be completed along with the typesetting and internal design work. We collaborate with our authors on the production side of their books, and we would certainly work with you on some design aspects.") and will ensure the dissemination of the book by the distribution into bookstores ("We use a third party sales team to sell trade editions of Unbound books into bookshops") and advertising ("We help with traditional publicity, but encourage authors to help with this where they can"), always maintaining a high level of involvement of the author and sharing 50% of profits with him.

The all-or-nothing model has some points in common with the one proposed by SellaBand in the music sector; in fact, if a book is not funded, the credits are returned to the availability of the backer and the backer can use them to support other books, or may request a refund to the platform ("If a project fails to reach its target of readers all credits will automatically be returned to the user's account. The user can then allocate those credits to other book projects or they can contact Unbound for a full refund."). The rewards are shipped directly by the platform, which updates the backer on the timing of preparation and shipping ("After a book reaches 100% it normally takes around 6-8 months from the manuscript hand-in

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date to go through all of the editorial and production processes. We'll send you updates throughout this time.") and deals with the reimbursement if it was not able to send the reward ("If a project reaches its reader target, but for whatever reason, Unbound fails to deliver the associated rewards to the user, then Unbound will refund these credits so they can be applied to another project.").

Although they both are dedicated to the publishing world, and mainly (but not only) to the emerging writers, Pubslush and Unbound differ to a greater extent than we have seen with regard to platforms for music. It could be argued that, beside the crowdfunding mechanism which represents the common phase in Pubslush and Unbound (albeit with significant differences related to the method), the services offered by the two platforms differ so much to have two different purposes: Pubslush for the publishing world, Unbound for the traditional circulation of books. Therefore, we should focus on the goal that motivates a writer to choose a crowdfunding platform (in primis) and to prefer a vertical platform to the inevitably more popular horizontal platforms. In fact, the author will not want to collect money, since the amount collected by the campaign should be functional to the creation and promotion of the submitted book and it should not - or at least not only - be seen as an economic compensation for the author, but in order to provide the best service to his own work.

That is to say, the entry into the target publishing market whether it is self-publishing or traditional publishing.

THE PATREON CASE

In conclusion of this brief and illustrative overview of some types of vertical platforms, I decided to consider Patreon, a platform dedicated to "content creators" (ranging from movies to writing, from comics to educational content), that more than a real crowdfunding platform could be called a form of micro-patronage.

It is, in fact, a mechanism that allows supporters to offer a monthly amount (which is a kind of subscription) to allow the content creator to continue his activity being financially supported..

In a platform like Patreon, the value of the community - and of every community built around a project and its creator - is even stronger and more central than what has been observed previously, for two distinct reasons: the pledge was renewed several times and it is, in most of projects, difficult to distinguish between campaign creator and project. This centrality is also recognizable in the rules of the platform.

In fact, the provided guidelines - in addition, of course, to ensure the authenticity of what is proposed by the creators - ("Do not put up fake pages or collect money for things you're not actually doing. You also can't use Patreon as a prank or to fund non-activity."), inhibit the use of the platform for certain categories of proposals ("We don't allow funds to be collected for organizations that promote, forums that distribute, or anything else that primarily facilitates harmful or dangerous activities. For example, an organization that promotes sexual abuse, intellectual property violations, weapons, commercial spamming, self harm, drug manufacturing techniques, or property crimes would be prohibited from receiving funds through Patreon") and even of individuals because of their conduct outside the platform ("We impose restrictions not only on the types of media and projects that can be funded on Patreon, but also on which people can and cannot receive funds through Patreon. After creating a Patreon page, any Creator caught in the act or convicted of making credible violent threats, committing violent crimes, malicious doxing, coordinating nonviolent harm such as fraud, or encouraging others to do the aforementioned harmful activities may be banned from using Patreon.

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People with a dangerous criminal history or known affiliation with violent or dangerous groups including terrorist or cyberterrorist organizations, organized criminal groups, and violent hate groups, cannot receive funds through Patreon, no matter the purpose or apparent intention of their Patreon page. Similarly, anyone who has ever been convicted of child sex abuse, fraud, or money laundering is not permitted to collect funds through Patreon.")(Patreon, 2015).

These are limitations that rigidly regulate the entry into the community, limitations that can be defined more subjective than related to the proposals and their contents. From this point of view Patreon itself as platform/tool, specifying that

atreon.com does not take part in the interaction between Users. Patreon.com does not have control over the quality, timing, legality, failure to provide, or any other aspect whatsoever of any ratings provided by Users, Content provided by Users, nor of the integrity, responsibility or any of the actions or omissions whatsoever of any Users.", and also "The Service is only a venue for connecting Users. Because Patreon.com is not involved in the actual contact between Users or in the completion of the Content Creation, in the event that you have a dispute with one or more Users, you release Patreon.com (and our officers, directors, agents, investors, subsidiaries, and employees) from any and all claims, demands, or damages (actual or consequential) of every kind and nature, known and unknown, suspected and unsuspected, disclosed and undisclosed, arising out of or in any way connected with such disputes.

The platform holds 5% of the amount collected as fee, the goals of the campaigns, considering the model of Patreon, are entirely optional and indicative, although the authors are encouraged to include them.

It is particularly interesting to see whether, and to what extent, Patreon becomes a system used on a large scale, not so much to fund projects, but to ensure an income - and especially the main source of income - for creators of cultural and informational content.

CONCLUSION

For reasons of space, we analyzed only some vertical platforms. However, in my opinion, this short comparison allows to identify the rapid evolution from a sociological point of view, from the point of view of the crowdfunding models and from the point of view of the system of rules.

In fact, it could be observed that, at least from the point of view of music crowdfunding, there are several points of contact between the platforms, without that this has undermined the research to offer a service as close as possible to the needs of the artist through elements of strong originality.

Even where we have observed the strongest differences, that is in the platforms for writers, it should be noted a common element in the value of the community and the creation of an ecosystem of relationships with subjects belonging to the target market.

Then, the vertical platforms can be considered more than a subset of the horizontal crowdfunding, as an independent system of relationships and rules which has in common with the horizontal crowdfunding a large part of the fundraising methods, but that is also profoundly different with respect to the aggregative procedures and the system of rules.

At the same time, it is likely that a larger spreading of horizontal crowdfunding could be useful for the world of vertical crowdfunding, also to allow more people to assimilate the economic and relational dynamics that are, as we have seen, a common and shared basis between the two types.

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Chapter 23
Crowdfunding as a Marketing Tool

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ABSTRACT

Most people, at a first sight, perceive Crowdfunding as a specific and exciting process to raise money. Of course, this is correct, but it is not the whole truth. A successful crowdfunding campaign must be addressed to a community of people, rather than to an indiscriminate crowd, which is also typical for any marketing strategy. Leveraging on this key element, crowdfunding can amplify almost any kind of communication activity, provided it is able to meet the needs of a community and to provide the benefits that the community expects. Therefore, if well exploited, crowdfunding is a powerful tool in the hands of marketers, whose potential goes far beyond the evidence of pre-selling a new product, to reach new marketing horizons such as branding, business development, CRM, credit scoring and even HR management.

INTRODUCTION

When Coolest Cooler's campaign on Kickstarter closed in August 2014, it ended up being the most successful Kickstarter campaign ever, raising $13 million from more than 62,000 backers. The target was originally set to $50,000, but, in only two days, the campaign hit $500k. Was such a huge success only a crowdfunding campaign? Clearly not. It was definitely a marketing campaign. Money strictly needed for putting the product into production was only a fraction of the amount raised. Besides funds, the main achievements of the campaign were both a large amount of pre-orders and a worldwide awareness. Are not they two typical goals of a marketing plan?

The takeaway of Coolest Cooler story is that crowdfunding is not only a matter of getting funded, but, also, enterprises can exploit it as a powerful tool to implement a marketing strategy. The ways to achieve this objective may assume different shapes, formats, and even processes.

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Moreover, the use of crowdfunding as a marketing tool is not limited to enterprises raising funds, but can be adopted also by those eventually investing. As always, planning and executing a marketing strategy cannot base on general rules, valid for every instance, but should be adapted to each single situation considering the opportunity, the environment and the strategic goals.

This chapter's purpose, far from aiming to present entrepreneurs and managers a set of rules following which their problems will solve magically, is to give them a structured idea and a few hints about how crowdfunding can widen their available weapons to reach their target.

BACKGROUND

Let us start by defining what crowdfunding and marketing are. Other chapters of this book deeply treat the Crowdfunding concept, so here we only remind its main elements. The two key elements are included in its etymology: "crowd", a mass of people, and "funding", collecting money.

However, "a mass of people" is not enough to describe the success of the crowdfunding phenomenon. The crowd - each single individual composing the crowd - must be engaged. Engagement is as more effective as more a campaign is able to catalyze people around a common need or feeling. That means a crowdfunding campaign must leverage on a community, which might be smaller or larger depending both on the subject of the campaign and on the campaign's creator's ability to communicate it. In other words: crowdfunding is all about identifying a group of people by its needs, reaching them through an effective communication and, finally, providing them with what they want (a product, a service, a return on investment).

Let us focus now on the definition of marketing.

UK based The Chartered Institute of Marketing (CIM, n.d.) defines marketing as

… the management process responsible for identifying, anticipating and satisfying customer requirements profitably.

The American Marketing Association states (AMA, 2013):

Marketing is the activity, set of institutions, and processes for creating, communicating, delivering, and exchanging offerings that have value for customers, clients, partners, and society.

Marketing author and academic Philip Kotler (Kotler, 1972) defines marketing as:

Satisfying needs and wants through an exchange process.

These three respected definitions have one theme in common: meeting the needs and providing benefits.

It clearly appears, matching this latter finding with what we reported above about crowdfunding, that we are talking about the same thing: both definitions go in the same direction by stating that marketing as well as crowdfunding are tools to meet the needs of people and to provide them the benefits they expect.

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The peculiarity of crowdfunding is that on top of satisfying needs and providing tangible benefits, it may reward people with intangible benefits too. Pledging money to help an entrepreneur dream come true or investing in a high potential startup to help its growth may eventually give a backer the opportunity to feel as an active part of the society's development; this may look rather more exciting than putting money on a listed though anonymous big corporation.

On the other hand, from the enterprise perspective, the process of aggregating a community in the name of both tangible and intangible needs and of its consequent benefits may be much easier and more rewarding. Easier because a communication campaign can leverage on a wider range of sentiments, more rewarding because, once engaged, people feel a stronger connection with the product and the enterprise, thus becoming a more loyal customer and a potential brand advocate.

According to a recent survey of Kickstarter projects by Wharton's Ethan Mollick and the University of North Carolina's Venkat Kuppuswamy (Mollick & Kuppuswamy, 2014), crowdfunding's ostensibly ancillary benefits are actually the primary reasons why successful startups use it. Author Kuppuswamy says: *Crowdfunding is not just a means for immediate funds, rather, it is a way to validate ideas, test markets, launch brands, find customers and impress investors*.

However, complications arise if we consider that there are different types of crowdfunding - i.e. reward base, equity based or social lending – and, additionally, that enterprises have different sizes and compete in many different industries. Marketing needs may then be quite different from case to case and, consequently, the opportunity of exploiting crowdfunding as a marketing tool may assume different purposes as well as distinct implementation modalities.

A structured approach to highlight the potential alternatives should be based on some classification. We suggest a first differentiation between marketing opportunities for Enterprises raising funds and those of Enterprises investing funds. This first distinction may help to detect the marketing opportunities of smaller and bigger enterprises. A further distinction within these two macros-categories will take into account the typical features of each type of crowdfunding, with a focus on Reward based and Equity based.

MARKETING OPPORTUNITIES FOR ENTERPRISES RAISING FUNDS

Reward Crowdfunding

Reward crowdfunding is usually the vehicle new entrepreneurs approach to raise the funds they need to bring an idea to reality. Usually, it works that somebody has an idea for a product or a video game, a book or an application. He/she uploads and describes it on a platform - say Kickstarter or Indiegogo – showing it off to the world and thus aiming to collect enough money to start the production. In order to stimulate donations, the entrepreneur offers some kinds of rewards whose value relates to the amount the donor is available to give. The most relevant is always the product itself, which will be produced and then delivered to donors if the campaign reaches its funding target.

Startups and entrepreneur are more and more using Reward Crowdfunding campaigns for the purpose to pre-sell a product, and this attitude, by now well-known and accepted by backers, opens a first set of great marketing opportunities. Companies are more and more applying crowdfunding not just to generate revenues, but more importantly, as a go-to-market strategy (Grell, 2015). Targeting a community of

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individuals with a strong sense of belonging to that group, with the aim of proposing them something exclusive, may be a good lever to get valuable information, which can be later used to consolidate the launch of a new product.

A company in the process of deciding the production of a new product, its development or its launch may consider a reward crowdfunding campaign as a component of the marketing mix, by setting clear and measurable objectives.

A general warning on employing reward crowdfunding for these purposes is that people expect to gain something concrete as a reward. Therefore, while a physical product is a perfect subject for such a campaign, the same does not apply to a service, such as an eCommerce site or a sharing platform, which is an intangible good and therefore hard to convert into a reward.

Market test. Likewise, a new entrepreneur or a start-up, a consolidated company may have a plan to launch a new product. It could be the new release of an existing one, or a brand-new or, else, an additional innovative item within a product line. The more innovative the product, the higher the risk is to invest in it.

Before launching an innovative product, marketing department usually tests it by submitting it to a focus group and/or commissioning expensive market researches. However, only larger corporations can afford these techniques. Small enterprises, often do not have enough resources to develop a product and, simultaneously, assess the market demand. Coincidently, those companies are often the most innovative, operating with an "out-of-the-box" way of thinking.

Launching a reward crowdfunding campaign may help to solve the problem. The main assumption is the availability of a group of people (a community), already known by the company and reachable directly through a mailing list or social networks. The larger and tighter the community, the higher the probability of succeeding. The most loyal customers, the company might have already raised and classified, for instance, establish a great community. A crowdfunding campaign in this case submits the new product to the most loyal customers asking them to pre-order the new product. If the campaign reaches the minimum pre-sale target, it means customers not only have demonstrated their appreciation, but, also, their willing to buy. An indirect effect is that the new product fans will tell their friends, thus enlarging the potential number of pre-buyers.

GE opened FirstBuild, a subsidiary of GE Appliances focused on developing the next generation of home appliances, which has launched 8 new products through various channels including Indiegogo (Dawson, 2015). Their primary goal has been to get products they believed in to market as fast as possible. Reducing the time to market means reducing investment for any one product while engaging in an exchange of value with consumers. FirstBuild launched Paragon Induction Cooktop crowdfunding campaign on Indiegogo early in 2015. The original concept for Paragon showed up as an idea posted on the FirstBuild website by Brad Walchak, a FirstBuild community member. First, they launched a design challenge to their community about 3 months prior to the Indiegogo launch date. What was that time used for? Product design, lead generation, and community engagement. However, despite the confidence they had built in the product through direct interaction with consumers, only a real-time test in the marketplace would validate the product. The crowdfunding campaign ended up in April 2015: the product acquired thousands of customers and more than $300k in sales, making GE confident in their value proposition and pushing them to move forward with production.

A great advantage of doing a market test with a crowdfunding campaign is that costs are mostly paid back: if the campaign is successful, it implies that people have pre-ordered the product and have paid for it. Margins on pre-orders can be attributed to cover the costs of the campaign.

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In assessing the campaign, a company must clearly define its strategic objectives. With reference to testing a new product, they can be, e.g.:

- **Testing Market Acceptance:** Trying to reach a well-defined target in terms of the number of products sold gives a strong feedback on product's acceptability. Feedbacks are not only relative to how much people like the product, but, also, to how much they are willing to pay for it.
- **Testing the Features of a New Product:** Campaign may offer prototypes with different features as alternative rewards. The most pre-ordered prototype will be most probably the one the market will reward.
- **Reach a Minimum Volume for Industrialization:** Engaging engineers to project the product industrialization or committing with a supplier to build a mold is remarkable investment and can be a high risk for a small company. If, on succeeding with a crowdfunding campaign, a sufficiently high number of products are pre-sold, the risks dramatically decrease.

Product Launch

A company, a small one, but a larger one as well, may have a new product ready to launch on its usual market. In this case, unlike the previous one we highlighted, the company has already invested on prototyping and industrialization, and it is planning a marketing campaign to launch it.

Marvell Technology Group, a semiconductor producer that took in $3.4 billion of revenue in 2013, on March 2014 used Indiegogo for a small fundraising drive. The company's objective: gauge demand for Kinoma Create, a software and hardware tool kit that includes a Marvell chipset to help build app-controlled gadgets. The campaign raised 5 times its original target form 552 backers.

A crowdfunding campaign can be a valuable additional tool in the marketing mix. A traditional communication campaign uses media to inform about the product, to assess its brand and to highlight its features. Usually, call-to-action is implicit, if traditional media channels employed ("if you like it, go out there and look for it"), or a little more explicit if digital media are chosen ("click to learn more or to find an outlet"). Only if the company sells the product online, the-call-to-action bring directly to a sale.

A crowdfunding campaign included in the marketing mix for the launch of a product adds the possibility to both communicate and sell. The warning here is that a reason for backers must be established. Why someone should order a product on a crowdfunding platform that is going to be available anywhere else? For instance, the crowdfunding campaign could be a sort of pre-launch where people have the chance to order the new product in advance with or without a price benefit.

In this case, the enterprise will concentrate part of its communication effort on driving the target audience to order the product, thus getting a measurable result. In addition, the following traditional communication campaign can leverage on the crowdfunding success with a new exciting story to help the main one (the product's features) standing out.

Entering a New Market

A product may be new for a specific geographic market where the enterprise has strategically planned to expand its business. A crowdfunding campaign can be set up on a platform of the destination country, with the same goals highlighted above: testing a market or launching a product.

Additionally, the company may want to achieve a few more kinds of goal.

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- **Get Distribution:** The reputation gained during a crowdfunding campaign and at its successful end, can be exploited to address the search of distribution partners in a new country. Not only brand awareness to consumers, but also to distributors is a goal the campaign can achieve. The lever is the evidence, provided by people pre-ordering, that the product can have space in the market and that, therefore, it can be a good business to distribute it over the country.
- **Reach New Customers:** Even if an enterprise is already operating in a new country market, a crowdfunding campaign may offer the chance to expand the market reach if the need is to improve revenues. A company can achieve this objective by leveraging on existing customers. In this case, a campaign should offer either a brand new product or the new release of an existing one. Or else, it can promote an additional item within an existing line of products.
- **Set a Track Record for Further Investors:** A successful crowdfunding campaign, no matter how high the funding target has been, proves that the company is able to attract customers. This is not only a direct benefit, but also an indirect one, in terms of appeal for future investors, who become aware of the enterprise's ability to raise funds. In fact, after the launch of a product in a new market, the company might need money to invest in further development and, therefore, might need to raise more consistent funds from Angels, VCs, Banks or throughout an equity crowdfunding campaign. A successful crowdfunding campaign is then a "jewel of the crown" the enterprise can add to its score, presenting its business plan for a financing round. Before its 2014 first successful campaign on Kickstarter, Pebble Watch could not raise funds from any VCs nor angel investors. After hitting $10 million from the crowd, Charles River Ventures invested $15 million (Pebble Techonolgy, 2013).

Customer Relationship Management

Whichever is the main objective of a campaign, among those listed above, an additional benefit is commonly achieved: contacts. People may interact with the campaign in many different ways, from subscribing to following it, from pledging funds to leaving comments or asking questions.

Those interactions are ways for engaging people and can give back extremely valuable data and information, provided that, before the campaign launch, the company has planned to measure and track them. Depending on their origination, data can be useful in several ways, e.g.:

- **Lead Generation:** Of course, people pre-ordering the product are definitely buyers. Yet, all others who have been interacting with the campaign are potential buyers. Even if they did not place an order, they demonstrated anyhow some interest in the product by asking questions, following the campaign to get updates (if contemplated by the platform), leaving comments, sharing the campaign on social networks. Tracking them allows to build up a database of leads the company may contact afterwards with the objective to convert them into buyers.
- **Loyalty:** A crowdfunding campaign cannot run without starting from a solid network upfront to contact and engage. Company's customers, if any, may also compose the network. In this case, a crowdfunding communication campaign targeted on them, may consider leveraging on their sense of belonging to a community of "brand lovers" and, for instance, presenting the new product as an opportunity specially thought for them. Whether they will order the product or not, their binding with the brand will most probably increase.

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- **Customer Profiling:** Another way to exploit the data gathered during a crowdfunding campaign is to use them as additional attributes to better profile customers (or leads). It is easy to figure out "buyer" or "not-buyer" as an additional attribute. Less easy, and trickier, is to associate with the data stored in the company's CRM any behavioral information related to the interactive activities tracked during the crowdfunding campaign. These include sharing the campaign, social networks used, negative or positive opinions, number of interactions, etc. The more interesting side of it is that those kinds of information are dynamic and not static, meaning that they may change over time. For this reason, they must be added to CRM database only if the company is provided with an adequate technology and a CRM strategy.

Dodge did a great job with its DodgeDartRegisty.com campaign (Swart, 2014). Upon registration, customers could have parts of the car funded by backers. The campaign went viral, engaging more than 1 million social media impressions. Even if less than 40 cars were purchased directly, the company mined data from tens of thousands of potential new customers and saw sales more than double the following quarter.

Equity Crowdfunding

Equity crowdfunding, more than reward, is definitely a way to raise funds, to the extent that the entrepreneur is willing to give away part of his equity in exchange of money for growth.

However, even a crowdfunding campaign may have marketing purposes in addition to funding. Like reward crowdfunding, an equity crowdfunding round starts from involving an initial community. So, once again like reward crowdfunding, it is a matter of engaging people and converting them. In this case into investors.

The amount of money involved in an Equity Crowdfunding campaign is considerably higher than that of a reward one and, hence, the relationship built with people must create a tighter link. People investing are careful about where they are putting their money and want to know details about the company. Therefore, an Equity Crowdfunding campaign is much more complex, but right because of that, it builds such a strong sharing of interests between the company and its investors, that they become the company's first brand advocates. This concept is the gist of Equity Crowdfunding as a marketing tool and the basis upon which enterprises can build other kinds of marketing activities.

Setting a Benchmark for Further Investment Rounds

Companies are using the equity crowdfunding platforms as a way to market their offering in hopes of attracting further investments, beyond those collected directly. If the campaign succeeds, further to raising funds two more side benefits are accomplished:

1. The company obtains a certified value (a number of people invested their money in front of an equity valuation).
2. The business model is perceived as good enough to attract investors.

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After the crowdfunding financing round, if the company, during the following months, is able to achieve the results it promised, a further and higher round can be set up and, most probably, it would be successful, as the business proved to be financed once and to be credible.

Furthermore, the valuation of the company at this stage can easily be higher than the one obtained in the first round, allowing the company to raise funds at a lower cost.

Someone went even beyond. Burgundy Winemaker Domaine Chanzy, a French winemaker, launched an Equity Crowdfunding campaign on the UK leading platforms Seedrs, as an alternative way to raise money for its IPO on the London Stock Exchange's (LSE) Alternative Investment Market (AIM) (Seedrs, 2015). Domaine Chanzy apparently believed that blending an equity crowdfunding round with a public listing would have expanded its investor base and attracted advocates for the brand.

Entering a New Market

Launching a crowdfunding campaign in a new country can be a strategic move to enter a new market. The enterprise may have successfully marketed its products or services elsewhere and believes they are innovative enough even for the new destination country.

The main benefit of launching through an equity crowdfunding platform is the communication synergy: promoting the fundraising, communication activities promote the product/service as well.

An additional benefit is that campaign communication costs can be paid back partially or entirely by the new capital raised once the round reaches its target.

Finally, the "long tail" of new investors (people investing individually small amount of money) are the best witnesses of the product/service offered by the company they invested in. They are willing to have a return on their investment and will push their friends to buy the "their" company's products to let it be successful.

Increase Creditworthiness

Financing a business with equity crowdfunding accelerates the process of raising money in front of equity rather than against debt. Equity crowdfunding is therefore an especially useful funding tool for innovative SMEs, as it can improve their creditworthiness and make them attractive to bank lenders by reducing their debt-to-equity ratio. An AFME (Association of Financial Markets in Europe) report states that in Europe *lack of equity is a key bottleneck to the provision of further overall SME funding, the US has a much more developed equity network for SMEs*[1] (AFME, Boston Consulting Group, 2015).

Crowdfunded companies, then, may leverage on their funding success to more easily access debt funds.

Rewarding Current Customers and Business Partners

We stress the concept of how important leverage on an existing community is to run a successful crowdfunding campaign. An interesting way of doing it is to involve customers or business partners (e.g. distributors, b2b customers, suppliers, etc.) allowing them to become stockholders. It works particularly with large networks, where members are small enough and feel somehow in tune with the company.

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Not only a campaign involving customers and business partners has a higher chance to succeed, but also it is a news itself and may have a better impact on media. Furthermore, partners and customers subscribing a funding call definitely certify that the company's business is attractive to the extent that even customers and suppliers are happy to invest in it. This looks as a great achievement for both the campaign and sales.

Finding New Business Partners

Pizza Rossa, after a £440 thousand successful campaign on Crowdcube, a leading UK equity crowdfunding platform, immediately received requests for opening franchises from all over the world (Crowdcube, 2013).

When a company is new to the market, it is often very hard and time consuming to find effective business partners, e.g. distributors, re-sellers, suppliers. A side effect of an equity crowdfunding campaign is to help the entrepreneur or management in the search process. The communication campaign supporting the funding round necessary hits the company's industry. If the round meets the target, enterprises operating in that industry may then be more likely to get in contact and start a deal. This may be a side benefit or can be set as one of the objectives the company wants to reach through the crowdfunding campaign. In the latter case, the company must identify in advance measurable KPIs and must plan a specific communication strategy.

Sugru campaign on the Crowdcube platform broke two world records (Crowdfunding Buzz, 2015): it featured the first ever £1m crowdfunding single investment, and boasted the widest reach, with investors from 68 countries. One of the founder's objectives was to raise the profile of the company, allowing it to more easily find industrial partners for entering new industries and distributors worldwide.

MARKETING OPPORTUNITIES FOR ENTERPRISES INVESTING FUNDS

Medium and large enterprises invest huge amounts of money in marketing activities and are constantly seeking new ways to stand out among competitors. Typically, they look for initiatives that maximize the exposure to their target and, at the same time, that minimize costs.

Reward and Equity Crowdfunding represent an alternative opportunity that may be extremely effective in both gaining visibility and containing costs.

Reward Crowdfunding

Those running reward crowdfunding campaigns are usually individuals or small businesses. They plan their fund raising to finance the launch of a product, as we have already seen, but also for charity or civic initiatives. This opens up a bunch of opportunities that enterprises looking for alternative marketing tools may effectively exploit in accordance with their objectives.

Brand Equity

Brand equity refers to the value of a brand. Brands are one of the most valuable assets a company has, as brand equity is one of the factors which can increase the financial value of a brand to the brand owner, although not the only one. Several elements can be included in the valuation of brand equity: changing

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market share, profit margins, consumer recognition of logos and other visual elements, brand language associations made by consumers, consumers' perceptions of quality and other relevant brand values. Therefore, brand equity is the value perceived by customers on top of a product or service. It can significantly affect the price and it derives from branding investments. A strategic objective, for any kind of enterprise, consists indeed in increasing its brand awareness, which implies enhancing both the visibility and the appreciation of its products or services. Marketing actions to achieve this strategic goal include traditional and digital advertising, sponsorship, promotion, public relations, social networking. All these kinds of communication activity have several common denominators: a profiled target audience, a benchmark (the product or service itself, a testimonial, a context etc.), and one or more communication channels.

A reward crowdfunding initiative presents all of these items. It has a target audience itself, which is built upon both the individuals investing in the project and the potential investors. It has a benchmark to compare to, which might be the context, e.g. the development of new brilliant tech ideas, the restoration of an important monument, or a social aid initiative through a charity. Finally, it has its own communication channel - the crowdfunding platform – although it also extends to several indirect channels, i.e. those, digital or traditional, used by the crowdfunding campaign promoter.

How can an enterprise leverage on these kinds of campaign? Here below we suggest a few examples, though, as always, the scope may be wider and depends only on the marketing team fantasy.

- **Promoting Directly One or More Campaign:** A company may launch its own reward crowdfunding campaign, not much for launching a product, as we have seen in the previous section of this chapter, but for a pure brand equity purpose. The opportunity may arise in relation to supporting a cause or an event where the company may want to be accredited as the main promoter. This way, the campaign target audience and, more generally, whoever is interested will associate the brand with a praiseworthy activity, as it touches deeply his sensitivity.
- **Co-Investing:** This approach is more complex, though more intriguing and full of interesting implications. The hinge of the approach is the opportunity for a company to finance one or more high-impact initiatives without allocating all the money needed but only a part of it. The target audience will perceive the company to be the promoter of the initiative, or its main supporter, but the Company is investing only a fraction of the entire budget. The role of the enterprise, here, is double. On one side it acts as the lead investor (or donor), letting other individuals or enterprises to cover the remaining budget. On the other hand, it also acts as an "advocate" and a driver for the fundraising campaign, leveraging on its reputation to involve other investors/donors. Depending on the positioning the enterprise wants to give its brand, it can explore several options, for instance:
    - **Startups Co-Financing:** A corporation may agree with a reward crowdfunding platform to launch a call for choosing a few start-up projects to be co-financed whether their crowdfunding campaigns reach a percentage of the funding target, (e.g. 50%); the Company will participate by covering the remaining 50%. The benefit here is the possibility to allocate a relatively low budget (the sum of the maximum amount of money allocated for each project), getting back a higher value in terms of spontaneous media coverage. This is what several Italian large corporations – Fastweb (Telco), Unipol (Insurance) and Poste (Italian Public Mail) – have agreed with Eppela, one of the biggest Italian reward crowdfunding platforms. Each of them allocated a budget form €100,000 to €150,000 to be spread among those of

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the previously selected projects that would have raised at least 50% of their target. On average, projects targets are lower than €20,000 allowing the sponsoring corporation to finance a relatively high number of new initiatives in a 4 to 6 month period.

  - **Co-Sponsoring a Monumental Restoration or a Social Activity:** Instead of paying the entire bill (e.g. for a monument restoration), whose importance for citizens could be either at a national or at local level, a Company might help promoters to set up a crowdfunding campaign. The corporation will then help them to both finance a part of the initiative and find other co-sponsors as well as to spread the message among people. The company might also help in other different ways. e.g.: a retailer can help by exploiting the proximity of its outlets to consumers to communicate and remind them the initiative. A significant example is The Giant Flag: a legacy project promoted by the South African branch of FCB, a multinational advertising agency. It includes the building of a flag made up of millions of colored desert plants, and a four-megawatt solar field, on a tract of land that was previously completely barren. Thanks to its size equal to 66 soccer fields, it will be effectively viewable from space. It will cost about $20 million, which FCB will fund both with corporate efforts and with a Crowdfunding campaign that will let citizens participate directly in this giant project.

- **Supplying Rewards:** In a reward crowdfunding campaign the promoter must plan to give back rewards to donors, proportionally to the entity of money they donate, and, hence, to establish a scale of rewards. As mentioned before, the main reward, in case of a campaign set to launch a product, is the product itself. However, that is not always the case. Indeed, the campaign might have other subjects than the launch of a product or it might need to allocate rewards for the donation of smaller amounts of money. In both cases, the promoter is forced either to invent some intangible rewards or to spend money for buying gadgets. By the way, it would be a great benefit for a campaign promoter to promise and to deliver attractive rewards which the platform might make available for free. A Company producing goods or selling services may consider promoting them by collaborating with one or more platforms and letting them offer to a selected number of initiatives a choice of its products (or coupon to get its services) as rewards. Of course, the selection criteria should be established taking into account the mutual compatibility between the product/service offered and the subject of the initiative. In any case, the donors must perceive a strong link between the two. Domino's Pizza created a competition in which their start-up businesses could win Domino's Pizza gift cards. Entrepreneurial winners could even reuse the vouchers as an incentive for smaller investors backing their projects through crowdfunding (Moules, 2013).

Research and Development

Among the classical marketing 4 Ps suggested by McCarthy (McCarthy, 1960), besides "*promotion*", which we considered above speaking about Brand Equity, "*product*" is another important item. A marketer considers a product in terms of its ability to satisfy a specific client's need. However, that need is not static, as it changes over time depending on the phase of the product/service in its life cycle. Therefore, among marketers' tasks, managing the product mix is a relevant one. Research is one of the main tools a company has to enhance its existing products or to create new. However, investing in research and development may be very expensive and risky for an enterprise, especially if the product or service is not part of its core line.

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Crowdfunding can offer an opportunity to enhance existing products or services or to develop new ones without the need of allocating an outstanding budget. Indeed, it allows a bottom-up approach rather than a top-down. The disadvantage is a lower accuracy compared to that achievable with a dedicated research. That is why this solution may be a more suitable choice for the "*long tail*" products rather than the core ones.

A first draft distinction may consider a "market" approach and an "internal" approach.

- **Market Approach:** By market approach we mean the involvement of people outside the company, who can be consumers as well as professionals. Lego launched *Lego Ideas*, a platform where anyone can propose an idea for a new Lego set. If the idea gathers at least 10.000 supporters, it enters a special phase called the Lego Review. A review board of set designers and marketing representatives evaluates projects according to Lego's review criteria and pick those to become new Lego Ideas sets. Projects selected in the review go into production and receive a royalty on sales. Supporters can now own the set they helped make happen. This is not properly a crowdfunding process, but more a crowdsourcing one. However, the principle is similar as it leverages on the ability of the brand to attract fans who are rewarded if their idea proves to be successful. Similarly, other companies may set up platforms, or partner with existing ones, to let professionals or fans propose their project (e.g. a lamp, a game, a piece of furniture, etc.…) and pre-sell it. As long as the product has reached a pre-defined amount of pre-ordered pieces, the company will industrialize it and put it into production. An additional benefit of this approach is its ability to improve existing customers' loyalty.
- **Internal Approach:** Sony set up a business program encouraging employees to develop the most innovative ideas they can think of in an effort to find new hits. Then the company launched a crowdfunding and e-commerce platform called *First Flight* for products coming out of that project. The site aims then to take a project right from the idea stage, to fund it and finally to commerce it within the same platform. Unlike the "market approach", the internal one focuses only partially on customers (they are involved to validate the projects through the crowdfunding process offered by the platform), while it definitely points on the skills and passion of employees for raising new ideas. In such a large corporation, in fact, many good ideas may be kept hidden, simply because the procedure to raise them may be excessively complicated or it does not take into account several classes of employees.

The main common feature between the two approaches is the opportunity, given to either customers or employees, to let them raise their passion for a brand or a product. Skills and intuition beneath this passion can be disruptive, being detached from the rigid practices that a company usually establishes for its creative process.

Equity Crowdfunding

We are used to consider Equity Crowdfunding with the eyes of a Startup or an SME seeking funds for its growth. We have previously highlighted how these subjects may take advantage of it in terms of marketing benefits. Indeed, a corporation may even look at Equity Crowdfunding as a marketing tool by assuming the role of an investor. Investing in a growing company may give not only an interesting financial return in the medium/long term, but also it can give significant results as a marketing investment. Of course, the

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hints we are highlighting below implies marketing objectives a company can achieve throughout other means than Equity Crowdfunding. Actually, a corporation may achieve the same strategic objectives by scouting the market directly to find the best opportunities to invest in. Nonetheless, the main advantage of resorting to Equity Crowdfunding stands in the opportunity to check the right horse (or horses!) to bet on among a wider list of initiatives, at considerably lower cost.

Research and Development

Google has acquired more than 180 Start-ups and, most probably, it owns a stake in many more. Recently the search engine giant has found a venture capital vehicle. Their objective is clearly to speed up the technological research process in order to expand their business faster than it is reasonably feasible with their internal R&D department.

However, not all enterprises have such a financial power as Google to let them scout a large number of new technologies and eventually invest in them. Here is where equity crowdfunding platform can help.

The market is still at its early stage phase. Nevertheless, an increasing number of Startups and SMEs all over the world has been exploiting this new funding channel. Moreover, the industries involved are not limited to high-tech industry, going from biotech to food and drink production and distribution, to manufacturing, to business services.

A corporation has then the opportunity to choose among a large number of initiatives and, if the case, to allocate funds to invest in them. In addition, unlike running a VC vehicle, investment management in this case may be quite simple, as it does not necessarily require a financial return, namely an exit strategy, nor it needs substantial equity stakes to subscribe. The advantage, then, consists in the opportunity for the corporation to monitor closely the activity of the companies participated, to better learn how the team operates and to acknowledge the potential of their business solutions. It will come a time when the corporation may evaluate to either buy the entire company or at least acquire a majority equity stake or else to establish a stronger industrial or commercial collaboration (see below).

Industrial and Commercial Partnership

Another purpose of investing a minority stake in one or more equity crowdfunding campaigns is to establish a commercial or industrial partnership with promising new businesses. The reason for doing that may be for either an industrial or a commercial purpose.

An industrial partnership, empowered by owning an equity stake, may rise as an opportunity when a Start-up or a SME launches a new product on the market. The corporation may evaluate the product is complementary to its offer or even disruptive compared to it. Else, the new product (or service) can be a semi-finished component able to improve the performances of the current line of products manufactured, or, conversely, an opportunity to expand their demand.

A commercial partnership may be an opportunity to enter a new geographic market if the Start-up is running a crowdfunding campaign and is operating in a market the corporation does not cover yet. Or else it allows expanding a product or service offer in order to better meet the customers' needs, thus helping to differentiate from competitors. Holding even a minority stake gives the corporation a better chance to affect the commercial policy of the participated Start-up and to evaluate the reliability of both its products and management.

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Brand Equity

Sometimes, investing in growing businesses and helping young entrepreneurs to make their dreams come true may be an additional motivation for large companies to fund enterprises by equity crowdfunding. Besides the primary objectives we hinted before – R&D and industrial and commercial partnerships – a corporation may want to achieve a secondary one: strengthening its brand image by appearing as a financial supporter of new businesses. Of course, in order to achieve such an objective, though being a side one, a company should plan a solid strategy. Investing spot in a few initiatives does not work. For this to impact on the public opinion and thus to affect its brand equity a corporation must plan to become a serial investor.

It implies planning an investment budget throughout more than one year and an investment policy in terms of setting clear criteria to both select the investment targets and acquire equity stakes. For instance, a plan should define whether investing in businesses at the early or growing stage of their life cycle, or else it should set a maximum equity stake to acquire.

Nowadays, this kind of marketing opportunity is still limited being the Equity Crowdfunding market at its infant stage worldwide and, therefore, it does not present yet a significantly large choice of initiatives for each type of industry. Even though, Equity Crowdfunding is growing double digit year over year such that a mid or large corporation should start considering this approach as a winning one in the near future and getting ready to fully exploit it.

For the Dutch electronics group Philips, the opportunity has been as much about sharing knowledge as funds.

Its Innovation Fellows Competition offered up to $60,000 to companies creating technological innovation. However, they provided not only funds but also mentoring support to help bring the winning idea to life.

This approach is based on the concept of “open innovation”, the belief that big ideas can come from anywhere.

CONCLUSION

Crowdfunding is certainly a way for raising funds, but it is even a powerful marketing tool. In fact, if marketing is a way to meet the needs and provide benefits to people, crowdfunding does the same. Therefore, depending on the way a company approaches and exploits it, crowdfunding can give a wide choice of alternative options for achieving the typical marketing objectives particularly related to two out of the four marketing Ps: *product* and *promotion*.

First, we highlighted that enterprises raising funds through a crowdfunding campaign have the opportunity to accomplish additional strategic objectives that go beyond fundraising.

This is especially true for reward crowdfunding campaigns, where marketing goals can have an even higher priority than fund raising. For instance, testing a new product by letting backers pre-order it, before putting it into production, is a great way to evaluate its market approval. Also, a reward crowdfunding campaign can be exploited for entering a new market, launching a new product or even strengthening the relationship with customers.

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Equity crowdfunding campaigns may pursue a side marketing goal too. It may concern the financial strategy by setting the base for further future funding rounds or increase credit worthiness. However, it also deals with the company's products or services strategy. Actually, a company may look for entering a new market, or finding commercial or industrial partners.

Nevertheless, marketing opportunities are not limited to enterprises using crowdfunding to raise funds, but even for those that invest funds. In the latter case, the opportunity is more suitable for mid and large corporations that hold a relevant marketing budget and that may look at crowdfunding as a more efficient or additional way to implement their marketing strategies. Similarly to what we reported for enterprises raising money, for those investing funds both reward and equity crowdfunding are suitable for pursuing marketing objectives.

Investing in reward crowdfunding campaigns can be a powerful tool for increasing a corporate brand equity. This is especially true when a corporation is a pro-active investor, meaning that, for instance, it supports a program for financing selected initiatives as long as they reach a share of their funding target.

Table 1. Summary of marketing objectives that crowdfunding can help to achieve

Raising/Investing Funds	Type of Crowdfunding	Marketing Objectives
Enterprises raising funds	Reward Crowdfunding	Market test: • Testing market acceptance • Testing the features of a new product • • Reach a minimum volume for industrialization
		Product launch
		Entering a new market: • Get distribution • Reach new customers • • Set a track record for investors
		Customer relationship management: • Lead generation • Loyalty • • Customer profiling
	Equity Crowdfunding	Setting a benchmark for further investment rounds
		Entering a new market
		Increase creditworthiness
		Rewarding current customers and business partners
		Finding new business partners
Enterprises investing funds	Reward Crowdfunding	Brand Equity improvement: • Promoting directly one or more campaign • Co-investing • Startups co-financing • Co-sponsoring a monument restoration • • Supplying rewards
		Research & Development: • Market approach • • Internal approach
	Equity Crowdfunding	Research & Development
		Industrial and commercial partnership
		Brand Equity improvement

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People will associate the company's brand to its commitment in supporting the development and growth of new enterprises. Another way a corporation can leverage on reward crowdfunding investing is to scout new technologies or products, by stimulating either external or internal initiatives.

Investing in Start-ups or SMEs by buying their shares offered through an equity crowdfunding campaign enhances the acknowledgement of these objectives. Instead of concentrating the whole R&D funds on expensive internal teams, a corporation may also acquire a stock of one or more promising business, thus controlling more closely their ability of developing new solutions. In addition, interesting Start-ups or SMEs can become commercial or financial partners whenever their offer is complementary to the investor's one.

The advantage of implementing such strategies by scouting opportunities on equity crowdfunding platforms rather than directly, is a matter of time and money: not all companies can afford an expensive due diligence on a large number of small companies, which, conversely, equity crowdfunding platforms facilitate.

The opportunity crowdfunding offers as a marketing tool depends of course on a company's marketing strategy, but they also rely on the ability of management or entrepreneurs to catch them by taking marketing decisions with an open mind.

Crowdfunding is still at its early stage and, especially equity crowdfunding. It has not expressed its full potential yet. Nevertheless, it is fast growing in the US as well as in Europe. This will certainly give rise to new ways of exploiting it as an even more powerful marketing tool than we hinted. As more enterprises and initiatives will list on crowdfunding platforms and the more both individuals and companies will get used in investing in growing businesses, the higher will be the scope and thus the higher will be the potential of using crowdfunding for pursuing marketing objectives.

So far, the opportunities we highlighted in this chapter are just hints to let decision makers find some ideas, which they can base on to set off their creativity. Table 1 summarizes our hints and their classification.

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Chapter 24
The Diffusion of Voluntary ISO 26000 among SMEs: Evidence from Taiwan

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ABSTRACT

Businesses are under the increasing pressure to demonstrably engage in social responsibility (SR). Following the demand, the International Standard Organization developed ISO 26000 for SR. small and medium enterprises (SMEs) are dominant in contributing to GDP. The relationship between SMEs and SR is still elusive. The purpose of this paper will be aimed at how SMEs will adopt ISO 26000 under what circumstances. We determine a set of hypotheses about diffusion of ISO 26000 and examine it empirically. We provide a better understanding of the cognition-behavior gap while "doing good". SMEs think that SR was Philanthropic responsibility, but strive for their subsistence as their top priority of strategy decisions. However, the impact of multinomial company and government are not decisive. Finally, SMEs take SR practices into consideration when evaluating stakeholder, they are more likely to adopt ISO 26000. Thus, SMEs must feed themselves with their own words and grow.

INTRODUCTION

Businesses are under the increasing pressure from their stakeholders to demonstrably engage in activities which are known as corporate social responsibility (CSR), social responsibility (SR), environment management and sustainability issue. In dealing with rapidly globalization, they have to increasingly face the challenge of doing more with less. Especially Small and medium-sized enterprises (SMEs) play a key role in the development of global economy (Morsing & Perrini, 2009), but lack of resource. Al-

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though there are several private and public organizations focus on improvement of social welfare of firm (Retolaza, Ruiz, & San-Jose, 2009). However, such initiatives are little, so indeed much thinking about SMEs and SR are based on a range of unsubstantiated hypotheses about SME behaviors (Jenkins, 2006).

There is an increasing appeal for businesses to become involved in SR practices (Fassin, 2008; Stoian & Gilman, 2016). Following this demand, the International Standard Organization (ISO) developed ISO 26000 international guidance standard for SR in 2004 (Castka & Balzarova, 2008a). The ISO 26000 has been built on the practical infrastructure of ISO 14000 and ISO 9000 (Castka & Balzarova, 2008a). This standard is suitable for all scales of organizations, no matter large or small (ISO/TMB/WG/SR, 2009). Castka, Balzarova, Bamer, and Sharp (2004) demonstrated how SMEs can implement the SR agenda and benefit from it. Furthermore, SMEs need to understand more about the details and conditions through more studies to adopt SR practices (Morsing & Perrini, 2009).

Large companies usually start from a small scale. Many a little makes a mickle. Most of all the businesses in Taiwan, including SMEs, are export-oriented or part of multinomial corporate (MNC) supply chain (Chen, Lin, & Chu, 2013). Taiwan has a very sound economy, and the best approach to mainland china's expanding market. For these reasons, the purpose of this paper will be aimed at how SMEs among Taiwan will adopt ISO 26000 under what circumstances.

The rest of this article is organized as follows. We start by reviewing the relevant literature about SMEs, social responsibility and ISO 26000. We then detail our methodology and investigate empirically. Next, we focus on the diffusions of ISO 26000. Finally, we conclude the key factors that push SMEs to engage in social responsible.

SMEs AND ISO 26000

SMEs and Social Responsibility

In this article, the term "social responsibility (SR)" is used rather than CSR, since many perspectives of the CSR agenda cannot perfectly fit organizations well (Hammann, Habisch, & Pechlaner, 2009; ISO/TMB/WG/SR, 2009). SR is regarded as "the managerial obligation to take action to protect and improve both the welfare of society as a whole and the interest of organizations" (Davis & Blomstrom, 1975, p. 6), as well as " on a voluntary basis" (Gilbert, Rasche, & Waddock, 2011; Stigzelius & Mark-Herbert, 2009).

Before studying the SR issues in SMEs, researchers should take an important assumption into consideration when they investigate the relationship between small business and SR. SMEs tend to change with their surroundings, multi-tasking, limited cash flows, personal relationships and informality (Madrid-Guijarro, García-Pérez-de-Lema, & Van Auken, 2013; Perrini, Russo, & Tencati, 2007). SMEs have specific characteristics that differentiate them from large enterprises, such as being directly managed by owners or being highly personalized (von Weltzien Høivik & Shankar, 2011), which means that the personal wills of the runner decide the distribution of the resources of the company (Jenkins, 2006).

On the other hand, multiple management objectives functions makes it more difficult for managers to develop focusing strategy (Jensen, 2002). Therefore, the managers of SMEs are less interested in things irrelevant to daily operations (Nielsen & Thomsen, 2009). Under the globalized competition, the profits of enterprises are comparatively decreasing, so are the resources devoted to charities (Stendardi Jr., 1992). Especially SMEs are facing great challenges. Besser and Miller (2001) indicated that for business managers, it is hard for them to value the investments whose profits do not appear quickly, such as

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supporting charities. Therefore, the owner-managers of small enterprises "never think about this issue" (Observatory of European SMEs, 2002), or believe that their influence on society and environment can be neglected (Hitchens, Thankappan, Trainor, Clausen, & Marchi, 2005).

However, SMEs are considered generators of wealth in most important industrial countries, and they usually run in the global market (Hawkins, 2006). The increasingly worsened environment inevitably impacts SMEs, and it is important for them to face the demands of society under the inferior condition of personnel, funds, and limited resources. SMEs are really flexible that they can adapt themselves to the dynamic market opportunities and modify their ability to trade (Sen & Cowley, 2013).

What do SMEs need to learn to achieve things such as SR or sustainability? SR means something, but not the same thing everywhere. In recent years, SMEs have surprisingly gained salience in academic literature (Battaglia, Bianchi, Frey, & Iraldo, 2010; Fassin, Van Rossem, & Buelens, 2011; Fassin et al., 2015; Lund-Thomsen, Jamali, & Vives, 2014; Sen & Cowley, 2013; Stoian & Gilman, 2016; Wickert, Scherer, & Spence, 2016), but there are very few works about the engagement in the SR agenda (Ciliberti, de Groot, de Haan, & Pontrandolfo, 2009). SR agenda could provide SMEs with significant scope for competitive advantage (Castka et al., 2004; Jenkins, 2009; Tilley, 2003), guidance to know what SR is ((ISO/TMB/WG/SR, 2009), and tools that enable them to implement SR (Castka et al., 2004).

ISO 26000

In order to establish "Guidance on social responsibility: ISO 26000", The ISO found ISO/TMB/WG SR in 2005. This group included about 300 experts form 90 ISO member countries and 40 liaison organizations, which represent six different stakeholder groups (ISO/TMB/WG/SR, 2009). The ISO 26000 includes 7 clauses and one annex (Figure 1). A good concise introduction to ISO 26000 is available at www.iso.org.

ISO26000 is a voluntary guidance (Castka & Balzarova, 2008b). The very concept of SR in SMEs is confusing because of the specific practice carried out (Murillo & LOzano, 2006). Therefore, ISO 26000 have been described by the focus of SR as shifting from understanding "why" (i.e., reasons for SR engagement) and "what" (i.e. defining the SR principles and core subjects), to "how" to incorporate SR throughout organization, and then achieving sustainable development. For further discussion, see Castka and Balzarova (2007), Schwartz and Tilling (2009).

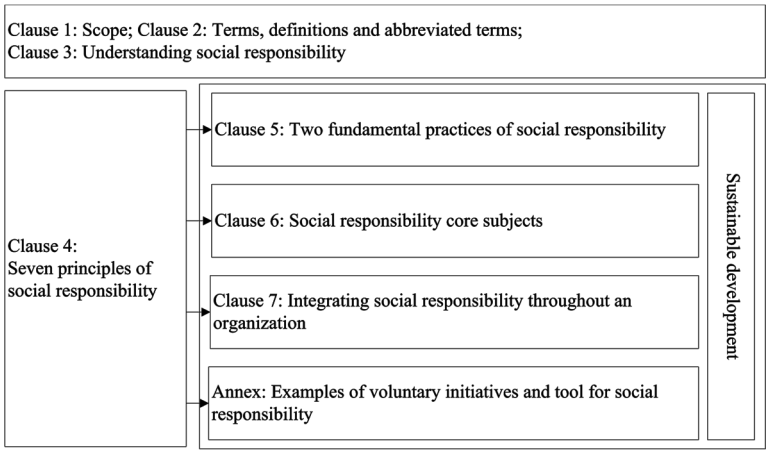
In last decade, a host of standards or principles have emerged to deal with SR, such as SA8000 (Ciliberti, Pontrandolfo, & Scozzi, 2008; Stigzelius & Mark-Herbert, 2009), SR agenda (Castka et al., 2004), AA 1000, and ISO 26000 (Castka & Balzarova, 2008a). However, there are only qualitative studies so far. (Lepoutre & Heene, 2006; Udayasankar, 2008). Empirical evidence is still limited (Morsing & Perrini, 2009; Perrini et al., 2007; von Weltzien Høivik & Shankar, 2011).

Hypothesis Development

The size of the firm plays an important role for SR. Many studies point out that compared with large enterprises, SMEs have better position and ability to carry out SR, and it is easier for them to receive the social interest brought by the growing of economy and innovation (Wennekers & Thurik, 1999), and they will attract many local customers and employees because of their fine reputation, which tightens the relationship between both sides (Lepoutre & Heene, 2006). On the other hand, SMEs are constrained mainly by their visibility, resource access and operations scales (Udayasankar, 2008; von Weltzien Høivik & Shankar, 2011). Therefore, SMEs will only be able to devote their resource to SR partly (Lepoutre & Heene, 2006).

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Figure 1. ISO 26000
Revised from: ISO/TMB/WG/SR (2009)



Hypothesis 1: The larger the firm is, the more likely it will adopt ISO 26000.

Perrini, et al. (2007) indicated their familiarity and consciousness of SR that make their profile different from other company. Carroll (1991) proposed a four-part comprehensive definition of SR: Economic, legal, ethical and philanthropic responsibilities. These concepts are not mutually exclusive but rather mutually reinforcing. Which of these statements best describes the way in which SMEs define SR? The perception of SR will shift value of owner-manager. Owner-manager value is essential for SR and will drive SR strategies (Jenkins, 2006; Murillo & LOzano, 2006; Sen & Cowley, 2013).

Hypothesis 2: Arising awareness on social responsibility is positive with undertaking ISO 26000.

Spence and Rutherfoord (2000) chose 20 British small enterprises to conduct a semi-structured interview, used profit and socially active as indicator, proposed four "frames" to perceive the social perspective of SMES: Social priority, enlightened self-interest, subsistence priority, and profit maximization priority. The role of SR in SMEs depends on priority of decisions and perspectives of the owner-managers (Burke, 2015). Hence, the beliefs of owner-manager will influence their intentions and actions (Fassin et al., 2011; Mitchell et al., 2007).

Hypothesis 3: The better the perspective of SR through decision-making priority is, the more likely ISO 26000 will be adopted.

The resources will be limited in SMEs which means that it can be difficult for them to deal with new and changing circumstances. The current economic downturn will affect SMEs' commitment to address SR issue (Brilius, 2010; Giannarakis, 2011). Therefore, SMEs which will increase investment for SR under uncertainty will tend to adopt ISO 26000 (Peutz & Mass, 2011).

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Hypothesis 4: SMEs that will increase investment for SR under economic downturn will be more likely to adopt ISO 26000.

Codes will form infrastructural platform that facilitates communication between partners in a network (Ciliberti et al., 2009), and will also have an impact on adoption of the international standard (Castka & Balzarova, 2008a). Therefore, in order to reduce the inconvenience of integrations between systems, organizations will adopt similar management system due to their custom. Previous research confirmed that certification in the past, whether to the same standard earlier or to similar standards in place, leads to an increase in diffusion rates (Albuquerque, Bronnenberg, & Corbett, 2007; Stoian & Gilman, 2016).

Hypothesis 5: SMEs have adopted international management systems standards or business excellence model in the past will tend to adopt ISO 26000.

SR means that organizations should integrate environmental, social, and economic requirements into their practice (van Kleef & Roome, 2007). Who will push SR to SMEs? There are two major sources of demand for SR:

SR is getting more and more important to both buyers and suppliers (Eltantawy, Fox, & Giunipero, 2009). Buyers, such as IKEA, realize that suppliers involved in unethical responsibility will hurt them in the long run (Eltantawy et al., 2009). Pressure from customers or Multinomial Corporation (MNC) will drive the SR behavior of their suppliers (Giannarakis, 2011). They tend to employ uniform standards (Castka & Balzarova, 2008a; Christmann, 2004). On the other hand, Supplier, such as Taiwan Mirror Glass, will discreetly select their good-credit buyers. If their buyer had been mired in unethical behavior, such as discrimination, they would be also harmed. Hence, members of supply chain will carefully evaluate partners by SR practices.

Other stakeholders, including investors, community, governments, and employees, can contribute to the demand of contracts with SR (El Baz, Laguir, Marais, & Staglianò, 2016; Spence, 2007). A key characteristic of SR is responding to "improving the quality of life of the workforce and their families" (WBCSD, 1999, p. 3) and "their preferences in terms of charitable support and giving" (Spence, 2007). SMEs focus on a narrow range of human resources management may result in poor protection for workers (Spence, 2007, p. 538). Therefore, SMEs that have help employees to establish labor union or employee welfare committee will tend to adopt ISO 26000. Governments can also regard ISO 26000 as a contractual requirement for governmental procurement (Castka & Balzarova, 2008a). They will then reward the firms by preemption.

Hypothesis 6: SMEs are in the network of Multinational companies (MNCs) which will undertake ISO 26000.

Hypothesis 7: If SMEs take SR practices into consideration when evaluating stakeholder, they are more likely to adopt ISO 26000.

Hypothesis 8: If labor union or employee welfare committee has already been established in organizations, SMEs will tend to adopt ISO 26000.

Hypothesis 9: There is a positive correlation between government contracts and the undertaking of ISO 26000

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A growing number of enterprises have incorporated SR into their strategies. The most of business leaders worldwide indicated SR will differentiate their reputations and brands as well as their products (Pohle & Hittner, 2008). Reputation building is an integral component of strategy formulation and in positive relationship with profitability (Khojastehpour & Johns, 2014). Companies can strengthen their reputations through SR (Fombrun, 2005). Therefore, SR is one of the key segments of the market (Siegel & Vitaliano, 2007). ISO 26000 has clear guidance about how to incorporate SR throughout an organization (ISO/TMB/WG/SR, 2009).

Hypothesis 10: SMEs which integrate SR into their business strategies will be more likely to adopt ISO 26000.

METHODOLOGY

The goal of the research design is to investigate whether SMEs will be more likely to adopt ISO 26000 when regarding business practice. SMEs can maintain a niche market as long as they embrace core technologies (Luo & Chang, 2011). The ways by which SMEs carry out SR are more divers, for example, they may take SR into consideration to increase the trust of clients. It is at this time of economic downturn that how enterprises realize their SR and how they turn SR into their unique competitive ability can be observed. Thus, it provides an ideal context for a study that focuses on diffusion of ISO 26000.

Data Collection

The European Union (EU) has standardized the SME concept (European Commission, 2005). In this research, current definition was applied to categorize companies with employees fewer than 20 as "micro", with 20-49 employees as "small", and those with fewer than 250 as "medium". To test the hypotheses proposed, a questionnaire survey is mainly employed in this research. Our empirical setting is the companies listed on database of China Credit Information Service and Taiwan Accreditation Foundation. The 2648 copies reached their destinations via mail, email or in person.

From these questionnaires, 283 are returned, making up 266 valid samples (10.06%) that contain sufficient information for SMEs analysis. Most of them are manufacturing industries, consisting of 72.93%, and next were service industries (17.67%). The characteristics of the samples were summarized in Table 1. There are 161 medium businesses (60.53%), and 66 small businesses (24.81%). Additionally, the average of the years for which enterprises found their companies was 28 years, which are twice of that of SMEs in Taiwan. 49.99% of the participants are executives, whose seniorities are 13.75 years on average, and this means that most participants that respond to our questionnaires are senior executives.

Questionnaire Design and Measure

The questionnaire consists of four parts. The first part contains questions about thing concerning SR, such as how SMEs define SR, decide the priority of decision making, and whether they have certification from the third party. In the second part, 57 questions are developed based on the principles, core subjects and fundamental practices of ISO 26000 to let the SMEs know more about ISO26000, but these

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Table 1. Demographic variables (N=266)

Characteristics	Frequency	Percentage
Industry		
Manufacturing	194	72.93%
Service	47	17.67%
Building	16	6.02%
Others	11	4.13%
Organization Size		
Less than 20 persons	39	14.66%
20-49 persons	66	24.81%
More than 50 persons	161	60.53%
Possibility of Adopting ISO 26000		
Less than 30%	48	6.39%
40-60%	141	34.97%
More than 70%	114	42.86%

results are not analyzed. The third part is basic information of the company. The last part is a two-paged introduction to ISO 26000, explaining that ISO 26000 contains seven clauses and one annex which include principles of SR, SR core subjects, and how to integrate SR into organization and so on. This gives SMEs preliminary ideas of ISO 26000.

We did the piloting of questionnaires on 35 EMBA students in National Sun Yat-sen University, and asked them to comment on any item that they found ambiguous. Furthermore, to assure expert validity, seven experts including those from academic circles, Chinese teachers and practitioners are invited to examine each item to confirm the meaning of the content. All items in questionnaire are specifically indicated. Additionally, to value dependent variable, respondents would complete the questionnaire items to get preliminary information, and they would be asked about the percentage of how they conform to ISO 26000. Measurement scale is adopted, the results range from 0 to 100 based on probability. The higher the score is, the better their acceptance is. Finally, the average of probability of adopting ISO 2600 is 60%

Results

A one-way analysis of variance (ANOVA) and t-test were run with different perspectives as independent factor and the probability of adopting ISO 26000 as the dependent variable. The results of hypotheses testing were presented in Table 2-7.

Statistically significant differences were found between firms size (F=3.527, p=0.016). Mean and standard deviations can be seen in Table 2. The enterprises with more than 50 employees agree that company had better possibility when adopting ISO 26000 more than companies with less than 50 employees. The larger the firm is, the more likely it will adopt ISO 26000. This set of results showed the impact of firm size on SR, which corresponded to previous research (Lepoutre & Heene, 2006), in support for Hypothesis 1.

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Table 2. Organization size

Organization Scale	N	%	Mean	*F*	*p*
Less than 20 persons	39	14.66%	49.23%	3.527	.016**
20-49 persons	66	24.81%	56.67%		
50 persons and above	161	60.53%	61.80%		

$p<0.1$*, $p<0.05$**, $p<0.01$***

Statistically significant differences were found in the pyramid of SR, with $F=6.80$, $p<0.001$(Table 3). The result demonstrated that philanthropic (M=61.21%) and ethical responsibilities (M=61.75) are higher than legal (M=14.28%) and Economic (M=6.02%). Many SMEs took large consisting of cash donation as SR, but rarely related them to business needs, such as green management. If they understand clearly about different levels of SR, they will accept ISO 26000 more. Thus, Hypothesis 2 was supported.

Statistically significant differences were found in the social perspective frames ($F=7.52$, $p<.001$) and result were shown in Table 4. The result showed that social priority (M=62.27%) is higher than others. Interestingly, subsistence priority which followed it is 59.65%. Although their source were limited, but flexibility created differentiation for the energetic SMEs (Spence, 2007). For their survival, they will accept different challenges, in support of Hypothesis 3.

Statistically significant differences were found in organizations' commitment to SR under economic downturn, with $F=3.54$, $p=0.004$ (Table 5). When enterprises encounter financial meltdown, 44.36% of them believed that this would not influence their SR practices, and even 18.05% of them would carry out further investment. Although most SMEs saw survival as their top priority, they would continuously invest in SR if they are able to do so, which corresponded to the results of the survey done by Berns,

Table 3. Awareness on social responsibility

Best Describe of Organization Defines SR?	N	%	Mean	*F*	*p*
Philanthropic responsibilities	132	49.62%	61.21%	6.80	<.001***
Ethical responsibilities	80	30.08%	61.75%		
Legal responsibilities	38	14.28%	52.89%		
Economic responsibilities	16	6.02%	36.25%		

$p<0.1$*, $p<0.05$**, $p<0.01$***

Table 4. Social perspective frames

Best SR Describe Through Decision-Making	N	%	Mean	*F*	*p*
Social priority	55	20.68%	62.27%	7.52	<.001***
Enlightened self-interest priority	16	6.02%	57.50%		
Profit maximization priority	27	10.15%	40.00%		
Subsistence priority	168	63.15%	59.65%		

$p<0.1$*, $p<0.05$**, $p<0.01$***

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Table 5. Organization's commitment to SR

Current economic Downturn Affects Organization's Commitment to SR Issues	N	%	Mean	*F*	*p*
Significantly increased	13	4.89%	67.69%	3.54	.004***
Somewhat increased	35	13.16%	63.14%		
Business as usual	118	44.36%	62.03%		
Somewhat decreased	54	20.30%	55.93%		
Significantly decreased	7	2.63%	41.43%		
Organization does not address SR	39	14.66%	48.46%		

$p<0.1$*, $p<0.05$**, $p<0.01$***

et al. (2009) on 1500 enterprises worldwide through the perspective of sustainable development. The result demonstrated that enterprises that continue to devote commitment to SR would be more likely to adopt ISO 26000. Thus, Hypothesis 4 was supported.

The t-test results were presented in Table 6. The effect of management system standard showed a significant difference (t=2.17, p=0.031). The result showed organization that adopted international systems standards in the past would be more likely to adopt ISO 26000. This empirically examined the proposition proposed by Castka and Balzarova (2008a), who believed that enterprises who adopted international management system and other similar frames would restrain themselves actively based on ISO 26000, in support of Hypothesis 5.

The effect of MNC was not significant, with t=0.95, p=0.343. The result revealed that whether SME belongs to a part of MNC will not influence their will which tend to accept ISO 26000. Thus, Hypothesis 6 was not supported.

The effect of screening stakeholders by SR practice showed a significant difference (t=3.59, $p<.001$). The result showed that enterprises which evaluate their stakeholders with SR will place more importance on their SR behavior, so their probability of adopting ISO 26000 were more than those of enterprises which did not take these into consideration, in support of Hypothesis 7.

The effect of labor union was significant, with t=2.93, p=0.004. The probability of enterprises conformed to ISO 26000 exceeded those without labor union by almost 10 percent (9.1%). The result demonstrated that SMEs would tend to adopt ISO 26000 if employees were able to set up an authority in their company. Thus, Hypothesis 8 was supported.

The effect of government contracts showed an insignificant difference (t=*0.*16, p=0.876). This suggested that Taiwanese government did not add SR into the standards for evaluation. However, in sum, enterprises that participated in tenders were superior to others when carrying out SR. Hypothesis 9 was not supported.

The effect of SR as a business strategy was significant, with t=6.38, $p<0.001$. This meant that enterprises that took SR as the strategy for operation had higher probability to adopt ISO 26000 (25.33%). Therefore, successful company usually integrated a social perspective into the core policy to guide its business activities (Porter & Kramer, 2006), in support of Hypothesis 10.

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Table 6. T-test calculated differences regarding sources

Sources		N	%	Mean	*t*-value	*p*
Third part certification	Have	235	88.35%	59.83%	2.17	.031**
	Not have	31	11.65%	50.00%		
In the Network of MNC	Yes	154	57.89%	59.87%	0.95	.343
	No	112	42.11%	57.05%		
Evaluating stakeholders by SR practices	Yes	160	60.15%	62.88%	3.59	<.001***
	No	106	39.85%	52.36%		
Labor union	Yes	178	66.92%	61.80%	2.93	.004***
	No	88	33.08%	52.39%		
Government contracts	Yes	74	27.82%	59.05%	0.16	.876
	No	192	72.18%	58.54%		
SR as a business strategy	Yes	220	85.94%	62.00%	6.38	<.001***
	No	36	14.06%	36.67%		

$p<0.1$*, $p<0.05$**, $p<0.01$***

DISCUSSION AND CONCLUSION

The growing significance of SMEs in economic development has seen an important shift towards their SR practice (Jenkins, 2006). Besser and Miller (2001) pointed out that due to the change of economic circumstance, enterprises might not be able to take on luxury for SR. How to put SR into practice effectively becomes an important issue, especially for SMEs whose resources are not abundant. von Weltzien Høivik and Shankar (2011) reported that ISO 26000 can meet the specific requirements of SMEs. Therefore, the purpose of this study is to explore SMEs' attitudes toward ISO 26000. The firm size, organization's commitment under economic downturn, codes, labor union, government contracts and business strategies are the key factors that push SMEs to engage ISO 26000. However, the impact of multinomial company and government are not decisive. It was also revealed in our research that SR is regarded as an important issue within Taiwan SMEs.

As our findings suggest, we offer several implications for academic practice. This study provides a better understanding of the gap between cognition and behavior in SR participation. The results showed that 49.62% of enterprises believed that SR was philanthropic responsibility, because they believed they should contribute to society as good corporate citizens. Small businesses in developing countries focus strongly on philanthropic responsibilities, usually based on religious beliefs (Azmat & Samaratunge, 2009). Only few enterprises (6.02%) chose economic responsibility, which was contrary to the impressions of normal SMEs (Hitchens et al., 2005; Observatory of European SMEs, 2002). This is inconsistent with the result reported by El Baz et al. (2016), who found that SMEs view SR as an economic tool. However, most SMEs (62.78%) chose subsistence as their top priority, pursuing long-term survival. There were differences between SMEs' cognition and the priorities of their strategic decisions. SMEs strive for survival in the global market and compete with large enterprises. As a result, they need to be innovative, fast, and dynamic, which makes survival their top priority.

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From the viewpoint of the supply chain, MNCs drive the SR behavior of their smaller suppliers (Castka & Balzarova, 2008a). Taiwanese enterprises usually play an OEM role. To reduce unnecessary costs, suppliers use cheap, but low-quality chemicals, or push their employees to work faster and for longer hours (Ciliberti et al., 2009). Many believe that the supply chains of large companies harm our environment (Aguilera-Caracuel, Aragón-Correa, Hurtado-Torres, & Rugman, 2012). According to such research, being part of an international supply chain would make little difference to the possibility of an enterprise adopting ISO 26000. Whether SMEs focus on exports or home sales, they have the same attitude toward SR. A growing body of evidence suggests that MNCs should be responsible for the SR practice of their supply chain (Amaeshi, Osuji, & Nnodim, 2008; Baden, Harwood, & Woodward, 2009). In order to join the MNC network, we suggest that SMEs should adopt ISO 26000 (Castka & Balzarova, 2008a). SMEs will also consider SR as a means of reducing risk when choosing a supply chain (Pedersen, 2009). This suggests that SMEs might be more willing to adopt ISO 26000. However, if SMEs cannot do so in an open and sincere way, it will not be effective. SMEs need to motivate themselves and grow.

Moon (2004) indicated that when conducting SR, the government's influence is decisive, and deciding whether to participate in government tenders will affect firms' willingness to adopt ISO 26000. The Taiwanese government has set up SR regulations for OTCs, but not for government procurement. The best function of government is to provide businesses with a fair environment, and to stop enterprises from destroying the environment while performing charity work. Moreover, the government should encourage enterprises to maintain SR by providing incentives. Corporations need a healthy society for efficiency and innovation (Porter & Kramer, 2006).

Evidently, the sizes of SMEs could affect the probability of their accepting ISO 26000 guidelines. Perhaps due to limited resources at the early stage of development, the SMEs could focus only on the core aspect of business, that is, profit. As they increased in size, the SMEs began to increasingly consider SR. Furthermore, more and more SMEs have recognized the importance of SR (Perrini et al., 2007). Hence, SMEs integrated the social responsibilities into their business activities, which enhanced the relationship between them and the society (Witjes, Vermeulen, & Cramer, 2016).

The global financial recession was a test of corporate's response and survival ability. The results of this study indicate that SMEs will not change their SR commitments due to temporary changes in the economic environment. SMEs that maintained their commitment to SR were significantly more willing to comply with ISO 26000 guidelines than SMEs that reduced the commitment. The investment view of SR can help the enterprises to achieve differentiation strategies (Siegel & Vitaliano, 2007). Over 80% of SMEs considered SR as a part of their overall business strategy. Therefore, the combination and development of SR and corporate core policy is an important source of future enterprise competitiveness as well as barriers of new competition (Boulouta & Pitelis, 2014).

International standards are important guidelines of international economic and trade activities. These standards can promote regional trade and reduce the communication barriers between enterprises. Past research was not conclusive as to whether manufacturing-oriented or business-oriented enterprises tended to fulfill SR more extensively (Murillo & LOzano, 2006). The results of this study pointed out that SMEs that passed the third-party certification were more willing to accept ISO 26000 guidelines. This suggests that the convenience of infrastructure has a far-reaching impact on management systems (Castka & Balzarova, 2008a).

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Limitations and Further Research

The major limitation of the study was concerning the sample scope and low respond rate, and the samples were constituted mostly of manufacturing business. Different samples might yield different results. The samples might not represent other regions, or even large enterprises. Therefore, better sampling method can be applied in future studies, or similar survey can be done in different regions or countries to improve the problems mentioned above. Moreover, in this research, SEMs understood what SR was through the frame of ISO 26000 and were asked about their will to carry it out, but they were not informed about further development or problems they might encounter after carrying out SR. So far, there was not any enterprise that really carries out ISO 26000 in the world. Thus, researchers can conduct richer and more studies on SMEs which have already adopted ISO 26000 in the future.

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Chapter 25
Human-Factor-Based Risk Management in the Healthcare to Improve Patient Safety

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ABSTRACT

'Patient Safety' tries to increase safety and transparency within healthcare systems for both patients and professionals. Within the healthcare sector, workflows become more and more complex, while time and money become scarce. As a consequence, the risk awareness, fault management and quality aspects become more important. One of the most well established risk assessment method is Failure Mode and Effect Analysis (FMEA) – a reliability analysis and risk assessment tool widely used in various industries. The traditional FMEA is using a Risk Priority Number (RPN) ranking system to evaluate and identify the risk level of failures, and to prioritize actions. However, there are several shortcomings in obtaining a quality estimate of the failure ratings with FMEA, especially when human factors play an important role. Thus, a new risk assessment method called HFdFMEA (Human Factor dependent FMEA) based on the dependency of used parameters and the observation of human factors, is proposed to address the drawbacks. The opportunity to improve patient safety is discussed as result of HFdFMEA.

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1. INTRODUCTION

In the healthcare sector, the patient safety has become one of the major quality targets, with aim in reducing risks. However, it has been recognized that the patient safety risks are evolving over time and for this they and analysed in depth on an ongoing basis (Institute of Medicine, 1999), (ANetPAS, 2014), (Paula, 2007). For example, it has been shown that in 1999 2.9% to 3.7% patients across US states suffered from disclosed adverse events (Institute of Medicine, 1999). A recent American observational study found that 45% of patients' experienced adverse events, like medical mismanagement, and 17% suffered from events that led to a longer hospital stay or more serious problems (Andrews, Stocking, Krizek, Gottlieb, Krizek, & Vargish, 1997). According to Paula (Paula, 2007) an adverse event is a damage caused by the medical treatment and not by the disease itself and therefore is as a patient safety issue. Vincent et al. suggested that "*the patient's safety needs to be addressed on the basis of a broad assessment of a system's health*" (Vincent, Taylor-Adams, & Stanhope, 1998), suggesting that Quality and Risk Management need to be addressed together in order to improve patient safety.

Human errors are one main source for accidents in any industry, including healthcare (Institute of Medicine, 1999). According to Reason (WHO, 2005), particularly important is the identification of cognitive processes common to a wide variety of human error types (Reason J., 1990). These errors are differentiated into variable and constant (Reason J., 1990) errors and are classified as active and latent failures (Reason J., 1990), (Vincent, Taylor-Adams, & Stanhope, 1998).

Risk Management implies the systematic handling of risks with intent of identification and avoidance of risks (Ennker, Pietrowski, & Kleine, 2007). Professional Risk Management starts before failures that would have caused any damage, happen. In practice this does not mean that we have an absence of failures, but that the accuracy, dependability and speed of handling failures reduce the consequential risks and damages. As a consequence, the use of professional Risk Management approach in an organization, can improve the safety within the organization. Quality Management deals with important risks as well but it is operated independently from Risk Management. Quality Management often serves as a methodical platform for Risk Management (Streimelweger, Wac, & Seiringer, 2015). With the updated standard ISO 9001:2015, the section Risk Management was extended and became an important part in the application of Quality Management according to ISO 9001. The gap between Risk and Quality Management seems to be reduced.

One of the most established risk assessment methods in healthcare is the Failure Mode and Effect Analysis (FMEA). The FMEA is used to demonstrate how a Risk Management methodology can be used to improve patient safety (Institute of Medicine, 1999), (Marx & Slonim, 2003), (Ennker, Pietrowski, & Kleine, 2007). The FMEA approach with its failure ratings based on an ordinal scale for occurrence, severity and detection of an event is simple, but there are some shortcomings in obtaining an accurate estimate of the failure ratings (Vikramjit, Harish, Sarabjeet, & Simranpreet, 2013), (EN 60812 - FMEA, 2006), (DeRosier, Stalhandske, Bagian, & Nudell, 2002).

An important shortcoming of FMEA concerns its limitations with respect to complex systems (Marx & Slonim, 2003), (DeRosier, Stalhandske, Bagian, & Nudell, 2002), (Vikramjit, Harish, Sarabjeet, & Simranpreet, 2013), in which a critical error arises from a sequence of errors. This can be evaluated by the FMEA but the causes of errors per se cannot be evaluated. Therefore, other methods are needed, like for example Fault Tree Analysis (FTA).

In a healthcare system different risks can occur simultaneously. A problem in the measurement and rating of such risks is that unrelated individual events often influence each other (Ennker, Pietrowski, & Kleine, 2007), (Marx & Slonim, 2003). Furthermore, the dependency between the internal and external

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risks, and respectively risks indicators, as well as the dependency with human factors, is not taken into consideration in the current approaches. A new risk assessment method based on the dependency of risks and extended by the human factors has the potential to deal with these shortcomings.

In general human factors can increase risk levels and the associated Risk Priority Number (RPN). A reduction of the risk levels can be done by addressing human factors in interactive sessions like trainings, motivation management, etc. In this paper we propose the enhanced Failure Mode and Effect Analysis, i.e., HFdFMEA method. This is a human factor-dependent FMEA, to model the dependency between different risk factors expressed by human factors and assess the risk level of failures based on human factors

The extension of the FMEA method is done by adding our Human-Factor-based Risk Management (RiDeM) system, which we validate (showing that it enables to increase the patient safety) with real world data acquitted from a Critical-Incident-Reporting-System (CIRS) (Streimelweger, Wac, & Seiringer, 2015).

The paper is organized as follows. Section 2 provides an overview on the background and related work, while Section 3 is used to present the Human-Factor-based Risk Management (HFdFMEA) approach, where the model of RiDeM in Healthcare is described in more detail. In section 4 the HFdFMEA is evaluated with actual data from a healthcare system and the evaluation results are discussed in section 5. Finally, we conclude and give an outline in section 6.

2. BACKGROUND AND RELATED WORK

In this section we explain Quality Management and Risk Management at large, and focus specifically in healthcare. We further explain FMEA and the "human factor" approach and the different roles of human factors and their impact on risks related to investigations.

2.1. Quality Management

In general quality is defined as "*degree to which a set of inherent characteristics fulfill requirements*" (ÖNORM EN 15224, 2012). In the last years, different quality standards and systems, as well as "best practice models" have been developed and established in the healthcare area like KTQ (Cooperation for Transparency and Quality in healthcare, www.ktq.de), EFQM (European Foundation for Quality Management, www.efqm.org), or EPA (European Doctor's Surgery Assessment, www.europaeischespraxisassessment.at).

2.2. Risk Management

Quality Management and Risk Management are independent but related terms. "*Risk Management aims to conscious dealing with opportunities and risks*," (Ennker, Pietrowski, & Kleine, 2007). Quality Management, also deals with risks, serves as a *platform base* for the Risk Management. The significance of risk has changed radically over the last century; "*Until the first decades of the 19th century, risks were accepted as more or less natural in the sense that they were directly associated with human activity rather than with failures of systems or equipment*", (Hollnagel, de Paris, & Antipolis, 2008). With the beginning of industrialization in the 19th century a crucial change took place, where failures of systems were included in the risks to be faced.

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2.3. FMEA

FMEA is as a systematic method for identifying failure modes of a system, item or function, and tries to evaluate and identify the effects before they occur (Stamatis, 1995). The purpose of the FMEA is to seek answer for questions like: "*what could go wrong with [the system or process] involved in creating [the system]; how badly might it go wrong; and what needs to be done to prevent failures?*" (Vikramjit, Harish, Sarabjeet, & Simranpreet, 2013). The traditional FMEA is based on the three factors: *severity*, *occurrence*, and *detection*, to determine the RPN (EN 60812 - FMEA, 2006), (Vikramjit, Harish, Sarabjeet, & Simranpreet, 2013), (Kmenta & Ishii, 2000). The FMEA was recommended by the Joint Commission on Accreditation of Healthcare Organizations (JCAHO) for the annual risk assessment since 1 July 2001 (Marx & Slonim, 2003). Unfortunately, this official accreditation does not specify if and how the human factors shall be included.

Most of the methods for risk assessment and accident investigation that are still used today in safety critical industries have their origin in the 1960s, for example FMEA and FMECA (MIL-STD-1629A, 1980). Driven by major accidents, risk assessment methods have been enhanced. Some further major changes and developments since the mid-1990s are for example the associated change in view on "human error", from the "old" look to the "new" look (Dekker, 2006) or the change from reactive to proactive safety, as marked by resilience engineering.

2.4. "Human Factors"

In most branches the conception of the error-free working employee is no longer valid. Rather efforts are made to understand the human error as a "human factor", to plan and to control it by the use of appropriate strategies (Paula, 2007). Vincent for example describes the "human factors" approach "*as a hybrid discipline that focuses on the human component within complex sociotechnical systems*" (Vincent, Taylor-Adams, & Stanhope, 1998). Research in the area of human factors is just beginning to be applied to healthcare since 2005 (Institute of Medicine, 1999), borrowing from industrial engineering and psychology. In the meantime, two approaches for research including human factors have been established (1) Critical Incident Analysis and (2) "naturalistic decision making" (Weinger, Pantiskas, Wiklund, & Carstensen, 1998).

2.5. Human Factors in Clinical Practice

Errors in medicine are among the ten most common causes of death in healthcare (Brennen, Leape, Laird, Herbert, Localio, & et al., 1994), (Com Q of HC in A, 2001), (Kohn, Corrigan, & Donaldson, 2000), (Ennker, Pietrowski, & Kleine, 2007). Risk Management in clinical practice considers errors, failures and adverse events. Leape (Leape L., 1994) emphasized that safer practice can only come from acknowledging the potential for error and building in error reduction strategies at every stage of the clinical practice. Reason (Reason J., 1995) pointed out, that "*human factors problems are a product of a chain of causes in which the individual psychological factors (that is, momentary inattention, forgetting, etc.) are the last and least manageable links…*". This means, not all errors lead to serious harm. In fact, it usually requires a string of errors to result in harm to patients. Yet it is important to consider these human factors.

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2.6. Management of Human Factors in Clinical Practice

To mitigate errors in healthcare, CIRSs (Critical Incidents Reporting Systems) are used. Their goal is to gather enough data about incidents/events such that one can predict errors before they occur. Countries such as, e.g., Germany, Switzerland, Sweden, England, USA, and a number of others, have already established voluntary, national CIRS systems. In some countries, e.g., USA and Sweden, the use of such a system is compulsory, which results in more accurate and meaningful reports based on the investigated data. WHO provides a guideline of defining the content and implementation of CIRS (Institute of Medicine, 1999). However, none of the existing CIRS systems automatically enables to leverage human factors in Risk Management.

3. HUMAN-FACTOR-BASED RISK MANAGEMENT

This paper addresses the challenge of increasing the patient safety through active Risk Management by classifying human factors and by taking into consideration those human factors for risk assessments using FMEA. Our proposed approach is based on the three components: (1) CIRS, (2) human factors and their weighting and (3) derived risk factors HFdFMEA.

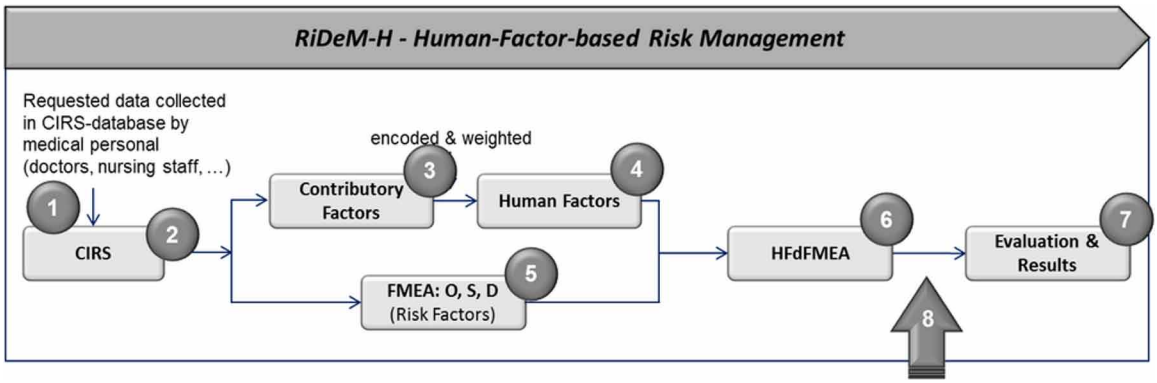
3.1. The RiDeM Concept for Healthcare

The concept for the proposed RiDeM is based on eight phases as shown in Figure 1: Phase one to three represent component (1) CIRS, phase four is equal to component (2), weighting, and phase five and six represent component (3), derived risk factors HFdFMEA. Phase seven deals with the evaluation settings and results (section 4) of the enhanced FMEA technique. For the evaluation of the derived human factors regression analysis has been used. In addition, the concept includes an eights phase not discussed in this paper, which points out the importance of monitoring and supervising. "*To manage risk means more than just to identify, evaluate, analyse and rate risks, as well as to define appropriate measures to minimize the risk. It is also important to follow the whole Risk Management process and to control and monitor risks and of course to go one step further and to supervise the implemented model*". More information about this 8th phase can be found at (Streimelweger, 2016).

(1) A CIRS as described in the previous section is leveraged to derive (2) human factors and weight them for the human-based risk determination later on. This is done once, over the frequency of all reported events per a human factor category (according to the column in CIRS) and once per each reported event over all human factors (according to the rows in CIRS). In practice, the human factor evaluation of the available CIRS data and risk-scoring need to be done by an expert team; scores of different experts must be evaluated for inter-expert agreement. (3) An expert team defines for each event the risk factors in terms of its severity (S), occurrence (O), and detection (D), all three on a scale from 1..10 in traditional FMEA, and from 1..5 in HFdFMEA. A scale from 1..5, allows the experts to have a clearer allocation of risk factors for O, S, and D. Furthermore, a Risk Priority Number (RPN) is assigned per each event in CIRS (RPN = S*O*D) (EN 60812 - FMEA, 2006), (Vikramjit, Harish, Sarabjeet, & Simranpreet, 2013), (Kmenta & Ishii, 2000).

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Figure 1. Eight phases to RiDeM-H - risk-dependent-management (RiDeM) for healthcare, © (Streimelweger, 2016)



Therefore, the inputs of HFdFMEA method are weighted human factors derived from all the CIRS-contributory factors. The outputs of HFdFMEA are human-factor based RPNs assigned by each event in the CIRS.

We evaluate our HFdFMEA approach by a multiple regression analysis where the traditional (FMEA-based) RPN will be defined as the dependent variable and the weighted human factors are defined as independent variables.

3.2. The Proposed HFdFMEA Model

In order to derive human factors from a CIRS, we employ the framework by Vincent (Vincent, Taylor-Adams, & Stanhope, 1998) which is used for analysing critical incidents/events. This framework includes factors of relevance to clinical practice and outcome by combining the strengths of Reason's model of organizational accidents (Reason J., 1990), (Reason J., 1995) with socio-technical pyramid of Hurst and Ratcliffe (Wagenaar, Groeneweg, PTW, & Reason, 1994), (Hurst & Radcliffe, 1994), (Johnson, 1980), (Moray, 1994), (Mahajan, 2010). In this framework, the hierarchy of factors has been derived from previous publications (Leape L., 1994), (Vincent & Bark, 1995), (Cooper, Newbower, & Kitz, 1984), (Cook & Weisberg, 1982), (Bogner & ed., 1994), (Moray, 1994) as follows: Patients (patient factors) and staff (task factors) as individuals are at the bottom, team factors and working conditions in the middle, and organizational and institutional factors at the top (Mahajan, 2010).

Given the contributory factors from CIRS, the human factors can be derived by their encodings similar to Vincent's framework. More than one contributory factor can be assigned to the same event. If a contributory factor is assigned to an event, it can be yes (HF=1=present) or no (HF=0=not present). Events with non-assigned contributory factors are classified under "not assigned."

The human factor (HF) for an event (E) is expressed in terms as follows:

$$HF = HF_1 + HF_2 + \ldots + HF_k = \sum_{j=1}^{k} HF_j \ (j=1, 2, \ldots k) \quad (1)$$

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In which HF_j is the cumulated human factor consisting of a number of different contributory human factors.

$$HF_{E_i} = HF_{1,E_i} + \ldots + HF_{k,E_i} = \sum_{j=1}^{k} HF_{j,E_i} \tag{2}$$

Whereat HF_{E_i} is the human factor of an Event i (i=1, 2, …n)

There are two possibilities to weight the contributory human factors for the human factor HF_j.

(A) Weighting over frequency of ONE human factor over all events (weighted per column).

The weighting of the contributory factors of HF_j can be expressed in terms as follows:

Weighting factor $w_j(HF_j)$ of a human factor weighted over frequency of ONE human factor over all events

$$w_j\left(HF_j\right) = \frac{\omega_j}{\sum_{j=1}^{k}\omega_j} \text{ with } \omega_j\left(HF_j\right) = 1 + \frac{HF_{j,E_i}}{\sum_{i=1}^{n} HF_{j,E_i}} \tag{3}$$

(B) Weighting on the frequency of ALL human factors per each event (weighted per row)

Weighting factor $w_j(HF_j)$ of a human factor weighted on the frequency of all human factors per each event

$$w_i\left(E_i\right) = \frac{\omega_i}{\sum_{i=1}^{n}\omega_i} \text{ with } \omega_i\left(E_i\right) = 1 + \frac{HF_{j,E_i}}{\sum_{j=1}^{k} HF_{j,E_i}} \tag{4}$$

Finally, the weighting method we use, is based on the conventional reliability allocation method by Kim, which typically considers a series system consisting of independent subsystems (Kim, Yang, & Zuo, 2013).

3.3. HFdFMEA Computation

As we have indicated, the objective of the FMEA is to compute the RPN per an event (equation (5)). The event having a higher RPN will have a higher priority for corrective action or preventive measure.

$$RPN = S*O*D \tag{5}$$

$$RPN_{E_i} = \sum_{i=1}^{n}(O_i*S_i*D_i) RPN_{E_i} \ldots \text{ RPN of an event i, i=1, 2, …n} \tag{6}$$

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For our extended FMEA the traditional calculation of RPN is enhanced by the human factors HF_j:

$$HF = HF_1 + HF_2 ... + \ HF_k = \sum_{j=1}^{k} HF_j \tag{7}$$

Related to an event E_i this results in:

$$HF_{E_i} = HF_{E_i 1} + ... + \ HF_{E_i k} = \sum_{i=1}^{n} \sum_{j=1}^{k} HF_{E_i, j} \quad i=1, 2, \ldots n; j=1, 2, \ldots k \tag{8}$$

Therefore:

$$RPN'_{E_i, HF_j} = \sum_{i=1}^{n} RPN_{E_i} + \sum_{i=1}^{n} RPN_{E_i} * \sum_{j=1}^{k} HF_{E_i, j} \quad i=1, 2, \ldots n; j=1, 2, \ldots k \tag{9}$$

RPN'_{E_i, HF_j} … human-factor-based RPN_{E_i}

In the next section we validate the output of the proposed HFdFMEA model $\left(RPN'_{E_i, HF_j}\right)$ by means of regression analysis. For the validation of the HFdFMEA model we derive the values of RPN_{E_i} for each of the human factors (as described in equation (9)).

In the HFdFMEA model the setting of measures is depending on the RPN as well as on the rated factor occurrence, severity and detection itself. For example, if RPN=15 whereas occurrence=3, severity=5 and detection=1, according to RPN the put measures are strongly recommended, but due to severity=5 the put measures becomes mandatory required.

The human-factor-based RPN $\left(RPN_{E_i, HF_j}\right)$ shows, that the increase of the non-human-factor-based RPN $\left(RPN_{E_i}\right)$ depends on the approach of weighting of these factors: Using the approach (B) "weighting on the frequency of all HF per each event" results in a higher RPN_{E_i, HF_j} then using approach (A) "weighting over frequency of one HF over all events". On the other hand, when comparing the percentage share, the results differ only very slightly. And that implies that the used approach of weighting is relevant regarding RPN_{E_i, HF_j}.

4. EVALUATION SETTING AND RESULTS

To evaluate our approach, we could rely on data acquired from cirs-health-care.de (developed by Inworks GmbH), a public, not compulsory, representative CIRS for Germany and Austria where currently 400 medical institutions take part and report their critical incidents and events. The database entries are anonymous. Each listed event entry is assigned to one or more of 32 expertise areas, e.g. surgery or neurology. Additional data about the professional category (doctor, nursing staff, other staff), a place (e.g., hospital, preclinical / emergency medical service, ambulance) and, e.g., a professional category,

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time of day, area of supply, gender of the patient, and state of an event, as well as (optionally provided) 'contributory factors' are stored. There are nine main categorised contributory factors: (1) patient, (2) organisation, (3) task, (4) person / individual, (5) communication, (6) working environment, (7) equipment /material, (8) team & social factors, (9) education. Except communication and education, which are specific to given CIRS databases employed in our research, all other are as defined in the Vincent's framework (Vincent, Taylor-Adams, & Stanhope, 1998), (Vincent & Bark, 1995). These entries provide the basis for the human factor evaluation. The CIRS uses up to 9 pre-defined categories for the contributory factors. From 2013 to November 2014, 194 TOP-events out of 5000 events were used for our analyses. The TOP-events are the evaluated and risk-rated events by an expert-team, consisting of healthcare professionals. Furthermore, the experts define necessary measures to help to avoid and minimize such risks in the future. The O, S and D ratings of an event range from 1…5, with RPN_{max} = O*S*D = 5*5*5 =125.

4.1. Defining the Human Factors

The traditional RPN of an event is calculated according to equation (6) as a result of the three factors O, S, and D. The above mentioned contributory factors simultaneously form the nine human factors for each event $\left(HF_{j,E_i}\right)$. Due to the contributory factors as well as other factors e.g. professionals, places etc. are provided as text, they need to be encoded before they can be used for further analysis, in that way 1=present/true and 0=not present/false.

4.2. Weighting the Human Factors

The derived nine human factors are weighted. Given the two approaches possible (A), (B), we selected both approaches to compare the impact on the accuracy human-factor-based RPN.

Comparing the reported events with weighting over frequency of one human factor over all events (approach A) and with weighting on the frequency of all human factors per each event (approach B) shows that in the first case, the weighted human factors are significantly lower compared to approach (B). That means, on the one hand, approach B emphasizes the human factors more, and, on the other hand, that the risk depends on the number of human factors assigned to an event.

Figure 2 illustrates the results of one reported event (event number: 123, event description: insufficient perioperative monitoring) and it's derived nine human factors. Only the human factors CForg, CFtask and CFwen are present and have value 1. Also represented are the weighted human factors Wpat to Wedu according to approach (A) and (B), the traditional $\mathrm{RPN}\left(\mathrm{RPN}_{E_i}\right)$ as well as the human factor based $\mathrm{RPN}\left(\mathrm{RPN}_{E_i,\,HF_j}\right)$. The used indices (i=1…9) are: (1) pat – patient, (2) org – organization, (3) task – task, (4) ind – person / individual, (5) wen – working environment, (6) com – communication, (7) equ – equipment / material, (8) tsf – team & social factors, (9) edu – education. The values for the factors S (severity), O (occurrence) and D (detection) have been provided by the CIRS-system provider Inworks GmbH.

As mentioned in section 4, the data for our evaluation are from cirs-health-care.de (www.cirs-health-care.de), a public, not compulsory, representative CIRS database for Germany and Austria where currently 400 medical institutions take part and report their critical incidents and events. The nine predefined categories are provided as text and derive into our nine contributory factors by encoding into 1

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Figure 2. HFdFMEA – from CIRS-data to the human factor based RPN © (Streimelweger, 2016)

HFdFMEA in Use: Example - Event 123: Insufficient perioperative monitoring

cirs-health-care.de contributory factors (encoded: 1=present, 0=not present)

CFpat	CForg	CFtask	CFind	CFwen	CFcom	CFequ	CFtsf	CFedu
0	1	1	0	1	0	0	0	0

calculated weighting factors - approach (A)

Wpat	Worg	Wtask	Wind	Wwen	Wcom	Wequ	Wtsf	Wedu
0,005128205	0,005149754	0,005173189	0,005128205	0,005176584	0,005128205	0,005128205	0,005128205	0,005128205

derived Human Factors muliplied with the weighting factor

HFpat	HForg	HFtask	HFind	HFwen	HFcom	HFequ	HFtsf	HFedu
0	0,005149754	0,005173189	0	0,005176584	0	0	0	0

calculated weighting factors - approach (B)

Wpat	Worg	Wtask	Wind	Wwen	Wcom	Wequ	Wtsf	Wedu
0,090909091	0,121212121	0,121212121	0,090909091	0,121212121	0,090909091	0,090909091	0,090909091	0,090909091

derived Human Factors muliplied with the weighting factor

HFpat	HForg	HFtask	HFind	HFwen	HFcom	HFequ	HFtsf	HFedu
0	0,121212121	0,121212121	0	0,121212121	0	0	0	0

HFdFMEA - the human-factor based RPN

				according to approach (A)		according to approach (B)	
Occurrence	Severity	Detection	RPN_{E_i}	$\sum Hf_i$	RPN_{E_i,HF_j}	$\sum Hf_i$	RPN_{E_i,HF_j}
4	4	3	**48**	0,015499527	48,74	0,363636364	65,45

(present) or 0 (not present). The next step was to weight these factors as described in above section 4.2. The risk-factors severity (S), occurrence O) and detection (D) are mandatory for the RPN computation. S and O are both published, D is computed and monitored, but is not published on cirs-health-care.de due to data protection. So we used factor D from Inworks GmbH database. Only the TOP-events out of all reported events by the medical institutions are published on cirs-health-care.de. Those TOP-events include amongst others the risk assessment for S, O and D and measures to reduce the relevant risks. Only those TOP-events are part of our evaluation. For the first case-study we had access to 195 TOP-events and for the second case-study we could access 289 TOP-events.

4.3. Evaluation of HFdFMEA model via Regression

To test the validity of the proposed HFdFMEA model we have used the multiple regression analysis. This was done to evaluate the statistical significance of the relation between dependent variable RPN and the human factors (Aldrich, 2005). Three special measurements can indicate the significance of a regression 'R', 'adjusted R square' (R^2). The final output of a multiple regression is an equation derived from the computed coefficients, which can be used to predict a new value for the dependent variable only using the independent variables in our case the human factors.

Our hypothesis is that the human factors help to indicate the RPN level. Based on our CIRS database we run the regression analysis and verify the statistical significance. To compute the regression results we have used the nine human factors. The regression output was evaluated using the following six assumptions. (1) Independence of the observations was fulfilled due to an acceptable Durbin-Watson value of 1.589. (2) Linearity, was confirmed by graphically identifying a horizontal band on the scatter plot

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between the residuals (Y axis) and the predicted values (X axis). (3) Homoscedasticity was tested using a scatter plot of the studentized residuals versus the unstandardized predicted values. Homoscedasticity can be rejected, as the residuals are mainly equally spread over the unstandardized predicted values. (4) Multicollinearity was excluded as the highest variance inflation factor (VIF) was 1.522 and the smallest tolerance value was 0.657. (5) Outliers with a standardized residual higher than 3 and all leverage and influential points are not part of the final model. (6) Normality was confirmed with a histogram of the standardized residuals.

As all six assumptions are fulfilled, the statistical significance of the regression result can be interpreted. R can be between 0 and 1, and a value of 0.274 unfortunately indicates a not so good prediction level. The R^2 value of 0.025 explains only 2.5% of the variability of the dependent variable. More importantly, the adjusted R^2 value of 0.025 means that the regression model explains just 2.5% of the proportion of variance, which indicates a low effect size. The effect size, which is explained by Cohen's classification, could be better, but based on the available data it was not possible to find a better model. In general, the R, R^2 and adjusted R^2 values do not always represent the real quality of a regression model. Also with a low adjusted R^2 the regression model can fit for the data. Due to the fulfilled test assumptions the regression output indicates a significant relation between the RPN and the human factors. As the prediction level is low would need to check why we have a significant relation, but we have problems predicting RPN with self-selected human factors. Due to the low R^2 a second case study should help to verify how the results would change if more data were used. Therefor the same CIRS-health-care database was queried. Since the first evaluation, 100 entries were added and the second trial a database with 289 reported top-events was available. The same settings for the regression analysis were used as for the first evaluation (Streimelweger, 2016). The final regression equation from the second trial is shown equation 10.

$$\begin{aligned} RPN'_{E_i,HF_j} &= 22.793 - \left(794.751 * \mathrm{HFpat}\right) + \left(134.140 * \mathrm{HForg}\right) \\ &+ \left(49.430 * \mathrm{HFtask}\right) + \left(188.762 * \mathrm{Hfind}\right) + \left(937.758 * \mathrm{HFwen}\right) \\ &+ \left(735.858 * \mathrm{HFcom}\right) + \left(319.293 * \mathrm{HFequ}\right) - \left(1614.985 * \mathrm{HFtsf}\right) + \left(1037.894 * \mathrm{HFedu}\right) \end{aligned} \tag{10}$$

Table 1 gives an overview of both case studies.

Table 1. Regression Analysis – summarized results © (Streimelweger, 2016)

	R	R^2	adjusted R^2	std. error of the estimate	Durbin-Watson
Case study 1: 194 top-events (CIRS-health-care.de database, 2014-11)					
Approach (A)	0.271	0.074	0.028	14.21403	1.592
Approach (B)	0.267	0.071	0.026	14.23325	1.589
Case study 2: 289 top-events (CIRS-health-care.de database; 2015-09)					
Approach (A)	0.251	0.063	0.033	13.74011	1.558
Approach (B)	0.248	0.061	0.031	13.74953	1.556

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5. DISCUSSION

In the following three questions to discuss the importance of the data source, the approach and the implications for the health system as well as for the practitioners and patients are developed (Streimelweger, Wac, & Seiringer, 2015), (Streimelweger, 2016).

5.1. To Which Restrictions and Limitations Do the CIRS Databases Lead?

Based on our research we conclude that it is important that all fields of a CIRS database are filled with informative, real data. Otherwise each kind of evaluation result becomes vague and inconclusive. Furthermore, it is necessary to define the required information in a way, that there is no space for giving answer like "all", "other" or a blank field. A concrete assignment is absolutely necessary, since this leads to more accurate results for subsequent analysis. To be able to compare with other hospitals also over their own national borders, it is necessary to use similar contributory factors, which results in human factors. Therefore, Vincent's framework or ISO standards could be used as guideline and best practice models to define categories and factors.

5.2. How Generalised are the Results?

The derived human factors from a CIRS database are only valid for the analysed database and for the given period of the data made available for us. A CIRS database can only provide national data. Ideally all healthcare facilities are obligated to provide information for a CIRS database. However, it makes sense to perform it within an individual hospital. In this case the hospital can profit mostly because this will help hospitals to improve their individual standards for patient safety.

5.3. What are Implications for the Health System, Practitioners and Patients?

The proposed HFdFMEA method allows improving patient safety by means of enabling better understanding and management of human-factors influencing risks and the Risk Priority Number (RPN), which in turn is of importance for the patient. Investigations in the relation between risks and human factors help healthcare professionals to identify potential problems, to improve processes, to minimize risk and respectively to avoid adverse events and incidents by putting proactive and predictive measures. An open communication regarding the reporting shall be encouraged. Anonymity should help the practitioners to ensure that they have no fear of negative consequences when reporting an event.

The HFdFMEA can be implemented by hospitals using a CIRS database and through this the human-factor-based RPN $\left(\mathrm{RPN}_{\mathrm{E_i},\mathrm{HF_j}}\right)$ can be evaluated per event, and depending on the assigned human factors, it would be possible to take appropriate measures to minimize risks. In addition, it offers also the possibility to handle chances (positive impacts).

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6. CONCLUSION

The target of this research was to answer the question "Is it possible to increase patient safety through active Risk Management by classifying human factors and by taking into consideration human factors for risk assessments based on FMEA?" The answer can be summarized as follows (Streimelweger, Wac, & Seiringer, 2015):

The proposed enhanced HFdFMEA embraces the human factor approach. The data recorded in the CIRS database upon an event can be used for this purpose. Therefore, the event-specific contributory factors are converted into the human factors, which are used in this model, by decoding into 1=present/true and 0=not present/false. As a result, those human factors are weighted. The HFdFMEA does not only reveal risk level of failures based on the human factor but also gives the possibility to reduce the risk level of failures through means of human factor interactions, like trainings, motivation, etc. This allows considering negative impacts, known as the 'typically risk', and positive impacts, known as 'chance'. Furthermore, the results of the regression analysis show that human factors, inter alia, may be interdependent.

In our research we did not differentiate between the different areas of expertise whereas this information could be provided quickly and easily by the analysis carried out in each area of expertise. This information will enable hospitals to focus on defined areas and to mitigate risks and increase patient safety.

Our on-going research activities are focused on a human-factor-based Risk Management (RiDeM) method, extended by the proposed HFdFMEA, which will quantify the relation between risks and human factors for an improved Risk Management method. The method consequently will facilitate to improve patient safety.

This research, the monitoring and supervisory part of the RiDeM-H model constitutes the phase 8 of our model.

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Chapter 26
Insurance as an Optimization Tool for Risk Management in Small and Medium-Sized Enterprises

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ABSTRACT

The SME risk management optimization model includes appropriate methods for identification, analysis and classification of risk assessment and developing a plan to overcome the risks and control the applied reaction to risk. Insurance is a classic way of a risk management process and is applicable to specific situations. The subject of this study is exposure and risk management in small and medium-sized enterprises (hereafter: SMEs) which are eligible for transfer of insurance coverage. This paper discusses the process of risk management in SMEs by transfer to insurance and indicates which risks and in what way can be transferred to the insurer. In this paper we analyze the supply of domestic insurers in Serbia, and insurance requirements, variants that offer coverage to overcome the particular risks to which SMEs are exposed. In the elaboration and research of mentioned theses the paper will use methodological procedures of analysis and synthesis, the inductive-deductive method, and if necessary, the comparative method of scientific research.

INTRODUCTION

The purpose of this chapter is to analyze the risks which SMEs transfer to insurance companies, and the value of risk optimization management in these businesses. The underlying premise is is that SMEs in Serbia fail to manage risks in an optimal way. The chapter starts from the premise that SMEs have difficulty in understanding insurance products, and that they need both support and assistance in this regard. In this sense, the chapter deals with main characteristics of insurance, with the aim to show how

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SMEs can optimize risk management and what the role of insurance companies could be. In an effort to identify issues that occasionally arise and point to possible solutions the author will compare the experience of countries with an advanced insurance market for SMEs, Great Britain and Australia in particular, with that of Serbia. Experience shows that in advanced economies insurance market is very competitive. Next, the chapter will examine offers of insurance products in the Serbian market and the use of broker insurance services. To enhance this chapter, the author will consider issues of importance to SMEs using as an example insurance services in Serbia and possible differences in relation to countries in which there exists a developed insurance market. Insurance sector examples will be presented to support the approach, but the focus will be on opportunities for SMEs. Following the above main content, the chapter discussion will include future research directions. Finally, the chapter ends with a conclusion and key terms and definitions.

BACKGROUND

Small and middle sized enterprises (SMEs) are considered the key drivers for growth and development of national economies. They contribute to growth of employment, particularly in the sectors of transport, civil engineering, communications and tourism. (Jeremić, Živić, 2011, p. 78) For example, in United Kingdom SMEs play a vital role in the health of the economy and according to the Financial Conduct Authority (2015) "99.3% of private sector businesses are SMEs." Similarly, in the Serbian economy 99.8% of business entities are SMEs (Chamber of Commerce and Industry of Serbia, 2016).

SMEs are exposed to numerous business risks. Most organizations must take risks in order to develop, so not all risks are inherently a negative phenomenon (Udovičić & Kadlec, 2013). SMEs regularly face certain threats and numerous risks which endanger their operations. This can have unfavourable economic consequences. Exposure to risks, especially negative ones, must be taken into account also in good times, when profits are increasing (Simons, 1999). SME business success depends on decisions concerning protection of particular risks and measures that should be adopted in order to control and reduce risks. In that respect, quality management of each company includes the organization of monitoring and management of risk.

Realizing SME significance the Boston Consulting Group carried out an extensive survey of 2,500 small businesses in six largest SME insurance markets: U.S., UK, Italy, France, Germany, and Japan. The research explored the insurance decision-making processes of small business owners and found that SMEs are more open to direct interaction and outreach from insurers than many experts have expected. SMEs expect targeted outreach initiatives, improved value proposition for brokers and agents and a "*hybrid direct*" model that provides semi customized offerings, advice, and information (Hoying, Agarwal, Rapsch, & Yasushi, 2014).

At a time when businesses, particularly SMEs, face the consequences of the economic crisis and climate change increases the frequency of extreme events, it is important to discuss issues related to security as a model for overcoming the risks to which SMEs are exposed. Insurance provides a certain amount of security in terms of decrease of potential loss that may occur through realization of risks covered by the insurance. The main objective of risk optimization in SMEs, especially after the occurrence of adverse events, is to establish at least a minimum of business activities in the shortest possible period of time (Njegomir, 2011, p. 41). The additional benefit is that an insurer provides support to SMEs, stimulates better and safer SME operations.

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In the whole of European Union there is emphasis on the problems of financing for SMEs, but significantly less attention is paid to insurance for SMEs. The EU Commission has noted that insurance requirements are often difficult to comply with and that in some cases SMEs and professionals in particular have found it hard to obtain insurance coverage for cross-border activities (Jeanmart, 2015).

According to available insurance indicators, Serbia is significantly below the average of EU member states. For example, with the value of the realized premium Serbia is on the 86th place in the world (National Bank of Serbia, 2016, p. 9). However, this data does not include the premiums collected from businesses and there is in fact no data on SME insurance to evaluate. The development of the insurance market reveals the level of awareness and need to conclude insurance contracts. In countries where insurance culture is more developed insurance of the business sector is increasingly provided. For example, in Australia only 26% of all SMEs do not have any form of general insurance. And while in Serbia texts are rare that deal with risk management and insurance for SMEs Australia provides detailed analysis of data with basic insurance information of relevance to SMEs (Insurance Council of Australia, 2008).

SIGNIFICANCE OF SME RISK MANAGEMENT THROUGH INSURANCE CONTRACTS

Conclusion of an insurance contract requires understanding rules on which the insurance and main features of this service are based. The lack of required knowledge may complicate understanding of the insurer's offer and lead to a conclusion of a contract which may not provide adequate risk coverage. An optimal common aim is to envisage the SME insurance also from the perspective of advantages provided by insurance and not only from the perspective of insurance expenses which is what SMEs usually do.

SMEs evaluate the recurrence and intensity of damage and maximum amount of loss that may occur for each separate risk. Ranking of risks and damages that may occur enables a risk manager to choose the most adequate methods or their combination in the risk management process. SMEs may be protected from some risks by insurance. According to Dickinson (2001), "most risks that a company faces cannot be insured or hedged and must be retained or financed internally" (p. 363). Therefore, insurance is one of the methods of partial financial control applied to provide funds for coverage of loss (Andrijašević & Petranović, 1999, p. 14).

In addition, not all risks are insurable. Financial risks which produce impacts measurable in monetary terms are suitable for insurance as a method of loss distribution (Vaughan &Vaughan, 2000, p.17). It is common that only pure risks are accepted for insurance. Insurance neither provides protection of individuals from speculative risks which they have voluntarily accepted (Njegomir, 2011, p.24). The insurer undertakes only a part of the potential loss that he is able to bear in the course of the calculation period. Thus, some risks can only be covered by specific and not all kinds of insurance. Consequently, risk of war and strike risks are covered in transportation insurance.

When SME risk manager determines the risks which will be covered, he should decide which risks will be covered by insurance and which will be retained. "Some insurable risks could be prevented or their impact reduced through efficient loss-prevention or control systems while some could be retained and financed within the company" (Dickinson, 2001, p. 360). Therefore, insurance represents only one component of the risks management process. And not all risks suitable for insurance should be insured or they should not be fully insured (Ivančević, 2006, p. 415) Priority is given to those risks which SMEs

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are legally bound to insure pursuant to the legal provisions or contractual obligations it had undertaken. This includes risks characterized by high intensity and low frequency because their realization could cause huge losses to SME.

In most cases the total risk of loss is not transferred to an insurer. Consequently, insurance indemnity will not completely cover the loss. The most important consequence for the insured SME is that, provided it is covered by the insurance, the amount of loss shall be reduced and the great loss shall be distributed into acceptable parts (Sneyd, 2003, p. 105). Laymen may believe that payment of premium is a waste of money if the insured event is not realized within the contracted period and if no loss takes place. However, even if the insured SME does not sustain any losses, it has received something in return for the premium paid: the insurers promise that, in case of insured event occurrence, it will be indemnified. The advantage of insurance is that the insured may recover the money invested in the insurance, by the indemnity payment in the current year in excess of the total amount paid for premium during previous years.

Besides providing a certain level of security, insurance can also improve the quality of SME operations. When deciding to insure a company against certain risks, insurers chose to insure successful companies. During the validity of the insurance contract period, they encourage clients to avoid activities exposing them to excessive risks, thus encouraging actions in the optimal interest of stakeholders (Kočović, Šulejić, 2002, p. 46). For example, insurance terms and conditions emphasize compliance with legal liabilities of the insured, such as the obligation of the regular bookkeeping in line with the provisions of the law. In some countries, insurers try to assist SMEs to improve risk management practices and knowledge of the benefits of insurance. For this purpose several publications have been prepared in the UK. AXA Insurance has already published "Guidance on preparing continuity plans for small businesses" involving business continuity planning for small businesses. Also, Association of British Insurers (ABI) issued a guidance ''Insurance for Small Businesses a guide to protecting your business''. However, in many cases there is still lack of risk awareness SMEs and according to Crichton (2009) "they are not meeting the very basic risk management standards to meet their insurance cover requirements." Risk management costs require the respective budgeting to cover all necessary activities. Generally, SMEs are not able to hire *full*-time *risk managers, as it is set forth in the concept of risk management.* Therefore, insurers are recommended to engage more and support SMEs in the process of risk management. In fact, experience of developed countries shows that when the insurer provides this type of support SMEs can reduce their loss ratio to 10% while increasing customer retention by more than 15 percent (Hoying et al., 2014).

Opportunities in Undertaking Optimal Preventive Measures in SMEs

Cooperation with the insurer and risks transfer to an insurance company may be useful for SMEs in many ways. Disbursal of compensation also contributes to the improvement of SME business environment and performance, and prevents the occurrence of certain risks covered by insurance (Mrkšić, Petrović, & Ivančević, 2007, p.7). Insurers also encourage SMEs to undertake preventive measures aimed at prevention of occurrence of certain risks. Prevention funds may be used for the purchase, replacement or rectification of equipment and protective devices, for employee training in proper use of equipment and for protective measures (Ilkić, 2015, p. 49).

Fire prevention measures are a particularly important example. Fire risk is a typical risk where coverage is provided through an insurance contract.

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Training of insured personnel is important because unprofessional and inadequate behaviour represents a risk which can be reduced to a minimum through preventive training. These courses are also interesting for the insured, since in this way security level is raised, with an impact on the amount of premium which provides significant budget savings. Confederation of Fire Protection Association (CFPA) Europe has therefore composed an integral system of training of the insured employees to familiarize them with a fire risk assessment methodology (Vidaković, 2010). Through application of this methodology in industrial, commercial, administrative and residential facilities, adequate risk assessment and prevention level of future risks is provided. The installation of high quality equipment is encouraged (electrical equipment, heating and similar) in accordance with applicable standards, as well as prevention and equipping facilities with fire protection devices. It is required that all stocks and especially materials with explosive or flammable properties are stored in line with law. Hence, the insurer's liability shall be excluded if the insured has not taken these protective measures.

Emerging Fundamental Risks in SME Insurance

Fundamental risks affect material goods, lives and health of many people. They involve floods, windstorms, earthquakes, wood fires and similar. Regularly, these risks affect large segments of the SME sector. Their realization results in catastrophic losses for some businesses. Risks stemming from weather phenomena and climate change nowadays require a special approach. It is considered that climate change represents the greatest threat to modern economy and particularly to agriculture (Petrović & Grujović, 2016). The number of these events grows globally each year. In fact, there were about 14% more natural catastrophe events in 2014 than in the previous year, which was the record for one year (Swiss Re, Sigma, 2014). Similarly, financial losses caused by floods in May 2014, in Serbia alone, exceeded 1.53 billion Euros. The loss recovery was mainly financed from budgetary funds, donations and foreign credit lines. The insurance business participated in indemnity with only 2.4%, i.e. with about 37 million Euros (Business & Finance, 2015). There are no data on losses in Serbia suffered from SMEs, but it can be assumed that they were greatly affected by losses from floods and that, like the majority of economy and population, have not been insured against this risk. In other countries the situation is similar. For example, according to Figueres (2016) "70% of natural disasters that affect people's lives and livelihoods are still not covered by insurance, most often because the right combination of financing and policy are absent or uncoordinated" (p. 42). These figures speak for themselves in terms of SME insurance opportunities.

Given the number and diversity of SME activities in all countries the author assumes that they are significantly affected by the impact of climate change alone. However, their problems are not given enough attention by the media or adequate support from state and local authorities. Even in the UK only a small number of SMEs received flood assistance from the local administration. Damages are mostly covered from their own resources or from their insurer. According to Crichton (2009) "most of the help for small businesses comes from their insurance companies", however many SMEs in the UK were unable to renew their insurance. Therefore, it is estimated that extreme cases of floods could lead to SME bankruptcy (Crichton, 2009).

Losses resulting from the natural catastrophes are vast. Classic insurance is not able to take over and cover all these risks. Participation of the state in respective risk management is demonstrated through the creation of different funds for insurance against these risks, cooperation between state and the insurer, introduction of obligatory insurance against certain risks which are considered catastrophic and subsidies or assistance in case of such risks. Development and implementation of policies that encour-

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age demand for insurance products against catastrophic risks and stimulate good practices of managing catastrophic risks are important. Accordingly, compulsory insurance against storms was introduced in France, Spain and Belgium which is contracted together with fire insurance (Saković, 2015). Turkey introduced compulsory insurance from earthquakes (Ivančević, 2006, p. 478)

There is no secure way to prevent natural catastrophes, but their devastating effects can be mitigated in part. Preventive and protective measures against loss occurrence are commonly applied. Accordingly, embankments, barriers, concrete walls are constructed and monitoring of meteorological data is organized. Some other activities are also taken. However, according to Crichton (2009) "SME are as yet not well prepared for the impacts of climate change and indeed many do not take the threat seriously, despite the fact that the smaller the business the more vulnerable it is to the impacts of climate related disasters while larger companies are more likely to describe their strategy regarding climate change and are probably more likely to have the resources to do so" (p.2). Only a partial loss can be covered by insurance and insurers have the right not to pay 100% of the claims costs. Which means a typical SME customer may not have the funds to meet the deficit. It is not possible to completely envisage all the consequences occurred by realization of these risks. Therefore, insurers limit coverage. If these risks were fully overtaken, premiums would be extremely high and therefore unacceptable for the majority of insured SMEs.

CHALLENGES OF SME PROPERTY INSURANCE

SME Property insurance requires rationality. Namely, the insurance of all property against all risks to would be too expensive and unnecessary. Decision on risks which will be transferred to insurance should be based on evaluation of the frequency and intensity of particular property risk exposure. Insurance of property assessed as low intensity risk with low likelihood of risk occurrence is not required. Such risk can be completely eliminated or significantly reduced through SME preventive and protective measures. The high frequency risks, including those of low intensity, as well as low frequency risks having great intensity should be insured. In the risk assessment processes the general statistical data should be combined with own experience. The place of insurance occupies an important place in the decision-making process. Some risks can be realized in some places to a lesser or larger degree, while elsewhere they cannot be realized. Duration of the insurance contract (short-term, long-term or multi-year) shall be matched to the risk type and effects.

Special insurance conditions and premium tariffs outline the contracting modalities of property insurance coverage. The insured sum represents the upper limit of insurer's liability and it must correspond to the actual value of the subject matter of insurance. Type of insurance coverage and the sum insured should be selected in accordance with the chosen risks and subject matter of insurance. Insurer's liability can be proportional and non-proportional. Under proportional coverage those parts of property exposed to high intensity risk (fire risk, e.g.) are insured because they can cause total loss of the insured object. In case of proportional insurance indemnity it is important that the insured object value is equal to the amount of the sum insured.

In order to avoid under-insurance some form of non-proportional insurance may be contracted as the insured is not always interested to insure property to the highest actual value. Under *The first loss insurance clause* each loss up to the agreed sum insured is contracted to cover the maximum possible loss that can be predicted for the insured SME facility. When applying this contracting modality, it is

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important to properly assess the amount of the maximum possible loss. It is favorable for the insured since the insurance premium is significantly lower than for other types of coverage. In case of low intensity risks with lower impact and limited loss (e.g. water leakage from installations) it is assumed that it would be optimal to contract SME insurance coverage through the first loss insurance. Robbery and burglary insurance is also contracted in that way. Special form of the first loss insurance is the *agreed value insurance* applied for high intensity risks which may result in total loss of the insured item. It is applied for the insurance against fire risk and some machinery breakdown. Premium calculation is based on asset book value as of 31 December of previous year. Therefore, it is required to maintain orderly bookkeeping which is an added value in SME development. When insurance based on *tax value* is contracted the insured and the insurer jointly determine the value of the insured item and respective indemnity accordingly. This is a way to insure items having a subjective value for insured such as fine art paintings, jewelry and collections.

Insured Event Prevention and Rescue of Insured Object

The insured is obliged to take all necessary measures in order to prevent risk occurrence covered by the insurance. Should the insured event take place, the insured shall be obliged to take applicable measures (reporting to the competent authority, etc.) or specially stipulated measures, in line with possibilities and situation occurred in order to limit consequential damage. Should the insured, without justified reason, fail to fulfill the above mentioned obligations, insurer's liability shall be reduced by an amount equal to the increase of damage due to such omission (Serbia, Law on Contracts and Torts, Article. 926).

The advantage for the insured, that SMEs should take into account, is the legal liability of the insurer to reimburse the expenses, losses and other damages caused by the insured's attempt to eliminate the immediate risk of insured event occurrence, i.e. reasonable attempt to limit its actual consequences. Reasonable expenses are those expenses which are lower than the loss that could have been expected if the expenses had not been sustained. This liability exists also if all the attempts of the insured have been unsuccessful. In addition, in case that the indemnity and the reimbursement of these expenses are higher than the sum insured, the insurer is obliged to reimburse them in full amount. In that way the client is encouraged to take necessary measures to prevent the insured event occurrence and to reduce its adverse effects.

SME Participation in Loss and Exclusion from Insurance

Through exclusions from insurance coverage and franchise contracting SMEs are encouraged to handle their property with care, to use it properly and improve working environment. The insured is entitled to retain the portion of risk in the self retention insurance. The respective decision is based on statistical methods (Andrijašević & Petranović, 1999, p.20). Insurance against particular risks foresees obligatory participation of the insured in the possible loss (franchise). This is contracted through percentage franchise and determination of minimal participation in the loss for certain risks (robbery, burglary, machinery breakdown and some other risks in domestic transport). In this way, the insured reduces the costs of the premium.

Insurance excludes certain risks, such as vulnerable facilities of the low-rise construction category (kiosks, cabins, containers) and wooden structures. Legal entities and entrepreneurs whose movable property (inventory, equipment and supplies) is located in such facilities are sometimes refused insurance contract in line with the specially designed conditions for SMEs.

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Legal Protection Insurance

Bearing in mind the complexity of legal system, SMEs need to engage professional assistance for any proceeding before the court or other dispute resolution entities in order to protect their rights. They will bear certain expenses accordingly. Legal protection insurance allows the insured SMEs to transfer the risk against occurrence of legal costs to the insurer, based on the premium paid. A party who loses the dispute partly or completely is obliged to reimburse the litigation costs to the opposing party, pursuant to court decision, in total or proportionally to the success achieved. (Serbia Law on Civil Procedure, Article. 153) Concluded legal protection enables the insured SME to be covered for expenses incurred during the potential litigation. This insurance type may have a positive effect for insurer as well. If the insured is successful in litigation, the insurer has a possibility to reimburse the expenses from the party which has lost litigation, i.e. from its insurer if that party has concluded a legal protection insurance contract.

Under this type of insurance, the insured has great influence on insured event occurrence, differently than under other types of property insurance. Therefore, insurers stipulate the participation of the insured in loss (franchise) and right of insurer to terminate the contract if two or three insured events occur during the same year (Ivanjko, 2005, p. 40).

This insurance type is developing and the new forms of coverage are offered. According to Serbian law, the legal expenses insurance is designed as a type of non-life insurance. This insurance covers legal expenses, lawyer's expenses and other proceedings costs (Serbia Insurance Law, 2014, Article 9). In Serbia there are no specialized insurers who deal only with legal expenses insurance. It is common that the legal expenses insurance is offered together with some other insurance type, most frequently with liability insurance.

Legal innovation is important since in clauses regulating dispute conduction, insurers should become authorized to require certain behavior from insured, not only in terms of litigation, but also their out-of-court behavior (Šulejić, 2005, p. 396).

However, Serbia has not demonstrated adequate interest in legal protection insurance. This is one of the reasons why the offer of domestic insures is poor. This type of insurance should be encouraged by the state. In return, the state would reduce expenses sustained for free legal assistance. Lawyers are interested in development of this insurance type, since it provides secure costs settlement. Due to the costs of the court and attorney, SMEs often renounce litigation. However, this insurance type may be important for SMEs, since it could enable better recovery of outstanding debts and better protection in legal proceedings initiated against them. SMEs should request from insurers to provide legal insurance coverage wider than coverage provided by classic insurance types. Or engage a lawyer in the pre-dispute proceedings in terms of preventive legal advice in order to avoid controversial situation occurrence, i.e. possible disputes, and obtain advice which could contribute to successful out-of-court dispute resolution. This form of legal protection could be realized in cooperation with lawyer's chamber, in the tradition of comparative legal experiences such as in Germany (Belanić, 2014, p. 32).

This kind of insurance is the most developed in Germany, with a large number of insurance types, high coverage amount and relatively low premiums (Belanić, 2014, p. 31).

Insurance of Persons

SME employers who contract collective insurance against the consequences of casualty for their employees are concerned for their employees and demonstrate corporate social responsibility. This contract can be subject to collective negotiations between employees and employers. Therefore, by paying the insurance

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premium SME employer provides some protection. In that case, the indemnity received by the employee is included in the total indemnity amount which employer is obliged to pay to the employee if liable for the injury which occurred. SME employer is entitled to insure all employees, regardless of the kind of work contract. Scope of insurance coverage is determined according to the requirements and needs.

An employer is liable to insure employees for occupational diseases and work-related diseases, in order to ensure compensations. (Serbia Law on safety and health at work, Article 53, 2015). Legislator did not set forth the minimum sum insured, enabling employer to conclude contract in line with his financial possibilities. It is necessary to bear in mind that most insurance companies in Serbia excluded infectious diseases, occupational diseases and other diseases from insurance terms and conditions and did not consider them as causalities. Therefore they are not covered by causality insurance. Some insurers have special conditions for occupational diseases. Some of them offer this insurance through stipulation of special clause with collective insurance of employees against the consequences of casualty.

THE SME INSURANCE CONTRACT

Upon deciding to use insurance as a risk prevention method, SME managers need to take measures in order to obtain optimal coverage with the lowest premium. There are numerous insurance products suitable for various needs and situations on the market. Adoption of appropriate decisions on the selection of insurance products requires having a certain level of financial literacy, knowledge and understanding of the basic characteristics of insurance. It is necessary to know the way the insurance system functions, as well as the way in which insurance treats risk transferred to it according to the insurance contract. Insurance service is sophisticated and insurance products are specific and complex. The lack of SME knowledge and clear understanding of the insurer's offer, conditions and the scope of the covered risks can turn into a difficulty and cause rejection of insurance.

On some occasions, the insured may decide to change the insurer, for example if another insurer offers a lower premium. Prior to making this decision, the insured should check if the scope of coverage provided by the other insurer at a lower price is completely the same as the existing one. A lower price does not imply the same conditions, even though the product may have the same or similar name. It seems that for the majority SMEs having the right cover is equally important as the price of the insurance policy (Financial Conduct Authority 2015, p.14). In more developed markets SMEs are looking for a lower price, but will also change insurers if they can obtain better coverage or satisfy a specific need, not just receive a better price (Hoying et al., 2014).

On some occasions, the savings provided by changing the insurer can really be just short-term. In fact, if the insured SME's technical result in a certain period of time becomes negative due to frequent claims within the coverage period, the insurer shall increase the premium by applying the bonus-malus system (BMS). In case of compulsory automobile insurance, the insured cannot benefit from the change of the insurer. All insurers offer the same premium and they all apply BMS in a centralized and organized manner, regardless of the chosen insurer. Interestingly, research has shown how the performance of SMEs does not significantly affect the volume and change in insurance coverage (Insurance Council of Australia, 2008).

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Pre-Contract Information is Fundamental

As a professional, an insurer has knowledge and information which is important for the conclusion of contracts, and which, without a preliminary presentation and clarification to the counterparty, is either unavailable or difficult to understand. Pre-contract and contract information is aimed at informing the insurance users of all the facts they need to know of the product, contractual conditions and most of all the parties' rights and obligations (Ivančević, 2015, p. 236).

The right decision can be made only by the customer, or the service user, who has been properly informed (Weatherill, 2001, p. 180). A potential policyholder should assess the information received and based on it decide whether to conclude the proposed contract or not and under what conditions (Ebers, 2004). Additional customer information and clarifications also influence the final decision. Information must not make a false impression of the insurance products. Information should be unambiguous, comprehensible, clearly stated, timely and extensive enough. However, it should not be too extensive, in order not to confuse the recipient.

The Serbian law has established the minimum content of information that an insurer is required to make available to a policyholder prior to the conclusion of a contract and stipulates the manner of making this information available (Serbia Insurance Law, Articles 82-84, 2015). Unlike decisions in comparative law that limit the obligation of precontractual duty to inform a policyholder only in the case of consumer status, the Serbian legislator has decided to impose an obligation for an insurer to report in advance to all potential policyholders (Mrkšić, Petrović, & Ivančević, 2014, p. 184).

In comparative law, the obligation of mutual provision of information of an insurer and a policyholder in the process of the conclusion of an insurance contract is also considered a duty (Borselli, 2012). A sanction for omission to provide information opens possibility of insurance contract cancellation, given that there was a defect of will during its conclusion. If a contract is concluded under fraud, a policyholder is entitled to request damage compensation (Serbia Law on Contracts and Torts, Articles 61, 65, 111, 268). Serbia Insurance Law Act also provides sanctions for failure to provide information. In the course of supervision, National Bank of Serbia is authorised to order an insurance company to eliminate illegalities and irregularities in any operations. A fine is envisaged as a sanction in the case that the prescribed information is not provided or not provided in a prescribed manner. An insurance company can even be left without a work permit if it gives false information about its operations or information that may mislead users of insurance service (Serbia Insurance Law, 2014, Articles 260 & 214).

Most often, insurers offer coverage of certain risks in several ways. Doing so allows policyholders to choose a variant of protection that suits them in substantive and financial terms. However, most small-business owners consider commercial-insurance offerings extremely complex and difficult to understand (Hoying et al., 2014). SMEs' managers have difficulties in choosing an optimal insurance product since they usually lack specific knowledge. For them it is not easy to understand insurance conditions that define the scope of risk coverage, the scope of insured risks and the insurance exclusions. When closing an insurance contract, it is necessary to study insurance conditions of several insurance companies in order to find coverage that provides the SME client with optimum protection. Many SMEs accept inadequate insurance coverage which does not provide optimal compensation of loss. These observations were made in the UK (Financial Conduct Authority, 2015). It was also noted that managers of SMEs who have suffered damage from floods, did not understand the scope of coverage obtained by concluding an insurance contract, or that the coverage is limited (Crichton, 2009). Insurance in case of flood,

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torrent and high water was an additional risk within the basic insurance covering the damages in case of fire. Those who suffered damage and had only the basic insurance package could not get coverage for the damage caused by floods.

Significance of Hiring Insurance Brokers for Optimal Coverage

When procuring insurance services SMEs can benefit from hiring a licensed insurance broker or a company specialized in insurance broking. SMEs have more complex insurance needs than retail clients but are not always more sophisticated buyers of insurance. Hiring a broker increases the chances of SME managers to obtain optimal insurance coverage according to their needs and financial resources. In United Kingdom many SMEs rely on the services of brokers to help buy insurance. However, in Serbia intermediaries in the collection of the total life insurance premium in 2015 accounted for only 9% and their share in the distribution channels for all types of insurance was only 7% (National Bank of Serbia, p. 14).

Indeed, the Serbian legislator has defined specific obligations for insurance brokers (Serbia Insurance Law, 2014, Article 94). This obligation is also present in comparative law and regulated in accordance with EU directives. For non-compliance with these obligations, a sanction is envisaged in the form of a fine (Serbia Insurance Law, 2014, Article 261). A broker reports to an ordering party or a third person for any damage caused by his omission to perform the obligation, or for its incorrect performance (Ivančević, 2014).

Brokers provide highly professional services specifically expressed when providing information and advice to the SME clients. The duty to advise a policyholder is also established for a broker. The broker is obliged to furnish the insured with all necessary advice and guidance in terms of circumstances valuable for closing and implementing the insurance contract. The duty of information means providing information that describes a product or a service (Ivančević, 2010) which relates to presentation of certain facts. Advisory service is preceded by an analysis of facts from collected information and provided by a person who advises. Recommendations should help the advised person to make a decision that is in his best interest.

As an expert in this field, a broker is obliged to analyze the dangers that the insured could face, define the specific insurance needs based on data provided by the insured, propose adequate insurance coverage, specify his advice and proposal for signing the contract with a specific insurer and mediate in the insurance procuring process in order to provide optimal coverage. Many SMEs in UK don't have contracted optimal insurance coverage especially because they did not understand. Obviously lack of adequate advice is a problem and consequently many SMEs do not use brokers to arrange their insurance (Crichton, 2009). Indirectly, it can be concluded that the situation in Serbia is similar.

Possible contribution of a broker does not end with the conclusion of a contract because during the term of the insurance contract there will appear other significant tasks (Ivančević, 2014, p.158). The last risk management phase is controlling and possibly revising the acts, procedures, measurements and plans for eliminating the risks. An SME risk manager can receive significant support from a broker in terms of risks transferred to the insurance company. After the contract becomes effective, the broker is obliged to review the content of the policy and contract, audit the performance of the contract and make a proposal for contract changes and annexes in the insured SME's optimal interest. The broker must provide necessary assistance to the insured while the contract is effective, as well as in case of the event covered by the insurance. The broker must make sure the insured has taken all the measures that enable it to exercise and

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protect contractual rights. During the contract validity all SME managers and employees must be aware of contractual obligations in order to prevent losing insurance coverage due to contract breaches.

The risk manager must be aware that insurance decreases the loss over a certain period of time. This way, static risk becomes reduced risk in terms of transferring the risk to the insurance company. For the insurer, the insured static risk becomes dynamic risk since two alternatives are possible: gain or loss (Sneyd, 2003, p.103) When the insured risk occurs, the insurer might not pay the necessary amount in a short period of time. This happens for various reasons, such as untimely insurer's reaction, the lack of resources, or an oversight by the insured SME, which represents a breach of the insurance contract and causes loss of the insurance coverage. By hiring a broker these new risks for SMEs can be reduced (Financial Conduct Authority, 2016). The broker is obliged by law to protect the insured's optimal interest during the closure of the insurance contract. He should clarify reasons why a certain insurance company was proposed, take care of insurance company's professional and other references, introduce the insured to all legal and economic connections with the specific insurer and provide professional support during contract realization in order to avoid any oversights by the insured.

Sometimes involvement of the broker does not guarantee that SMEs will be provided adequate coverage. A review of insurance brokers in the UK found that their service when arranging insurance for SMEs is not always consistent with customers' expectations (Financial Conduct Authority, 2015). Hence, the Association of British Insurers has published a brief guide whose purpose is to encourage SMEs to verify that the broker works in their best interests (ABI, 2016).

A Review of SME Packages in Serbian Insurance Companies

Most insurers work with SMEs according to general and special conditions for particular types of insurance products. Some insurance companies in Serbia are developing their marketing strategy on the basis of introducing new SME insurance products while others are focused on offering classic insurance support for SMEs. Therefore, some Serbian insurers have come to understand the essence of SMEs, their specific activities and are in fact offering special insurance packages. The author shall present the basic characteristics of the insurance products tailored to SMEs needs.

Dunav Insurance Company manages „*Business Bonus Packages*", which include different solutions for insuring certain activities of SMEs (Dunav, 2016). This insurer designed packages for retail, production and artisan industry, catering services (restaurants, cafes, and hotels), service industry such as beauty and spa services, as well as for the office, firms and agencies. Insurance contracts are closed for the period of up to one year. When it comes to price of insurance, the premium is lower compared to standard coverage offered within these packages. In case the insured SME decides to take two or three types of coverage in addition to basic package, 5% discount is granted. For all four types of coverage, 10% discount is granted. The insurer shall assess the damage within 24 hours and quickly process the request and pay for damages. The coverage that was completely or partially expended by the damages can be arranged again, within the remaining period and under favourable conditions.

Risk coverage can be arranged by combining risks from several packages. The basic insurance package includes compulsory coverage and a number of optional types of coverage in order to provide a comprehensive insurance protection. The basic package provides property protection against the consequences of: fire and other dangers, burglary theft and robbery, glass breakage, machines breakdown and other dangers as well as t employees insurance in case of an accident. The optional types of coverage are chosen according to specific needs of an SME industry sector: to insure machines, equipment and installations

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in case of a failure; business profit and income costs in case of a work interruption due to fire or to have comprehensive general liability insurance. Bonus types of coverage *Dunav Insurance Company* are also foreseen for each package. Each package offers the following bonus two types of coverage:

1. Increasing the insured sum for stocks in the selected period by 20% of the insurance sum for the stocks on each individual account;
2. Costs covering the door lock change due to key loss – 200 Euros per event and per year. Bonus coverage for employees' belongings due to burglary theft and robbery is offered with most packages. The coverage is 50 Euros per employee and per event and 200 Euros per year.

Property insurance is arranged as the insurance sum for each of the risks in the specific percentage of the basic-total insurance sum and with the individual risks with the exhausted insurance sum. The insured also participates in covering damages through franchise deductible. Minimal participation is foreseen for certain risks (burglary theft and robbery, machine breakdown and other dangers, as well as the optional coverage for the work interruption due to fire and other dangers).

Accident insurance covers the death risk in case of an accident and the total permanent disability in three combinations of the insured sums.

Grawe Insurance Group offers SMEs their1 ''Entrepreneur'' package, (Grawe, 2016). Forty different kinds of SMEs can be insured through the package, such as shops, pensions, restaurants and cafes, gyms, kindergartens, schools, retirement homes. It includes property insurance ''at first risk'', without an expert's assessment. Insurance within the package can be agreed on for the period of one to ten years, with the possibility or renewal. Premium can be paid on instalment plan, whereas an instalment cannot be lower than 30 Euros. The package provides insurance of: office space in objects and condominiums (up to 250 m^2 or up to 500 m^2 for certain SMEs, used for entrepreneurial purposes), equipment, machines and furniture, goods, stocks and merchandise.

According to client's choice, insurance provides protection against the following risks: fire and natural disasters, flooding, burglary theft and glass breakage. Insurance sum varies from 10,000 to 75,000 Euros, whereas equal insurance sum is valid for each of the insured risks.

Wiener Stadtishe insurance company offers the „*Insured business"package* intended for micro businesses and SMEs, Wiener (2016). It provides SMEs with the possibility to insure their property through a compulsory package for equipment, stocks, third parties, employees' belongings, and money and cash assets. Within the optional package, the insured can insure its own and the third party's construction sites, as well as investments into others' construction sites.

Basic package provides protection against the following risks: fire, thunder strike, explosion, windstorm, hail, civil unrest, snow pressure, outflow of water from installations. The coverage can be expanded for the case of work interruption due to any of the risks from the basic coverage. The coverage can be additionally arranged for material damages caused by the following risks: flood and high water, burglary theft and robbery, cash on hand in the cash register of the premises exclusively against the risk of robbery, as well as the machines, appliances and equipment breakdown.

The coverage may also be expanded in terms of optional package covering for damage caused by glass breakage at the construction site and waterworks and sewage installations breakdown at the construction site. As additional coverage, insurance of portable equipment can also be arranged, as well as general liability insurance for damages to the third parties, with the possibility to expand it to the employer's liability.

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AXA insurance offers firms, micro firms and SMEs specially designed insurance package called *''Complete BUSINESS''* (AXA, 2016). The insurer provides damage assessment within 48 hours from the claim and payment of 50% of the damage in advance, so that the insured could eliminate the consequences of damage and continue with operation.

This package covers the insurance of office space, employees, equipment, stocks, glass and advertisements, SME's guests and service users, money, computer equipment, as well as SME's liability towards third parties and employees. Three insurance packages are available: Standard, Superior and VIP.

VIP package provides insurance against the basic risks: fire, hail, thunder strike, explosion and other; outflow of water from installations, flood, high water, snowmelt, glass breakage, general liability, burglary theft and robbery, machine and installation breakdown, computer equipment insurance. Superior package does not cover for the machine and installation breakdown or for computer equipment insurance. Besides these two risks, standard package does not cover burglary theft and robbery.

Optional coverage can be arranged for all the packages, including the protection against the consequences of landslide, earthquake, employee insurance against work-related injury whereas treatment costs are covered, employer's liability insurance, and protecting insured's users against work-related injury.

Besides basic and additional coverage, bonus coverage is offered as well: insurance coverage for fixed costs caused by work interruption due to fire, insurance coverage for renting a new space due to work interruption caused by fire or explosion, insurance coverage for the production of marketing materials necessary for business promotion after business continuation, coverage for the construction and erection works, coverage for the damage on summer and winter gardens of the cafes and restaurants and key person insurance.

Therefore, offers of Serbian Insurers targeting SMEs are various. Dunav insurance has included in the basic package the employee insurance against accidents, but for most insurers it is contracted on demand. With AXA Insurance employees insurance may be stipulated as collateral, as well as accident insurance for customers insured.

Most insurers offer SMEs property insurance to the sum insured but Grawe Insurance offers first risk. Insurance from liability to third parties in Dunav can be arranged as an optional coverage, while in Wiener Stadtishe this can be additional coverage and liability insurance to employees. Bonus coverage are offered in packages of Dunav Insurance and AXA Insurance.

Variety offer Serbian Insurers shows that SMEs have a choice but also a difficult task to choose among various options. In order to conclude a contract it is essential to obtain assistance from insurers or brokers.

Review of coverage of certain risks through packages is shown in Table 1[1].

FUTURE RESEARCH DIRECTIONS

Overcoming risks through insurance in the normal course of SME business is left to assessment and evaluation of their managers. Insurers are recommended to engage more and support SMEs in the process of risk management. On its side the state can encourage and streamline SMEs to insure against financial loss by providing subsidies for insurance or other financial incentives such as introduction of tax relief for SMEs if they transfer certain risks on insurance companies.

There is an imperative need for the state to identify and take specific measures, using suitable methods, in order to protect from damages that are the result of fundamental risks. The SME sector is considered to be further threatened by the fact that as a rule the state does not allocate funds for the rehabilitation of

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Table 1. Examples of SME risk coverage in packages

Type of Risk	Dunav	Grawe	Wiener Stadtishe	AXA
Fire	Basic	Basic	Basic	Standard
Thunder strike	Basic	Basic	Basic	Standard
Explosion	Basic	no	Basic	Standard
Windstorm	Basic	Basic	Basic	no
Flood and high water	Basic	no	Additionally	Standard
Hail	Basic	Basic	Basic	Standard
Torrent	Basic	no	Additionally	
Snow pressure	no	no	Basic	no
Snowmelt	no	no	no	Standard
Earthquakes	no	no	no	Collateral
Landslides	no	no	no	Collateral
Outflow of water from installations	Basic	Basic	Basic	Standard
Glass breakage	Basic	Basic	no	Standard
Burglary theft and robbery	Basic	Basic	no	Superior
Civil unrest	no	no	Additionally	Standard
Robbery during the manipulation of money at the box office	no	no	Additionally	no
Machine and installation breakdown	Basic	no	No	VIP
Computer equipment insurance	no	no	No	VIP

Source: Own presentation of the author.

the consequences on incurred losses so that they are actually left to themselves and their own resources. For this purpose some of the solutions that have given good results in other states, or some of the suggestions of experts can be applied.

It would be important to reinforce awareness of SMEs about offers, opportunities and benefits of insurance. Insurers will need to simplify product offerings and become proficient at providing customized counsel. The state and the educational system have special responsibility to develop and improve models of financial education among citizens. Socially responsible behavior of insurance companies can be expressed through the support of the state, educational institutions and non-governmental organizations in the process of financial education modeled on activities carried out in other countries. Clearly, the state also has an interest in developing proper training of SMEs. In this way it contributes to the realization of the social function of insurance that is manifested through financial security, raising living standards and creating a favorable impact on the overall social welfare.

CONCLUSION

In developed countries the share of SMEs in total premium is much more significant than in Serbia and this affects the number of SMEs and the culture of security. In their business operations SMEs in Serbia underutilize risk insurance. Most often the payment of insurance premiums is considered an unnecessary

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and not a necessary business expense. Insurance can provide protection from many unforeseen events that may cause losses in business. The chapter has showed that SMEs in the process of risk management have similar weaknesses in Serbia and in the countries with developed markets. SMEs need assistance in risk management as well as appropriate advice and technical support from insurance brokers. In fact, SMEs are in need of the same kind of support that is normally provided to consumers.

Properly choosing risks that will be transferred to insurance, selecting appropriate ways of providing insurance coverage is in the function of SME development. Insurance therefore contributes to the stability and security of SMEs. Through preventive and repressive measures insurers encourage conscientious and responsible business of their policyholders. Consequently, insurance becomes high-quality support for clients, particularly by providing necessary suggestions, advice and in assessing individual risks in SMEs.

SME businesses operate in a tough and changing environment. Their operations are still held to the same standards of corporate governance, employee welfare and liability as in larger companies. They often have to manage risks with fewer resources in less time besides concerns of the day to day business. SMEs therefore require a suitable packaged insurance policy which will protect their assets, liabilities and employees from the risks associated with operating a business. Insurers should be able to adapt and improve their products aimed at the needs of SMEs.

When evaluating the insurer SMEs need to study and understand the insurance terms, comparing the amount of premium for a particular volume of required insurance coverage for individual insurers. Conclusion of appropriate insurance contracts that will meet their actual needs requires expertise and quality assessment of many factors. Hiring a professional person, a broker, is a good option for SME risk optimization, because, as a rule, these entities do not have their own experts, or are exposed to complex risks in their business operations.

It is realistic to conclude that optimization of risk management for SMEs contributes to the stability of their business, their development and overall social security, encourages their investment in innovation and consequently allows greater degree of their overall market exposure.

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KEY TERMS AND DEFINITIONS

Insurance Beneficiary: One who will receive the benefit in the event of an insured risk.

Insurance Premium: Amount a policyholder or contractor is obliged to pay as compensation for the provision of insurance protection and represents a measure of risk.

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Insurance Policy: The basic written document that accompanies an act of insurance and evidence of the conclusion of insurance containing all essential ingredients of a contract.

Insured Subject Matter: The subject clearly stated in the insurance policy specifying what is ensured. The existence of the object of insurance with certain characteristics is an essential precondition for the conclusion and duration of insurance.

Insureable Risk: The risk covered by insurance if an insured event takes place provided possible loss is plainly explained, it is accidental, it is part of a similar group of risks and the insurer must be able to compute the probability of a loss.

Over-Insurance: Insurance sum is greater than the actual value of property insured.

Property Insurance: Indemnity for damage caused by realization of the insured risk to the extent suffered.

Risks Prevention: Measures aimed at eliminating the possibility of the event of loss such as installation of alarm systems which reduces the risk of burglary and which simultaneously reduces insurance costs.

Sum Insured: The amount paid to the insured if the insured event occurs representing the upper limit of the basic obligations of insurers.

The First Risk, *First Loss Insurance***:** Property insurance policy that grants only partial insurance where the policyholder agrees to accept an amount less than the full value of damaged, destroyed or stolen items/property. In return, the insurer agrees to not penalize the policyholder for under-insuring their goods or property.

Underinsurance: The sum insured is less than the value of insured property (in case of damages paid to the extent of the sum insured).

ENDNOTE

[1] Editors' note: This is just an example of the combination of possible insurance products described in earlier sections of this chapter.

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Chapter 27
Regression Analysis for Environmental Practices:
Participation among Finnish SMEs

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ABSTRACT

The aim of this research is to shed light on establishing a successful integration of environmental practices among small and medium enterprises (SMEs). The purpose is to develop a better understanding of what drives SME participation into potential environmental practices within a context in Finland. Specific objectives are to: 1) assess the willingness to participate (WTP) among Finnish SMEs based on four drivers - financial performance, internal readiness, supplier pressure and governmental regulations; 2) separate respondents into demographical subgroups based on their WTP; and 3) determine features that characterize Finnish SMEs which are WTP based from the studied sample.

INTRODUCTION

There has been increasing pressure from public institutions, consumers as well as non-governmental agencies regarding environmental performance of business industries due to their association as being the most visible contributor to environmental pollution. In such conditions, firms have begun to enhance competitiveness through environmental performance by minimizing environmental impact in their business activities. Despite emerging literature on various justifications on factors influencing firms in green participation, the emphasis is mostly on large firms while SMEs remain relatively unknown. SMEs are a source of job creation and introducing innovation and competition to the market; however, it is estimated that SMEs account for around 60 percent of carbon dioxide emissions (Revell & Blackburn, 2007). In

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addition, they also contribute 70 percent of the total global pollution (Aragón-Correa & Sharma, 2008). According to previous research, little attention was paid to SMEs which represent suppliers within the supply chain. As a result, SME suppliers can be treated as missing links between SME environmental management and green issues in the supply chain management.

Most Finnish SMEs in the manufacturing sector are part of the value chain of domestic large companies. In order to compete globally, large companies have to fulfill the growing needs of environmental practices in their operations. In order to remain in the value chain, SMEs have to incorporate green elements in their operations as well. The government has played their role in providing a number of incentives to assist in the installation of environmental practices among the SMEs. However, it is interesting to note that a relatively high proportion of firms receiving public support have yet to be translated into a higher proportion of SMEs offering these products or investing in resource efficiency (DG Enterprise and Industry, 2014).

Therefore, the aim of this study is to develop a better understanding of drivers that can influence potential environmental practices in the context of Finnish SMEs because each country has their own particular characteristics such as policies, natural assets and technological capabilities. The objectives are to:

1. Assess the willingness to participate (WTP) among Finnish SMEs based on four drivers - financial performance, internal readiness, supplier pressure and governmental regulations which were highlighted in the literature
2. Separate respondents into demographical subgroups based on their WTP
3. Determine features that characterize SMEs that are WTP based from the studied sample.

The study addressed two important gaps in literature from the perspective of the practitioner and academia. It is essential for practitioners to recognize the driving factors of green participation for the benefit of future strategy formulation as well as to extend knowledge from a new point of view in the academia based on a sample from Finnish SMEs.

This study gave rise to a current discussion out of existing studies with an extension on the influence of financial performance on Finnish SMEs toward their WTP in environmental management. The conceptual model was partly based on a framework by Lee (2008) with an additional variable focusing on the influence of financial performance. The study attempted to find out the possibility of financial performance to become an antecedent to WTP in environmental management.

BACKGROUND

The Small Business Act (SBA) for Europe conducts a review of the act annually to provide a better understanding of recent trends and national policies related to SMEs in Europe. According to the DG GROW (2015), the estimated number of Finnish SMEs was 219,584 which covered 63.7 percent of the employment rate in Finland and did not include enterprises within agriculture, forestry, fisheries, education and health industry. This implies their importance as a job creator and contributor to national value added industries. Finland being one of the Europe Union (EU) member states is not excluded from being monitored in policy measures which incorporate ten principles including environmental factors. In a nutshell, the 2013 review indicated that the environmental performance of Finnish SMEs were all

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above average and ranked at the top of the list of all the EU member states. Finnish SMEs scored remarkably well in resource efficiency practices along with the development of green products and services. Therefore, this study is relevant to be conducted within the Finnish SME context which could provide an indicator to other SME populations with regards to environmental focus. Moreover, Finnish SMEs are recovering from the economic crisis in 2008 and expecting future growth especially in internalization. Consequently, this study could enhance understanding on how SMEs are stimulated to strengthen their environmental performance.

Previous empirical literature has used several theoretical perspectives to explore the internal driver(s) of a firm to respond to the demands of environmental concerns. Based on strategy resource based logic, both financial and non-financial resources are crucial to support any firm to continue to develop certain capabilities in order to enhance overall competitiveness (Wernerfelt, 1984, 1995). The availability of internal resources enables for the type of strategy that they intend to formulate and compete in. The major difference between small and large firms is the amount of resources that are available. Small firms are often associated with an impression that they are very limited in resources and less capable to invest for a new particular strategy that can bring them more advantages in market positioning. In conjunction with environmental practices, most SMEs are financially incapable of availing their firm to be more environmentally responsible oriented (Pacheco, Dean & Payne, 2010; Roberts, Lawson & Nicholls, 2006 and Simpson, Taylor & Barker, 2004). Moreover, SMEs also lack the competencies that it takes to bring them to become more environmentally active. Limitations of knowledgeable staff on environmental regulations and the ability to meet environmental performance requirements suppress the interest to participate.

Financial resource is a key driver to stimulate the adoption of environmental practices (Ghisetti, 2015). In order to develop green strategies, companies require huge amounts of investment which increase the role of public and private actors to support the initiatives. Financial constraints always reduce the ability of firms to innovate (Savignac, 2008). In view of these needs, Collector Bank Ab (a private credit company, formerly known as Collector Finland Oy) is interested to seek a specific role of finance as a driver to sustainability growth within Finnish SMEs. This study could promote their understanding in decision-making on credit granting processes and indirectly remove the barrier of environmental practices adoption. Therefore, this study separates the dimensions of finance from the previous framework into a new variable named financial performance. In this study, financial performance is the current financial measures of each SME as indicated in Table 1. On the other hand, readiness is referring to internal characteristics of SMEs which permits environmental practices adoption. Consequently, this study is interested to examine whether the internal factors of Finnish SMEs stimulate them to participate in green practices.

It is common for global players to have suppliers from all over the world to take advantage of the lowest cost source possible in order to minimize the total cost of end products. These type of suppliers are mostly SMEs (Walton, Handfield & Melnyk, 1998). However, this approach could end up with far more costly consequences if the products are rejected due to their non-compliance with environmentally oriented markets. In such situations, large firms have to assure their suppliers to integrate environmental standards required by their targeted markets. Consequently, SMEs are pressured to integrate environmental considerations into their business processes. In this respect, Asian SMEs that supply goods to foreign markets have to consider getting accreditation such as ISO 14001 to fulfill the standards of their buyers to secure their position as suppliers (Lee & Klassen, 2008; Rao, 2007; Zhu, Geng, Fujita & Hashimoto, 2010 and Zhu, Sarkis & Geng, 2005).

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On the other hand, literature has highlighted the importance of regulations as a significant driver of environmental participation among firms. Regulatory pressures are viewed from penalties or fines issued to industrial organizations that are found to violate the environment. SMEs are always associated with being reluctant to adopt environmental practices in their business operations and therefore, regulation is an important driver for them to initiate the transition with at least minimal participation. Moreover, government plays an important role to stimulate awareness among SMEs by providing appropriate supports to promote environmental practices adoption (Lee, 2008). Therefore, buyer's practices and government involvement are chosen as external factors which stimulate the WTP in environmental practices among Finnish SMEs. Buyer's practices refer to the buyer's practices to improve environmental performance of their suppliers which includes supplier assessment criteria, the environmental performance of incoming supplies and environmental focus supporting activities. Meanwhile, government' involvement includes environmental efforts related to technical and financial incentives, economic benefit such as tax reduction and infrastructure supports. Following are the hypotheses of the study.

Hypothesis$_1$: Financial performance has a significant influence on the willingness to participate in environmental practices among Finnish SMEs.

Hypothesis$_2$: Firm readiness has a significant influence on the willingness to participate in environmental practices among Finnish SMEs.

Hypothesis$_3$: Buyer pressure has a significant influence on the willingness to participate in environmental practices among Finnish SMEs.

Hypothesis$_4$: Governmental involvement has a significant influence on the willingness to participate in environmental practices among Finnish SMEs.

Table 1 lists all the items measured under each variable.

METHOD

This study used primarily a quantitative approach with a survey method. The conceptual models of this study is partly based on the framework developed by Lee S. S.-Y. (2008) with an extension of additional variable that is focusing on the influence of financial performance toward WTP in green practices among Finnish SMEs. Hubbard and Armstrong, (1994) stated that a successful replication leads to reliability of results and a replication with extension provides an enhancement generalization of the findings beyond the prior context.

According to DG GROW (2015), the number of Finnish SMEs is 219,584. Therefore, the research samples of this study totaled 383 in accordance to Krejcie and Morgan (1970) who indicated that it is sufficient and valid to represent the population. The survey was conducted online for the duration of two months from May to April 2015. The total response compiled was 170 sets which was equivalent to 44.3 percent response rate.

The survey questionnaire contained 32 items; 7 related to the demographic and 25 related to the conceptual framework and measured on a seven-point Likert scale from strongly disagree to strongly agree. Cronbach's alpha value for all constructs was 0.769 which provided sufficient value for the data to be used in this study.

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Table 1. Conceptual framework

Internal drivers	
Readiness	**Financial performance**
• Managers are aware of the importance of environmental issues • Environmental issues are well communicated in our company • Implementing environmental management system • Will implement environmental practices if we can have financial support • Has knowledge related to emerging environmental issues • Has human resources to deal with emerging environmental issues	• Company's turnover category (million euro) • Has financial reserves to invest in environmental technology • Firm's current financial situation • Firm's financial situation over the last few years • Firm's financial situation for the coming few years
External drivers	
Buyer's influence	**Government' involvement**
• Incorporate environmental considerations in selecting their supplies and suppliers. • Firm's financial situation for the coming few years • Have interest in greening the supply chain. • Environmental management system (e.g. ISO 14001). • Provide us with environmental training, education or technical assistance.	• Coordinate the environmental practices initiatives • Increase funds for the environmental practices initiatives • Provide guidelines to SMEs in environmental management practices. • Spread knowledge of environmental management. • Build infrastructure for facilitating environmental practices initiatives.
Company Willingness to Participate	
• Aware of the environmental management practices initiatives. • Willing to participate in the environmental management practices initiatives. • Have managers who have interest in the environmental management practices initiatives. • Expects environmental and economic benefits from the environmental management practices initiatives	

Source: Own presentation of authors.

The researchers performed analysis of the data and exploration of relationships determined through descriptive and inferential statistics. All research objectives and hypotheses were addressed accordingly. First, the dispersion of respondents were described and analyzed. Next the correlation results were evaluated to determine the relationship between the drivers, company profiles and their participation in green practices. Lastly the regression results were tested to evaluate the association of the drivers in terms of the participation of Finnish SMEs in green practices1.

ANALYSIS AND FINDINGS FROM HYPOTHESES TESTING

Demographic Profile of Respondents

Table 2 describes the dispersion of respondents with respect to their demographic variables. 170 SMEs took part in the survey and the majority of them were from metal, building, wholesale and retail trade industries. 66 percent of the respondents belonged to entrepreneur job positions. A cumulative percentage of 94 percent generated up to 10 million euro of sales turnover within a year. Two-thirds of the total number of respondents comprised family-oriented companies with more than 20 years of operating experience. A combined percentage of 80 percent of the respondents belonged to SMEs with less than 19 employees. More than half of the respondents did not export their products or services internationally.

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Table 2. Frequencies of demographic data by types of industries

	Metal	Electric / Electronic	Building / Construction	Rubber/ Plastic	Chemical	ICT	Forest Based Products	Food	Energy	Wholesale and Retail Trade	Others	Total	Percentage
N	20	8	29	3	4	14	8	6	6	15	57	170	100
Job Position													
Entrepreneur	13	3	20	3	2	9	7	3	5	10	37	112	65,9
Shareholder	2	2	5	0	1	2	1	2	0	2	9	26	15,3
Chairman	1	1	1	0	0	3	0	1	0	0	2	9	5,3
Others	4	2	3	0	1	0	0	0	1	3	9	23	13,5
Company's Turnover													
0-1	4	4	11	1	0	7	2	0	0	5	18	52	30,6
1-2	4	0	7	0	1	2	1	2	3	2	16	38	22,4
2-10	11	3	9	2	2	5	4	4	3	6	21	70	41,2
10-20	1	1	1	0	0	0	1	0	0	1	0	5	2,9
20-100	0	0	1	0	0	0	0	0	0	1	2	4	2,4
100	0	0	0	0	1	0	0	0	0	0	0	1	0,6
Company's Employees													
1-4	4	2	8	0	0	5	4	1	0	2	16	42	24,7
5-9	7	3	10	2	1	1	1	1	1	3	14	44	25,9
10-19	2	2	8	1	1	4	1	2	3	8	19	51	30,0
20-49	6	0	0	0	1	4	1	1	2	0	6	21	12,4
50-99	1	1	2	0	0	0	0	1	0	1	1	7	4,1
100	0	0	1	0	1	0	1	0	0	1	1	5	2,9
Company orientation													
Family	14	7	18	1	4	11	7	4	3	10	33	112	65,9
Non-family	6	1	11	2	0	3	1	2	3	5	24	58	34,1
Age of the company													
0-5	1	0	2	0	1	1	0	1	0	3	5	14	8,2
6-10	4	1	5	1	0	2	0	0	3	2	13	31	18,2
11-15	1	0	4	0	0	3	1	0	1	2	6	18	10,6
16-20	0	0	3	0	1	3	0	0	0	0	5	12	7,1
>20	14	7	15	2	2	5	7	5	2	8	28	95	55,9
Percentage of sales for export													
0	10	4	17	1	0	9	3	2	3	9	33	91	53,5
1-19	5	2	6	0	4	1	5	3	1	4	13	44	25,9
20-39	0	1	2	1	0	1	0	0	1	1	6	13	7,6
40-59	2	0	3	1	0	1	0	0	1	0	0	8	4,7
60-79	1	0	0	0	0	1	0	0	0	0	1	3	1,8
80-100	2	1	1	0	0	1	0	1	0	1	4	11	6,5

Source: Own presentation of authors.

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Percentage Distribution of Drivers

Figure 1 is the percentage distribution of agreement for each dimension under readiness. At first glance, 50 to 60 percent of the respondents agreed with all the measurements and up to 80 percent were aware of environmental issues. The percentage of Finnish SMEs which have already implemented environmental management systems exceeded 60 percent. This reflected a considerable level of participation with regards to environmental practices. In terms of human resources, half of the respondents already have the knowledge and the employees related to environmental concerns. Their low priority on environmental practices investment is signified by varying responses on issues of implementation with financial support (see Figure 1).

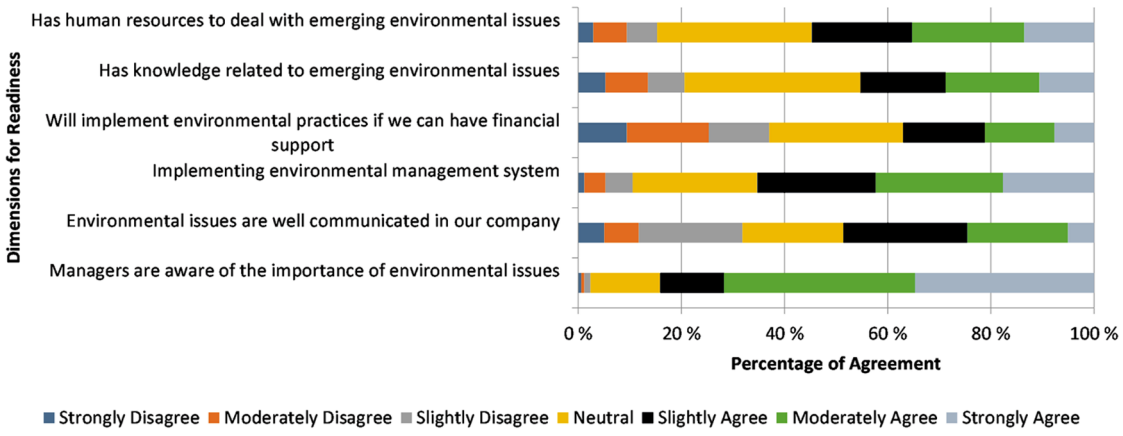
As indicated in Figure 2, even though 50 percent of their buyers incorporated environmental elements in choosing their supplies and suppliers, other indicators suggested weak buyer influence within the respondents' value chain pertaining to environmental considerations. Only 10 percent of their buyers had initiatives to offer environmental knowledge or skills enhancement. Their buyers' slight interest of greening the supply chain with low request on environmental concerns indicated their relatively minor role in stimulating respondent participation.

Meanwhile, Figure 3 illustrates the distribution of percentage for government drivers. The percentage of respondents who chose to be neutral was just as many as those who disagreed to government linked measures. It seemed that only a modest 20 percent were receptive to governmental support in promoting environmental concerns in their company.

Correlation Analysis

The strength of prediction of one variable to another is indicated by a correlation coefficient which ranges from +1.00 to -1.00. The value of +1.00 suggests a strong positive relationship, whilst -1.00 shows a strong negative relationship and 0.00 indicates no relationship. Table 3 shows the correlation coefficient values between the dependent variable in this study, which is the willingness of Finnish SMEs to participate in environmental practices (WTP) and their respective independent variables: readiness, buyer pressure, governmental influence and financial performance.

Figure 1. Percentage level of agreement on dimensions under readiness
Source: *Own presentation of authors.*



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Figure 2. Percentage level of agreement on dimensions under buyer driver
Source: *Own presentation of authors.*

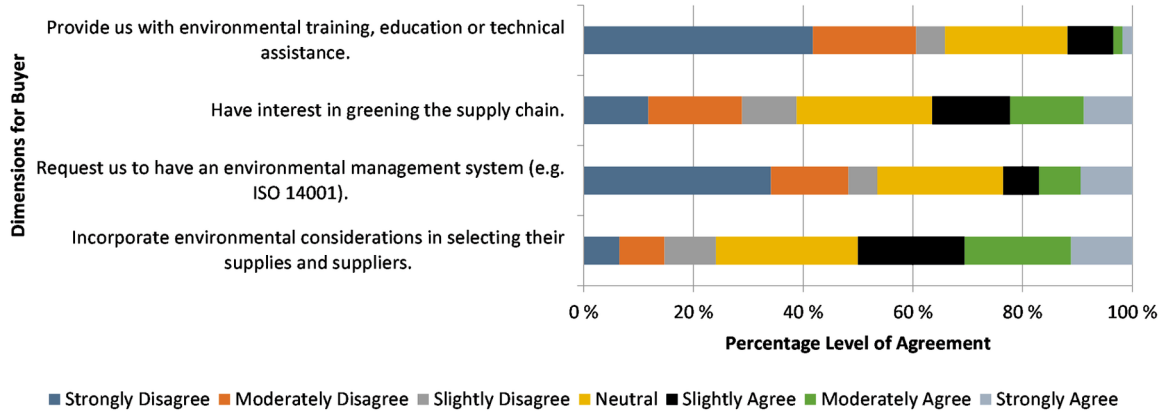
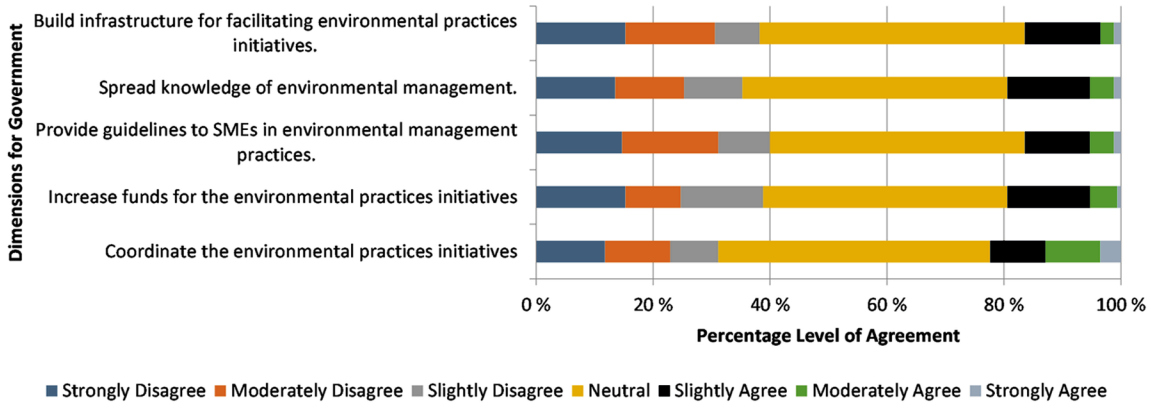


Figure 3. Percentage level of agreement on dimensions under governmental drivers
Source: *Own presentation of authors.*



As illustrated in Table 3, all relationships are significant toward WTP. Company readiness with organizational resources associated with environmental concerns has the highest correlation value of 0.619. This is followed by buyer pressure, 0.529 and governmental influence, 0.439. Although significantly correlated, financial performance holds the lowest correlation value toward WTP with 0.365.

The researchers were interested to find out the relationship of the respondents' profile with their WTP. Table 4 portrays the correlation coefficient values according to demographical categories. Post, company turnover as well as company size appeared to have a significant relationship with WTP. Even though the strength of the relationships was moderate, it provided potential insights on certain groups within these variables which could diversify the level of WTP.

After identifying the significant demographic variables, the results of the correlation analysis between the drivers and WTP were divided according to the respective groups. The reason they were divided was to trace groups that were more driven toward WTP by comparing the strength of their correlation values with those in Table 3. The status of each relationship is indicated in the status column. As illustrated in Table 5, there are 15 relationships with higher correlation coefficient values. The relationship which was

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Table 3. Pearson correlations between drivers and willingness to participate

	1	2	3	4	5
1. Readiness	1				
2. Buyer	.475**	1			
3. Government	.284**	.486**	1		
4. Financial	.336**	.256**	.271**	1	
5. Willingness	.619**	.529**	.439**	.365**	1

**. Correlation is significant at the 0.01 level (2-tailed)

Source: Calculation of authors.

Table 4. Spearman correlations between demographic variables and willingness to participate

	Job position	Company turnover (million euro)	Company size	Type of industry	Ownership of the company	Age of the company	Sales exporting
Spearman Coefficient	,187*	,204**	,179*	,027	-,021	,031	,123

Source: Calculation of authors.

most significant was within a group with a company size of more than 100 employees with governmental involvement and WTP with the r value of 0.960 which suggested a very strong relationship. Moreover, a group of company turnover with one to two million also represented improved relationships in terms of their readiness, buyer pressure and governmental involvement toward WTP.

Regression Analysis

Regression analysis was performed to investigate the degree of company readiness, buyer pressure, governmental pressure and financial performance of a company to predict the participation of Finnish SMEs in environmentally sustainable practices (WTP). The result of the regression is summarized in Table 6 which provides all the parameters and if the p value < 0.05, it would indicate that the driver would have a significant impact on the WTP. The normality test of the residuals was also performed and the requirement for normality was met which suggests linear relationship between the dependent and independent variables. A significant regression equation was found ($F(4,165)=40.940$, $p<.000$) with an R square of 0.498. The predicted WTP is equal to -2.396 with + 0.418 readiness, + 0.185 buyer pressure, + 0.153 governmental pressure, and + 0.196 financial performance. The value of R square suggests that the drivers investigated provided 49.8 percent variation in determining Finnish SME participation. Based on the coefficient table, all factors were significant and supported the participation with readiness as the most influential factor.

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Table 5. Pearson correlation between drivers and willingness to participate for each sub-group

Demographic Variables		Readiness	Status	Buyer	Status	Government	Status	Financial	Status
Job Positions	Entrepreneur	.598**	x	,584**	Improve	,557**	Improve	.384**	Improve
	Shareholders	.668**	Improve	.462*	x	.369	x	.299	x
	Chairman	-.250	x	-.013	x	-.241	x	-.183	x
	Others	.736**	Improve	.467*	x	-.048	x	.413	x
Company's Turnover (millions)	0-1	.359**	x	.542**	Improve	.456**	Improve	.254	x
	1-2	.794**	Improve	.611**	Improve	.564**	Improve	.278	x
	2-10	.644**	Improve	.404**	x	.270*	x	.329**	x
	10-20	.748	x	.736	x	.919*	x	.359	x
	20-100	-.796	x	.108	x	.483	x	.584	x
Company Size	1-4	.448**	x	.643**	Improve	.427**	x	.438**	Improve
	5-9	.598**	x	.463**	x	.324*	x	.113	x
	10-19	.744**	Improve	.519**	x	.391**	x	.238	x
	20-49	.633**	Improve	.206	x	.617**	Improve	.379	x
	50-99	-.196	x	.245	x	.677	x	.728	x
	100	.799	x	.771	x	.960**	Improve	.145	x

Source: Calculation of authors.

Table 6. Multiple regression models for willingness of SMEs to participate in green practices

Model Summary				ANOVA		Coefficients		
R	R^2	Adjust R^2	SEE	F	Sig.	Independent Variables	B	Sig.
.706a	.498	.486	3.81804	40.940	.000b	Constant	-2.396	0.175
						Readiness	0.418	0.000
						Buyer	0.185	0.004
						Government	0.153	0.004
						Financial	0.196	0.050

b. Predictors: (Constant), Government, Readiness, Buyer, Financial
Source: Calculation of authors.

DISCUSSION

This research explored how Finnish SMEs reacted toward driving factors of their behavior to participate in environmental practices. The implications of the study can be useful for SMEs and large-sized companies as well as governments which continuously strive to improve environmental performance along the value chain within nations. Based on the findings, it can be concluded that all hypotheses proposed at the beginning of the study were supported.

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Discussion of Hypothesis 1: Readiness has Significant Influence on the Willingness to Participate in Environmental Practices among Finnish SMEs

Regarding the extent of readiness as a driver toward WTP, the findings suggested that the majority of Finnish SMEs were stimulated to some extent. There exists a significant association between organizational resources and capabilities with environmental concerns towards WTP given a high correlation coefficient. The findings supported the notion embedded within resource based views which claimed that companies could sustain competitive advantage based on internal firm characteristics (Barney, 2001a, 2001b and Wernerfelt, 1984, 1995). Interestingly, the results suggested that more than 60 percent of Finnish SMEs are already involved in environmental practices by engaging environmental management systems within their operational systems. This is consistent with the findings of TNS Political & Social (March 2012b) which reported almost 93 percent of EU SMEs are using at least an approach to become more resource efficient. More than 80 percent of the companies are aware of emerging environmental issues although it is moderately communicated internally. In Finland, SMEs are more likely to be conscious of the rising cost of non-renewable energy and most of them are supporting efforts to look for alternative renewable energy solutions which are actively developed within the country. Human capital plays a vital role to ensure the successful growth of a company. Half of the respondents claimed that they have the knowledge and skills in environmental concerns. Universities in Finland provide assistance initiatives through regular attempts to engage their SMEs in training with an environmental focus (DG Enterprise and Industry, 2014). Dynamic capabilities development through employee empowerment could be achieved through these opportunities. SMEs should be mindful that green practices lead to long term cost efficiency as well as promoting synergy among their current and potential buyers. They should put more effort in gradually improving their internal readiness capabilities through training to develop skills and competencies among their human resources and also exploiting the wide-ranging potential for enhancing energy efficiency in their operations.

This highlights the importance of flexibility development within a company for future adaptability to the dynamics of a market. In order to sustain a competitive advantage, companies have to develop inbuilt flexibility within their value chain to face the uncertainties of future global environmental markets.

Discussion of Hypothesis 2: Buyer Practices have Significant Influence on the Willingness to Participate in Environmental Practices among Finnish SMEs

This study also indicated an important influence on buyer practices and governmental involvement. Although more than half of the respondents did not export their products or services internationally, 50 percent of the respondents' buyers strongly incorporated environmental requirements in conducting business transactions. This could explain the reason that more than half of them have already implemented environmental management systems. Even though this does not associate largely with international environmental regulations and requirements, effects of second tier regulations are seemingly delivered through the value chain. Furthermore, Finnish SMEs are largely attached to the value chains of large domestic companies. It can be seen that medium-sized companies with more than a 100 employees are very strongly stimulated by buyer pressure as compared to smaller-sized companies2.

Only 10 percent of buyers include knowledge and skills enhancement assistance which suggests less urgency of environmental needs in supplies. The buyers could be relying on government support to facilitate the SMEs with regards to environmental concerns. The interest to promote environmental

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practices in the value chain has drawn a variety of responses which implies that they have yet to see it as a main competitive advantage. In this case, the external network which is the buyer provides only moderate pressure to Finnish SMEs to mobilize their internal resources and capabilities for environmental performance.

Discussion of Hypothesis 3: Governmental Involvement has Significant Influence on the Willingness to Participate in Environmental Practices among Finnish SMEs

Based on the results, most of the respondents are sitting on the fence with regards to governmental involvement in implementing green initiatives in the value chain. Essentially, in Finland there is SITRA (The Finnish National Fund for Research and Development), an environmental program to support the creation of start-up companies with an environmental focus as well as to promote specific markets. Furthermore, the government provides support to two of the main industries in Finland i.e., metal and construction. For the construction industry, enterprises as well as research institutes with the government's assistance have developed products and processes which are embedded into construction projects such as heating and cooling systems. Likewise, awareness campaigns are also conducted within the metal industry. The government has also been providing resource-efficiency improvement support to assist companies to enhance their environmental performance (DG Enterprise and Industry, 2014). Finnish SMEs also ranked second amongst EU SMEs for their interest in bidding for a public procurement which require them to include environmental practices (TNS Political & Social, March 2012a). This suggests that Finnish government has managed to stimulate them to some extent. However, based on the measures of this study, these efforts have not yet reached the Finnish SMEs as a whole. It is recommended that the government provides indirect assistance such as by promoting collaborative opportunities between SMEs and large companies.

Discussion of Hypothesis 4: Financial Performance has Significant Influence on the Willingness to Participate in Environmental Practices among Finnish SMEs

Internal source of financing is not a strong determinant for Finnish SMEs to participate in environmental practices based on a weak relationship coefficient. It has been argued that the SMEs' lack of participation is mainly due to their financial constraints to fund the adoption. Apparently, this research suggests that financial performance led slightly for Finnish SMEs to actively increase their environmental performance. Although SMEs' economic development in Finland has recovered since the financial crisis in 2008, the study has shown that they could possibly have other concerns other than being environmentally oriented (DG Enterprise and Industry, 2014). Varying responses on the issue of 'environmental implementation with financial support' reflects the priority of Finnish SMEs toward environmental practices adoption which is perceived more like an option rather than a need.

Nevertheless, the demographical variable on 'sales turnover' has a significant relationship with WTP. It appears that rather than higher sales turnover, Finnish SMEs with a 'one to two million euro sales turnover' and 'smaller-sized companies' have a higher probability to participate. It may be that companies with small capacities are more flexible to accommodate their resources and engage in environmental practices (Shukla, Deshmukh & Kanda, 2010).

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The correlational relationship of financial performance and WTP also implies that both variables can be performed in a similar manner. Significant results suggest that Finnish SMEs which choose to participate in environmental practices adoption also have a high tendency to perform well financially.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

The sample of this study was obtained through Collector Oy's customer directory. Therefore, generalizations from the results may not comprehensively represent all Finnish SMEs. Furthermore, there is potential existence of social desirability bias where respondents may have a tendency to respond in a favorable manner towards environmental issues. However, the number of responses was sufficient and the respondents also came from various industries in Finland which increased the presence of heterogeneity. In addition, each item was measured in a seven-point scale to minimize the presence of social desirability bias.

In order to achieve an in depth view of Finnish SMEs based on the model of this study, it is suggested that a qualitative approach be adopted in gathering and evaluating responses. Three entities of the model could be incorporated in future research i.e. companies, suppliers and government sectors within a study to determine how these variables may be able to drive and complement one another to promote environmental practices adoption nationally.

CONCLUSION

The managerial implication of this study is that this analysis enhances the awareness to improve the governance of Finnish SMEs through an understanding of the drivers that influence them in environmental practices adoption. The study has statistically analyzed 170 responses and demonstrated that Finnish SMEs are aware to some extent that their companies need to play a role in achieving environmental sustainability. Internal and external resources play a critical role to steer the growth of Finnish SMEs towards environmental improvement. The buyers of Finnish SMEs provide both direct and indirect pressure along the value chain. Governmental involvement should be more comprehensive within the SME context. Universities as well as the public sector are encouraged to equip the SMEs on the significance of environmental practices and assist them to execute the transition.

The addition of 'financial performance' in the previous conceptual framework developed by Lee S. S.-Y. (2008) has improved the *r squared value* of the multiple regression analysis. This implies that the revised model in this study contributed to a higher variation in determining the participation of Finnish SMEs. Furthermore, this model also provided a stronger significance level in all drivers toward the willingness to participate in environmental practices rather than just two out of three drivers as in previous models.

From the financial perspective, this study provided some insights as to how the current financial performance of Finnish SMEs was associated with environmental concerns. This study can assist in promoting public and private funder understanding in decision-making of credit granting processes and indirectly remove barriers in environmental practices adoption.

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KEY TERMS AND DEFINITIONS

Buyer's Practices: Buyer's practices to improve environmental performance of their suppliers which includes supplier assessment criteria, the environmental performance of incoming supplies and environmental focus supporting activities.

Environmental Practices: Operational activities that reduce the amount of damaging impact to the environment.

Financial Performance: Current financial measures of the Finnish SMEs.

Government' Involvement: Finnish government' environmental efforts related to technical and financial incentives, economic benefit such as tax reduction and infrastructure supports.

Readiness: Internal characteristics of the Finnish SMEs.

Willingness: The willingness of Finnish SMEs to participate in environmental practices.

ENDNOTES

1 Editors' note: Regression analysis as a mathematical method of modeling the relationships among three or more variables is also used in chapter 12.

2 Editors' note: Research results from chapters 1, 6, 7, 8, 12 and 14, also inductively suggest this notion of the unique significance of medium-sized enterprises in the whole set of ensembles of criteria.

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Chapter 28
Student Projects and Virtual Collaboration in IT Degrees: Incorporating Entrepreneurship into Study Programmes

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ABSTRACT

This paper describes a framework that assists the inclusion of Entrepreneurship into computing study programs. It has been developed within a European Tempus Project and is built following a process-oriented view of innovation and entrepreneurship. It outlines key activities and capabilities of entrepreneurship. An approach is presented that combines existing online tools with the traditional methodologies for creating courses on entrepreneurship. We introduce a concept -the virtual innovation space- to take the most advantages from opportunities that the Internet gives us for increasing efficiency of learning entrepreneurship for IT students. A summary of the course content on entrepreneurship that is developed and used by the project partners for their local courses is presented. We present and discuss feedback received from the project partners and describe some student projects and experiences. The work in this paper can be useful for other universities and similar projects to compare their effort and receive some justification or ideas for their initiatives.

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INTRODUCTION

Higher education, innovation and entrepreneurship are long established as key pillars to provide various ways of engaging with enterprises. Over the last decades there has been an increased demand to include innovation and entrepreneurship into educational programs, emphasising the importance of engagement between industry and academia. However, the inclusion in curricula and educational programmes still seems to be challenging, although some successful examples illustrate how collaboration between academia and industry can be beneficial. There is no doubt that links between training, research and innovation by means of introducing advanced training in entrepreneurship and innovation capabilities are beneficial. In relation to the education domain, comparable professional standards, frameworks and curricula are important but less well established. Furthermore, although e-learning concepts seem to be particularly suited for collaboration and entrepreneurship, it appears that in e-learning programmes collaboration between academia and industry is less prominent. Furthermore, training transferable skills and creativity as part of entrepreneurship is challenging in an e-learning environment. In particular support for student projects and engagement practices are less well-developed.

This paper provides a framework and description of an open infrastructure for student projects as part of an IT entrepreneurship course that can facilitate collaboration between students and enterprises.

RELATED WORK: ENTREPRENEURSHIP, INNOVATION, AND STUDENT PROJECTS

Many researchers have discussed innovation management and entrepreneurship as part of Information Systems (IS) and Information Technology (IT). Many have described insights into innovation processes in organisations and the role of IT (Carroll & Helfert, 2015, Carey & Helfert, 2015) and many tools have been suggested (Auinger et al., 2014). A large body of research is, in general, concerned with the impact of IT and the successful application of IS to support businesses becoming more innovative (Legris, 2003). Entrepreneurship and innovation are closely linked (Huff, 2013; Blundel, 2011). Recently the concept of Open Innovation has been discussed in many papers (Maccani et al. 2015; Huff, 2013; Chesbrough, 2006; Drucker, 1993). Innovation can be seen as an outcome (product) or a process (activity) or a combination of both. Process innovation has been described as any new way of developing, implementing and maintaining IS in an organisational context (Swanson, 1994). In his seminal work, Drucker focused on two aspects of innovation: the process of innovation i.e. how innovators search for opportunities and transform them into a new practice in the marketplace; and the practice of "entrepreneurship" i.e. how institutional ways and processes embed the practice of innovation into an organisation (Drucker, 1993).

A process can be described as a repeatable set of value-adding activities with a discrete beginning and a discrete ending that produces desired, predetermined, measurable outcomes. This view posits that all work is a process and all products or services are the outcomes of processes. A so-called "resource-based" view of IS/IT innovation has been popular in the literature (Feeny, 1998) and more recently a "capability-oriented" view of IS (Peppard, 2004).

Research concerning the influence on students of technical specialities in an educational program in engineering showed that there is no connection between presence of the program and a positive and significant effect on the venturing rate of the students (Militaru, 2015). Moreover, the students, with an average age of 21 years, had an opinion that entrepreneurship skills did not matter at all or that it

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was not closely related to the technical skills. Another investigation aimed to test an idea whether an entrepreneurship course can improve the entrepreneurial intentions, and learning efficacy of technical specialities students (Chen, 2015). The results found the entrepreneurial intentions of students have not been improved. This indicates that with the implementation of the entrepreneurship course, students should better assess their suitability to pursuing an entrepreneurial career. However, the presence of formal factors in entrepreneurial education (e.g. university's incentives to create a new business, entrepreneurial knowledge, training and skills as part of entrepreneurship education) is a base for student entrepreneurship (Urbano, 2016). Entrepreneurship education may not teach students only to initiate a start-up but to apply what they learned to their future careers. The above research indicates that introducing a generic course on entrepreneurship for students of technical specialities is mostly not effective. Moreover, research demonstrates that education should be only in terms of ethical entrepreneurship and innovative behaviour in everyday life (Ibáñez-Romero, 2016).

There is a need for further research on new approaches and for developing course and curricula for these set of students. Research towards finding approaches for increasing entrepreneurial intention during entrepreneurship education is performed by comparing results from the course for two categories of students (for business and science and engineering students) (Maresch, 2016). The principal results show that entrepreneurship education is generally effective for business students and science and engineering students. However, the entrepreneurial intention of science and engineering students is actually negatively affected by subjective norms, whereas that effect is not apparent among the business student sample. This paper did not give effective didactic approaches as to how to develop a course program, but it gives an understanding of what we need to research.

Research concerning evaluation of assessment methods in engineering entrepreneurship education shows a lack of effective tools that can be used (Purzer, 2016). This research shows that multiple forms of assessment instruments are needed to create a complete picture of one's entrepreneurial mind-set and competences. The tools for student assessment come usually from business courses and include such topics as business planning, design, communication, business realisation, teamwork, and leadership. These topics omit technical knowledge for engineering students. Another aspect of student assessment lies in differences between general communication skills and the skills critical to engineering entrepreneurship. The latter should be assessed with specific approaches, for instance as described in Pistrui (2012).

Increasing the effectiveness of courses can be achieved by catering for the educational needs of an individual (Sarkar, 2016), described as the knowledge and capability profile that is not given any importance in conventional education programmes (classrooms). Sarkar (2016) provides an analysis of forms of educational activities as transnational based by a university or a multinational company, online inclusive with a learning management system, a distance education online mode, and a collaborative education. Some forms of educational activities can be more effective using virtual class rooms. In addition, a successful and effective e-learning system should include personification (Kattoua, 2016) that considers personal, social, cultural, technological, organizational and environmental factors. Furthermore, building collaborative approaches between various organisations can increase effectiveness and can help to ease the career bariers (Colibaba, 2016; Bauer, 2016; Akhter, 2016). Using virtual and e-tools in this collaborative educational activity are important in order to design guidance services for students and enhance their motivation to complete their studies.

In addition, students should have a good understanding of the different stages and aspects of the entrepreneurial process. They should be able to understand how and why exposure to the main dimensions of the entrepreneurial process stimulates entrepreneurial competence development, for the individual IT

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entrepreneur as well as for the entrepreneurial IT team. They should also be able to assess the potential and feasibility of a new IT-based venture, with a specific focus on how to identify and make use of different entrepreneurial financing models and alternatives, and what role entrepreneurial judgment and entrepreneurial identity plays in this decision-making processes.

Research Approach

In our work to build a framework for including entrepreneurship and student projects into the curricula we follow the principles of engaged scholarship. Van de Ven (2007) describes engaged scholarship as a participative form of research for obtaining the views of key stakeholders to understand a complex problem. By exploiting differences between these viewpoints, he argues that engaged scholarship produces knowledge that is more penetrating and insightful than when researchers work alone. Engaged scholarship has a number of facets; a form of inquiry where researchers involve others and leverage their different perspectives to learn about a problem domain; a relationship involving negotiation, mutual respect, and collaboration to produce a learning community and an identity of how scholars view their relationships with their communities and their subject matter. We follow this approach in order to develop the proposed framework within the European Project. In the following we describe our framework together with some experiences. We conclude our paper by outlining some further research directions.

PILLARS FOR ENTREPRENEURSHIP AND VIRTUAL COLLABORATION

The framework was developed with consideration of training and advance key entrepreneurship skills for students. This research was developed in the context of a European Project: NEFESIE "The National Education Framework for Enhancing IT Students' Innovation and Entrepreneurship" (http://tempus.nung.edu.ua). A consortium of four universities from EU countries and the five Ukrainian Universities have worked together since 2012 to build this framework. The objective of the project is to promote the synergy between academic programs, research expertise and businesses in Information Technology (IT). Critical objectives for the NEFESIE are:

- Identification of the best models and frameworks for university – company cooperation
- Development of an infrastructure that enables the sustainability of a new ecosystem of university-company cooperation
- Development of a web portal called Virtual Innovative Space to maintain contacts between students, companies and universities as well as to enable knowledge transfer between the actors

In addition, recent research on entrepreneurship, leadership, and innovations has turned the focus on sociological aspects, which lead us in turn to centre the framework towards the micro-level, viewing creativity, innovation, management and leadership as social processes that unfold in real time from moment to moment in and amongst a group of individuals. As the focus has shifted, we recognised the shift from traditional phenomenological and methodological boundaries to consider "on the ground" interactions of multiple participating agents who make up these processes (Iszatt-White, 2011, Lundberg, 2014).

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The selected research methodology of engaged scholarship seemed to be well suited for this investigation. These multiple participating agent activities are microsocial communications among actors (e.g. students, lecturers). In our research, we tried to adapt the research into our course packages to increase innovation and entrepreneurial potential in IT students. This laid the foundation for leveraging virtual collaborations among IT students and among students and IT companies.

One of the goals of the Tempus project is to develop an eco-system for enabling students', universities' and companies' continuous interaction and exchange of experiences. Based of the best experience of the universities involved in the project and results of similar international projects we have developed a set of guidelines for how to effectively organize objects in regional eco-system. These recommendations have the form of algorithms by following which a university, a student, or an IT company can organize their own resources in the best way to cooperate with others.

In order to connect all these substructures, we have proposed four steps:

- Nationwide training seminars for acceptance and understanding of the improved guidelines produced in the project.
- Awareness campaigns for students. Running an innovation competition for students.
- Organizing "The first student innovation forum in Ukraine". Create an advisory board based on a consortium of IT companies.
- Involving companies (associations of companies) as a support network for student/company contacts for good innovation.

Furthermore, for involving students, we have designed course packages for boosting innovation and start-up projects within the university environment. The courses are in-line with the establishment of a virtual collaboration platform described below. The courses have already been implemented in the study process in the Ukrainian universities. In addition, the proposed eco-system was established regionally involving five Universities from the Ukraine. The five universities have been selected due to their technical focus and the importance of their IT departments. They have established experience in cooperating with the IT industry.

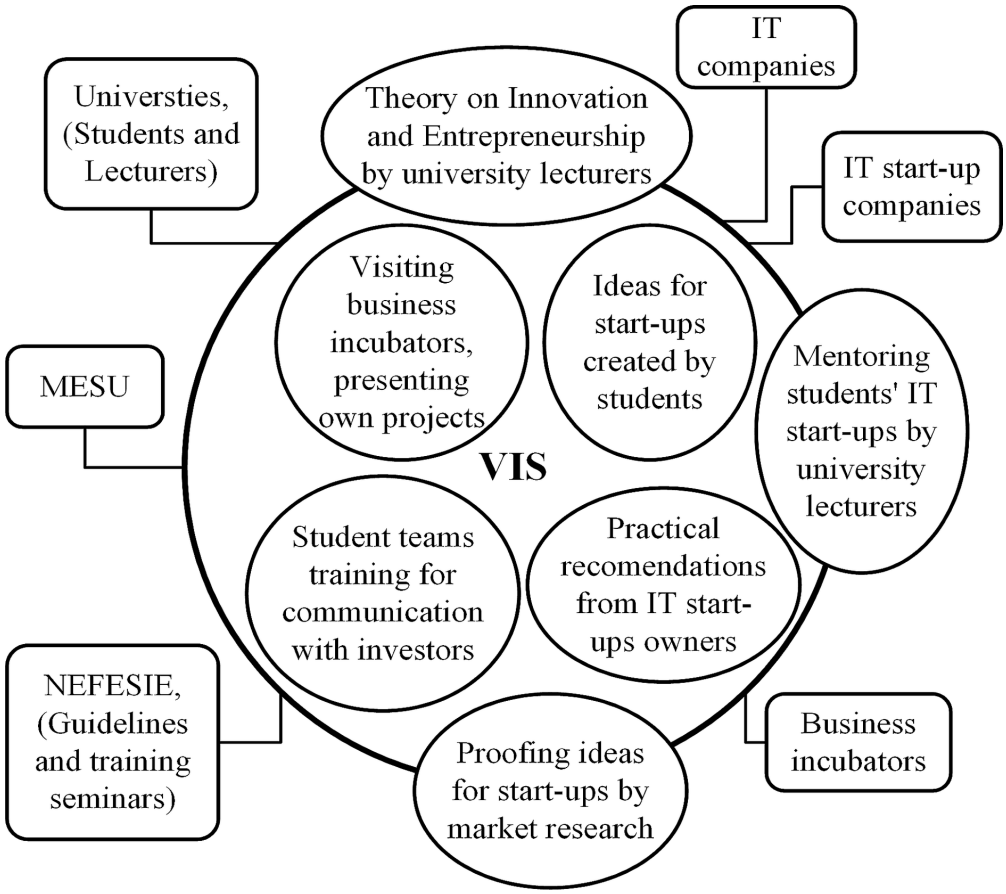
Figure 1 illustrates the overall framework. The course on innovation and entrepreneurship is supported by the Virtual Innovation Space (VIS). The course chapters enclosed in ovals correspond to the course curriculum logical. The course chapters placed in the circle are supported by native activities of the VIS. The chapters that are partly overlapping the circle can be supported by VIS partially or mediated by additional regional structures. For example, the theoretical material will be part of the VIS but lectures will be conducted by university lecturers.

Entrepreneurship Module

As one example, the BSc in Enterprise Computing at Dublin City University gives students the foundation for a career in information technology for the modern business enterprise. This degree is intended to educate high-end IT professionals with knowledge of how business works and the roles of technology in the enterprise. It will teach practical skills in designing and managing information systems, and deploying them effectively and creatively. This degree provides students with an understanding of how

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Figure 1. NEFESIE framework and virtual innovation space



software addresses real-world computing problems and will teach them how they can best use computing technology to help people to work together and give companies a competitive edge in the marketplace. They learn how to use and manage information technology and systems to improve and even re-design the way they do business.

The first year is devoted to gaining a strong overall competence in computing technologies, such as computers themselves, operating systems, web systems and the internet, and to acquiring fundamental mathematical skills. In subsequent years, by specialising in information technology, web systems or networking technologies, students are equipped with the necessary skills to work with computing technology across a broad spectrum of business enterprises. They are able to manage, improve and re-design the way businesses use computing systems. In Year Three, they will have the opportunity to spend seven months on our INTRA paid work placement programme, which integrates academic study with a closely related job. It will give them an understanding of the professional and practical business world and will help them to stand out in the graduate employment market. In final year, students study advanced modules in information systems, business strategy and management. In addition, they complete a major team-based project. Practical experience is a principal component of their learning. Throughout the four years of the degree, there are formal lectures, with a strong emphasis on the practical applications in the computer labs, tutorials, ongoing assessments and projects drawn from real-world situations.

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The objective of the final year enterprise module is twofold. First, to introduce students to the theory and practice of entrepreneurship in the context of high technology venture creation. Secondly, it provides the student with a set of theoretical concepts and practical tools that can be used for understanding how IT-based innovative ideas and solutions can potentially be transformed into economic, social and/or other forms of value of which a distinct demand can be identified. The module is a combination of lectures and practical elements where students apply skills related to creativity, leadership, planning, and team management involved in initiating and developing a new business venture.

Learning Outcomes

- Analyse different stages and aspects of the entrepreneurial process
- Be able to initiate the development process of an IT-based value offer (commodity, product, service, experience or a bundle of), by doing business modelling and business planning
- Assess the potential and feasibility of a new IT-based venture
- Assess the role of universities, governments, firms and entrepreneurs in the innovation process
- Practice enhanced team working, planning, negotiation and problem solving in a high-technology product development environment

INDICATIVE CONTENT AND LEARNING ACTIVITIES

The content of the course consists of different topics related to entrepreneurial competence development and IT based value creation. We paid particular attention to innovation, creativity, and leadership as they unfold in micro-level social interactions (Lundberg, 2014; Avolio, 2016; Lundberg 2017). The execution of a team project will be the practical component of this course in which the theoretical aspects will be practiced and the practical doings will be theorized. The main focus is to gradually integrate the entrepreneurship and innovation part with development of an IT based value proposition into a coherent proposal by the end of the course, as this is key to entrepreneurial competence development within high tech sector.

Topics include:

- Foundation for High-technology Entrepreneurship.
  Definitions of high- tech entrepreneurship and the Entrepreneurship process. The environmental influences affecting entrepreneurship. Ireland's high tech sector, structure and performance. Indigenous versus Overseas entrepreneurship.
- Innovation and Entrepreneurship.
  Sources of innovation; Relevance of sources to the entrepreneur; New Product Development Strategies; Technology Adoption Lifecycle. How to work and think processual in loops between creative idea generating and bringing an innovation to the market.
- Ideation
  Sources of new business ideas, effective brainstorming, product benefits, idea screening, product concept development. Intellectual Property Rights. turning an opportunity into innovation, Bringing an innovation to the market,

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- Entrepreneurial process and tools
  The relationship of creativity and innovation to management of IT projects, How opportunity and innovation are linked within the IT domain. Business model canvases and business plans
- Financial Planning and Commercialisation
  Financing requirement, financial projections and analysis, cashflow, profit and loss account, balance sheet. New product pricing. Stages and sources of financing in high tech venture, government grants, venture capital and stock market flotation.

VIRTUAL INNOVATION SPACE

In addition, to in order to facilitate virtual collaboration we have developed an online tool called a Virtual Innovation Space (VIS), aiming to facilitate the company-university-student cooperation service. In trends of increasing the role of e-learning in the Tempus project an approach to create a virtual innovation space as a website was introduced. The VIS is seen as a single network source of information, a collaborative environment, a source of mutual assistance and potential investors, e-help for more reliably improving the innovation and entrepreneurship potential of IT students and increasing the quantity of successful start-ups organized by university graduates. As the e-learning tool VIS enables IT students to: 1) enrol in innovation and entrepreneurship courses, 2) carry out their diploma project activities, 3) join in company projects, 4) present and discuss their ideas and build a team around the idea. For lecturers in universities the VIS can offer a tool for cooperation with IT companies, finding research partners, and carrying out the students' diploma projects. IT companies can see the VIS as a resource for promoting themselves and establishing connection with IT departments in universities through collaboration with lecturers. VIS provides an infrastructure and mechanisms that support interaction and knowledge transfer between students, universities and companies.

Key functionalities that this tool provides, includes:

- Competence databases, for companies, students and universities;
- Projects and assignment suggestions and support for their formation;
- Connecting people and projects, matching services;
- Collaborative space for supporting project start-ups;
- Funding mechanisms.

In the context of Ukrainian University, the VIS was a novel concept to engage with companies, students and the university to structure educational activities. The VIS facilitates and supports creating ideas from students and business concepts. It helps the preparation of a viable business and project proposal and helps to communicate and present the ideas. In conjunction with the students' contests the VIS supports the assessment of the project and ideas. Using the VIS demonstrates the improved microsocial communication among students in different universities and IT companies. VIS leverages Ukrainian student's entrepreneurial potential in order to create viable ideas and effective collaboration between companies and students. As demonstrated by some example projects from the Ukrainian students' contest and DCU, ideas cover a wide range of topics, however illustrating a common motivation seeking a market potential. That we regard as good result for Ukrainian technical students.

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STUDENT PROJECTS AND VIRTUAL COLLABORATION

The main goal of the course is to teach students to create their own start-up projects in IT and train students in entrepreneurship. During the course the students need to learn several different approaches essential for new company creation. They have to form groups to develop an IT project to a level of getting the first potential customers.

For students, reaching the goal of having customers during one or two semesters is a hard task. On the one hand, they do not have enough knowledge and have to constantly learn as usual students. On the other hand, they deal with the real market and have to obtain experience with gaps in knowledge. To solve the problem of the first steps in start-up we use the VIS. We have organized the students' innovation projects competition within the VIS. The students' projects were assessed by professionals from well-known IT companies and professors. During the first competition, the students had submitted several hundred IT innovation projects.

A few of the example projects from the competition and DCU are:

- **Spectrex**: The intellectual system of pulmonary survey. New unique technique for diagnosing diseases of the respiratory system will speed up and simplify the diagnostic process in medical facilities! The project aims to improve the quality of human respiratory system diagnosis by developing an expert pulmonology diagnostics system based on modern methods of analysis of macromolecular structure of moisture in exhaled air.
- **An Application for Learning Foreign Words "Words with Frog"**: This is an effective method, based on associative memory and creating visual images. It provides quick learning of foreign words while preserving quality. The application combines a scientific approach and gaming principles for effective and rapid learning of foreign words.
- **MeViCS**: It offers you one of the ways to prevent slouching at home - a device «MeViCS». «MeViCS» should be applied to align the spine and preventive curvature of the spine.
- **YouDrop**: Architecture and software tools for building the infrastructure of distributed cloud. The idea of YouDrop is based on Peer-to-Peer (P2P) technology as a means of providing Cloud services to individuals, companies and organizations, with the view to facilitating cost-effective scalability, flexibility and efficiency and enhancing the experience of creating, organizing, publishing and sharing content.
- **HotBox**: HotBox(Hotspot Jukebox) is an idea for a mobile application that acts as personal jukebox interface for people in a public premises. Using this application, users can select the music playing in pubs, cafes, restaurants, bars etc. using their phone or mobile device by selecting from a music collection provided by the proprietor. It gives control to both the host and the user to select what music is being played on the premises.
- **New York CitiBike Data Visualization**: A web application to give users a visual representation of data obtained from www.citibikenyc.com going back to July 2013. Users will be able to view heatmaps of stations over time and to view graphs and charts of data of their choice. The application is built using Python on the Flask micro-framework using Bokeh for the visualization.

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- **Manage IT**: Designed to help IT Managers monitor their department's service desk performance. The IT manager can input data related to service desk incidents that is then visually represented on graphs and charts. Each logged incident is assigned a RAG score based on completion success rate. This gives the IT Manager a simple way of tracking performance and identifying areas that need improvement.
- **Web Based Octiv User Interface**: The project is a web based user interface for controlling and retrieving information from an Octiv unit, owned and developed by Impedans Ltd. The idea behind this project is to allow remote control / data gathering from the unit, regardless of the device size or operating system. By using technologies such as JavaScript, JSON, HTML, CSS, Foundation framework, the website provides intuitive, responsive and impressively looking interface for the Octiv unit.

Let us show how the VIS helps a student project by an example of a "Learning Circle" that is developing by one group of five people. In the first stage students organised a group to prepare an application announced on the VIS website. In the process of preparing the application they have to describe technical and financial aspects of their idea. The application made them to be more realistic in terms of resources and values they want to produce in the project. But the process of filling in the application form is creative rather than realistic. It describes students' desires more than their capabilities.

The second stage was after assessment of the project by a jury. There were two processes during competition that had an impact on the project. The first was competition results and comments from the experts. Those comments were rather critical based on different experiences from technical to financial aspects. The second was the possibility to compare their own project with others. They could see the same mistakes and incompleteness have been made by others and are therefore more visible. We have developed a way to improve their own project. From the first two stages, they had an internal vision of changes but from the course they took direction and tools.

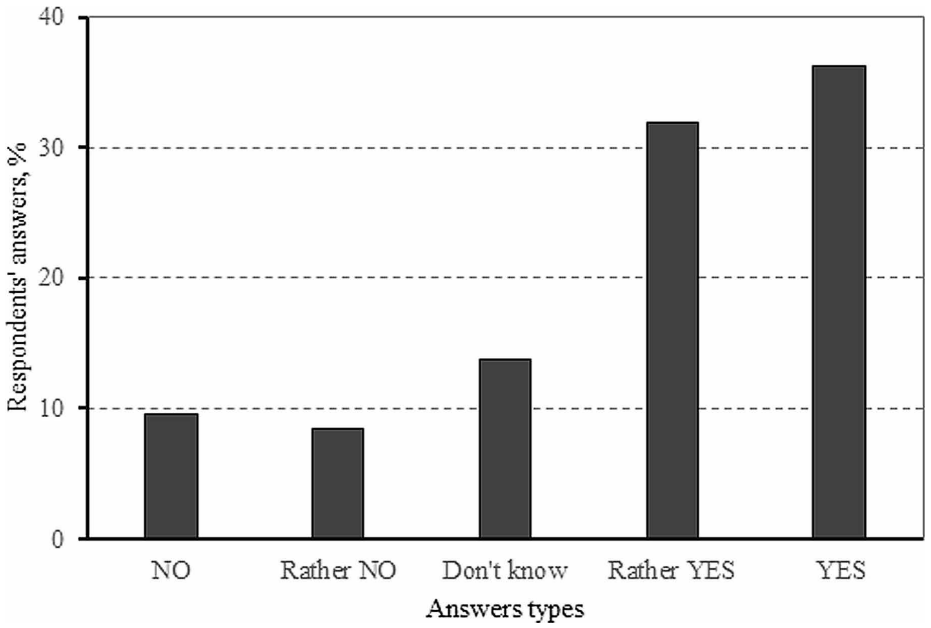
EVALUATION AND FEEDBACK

In practice, we have found that boosting integration processes between IT companies and a university on a regional level requires a kind of additional effort that we can call "an introduction". We do not mean that a university does not know about regional IT companies or vice versa. They do not use to their full potential all possibilities of each other's internal structures. In order to receive further feedback, we have conducted a series of interviews and surveys among key stakeholders.

In 2016 a survey involving 546 students of all years of study of Ukrainian universities was carried out. Figure 2 shows that more than 66% of respondents thought it necessary to introduce new university courses on innovation and entrepreneurship. Negative answers can be explained that students previously had a course on basics in economic science that is in the list of compulsory courses in most of the universities. Analysis of responses distribution per years of study shows a tendency that students of the third and fourth years of study are more interested in innovation and entrepreneurship courses than second-year students. This can be explained that the students of the fourth year of study have more technological competences in IT to develop software projects. The survey results allow the conclusions to be drawn that the Ukrainian students have high entrepreneurial and innovative potential and a tendency of the growing experience of practical activities. The analysis of the survey responses has

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Figure 2. Consideration to introduce new disciplines on innovation and entrepreneurship into the curriculum



shown the overwhelming importance of developing and implementing the disciplines of innovation and entrepreneurship in the University courses list for IT students in the educational and vocational training programs for "master" level.

In trends of increasing the role of e-learning in the Tempus project an approach was introduced to create VIS. Surveys among students and university staff show undeveloped innovation and entrepreneurship in both educational and research activities in universities. In summary, the feedback highlights:

- Lack of courses for IT students in innovation and entrepreneurship in the majority of Ukrainian universities
- Low level or absence of infrastructure for implementing institutional innovation and entrepreneurship policies
- Inefficient managerial capacities, (lack of well-trained management personnel) in Ukrainian universities for supporting innovation and entrepreneurship activities of IT students at the level of the modern IT market.
- Low level of research cooperation with IT companies and participation in international projects.

In the project to solve stated challenges we had decided not to follow a traditional approach like building innovation and entrepreneurship offices in partner universities or make a network among partner universities for implementing some changes in internal university policies.

In relation to the VIS collaboration platform, we tried to meet the challenge of boosting the VIS among potential users by conducting a contest for IT students. The contest had two nominations for IT idea and IT solution. For judging the contest, experts from IT companies and lecturers were invited. Up to now two contests had been conducted. To increase popularity each contest was conducted in a differ-

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ent city in the Ukraine. As a result of contest, more than 60 university and IT company representatives, 29 universities, and 18 IT companies were registered in the VIS. During the last contest, more than 200 applications were submitted by students' teams.

From a survey of lecturers that are users of the VIS we got positive and very positive responses regarding increasing knowledge and skills for implementing innovation and entrepreneurship activities among IT students.

CONCLUSION

The running of VIS project shows that modern students got into the habit using online resources for learning and easily combine them with traditional university courses. We found that at least Ukrainian IT students from the fourth-year of study and later are interested in implementing their own ideas as real start-up projects, but they do not have the necessary competences. Therefore, we can conclude that the perspective approach is to involve in traditional education online resources that can be seen as theoretical and practical tools for connecting IT students with different aspects of real market activities.

From analysis of the students' projects we can conclude that they have a good communication among themselves. Students in a team are aware of strong and weak sides of each other. That helps them to quickly start developing technical projects by dividing the work among themselves in the most efficient way. By introducing the course on entrepreneurship for IT students we use established microsocial communication connections (Lundberg, 2014) among them for leveraging of spreading innovation ideas in their start-ups. We found that a previous experience of IT students in solving technical tasks in a team is a very good ground for start-ups. The perspective research lays in finding optimal ways to take advantage of students' technical microsocial medium (teams of students for solving technical tasks created in their social medium) to boost start-ups.

Further research should be directed towards establishing more trusted connections with big IT companies through involving them in VIS activities.

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Chapter 29
Cloud Service Footprint (CSF): Utilizing Risk and Governance Directions to Characterize a Cloud Service

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ABSTRACT

Cloud Computing (CC) services have made substantive advances in the past few years. It is rapidly changing the landscape of technology, and energizing the long-held promise of utility computing. Successful jump into CC is a considerable task, since the surroundings are not yet mature and the accompanied risk and governance frameworks are still evolving. This effort aims to portray an identity for CC services by employing risk and governance directions among other elements and techniques. Cloud Service Footprint (CSF) is considering practical aspects surrounding the CC paradigm and prescribing the associated directions. CSF will help Cloud Service Providers (CSPs) to characterize their service and benchmark themselves. The Client Enterprises (CEs) can utilize CSF dimensions to find a better way to navigate through CC service arena and to understand its parameters. Along with cost and functional capabilities, the Cloud Service Footprint (CSF) can provide enough information for business executives to evaluate CC services and make informed decisions.

INTRODUCTION

Cloud computing (CC) is increasingly asserted as the technology with the potential to change the way internet and information systems are being utilized into client enterprises (CEs). CC has emerged as a growing trend of scalable, flexible and powerful computing, capable of introducing a paradigm shift in how technology is delivering value to the business. With significant global investments, CC is showing the power to completely revolutionize the business mindset and to promote new business characteristics such as on-demand self-service, broad network access, shared resources, rapid provisioning and minimal intervention. However, CC benefits are not coming hassle free; several risks, technical concerns, contracting and compliance issues are surrounding the CC services.

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Some challenges arise because the adoption of CC services might begin outside the technology organization (TO) or against the CE strategy leading to loose associations. Other challenges are due to immaturity of particular CC service measures, even worse is the reduced maturity of CC associated risk and governance models. Business and technology teams have to increase correlation and communication to collectively agree upon the right balance.

This chapter consider few surroundings to portray a picture for CC deliberate challenges. It investigates the effects of maturity status on the enhancement of key CC service features and its value propositions. It then researches the governance abilities to orchestrate heterogeneous environments, setting rules and responsibilities, leading the way to maintain the CC phenomena. Risk management (RM) is called-out to handle the associated risks in a reliable and trustworthy way. This chapter devote to define a new term called Cloud Service Footprint (CSF) to portray an identity for a CC service.

The trust and trace natures of CC services provide a major motivation to characterize the CSF. When correlated to cost and functional capabilities, CSF deemed to be the third element to provide enough information for business executives to evaluate CC services and make informed decisions. This aligns to an early lesson, whereas realizing value from new services requires a mature organization that can recognize associated benefits and own the tools for effective performance management.

CSF dimensions and parameters are categorized in a systematic manner as related to the CC concepts to separate the potentially significant business benefits and threats from the hype and hyperbole that are surrounding. The conferred CSF components provide first pass among a jungle of elements that shape the CC structure. These components include architecture dimensions, data considerations, licensing and agreements, collaborations and adaptations in addition to the ethical and legal aspirations.

This chapter is factorizing the CSF dimensions as evidence-based insights while looking at CC benefits, associated risk elements and governance contributions. It appeals to both academics and practitioners. Its length and design precludes extensive treatment of each area, but highlighting some key concepts and practices that can help smoothing the CSF consideration and evaluation.

BACKGROUND

Cloud Computing (CC) represents the network of business platforms (Baya, Mathaisel & Parker, 2010). It is a new way to conceptualize and manage the integration between business and technology. Yet, there is no universal way to measure business and technology alignment in literature (HBR, 2011; De Haes & Grembergen, 2009). Risk and governance are gaining more space to reshape the cloud era. The parameters of CC services are extensively discussed in literature, similarly are risk management and governance. But, they are evolving with plenty of research dedicated to each topic individually or bi-combined (Aven, 2008; Ackermann, 2012; Goranson, 1999). We are jointly correlating these topics. The joint understanding is unique since everyone know these topics individually, but limited client enterprises (CEs) are doing all of it.

CC and technology transformations have reshaped significantly the business domains (Menken & Blokdijk, 2008). Usually we used to say that technology must support business strategy, nowadays, there are times when technology will lead into the next realm of the previously unthinkable (Vice, 2015). This is obvious today with many CEs are establishing technology in the core of their operations (Turban, Leidner, McLean & Wetherbe, 2008). This shift will require more collaboration between business people and technology organization (TOs) with both parties are invited to understand the terminologies and concepts of each other.

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Researchers agree that CEs are facing a continuously changing business environment and a highly complex set of rules and regulations. Collaboration is required to establish a governance model for CEs based on utility driven computing which is started to stay and grow (Shawish & Salama, 2014). The movement towards CC adoption is in line with the global trend of moving from product procurement to service procurement. That is why board members are being directly accountable for technology and requiring strong governance in analogy to their responsibility for enterprise objectives and key assets (Hardy, 2006). With such speedy progressing and emerging, it becomes crucial to understand and characterize all aspects about the CC services and associated technologies. Here comes the introduction of the CSF.

CC chaos is passing a hurdle with everyone is asking; What is a cloud services? Why do I need to move to the cloud? What is a service lifecycle? Who are service owners? CSF is introduced to help executives answer such question and take informed decisions. CC practitioners are trying to take a more structured approach to the art of governing, and turn it, as much as possible, into a science (Brown & Laird & Gee & Mitra, 2008). Risk Management is the process enables the enterprise to set the risk tolerance, identify potential risks and prioritize them based on the enterprise's business objectives in association with internal controls (AAIRM, 2002). Plenty of books and articles have defined and discussed risks, the enterprise risk management and the risks associated with CC (Hillson, 2008; Brotby, 2006; Davis, Schiller, & Wheeler, 2006; Schlarman, 2009).

Plenty of articles are trying to answer the practitioners concerns when asking why do we need the new esoteric terms when evaluating the CC services? (Stantchev & Stantcheva, 2013). The advent of CC has enabled every CE to acquire software, often without the need for technology team support or capital (Marks, 2015). Thus it is more important to set new rules and define parameters that everyone may understand.

In summary, it can be argued that recent progress in CC and technology environments have promoted more research on enterprise risk management and governance (Abram, 2009; Segal, 2011). The main differentiator of this chapter is the orchestration of a wide spectrum of elements to help executives, practitioners and researches understand correlations and plan necessary CC service elements and supporting functionality. Joint understanding produces the CSF as a scalable, measurable, sustainable, and defensible term that is continually improving.

CLOUD SERVICE FOOTPRINT (CSF)

In its original and primary form, the footprint is a tracing that contains lots of information about the identity and nature of the beast that made it. This chapter is introducing the Cloud Service Footprint (CSF) as an invented term to identify aspirations and interdependencies of a given cloud service. CSF is intended as a control element that provides client enterprises (CEs), cloud service providers (CSPs) and regulatory bodies with necessary visibility to measure each CC service independently or collectively. CSF is intended to work in discrete and continuous basis. This section is providing few insights to define, generate and correlate CSF, additionally it will look into its feasibility and motivations. CSF is crafted for CEs considering to implement CC services. It provides a multi-category approach to evaluate the CC impacts on the CE from various angles. Yet, it also adds value for CSPs who are trying to bench mark their CC services. CSF helps to clarify the service transformation mechanisms and fit it within the CE governance, service management and operations. Overall, the CSF dimensions help to move away from reactive and unreliable CC services evaluations.

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Definition

In analogy to the original definition of a footprint, the Cloud Service Footprint (CSF) is intended to provide a tracing that contains lots of information about the identity and nature of a given CC service. At one place, CSF is used to describe the trails and traces left online. On the other hand, it can contain weighted indices that consider the service risks, controls, maturity and momentum considerations. CC associated risks are understood, mapped, segmented, weighted and monetized by the CSF.

CSF will enhance the CE technology decision-making processes and assist CSPs in communicating the value proposition of their products and services. Additionally, this helps to demonstrate, justify and realize the tangible value of CC initiatives by senior management and key business stakeholders. It also assists CSPs in winning, serving and retaining customers.

Motivations

When applied to CC, controls that exist today need to be stretched and distressed to cope with the demands placed on it. Modifications may be insufficient, this assures the need for new mechanisms and parameters to control various CC aspects and associated risks. CC services should have adequate internal controls, applied security levels or enhanced values for each business area. CSF is intended to touch on the scope of technical controls required to mitigate threats. It draws from the quality management procedures and the governance models to introduce a simple to use and easily-to-understand parameters or techniques that can be easily dictated and managed.

CC increasingly require the management of Middle Circle Contractors (MCCs) or the "men-in-the-middle". CSF shed special light and controls for selecting and contracting a suitable MCC or CSP. The critical elements of CC service deployment boil down to "trust and trace". An appropriate CSP will maintain sustainability and quality to prevent loss of data and vendor or technology lock in. A malicious user can move from one CE to another through the CSP environment because CSPs are providing support and services for multiple CEs on a shared basis. Furthermore, if an MCC is using common devices it is important to separate the interfaces between CEs with distinct accounts separate privileges and folders. CSF can summaries such roles and help the CSP or MCC to "commensurate with the level of risk to which the CE is exposed to" (CSA, 2015).

CEs utilizing CC services need to develop robust service schema in collaboration with CSPs. This schema is required to achieve agreed-upon goals to support the business mission and technology goals regardless of the service or deployment model. CSF may act to adjust the defined roles and responsibilities in the combined schema based on the respective scope of control. The deployment model may define accountability and expectations based on risk assessment. CSF is trying to combine many parameters to help CEs, MCCs and CSPs and enhance the common understanding.

Derivation

CSF was derived through a reverse engineering process for several CC implementations. Lessons learnt were collected and the development elements were analyzed. To find the best fit, attained data were categorized with respect to the main CSF dimensions and subs. Every CC service were examined based on composite expectations of CEs or considering the characteristics of a specific CE. Controls modeling

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and risk adjustment were deliberated based on highlighted issues and concerns. Such tunings played a key part in the CSF crafting to outfit categories that include a broad range of details or in situation that have a large number of outside forces.

Feasibility

CC increasingly emphasized the trend of separate independent services that run in the background. Multiple services are invoked together to make an action. CSF can demonstrate an increased value as a facilitator for these "off-the-shelf" services. In this context, CSF can provide the power needed to seamlessly automate processes and manage CC services effectively. CSF is introduced to give business and technology organizations the necessary visibility and control for continuous improvement of CC services. Factoring in, CSF is intended as an essential element to better identify the merits of a selected CC service. Promoting clarity and transparency, CSF may derive an efficient delivery process with optimum performance to control costs, maintain compliance and reduce vulnerability.

Solid measurements provided by CSF allow CEs to enumerate action delivery and optimize the operation. Better service understanding produced by CSF enhances the mechanism to improve the value calculations of CC services and technology investments, such as total cost of ownership (TCO) and the return on investment (ROI). It helps to standardize the CEs and CSPs interaction processes with each other also with various stakeholders. With enhanced asset and business orchestration, CSF is expected to affect the CC strategy, analysis and decision hierarchy and to reduce the traditional sophistication of technology. CSF may synthesize various results to provide a clear picture of the total impacts of a CC service.

Correlations

Three elements are claimed to provide enough information for business executives to evaluate CC services and make informed decisions. In addition to the CSF, cost and functional capability can provide the basis for prioritizing CC and technology initiatives in a manner that saves huge struggle among CEs. The correlation between these three elements can produce an effective business value and ensures that CC service benefits can be realized.

Cost signify the investment necessary to achieve certain value and acquire the associated benefits of the proposed service. Cost combine all investments and expenses necessary to deliver the proposed value. Additionally, it captures incremental or ongoing payments over the existing environment if it is associated with the service. Costs must be tied to the benefits that are generated. Direct benefits and functionalities represent one part of the investment, although it is typically used as the primary way to justify the service attainment. Another significant part is related to measuring the strategy alignment of the CC service or the expected drawbacks on the CE future. Flexibility represents the value that can be generated if new features are built on top of the acquired service.

Functional capability represents the operational value derived from the proposed CC service as measured by the entire CE combining the technology organization (TO) and/or business units (BUs). Benefit estimates involve a clear dialogue with the CE stakeholders to comprehend the specific value being created. Prior to cloud era, functional justification focus on one business silo, leaving little room to analyze the effect on the entire CE strategy. CC services are enabled across the CE and effects its entire environment, consequently it promotes full examination and places variable weights to measure benefits and capabilities.

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CSF can be hired to ensure CC service sustainability and ability to perform as promised, in a secure, trusted and reliable way. It enables better design, evaluation and management of CC services. This defines a clear line of accountability that can be considered whether the focus is external from the public cloud, or within a private cloud inside the CE. CSF may also consider the side effects or enhancements of a CC service. For instance, acquiring an industry accredited service can potentially increase standardization and efficiency. However, an embedded collaboration feature may translate to greater worker productivity if activated. The bottom line is that correlating CSF with cost and functional capability provides the ability to measure multiple dimensions related to CC services and to capture their future and strategic values.

CSF BUILDING DERIVES

CC is positioned in a convergence mode as a technology adoption that inherits business risks. Problems are typically associated with the newly emerging business models. Substantive advances occurred for the CC service delivery models in the past few years. But, associated risk and governance practices have not matured at a similar rate. The dynamic scalability of CC enhances the possibility of quick upsizing and downsizing, but there exist some roadblocks. Business and technology teams have to increase correlation and communication to collectively agree upon the right balance.

Some internal and external factors add up to increase the efficiency of CC services, including the compliance strategies and risk based auditing. CC aspirations encourage governance in its participatory form as the job of every stakeholder, particularly the most vulnerable. The board of directors are playing a main role in CC governance under the corporate governance umbrella while aligning the CE strategy. Understanding CC service aspirations and alignment help in setting related policies and ensuring the CE credibility.

This section is putting risk and governance in the heart, looking at service maturity and momentum to introduce Cloud Service Footprint (CSF) as a guideline to evaluate the CC services. It supports moving business infrastructure, processes and applications into the cloud while increasing the navigation clarity through the fear, uncertainty and doubt. It also provides answers to improve the understanding of CC adoption in a structured and systematic approach.

Risks Management

The ISO Guide 73:2009 define risk as the "effect of uncertainty on objectives" (ISO:2009). This includes uncertainties caused by ambiguity or lack of information. According to COSO "Risk is the possibility that an event will occur and adversely affect the achievement of objectives" (COSO, 2012). Positive and negative uncertainties are contained within the CC services and their surroundings. Tracking and measuring risks, enhances the opportunity to meet original projections. Risk Management (RM) is the act of aligning exposure and capability to handle risks as per the stakeholders' guidelines. In this regard, it acts as a primary means to support technology decisions triggered to protect the confidentiality, integrity, and availability of CC services and assets. Different categorization of risks may be introduced to allow stakeholders understanding the qualitative distinctions between the types of risks that CEs can face. Although some categorizations defined before the cloud era, they are now becoming more recognized and deep (Kaplan, & Mikes, 2012).

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Business risk mapping is the process used to identify and segment contemplations that can hinder the normal business flow. CC services enable cross functionality with all business processes introducing a joint risk arena. Hence, CC related risks need to be delineated in the functional space and categorized along functional lines to identify their inter-dependencies. No two industries will have a common generic set of functional risks. "After the risk management plans are implemented, there is a need to follow-on actions as part of a comprehensive assessment and continuous monitoring program for effectiveness" (Alnuem, Alrumaih & Al-Alshaikh, 2015). Risk assessment is crucial to help management evaluating the risk events associated with its cloud strategy. This will help to determine the potential impact of the risks associated with each CC option (Broder, 2006). The ability to make risk assessment more accurate depends on whether the CE has a comprehensive, accurate, and current inventory of risks. The outcomes of risk treatment plans should be incorporated into service agreements where applicable to analyze risks' likelihood, acceptance levels and criteria.

RM functions are critical to every CE. It includes the valuation of CC assets and the analysis of associated threats and vulnerabilities. Risk likelihoods are usually based on a related probability density functions The underlying impacts of risk scenarios necessitate the development of risk action plans defining the proper risk technique either being mitigation, avoidance, transfer and acceptance. "The occurrence of an event, which is associated with the adoption and use of cloud computing can have undesirable consequences or impacts on user companies" (Dutta, Peng & Choudhary, 2013). CC can affect critical focal points of RM including the CE risk profile which encompasses the entire risk population. This profile should be extended by the inclusion of a subset of the risk universe associated with business units, CSPs and MCCs. The inherent and residual risk levels of CC options can be either greater or less than those as the non-cloud computing solutions. Similar changes occur to the likelihood and impact in many cases when CC solutions are adopted.

There are many variables, values and risks in any CC opportunity or program that affect the business decisions. Risk types may not be affected if CC services are procured, but some of them may have different characteristics. However, the CE level of risk thresholds will, in most cases, change based on CC purpose and how far the CC solutions will be adopted. As CC services are going through, some changes are associated with the CSP who has been engaged. "With cloud computing poised to move from its nascent phase to a more robust growth phase, a systemic understanding of the risk space enveloping cloud is becoming important" (Warrier & Shandrashekhar, 2006).

Each CE has to weigh few variables to decide for cloud appropriate solutions with the executive board to be engaged when required. Some risks can be managed through a rules-based model; others may require alternative approaches. CEs acquiring services from CSPs should ask whether their own management has defined risk tolerances with respect to CC services and accepted any residual risks. Normally, a CSP should demonstrate comprehensive and effective RM processes in association with its services. The CE should carefully evaluate the risk behaviors of a CSP in conjunction with their own abilities to compensate for the potential RM gaps. Risk assessment approaches between CSPs and CEs should be consistent or mapped. They should jointly develop risk scenarios for the cloud service. Such scenarios should be intrinsic to the CSPs' design of service and to the CE assessment of CC service risks.

Governance

To be effective, CEs must establish clear chains of responsibility to empower people and to widen the communication channels to keep all stakeholders informed. This should be accompanied by measurements to gauge effectiveness and policies to guide the entire CE toward its goals. On top of this control

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mechanisms are necessary to ensure compliance and strategy alignment. Governance is a strategic lesson learned the hard way over the past decade but it need to be revisited in the cloud era to handle all challenges and controls. Governance represents a set of processes, customs, policies, laws, and institutions affecting the way an enterprise is directed, administered or controlled. It also controls the relationship among involved stakeholders.

There exist plenty of good governance principles, including four major pillars:

- Accountability obligation to report, explain and be answerable for the consequences of decisions that was made on behalf of the stakeholders.
- Transparency to enable stakeholders understanding the decision-making process and follow the consistent rule of law to achieve justice.
- Responsive to serve the entire stakeholders in a responsible manner while balancing competing interests appropriately. It also produces a positive timely response to change.
- Effectiveness to implement decisions and follow processes with efficiency. The best out of the available people, resources and time will be utilized to produce superior results in equity and fairness.

Good governance is based on the acceptance of the shareholders' rights as the true owners of the CE and the role of senior management as trustees. Governance lead to "establishing chains of responsibility, authority, and communication to empower people carry out their roles and responsibilities while establishing measurement, policy, and control mechanisms" (Brown, Moore, & Tegan, 2006). There are many governance practices that follows similar basic principles in terms of audit behaviors, board and management structures, corporate responsibility and the exercise of control rights.

As cloud correlates business with technology, governance will enhance both executive and non-executive oversight. Business directors will gain significant benefits as they have limited amount of time to devote to the CE, but almost unlimited responsibilities. Governance need to start with the decision makers who are building cloud architectures. It is aimed as a constitution that is required to articulate a common agreement about cloud definitions and follow the best possible process for decision making. Good CC Governance is expected to deliver well-defined solutions that will satisfy stakeholders and resolve any conflicts. Cloud governance roadmap is a sub-journey of the governance roadmap with long-term view to deliver short term solutions with a coherent vision.

CSF acts to maximize business value by incorporating effective business-driven management and governance tools into the CC applications from the ground up. It also aims toward minimal disruption of business, technology operations and stakeholders inconvenience. CSF is a critical success factor for both achieving standardization, reducing costs and improving business process flexibility. CSF is ultimately turning business agility from a platitude to reality. Typical governance paradigm includes requirements of technology infrastructure, employee behavior, and business processes. These components are often recorded, implemented and measured in silos, CSF acts to cross link these capabilities. Effective governance will be produced as executives break down the walls between business silos and devise common approaches. CC technologies helped in resolving the trade-offs between diverse, sometimes conflicting, needs and interests.

Governance will be utilized as a mechanism to orchestrate heterogeneous elements in the cloud environment, setting rules and responsibilities, leading the way to review the cloud phenomena and the associated risks in a reliable and trustworthy way. It should be noted that migrating to the cloud is not

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an abdication of responsibility. Even, the outsourced service still need to be governed. The opposite understanding may place the whole enterprise at risk of falling over technical and compliance barriers. CSF helps to embed and link the governance practices inside CC lifecycle end-to-end. The cycle includes requirements gathering, planning, architecture design, deployment, bursting, CSP switching and off-boarding from cloud.

Maturity

The National Institute of Standards and Technology (NIST) defines CC as: "A model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g. networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction" (Mell & Grace, 2011). The NIST definition aimed towards a mature setup, which is not the situation today where CC means various things to different stakeholders. Developers often equate CC and web services as one and the same. Designers view CC as a set of implementation patterns that should be applied during development. Business executives and technology leaders consider CC as a core underpinning to their information and technology strategy. CSF supports creating a shared vision and definition to achieve the promised benefits as expected by every stakeholder in a mature, responsible and diverse environment.

Cloud metrics are stacking without clear capabilities and boundaries, even "the terminology of cloud service measurements is not well defined" (NIST, 2015). Different interpretations exist between CSPs, CEs and regulatory bodies who should monitor, control, and report on CC services. This require more transparency to precisely align CC services, expenses and demands. Effective measurement of CC services is still evolving to optimize resource utilization and enhance controls. Mature and unified metering will impose unique benefits on the top of every CC service. Various stakeholders are expected to benefit from enhanced controls. CSF supports leveraging the CC metering capability according to a suitable level of abstraction in order to enable fair judgement on the reliability and effectiveness of CC measures.

In its mature setup, CC offers a value proposition that is different from traditional technology environments. It enables the CEs to provision computing capabilities based on self-service model and on-demand requirements. It offers economies of scale that would otherwise be unavailable. For example, CC enabled computing resources such as servers and network storage to be acquired and upgraded automatically without requiring physical intervention or human collaboration. Effective resource pooling is a value that is enhanced along with CC maturity. The CSP resources may serve multiple CEs using a multi-tenant model. Different physical and virtual resources can be assigned or reassigned as per CE demand. "Resources can be rapidly and elastically provisioned" (Shinder, 2013). With rapid elasticity, resources often appear as unlimited and can be purchased in any quantity at any time. CSF acts to standardize and formalize the CC value proposition including its various elements.

To cover the requirements of CEs across the whole business spectrum, CC are utilizing four main topology deployment models. These models are progressively elaborating to cover a wide matrix of cost and features. Private clouds are dedicated to a single enterprise for private use. Public clouds are owned and provided by external CSPs, their services are priced based on actual consumption basis. Hybrid clouds blend the benefits of public and private clouds by enabling CEs to retain confidential information in a private cloud, while providing access to the wider choice of applications available in a public cloud. Community clouds share collaborative resources between number of CEs with common interests. CSF is considering the topology deployment model while accounting for the maturity of a CC service.

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To support multi-layers on-demand services, CC encompasses a variety of service delivery models (SDMs). These models are evolving to provide different service forms while spanning all computing layers. Infrastructure-as-a-Service, IaaS, is generally the CE first step into CC. Platform-as-a-Service, PaaS, acts at the platform level to provide an environment that supports rapid evolution for key business application development. Software-as-a-Service, SaaS, are available at the application level, via standard browsers to support device independence and anywhere access. Database-as-a-Service, DBaaS, is a cloud-based approach to store and manage structured data, with similar functionality to relational database management systems (RDBMS). The maturity levels of these models vary significantly in accordance to their spread. CSF measures the disruptive behaviors of these models as they deliver new functionalities.

Positive correlation exists between CC maturity levels and the refined organizational practices. Maturity helps to realize CC benefits and measurement instruments, especially when there is no common agreement to define the service elements. Effective maturity assessment is a key to measure readiness and to establish CC roadmaps and improvement plans. Immaturity may affect CC decisions explicitly causing a disturbed enterprise architecture and service agility. Even the project and portfolio management approaches should be unique and mature to deploy CC services as a holistic single overall process. CSF consider correlations, measurements and deployment techniques to help producing a transparent blueprint for CC services.

Getting optimal value from CC requires maturity at the strategic and operational levels. Strategy can enhance alignment and governance while operation can provide continuous measurements and performance enhancements. The combination of activities at both levels augments the conditions for adequate value delivery. A robust governance framework operates at the highest levels to enable the transition and operation of CC. Such framework may compensate for some immaturity or weaknesses. A high level steering committee is recommended to operate at the executive level to align with business strategy and enterprise architecture. Overall, the CSF is introduced to enhance CC maturity, provide visibility to the business, communicate uniform maturity measurements and define clear tradeoffs if necessary.

Service Momentum

Plenty of CC services are spread across the arena. CEs select and adopt new services based on their future economic benefit or utility. The concept of service potential was described in ITIL as "the total possible value of the overall capabilities and resources of the IT service provider" (Axelos, 2016). In its definition, service potential relates to the service providers' ability to better utilize their resources and capabilities in a way that will allow their CEs to deliver business outcomes. It drives up the demand for services from CEs and reduces the idle capacity of the service providers.

The proposed service momentum approach complements the service potential landscape. It covers broader service areas and use additional variables to evaluate the CC service capabilities and predict its future. Service momentum is meant to measure the ability of a CC service to deliver value at any point in its life and support the CE business that is committed for. It identifies collaboration junctions with various business elements to achieve efficiency and absorb the CC service as a strategic business asset that can last onwards. It also includes the service capacity to deliver an economic output from the moment when the service is first acquired in addition to benefits from subsequent upgrades.

During CC service implementations, service momentum helps to validate the ecosystem components. It can be viewed as a broad-scale assessment and spatial mapping of every component. This may determine the overall service relevance to CE policies, business scope and the expected success likeli-

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hood. Service momentum can achieve an integrated assessment to represent the expected business value without masking the individual contribution of each component. It includes the identification of the key service-specific processes and the relationships with the targeted ecosystem services.

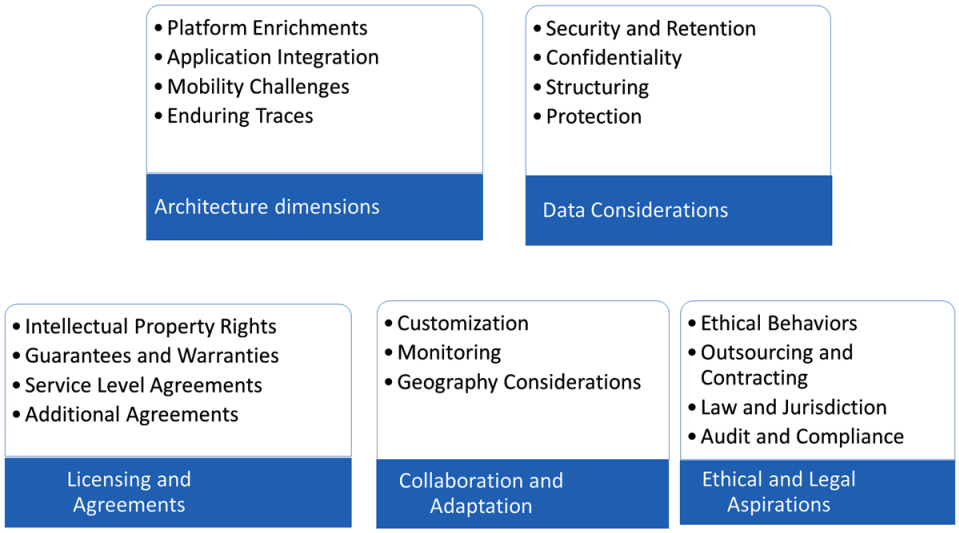
To measure the future sustainability of CC service, service momentum may include selected predictor variables to establish a scoring scheme that is allied with the service attributes. Various techniques can be used to identify the scores associated with each attribute. Thresholds can be accompanied based on accepted standards and relative observations. Reliable spatially explicit data may enhance the key business processes and support the management decisions. Sometimes there exist no clear thresholds or attributes to support the identification and development of quantitative future estimations. Modifications can be triggered based on the service performance and business relevance.

Service momentum is sought out to utilize the best available approaches to assess the current and future capabilities of each individual CC service based on abstract and expert opinion. This allows service momentum to act as a quality indicator to ensure CC service availability and feasibility. Service momentum approach is not yet complete; it needs further analysis to develop. Hands-on practical experience, market research, deep knowledge and industry relationships are utilized here to tentatively measure the service momentum for every CSF dimension or component.

CSF DIMENSIONS

CSF penetrates various fields to create an identity for every CC service and help both CEs and CSPs to better utilize resources, conduct the contracting and handle CC projects implementation operation and service management. CSF is encompassing various aspects including the architectural dimensions, data considerations, licensing and agreements, service collaboration, and legal aspirations. All dimensions, parameters and sub-parameters are shown in figure 1 below.

Figure 1. A list of all dimensions and sub-parameters of the Cloud Service Footprint (CSF)



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Architectural Dimensions

When planning CC projects, suitable architecture is considered among the most natural and necessary prerequisites. It determines few dimensions related to the CC service such as the number of users, transactions and its price list. One challenge is to determine the unique scope and parameters to provide an optimal relationship between service cost and effectiveness. This section is considering CSF capabilities to boost and optimize CC architectural elements including the platform enrichment, application integration and mobility challenges.

Platform Enrichments

While acquiring new CC service, CEs are expected to assess how this service can be utilized to enhance their technology adoption and promote business integration. Stakeholders may require to satisfy specific technical constrains, especially for unique requirements or sensitive information. Understanding technology concepts is important to determine what efforts are reasonable to address the CC risks. The CEs ability to assess the CC platform is important to give informed consent to forgo certain measures. CEs must be competent to assess the architecture related to the CC services or consult with someone who is. Number of platform measures and concepts are important to achieve the planned integration or correlation with on-premises technologies. Platform enrichment may consider the effect of various technologies on the CE future and adaptation.

CC services requires well-structured platform that foster adaptive implementations and accept sets of standards. Enriched platform need to leverage all solutions, share and re-use the existing infrastructure in a repeatable and cumulative means. A successful CC implementation may require blending of traditional on-premises infrastructure with public shared systems. Poor integration can prohibit the realization of multiple benefits. Infrastructure ownership can be a differentiator where some CSPs don't own their CC servers and instead use Amazon or Microsoft infrastructure for storing data and backing it up. Such a case creates an issue if the CSP defaults on a payment to servers' owner who might immediately cut off access.

Application Integration

CEs are looking to modernize and enhance their entire business applications environment. CC services attracted CEs to focus on rapid-deployment implementations that is delivering simple and scalable solutions. They encourage CEs to abandon the engagement in expensive implementations and customizations of protracted enterprise applications that is based on specific vertical solutions. Instead the applications based on CC services proofs their ability to deliver cost-friendly solutions that address a specific business processes in a short time. CSPs are trying to utilize best practices to jump start CEs with new efficient applications in smaller time frame. Application integration is meant to facilitate smooth connectivity of CC services with the existing and future applications.

The CC applications are what they are, as they are "generally implemented on the provider's terms, thus the degree of negotiability pales in comparison with the contracting model in traditional services" (Opelt, Gloger, Pfarl & Mittermayr, 2013). There is a general recognition that CEs have to start at CSP configurations, especially those well-established large CSPs who dictate their rules. Consequently, if a CE expects customization with genuine configurations of service parameters, then there should be special considerations related to the acquired solutions or components.

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Mobility Challenges

The 3As (Anytime, Anywhere and on Any device) phenomenon resulted from the prioritized mobile access (Mastorakis, Mavromoustakis, & Pallis, 2015). Mobility required by CEs to engage with their customers, business partners and employees. Mobile engagement is increased to enrich customer experience and transform data into actionable insights. However, it exposes applications and data on a small, light and always-on portable device. Every CC service should be evaluated against its mobility practices and its engagement with mobile service providers (MCPs). CSPs are expected to manage mobile application distribution and governance by considering several MCPs and public application stores.

Mobility is located at the front end of the new interaction system, which is people-centric as opposed to traditional systems, which was record or process-centric. CC services should support effective mobility platform that has a scalable hierarchy and architecture and can progressively deliver the optimum service based on existing resources. It should respond timely to the iterative, faster lifecycles, fragmented mobile devices with various operating behaviors. CSPs are expected to accommodate advanced mobile services such as push notifications and geo location services. CSPs are expected to have a robust mobile strategy to reduce risks across the CE infrastructure including mobile devices (endpoint) and other mobile stacked layers.

Enduring Traces

While information is transmitted online via website registration, emails, attachments or any other forms of uploads, they leave identifying traces and information. Such traces can be seen by others online or it may leave a permanent effect in the supporting platform architecture. CEs can be susceptible to security flaws originating from the leak of personal information via this digital footprint.

A CC service should be evaluated against the trace it leaves online. Network technologies tend to leave large traces due to its spread and expansion. Functional technologies tend to leave fairly small footprints as they may not be used outside a specific silo. One functional example is Computer Aided Drafting (CAD) system which is used only by engineering department. Some technologies or services can have small footprints or very large ones based on their complexity and usage. One example is the Enterprise Resources Planning (ERP) and Customer Relationship Management (CRM). Technology borders should be set up carefully when moving any functionality to the cloud. The enduring traces can play a major role in the complexity and cost of CC service.

Data Considerations

When contracting a CSP or an MCC to process data on its behalf, the CE will continue to be accountable and responsible for what the third party does with the data. This means that the CE could be liable if the data handled by the CSP is lost or destroyed. The CE has an obligation to ensure that the contracted third party has adequate measures in place to protect data securely against unauthorized or unlawful processing, accidental loss, destruction and damage. The CE also should consider data confidentiality, structuring, protection and backward collection when the contract is ceased. CSF is considering such dimensions as described in this section.

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Security and Retention

CEs are required to ensure that all data processing under their responsibility is handled in adherence to their data protection principles. Whether data handling is outsourced or being processed internally within CE data controllers. CEs can manage those requirements by including a security schedule within the CSP contract to outline data handling mechanisms. This includes:

- How the CE data is separated from others' data?
- Applicable restrictions on data and the associated security measures.
- Responses to security breaches of all kinds
- Reactions to legal requirements under various scenarios

CEs need to validate the CC service dimensions in relation to data disposal and retention schedules. Legal obligations and committed practices should be cascaded when the data is hosted and processed in the cloud. Data procedures need to comply with the stakeholder agreed schema and clarified during the contracting with the CSP or an MCC.

Confidentiality

There are many occasions when data access is restricted to authorized CE staff. Prior to signing a CC service agreement, CE seniors need to test CC solutions for data confidentiality and compromising immunity. It is required to assess whether the cloud is an appropriate place to store and work with classified data where confidentiality is critical. Outlining provisions in the contract may be required to detail the processes required to protect confidentiality (JISC, 2014).

CSP standard terms and conditions vary in the degree they undertake to maintain the data confidentiality. Some CSPs state that they have no duty of confidentiality regarding CE data and place the responsibility on the CE. Therefore, it is desirable to state clearly in the contract the confidentiality terms and obligations between CEs, CSPs & MCCs.

Structuring

The ownership of CC services and applications may not be available for licensing on CE systems outside of CSP provision. This pressures the importance to keep a copy of data locally under CE control to have the ability to download and use data in a native standardized format. Alternatively, the CSP should be able to move data to a different host if the CE becomes dissatisfied or otherwise wants to change providers. The CE need to confirm the CSP capability to purge and wipe any copies of the data according to different scenarios. This goes in line with data usage rights where the ownership of data supplied by the CE to the CSP need to be clearly disclosed. Even the ownership of metadata and other statistical information should be considered with the purposes it may be used for.

Data format may consider the portability and interoperability features to ensure that all CE data can be exported to multiple standardized format at any stage of the service delivery. Data encryption responsibilities should be completely understood by the CE if the provider encrypts confidential data, including who can determine the encryption sufficiency and how it should be used in all data transportability scenarios.

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Protection

CSP should back up data adequately to include data, configuration items, settings, files, documents, operating systems, applications and permissions. Backup frequency can be either immediate, hourly, daily, weekly or monthly and the storage location can be offshore or offsite with pre-determined relative location and distance from the location of the data being backed up. Access to backup data or archived data should be clearly articulated including the method it is available through and the management of restoration requests. The timeframe that it will be commenced within and the backup data retention period. The permission of client audits of backup data. Regular maintenance program is also required to ensure the reliability and stability of CSP resources and service offerings. If any service is paid the expected costs should be mentioned

CSP is expected also to take every reasonable action to protect data and guard against unauthorized attempts of access. Breaches include unauthorized access to confidential CE information by the CSP employees, MCCs or by outside parties like hackers. There should be procedures to be triggered if the CE discover that his data has been lost or compromised and policies to notify CEs of security breaches and next actions. CSF in intended to mask the complexity of data structures and protection allowing the CE to make informed decisions. It simplifies the CC data interaction with the systems and can be utilized easily to optimize operational decisions.

Licensing and Agreements

The nature of CC services allows information to be continuously generated, constantly added, removed and modified. It is important to agree upon the ownership of this data and to ensure that the CSP contract terms are clear. In certain conditions, it is essential to state in the contract that all data will continue to be owned by the CE including the residual database rights.

Intellectual property rights, warranties and guarantees should be considered while crafting the agreement accord. The CE, as data controller, will remain responsible for the adequate protection of their stakeholders' data. Combined with CC contracts there should be some agreements or provisions in order to clearly define the acceptable behavior of personnel from both parties including the service level agreement (SLA). Contract and agreements accord are important for both CEs and CSPs and is considered as a crucial part of the CSF dimensions

Intellectual Property Rights

CEs and CSPs need sloid arrangements to manage the intellectual property rights (IPRs). It is important to consider those rights from the outset of the service agreement as CC services are usually operated from the CSP cloud. CSPs can claim the ownership of the service itself, but CEs need to have the ownership of unique processes, contents and data uploaded by their users. A reviews for the CSP standard terms and conditions should be conducted at the early start-head to validate the IPR. Negotiations may be required to modify certain terms and conditions especially for emerging conditions. One scenario is to set out how intellectual property rights are assigned for new materials created as part of the jointly launched CC service.

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Software Escrow Agreements (SEAs) is a smart, simple way of protecting intellectual property rights for software owners while ensuring the long-term availability of business-critical systems for end-users. SEAs are used to ensure continued use of critical business systems by depositing the software systems source code with a neutral third party escrow agent (Olson & Peters, 2011). SEAs can be used effectively in CC.

Guarantees and Warranties

Certain services or applications may require a guarantee that only named authorized persons can use certain resource and on local servers only. Using CC services create a possibility of third party access including the CSP or MCC staff, additionally data location may not be specified. This necessitate that contractual agreements between CE stakeholders or clients to be reflected in the CC service contracts if correlated. CE should guarantee preventing unlicensed users and any unauthorized usage of the licensed resources.

CE should also consider to have necessary warranties related to the performance of the CC services. It is important to examine the terms and conditions of any warranties provided by the CSP according to its requirements. If a special warranty is required, it should be negotiated at the service start-head.

Service Level Agreements (SLAs)

When CEs utilize CC environments, they are inherently giving up control over certain aspects of the provided services. Service Level Agreements (SLAs) define the acceptable service levels to be provided by the CSP in measurable terms. SLA acts to define the necessary roles and responsibilities appendices to provide careful delineation between the accountabilities and relationships among all parties. As a best practice, SLAs should clearly define how CSPs monitor their service levels, provide timely notifications of failures or upgrades and submit evidences that problems have been resolved or mitigated. Issue reporting, communication mechanisms and response times for support requests should be defined and classified into reasonable agreed scenarios. If an SLA is not met, the consequences can be catastrophic to CEs.

Service Level Agreements (SLAs) represent an important component under the umbrella of the overall CC contracting between CSPs and CEs. SLA performance clauses should be consistent with other performance clauses within the contract. SLA should be fully contemplated by both of them prior to procuring CC services. SLA usually includes provisions that detail how end-users may use the services, responsibilities of the CSP, and how the CSP will deal with customer requirements. It is noteworthy that the definitions, measurements/metrics and enforcement of this performance vary widely among CSPs. Therefore, a CE "need to fully understand any ambiguities in the definitions of the terms in order to know what levels of service to expect" (Metheny, 2013). The bottom line is that value is provided where terms are clearly defined and performance metrics are measured and guaranteed.

Additional Agreements

CC contracts may require to set out additional agreements or workflow processes to be activated in case of non-performance, breach of contract or even the special scenarios. Consortium agreements handle the special case when several CEs are working together on a private cloud to outline the terms and conditions of collaborative working. Software Escrow Agreements (SEAs) are necessary for business

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continuity and more crucial in CC to mitigate the inherent risks resulted because CEs rely on the CSP tools and applications. It ensures that the systems utilized by CEs can be made available in severe cases with an access the source code and documentation. The source code is released to the licensee (CE) if the licensor (CSP or MCC) vanishes out or fails to maintain and update the software as specified in the software license agreement.

Some CEs may require that CSP and MCC personnel to sign Non-Disclosure Agreements (NDAs) when dealing with their data to ensure that they protect sensitive non-public information or details. The acceptable behavior prescribed by NDAs requires reasonable oversight, including examining its clauses and monitoring some end-users' activities. CSF is shedding the light on the additional agreements to ensure reliable CC service is provided. On top of this, there may be a need for specific service agreements, rights and responsibilities clauses, license arrangements, security schedules and what is required.

Service Collaboration

Unlike traditional applications, temporary interruption in CC services may be the norm, not the exception. Each CSP can define its own service approach and limitations which is outside the CE controls. Cloud and related technologies have promoted new service status including the "always on" concept, Omni-channel experience and the versioning control tracking. Multiple dimensional synchronization poses a new set of requirements, as customers demand seamless uniform look and feel.

CSF is considering necessary parameters to ensure that CC services are effectively designed, well-documented and closely monitored and collaborated by the CSPs and CEs. It provides the ability to have a continuous experience across multiple brands, formats and devices that is completely bespoke. CSF is considering the promise of new thinking and marketing ways that has been fabricated by the CC and associated services.

Customization

There are areas where CEs need to show their naivety by asking for changes that directly contradict the commoditized nature of the service offering. Usually little changes are accepted by the CSP who may comply with CE's complex requests only at a very high cost. Special requirements take backseats with CSPs who prefer to incorporate any processes changes to all CEs. The management of specific application changes for every CE will drive down CC efficiencies and raise costs. Silo implementations may delay the CSP strategy, root-in the ability of swift change reactions and necessitate setting new policies.

CC enables the most sophisticated analytic tools and applications along with increasingly diverse data sets. CC resources are being put in use to solve problems in ways people can scarcely imagine. CSPs utilize an infrastructure that enables CEs to deliver value more quickly. This is leading the way for context-driven variability by understanding CEs and engaging them in more authentic or personalized ways. CC services changed the collaboration obligation and technologies in a manner that is very useful for CEs as they reduce the costs associated with expensive travel and communication. Cloud also converted the ways data transactions are facilitated along plenty of industries and activities.

CSF needs to measure the easiness and effectiveness of CC service to deliver new applications to a broader set of users. Collaboration benefits and parameters need to be measured by the CSF to improve operational efficiency and facilitate effective mechanism and an integral element.

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Monitoring

CEs may require their usage of the CC services not to be monitored by CSPs either due to concerns regarding the outcome of such monitoring or their fear to disclose confidential data. CSPs consider different monitoring policies to control the nature/pattern of use or to ensure good quality service provision. Monitoring may be used for statistical analysis or to enforce the acceptable use policy (AUP). CSF is opening the CE eyes to examine the contract details related to the level of monitoring and to confirm that associated terms are consistent with their own requirements.

Geography Considerations

CSPs are likely to store and move data around multiple servers situated in a number of jurisdictions which are most likely located in different countries. Some jurisdictions do not allow the transfer of data abroad unless the hosting country has an adequate level of protection or transparency (JISC, 2014). CEs will need to find out where the CSP is processing data an ensure satisfactory geographical location are chosen to store and archive data. Some major CSPs offer a number of "regional zones" in which a customer may be assured the data will remain. Yet, it is good practice that CE ask for warranty or legal assurance of data location during the contracting phase. The CE should also verify that reporting and auditing mechanism are compliant with local requirements.

CSF consider such geographical information to evaluate service reliability and spread. Additionally, this gives a description of how much territory the CC service is intended to cover, utilize and reach functionally.

Legal Aspirations

CEs, CSPs and MCCs usually follow the contractual agreements but also they need to consider ethical rules and other applicable laws. Behavioral and legal circumstances should be closely considered by the CEs when acquiring a CC service. The experience and reputation of a CSP is important as well its geographical spread, divisional and functional reach and its service coverage. CEs are expected to do their due diligence or consult for recommendations to choose a CSP with a proven record of ethics and functionality.

This section is pinpointing few CSF dimensions related to legal, ethical, law and jurisdiction controls. It also looks at to determine the outsourcing and contracting recommended behaviors and some considerations related to audit and compliance surroundings for CC.

Ethical Behaviors

Inadvertent disclosure or unauthorized interception may pose a great effect on the CEs and their clients and partners. CEs should ask themselves how bad it would be if unauthorized parties gained access to information in bulk or case-by-case basis. The CE should take the proper precautions and measures to prevent access or disclosure. Some measures are easy to set up and then run without additional input while advanced or custom measures may require expert knowledge.

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One reason why ethics are important, is the difficulty of evaluating every functionality and implementation of safeguards in particular. Some measures are less likely to be deemed necessary as they may prevent service access or disrupt the flow of practices. Therefore, it is preferred to compensate by a CSP ethics to provide a holistic assurance of safeguards and functionality measures. Service can be re-visited occasionally and selectively to verify or advise situations where additional considerations are necessary.

When evaluating CSPs, CSF imposes a considerable scoring weight to the possibility of expected breach and handling ethics. The extent to which ethical behaviors affect the CEs' ability to collaborate with stakeholders is considered. CSF is required to validate some ethics and conditions to reduce the likelihood of the disclosure and to determine when it is necessary to implement additional safeguards.

Outsourcing and Contracting

Trust and confidence are key factors when the CE decide to participate-in or engage-with a project or a program. In the CC era, these factors are further complicated due to multiple interdependencies. CSPs and middle circle contractors (MCCs) are major players in the CC supply chain loop. The lack of physical control over infrastructure in many CC deployments necessitate mechanisms and parameters to reduce deployment and operation concerns. Stakeholders are more likely to engage with CC projects when they have sufficient confidence that the CSP and other MCCs can control and deliver the desired business outcomes in a consistent manner as they are contracted to.

Prior to the CC era, the failure due to purely external challenges was limited, however this is increasingly being a possible reason of failure. Clashes between various parties may occur due to the inadequacy in understanding the functional and technical specifications or their rigidity to be accommodated into new business realities. The terms of the agreement for CC services should always be read with particular attention to the CSP mechanisms. CEs should ask questions to fully understand how service is implemented, information is protected and how it is aligned to their business goals. It is important to identify the legal and ethical surroundings of the jurisdictions, especially, when the CSP is located overseas. To avoid clatters and disappointments, the CE need to ensure that the CSP or MCC understanding and protocols are on par with the CE expectations. Confusion may affect many stakeholders and increases the likelihood of external action to curtail the actions of the CE. The CC deployment teams need to place huge efforts to avoid loss of confidence and participation which is pervasive in change management.

CEs need to ensure that CC service contracts are adequate to handle their requirements and concerns and to respond to the future expectations. Policies and procedures in the contract need to comply with the CE obligations, strategies and policies. CC contracts can vary in format and wording depending on the CSP and the type of procured solution. For all CC contracts, it is a good practice to ensure that legal obligations are managed according to the CE satisfaction. An important factor at the contract stage is to ensure that the CSP will take reasonable steps to meet the CE's existing legal duties while they are providing the service (JISC, 2014).

CC service contracts are expected to handle the obligation to comply with data protection legislations and obligations. Appropriate management of intellectual property rights, licensing of resources and law enforcement obligations may be detailed to the appropriate level. CEs need to consider also the CSP's take-down policy for its internal and external published content if some materials are declared to break the law. The procedure, authorization and CE involvement in removing such material should be assessed and documented.

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CSF visualize the CC projects to have deep engagement with business strategy, thus large-scale failure in them could be part of the board agenda. There are times when, in spite of all care and consideration, projects get so far off-the track, thus there is no alternative to pulling the plug. CSF aims to examine and assess the CSPs and MCCs relationships and dependencies to the extent possible. The CSF is intended to provide the stakeholders with enough visibility to navigate the trust and confidence factors. CSF aims to make all stakeholders, including the board, more aware of the consequences and prepared to make decisions from the early days of the project.

Law and Jurisdiction

Due to its nature, multiple legal jurisdictions are involved in off-shore CC services. Relevant jurisdictions are likely to include the country in which the CE is based and the country where the CSP headquarters are located, in addition to the locations where CSP servers and its MCCs reside. Defining which country's laws apply to a particular issue and which country's courts will hear a particular dispute can be complex. The resolution may vary according to the area of law and the jurisdiction in which the question arises. However, some general observations are possible.

A CSP normally specifies within the contract terms the governing laws of a specific country and that disputes will be heard in which country's courts. Usually jurisdiction is performed in the country where the cloud provider has its principal place of business, but occasionally it may be the legal system where the CE is based. The law typically places few restrictions on this type of contractual clause, except the situations of specifying a totally irrelevant jurisdiction or stringent controls.

In the event of a dispute CEs need to avoid enforcing contractual terms or defending an action in an overseas jurisdiction and under foreign law. They may therefore have to consider the possible additional costs, efforts and impacts if the CSP choose to apply a foreign law and jurisdiction against the benefits of that particular service.

Audit and Compliance

Due to the on-demand provisioning and multi-tenant aspects of CC, traditional forms of audit and compliance may not be available, or may need to be modified. CC enforced major changes in the auditing arena causing external and internal audits to stretch, also continuous auditing concept is introduced. Similarly, the compliance is expanded to propagate into the CC service insides and not to stop at the boundary of the CSP. The embedded audit and compliance procedures need to provide the required value to all stakeholders including CEs, CSPs and regulatory bodies. New parameters and techniques need to be invented to accommodate the audit and compliance techniques that are appropriate and necessary for the CC service and the CE circumstances.

CSF may consider adding reasonable care for any CSP or MCC related restrictions or missing contractual exceptions. Its parameters will simplify CC audits and will enhance some behaviors, components and related aspects. CSF behavioral involvements will reduce the misunderstanding between various stakeholders and provide more visibility and awareness. CSF is intended to achieve higher degrees of communication, comprehension, and buy-in of all the stakeholders. Thorough audit and compliance processes can avoid regulatory fines and reputational damage and reduce disruption. Ultimately, this will give CC platforms the ability to implement system changes and refinements faster and in a more cost-effective manner.

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FUTURE RESEARCH DIRECTIONS

The relation between technology organizations (TOs) and business users is being rephrased leading to a wide change in mentality and collaboration of both teams. Risk accompanies change, it is an inherited component of life. The willingness to take and accept risk is crucial for development and progress. Governance is setting the roles to enable stakeholders benefiting from change while minimizing the negative consequences. Technology is now everywhere, and cloud computing (CC) is extending its reach and stretching services so it can be used without significant capital expenditure or even the involvement of technology organization (TO). It is the time to promote unique measures to help business and technology stakeholders including executives to compare CC services and understand associated risks and implications. This is triggering a joint research in CC risk and governance, along with the business and technology alignment in the CC era.

Cloud computing (CC) and associated technologies opens a wide research terrain in theories, characterization and measurements of CC services. Cloud Service Footprint (CSF) is a measure that is introduced in this chapter to provide self-characterization of CC services. It enables the CC service to be utilized everywhere with a standardized business implications and approaches. It also endorses advanced measurement techniques for CC services and mini-services structures, paving the way for independent CC services and extensible enterprise transformation. It aims also to enhance scalability, reduce costs, simplify service management and the decision making process. However, all these phenomena are improving gradually while the CC services are maturing. Extensive research is required to accompany these phenomena, enhance the CSF dimensions and produce effective measures.

In summary, this chapter suggests two main research topics, the first is related to the development of an effective measures for CC services based on risk and governance concepts. This effort, in order to be successful, requires the participation of a very wide range of stakeholders and to benefit from existing frameworks, theoretical bases and practices. The second is to widen the CSF dimensions to include all possible aspects of the CC services whenever they can be realized and measured. Qualitative description and analysis to be conducted continuously, comprehensively and while quantitative description of the CSF dimensions need to be added, if applicable, at a later stage. Quantitative analysis is suggested to follow the weighted average mechanism considering the risk, governance, service maturity and momentum levels.

CONCLUSION

Cloud computing (CC) is reshaping the future, plenty of benefits are justifying its acceptance both from technical and management perspectives. However, it is important to re-invest the savings obtained from CC utilization to attain additional controls, ongoing assessments and more optimization. This chapter studied some CC aspirations including risk, governance, service maturity and momentum levels. It then defined a combined factor that can measure continuously the CC service performance and validate business benefits. Cloud Service Footprint (CSF) is introduced to evaluate a CC service, certify if accepted challenges are rewarded and to identify if the acquired CC service is adequate. CSF as a footprint consider all dimensions and subs surrounding the CC service and the traces that can be residual out of any dimension.

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CC services are undoubtedly forming the dynamic heart of the next transformation and utility based computing. Practice has shown that associated CC technologies and risks are often not well understood by the key stakeholders in the client enterprises (CEs) including board members and executive management. However, without a clear understanding, major stakeholders have no point of reference for prioritizing and managing CC services and align them with the CE objectives. CSF is designed to provide executives with more clarity to navigate into the CC journey with long-term view to deliver short term solutions in a coherent vision.

CC service benefits are introduced through evaluation and deployment phases but become measurable during the utilization and operation. This chapter define some CSF dimensions to help business and technology stakeholders working for the CEs, CSPs, MCCs or even regulatory bodies to evaluate and compare CC services. It is intended to support the selection and rollout of CC services with sure steps to satisfy the integration and isolation rules on the way towards well governed "off-the-shelf" CC services. In this regard, the CSF measure the CC service dimensions related to the supporting architecture, data considerations, licensing, service collaboration and legal aspirations. In every dimension and subsequent branches lookup items are identified and commented to achieve the best performance.

CSF is expected to apply equally to existing services and future components and to help in deriving the policies, mechanisms and metrics associated with a CC service. It also needs to judge new components of CC services as well the pre-defined ones. Well-governed CC services can help to regenerate the CE processes and fit business areas. Clear, fact-based efforts and communications are required to lay the foundation of CC service measurements and to include standardized methodologies.

By introducing the CSF, this chapter attempts to present an effort and aspirations to ignite fruitful discussion that will eventually lead to an increased number of research studies in the field of CC service characterization based on governance, risk, service maturity and momentum. This field is really important as it is paving the way to enhance the standardization of CC service and associated technologies. The ultimate goal is to help CEs evaluate existing CC services while the CSPs can brand and benchmark their services in standardized formats

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KEY TERMS AND DEFINITIONS

Client Enterprise (CE): An organization that uses the professional, networking or computing services provided by Cloud Service Providers (CSPs) according to a signed contract against some agreed financial charges. This is compared to ITIL:2011 definition of "business customer" as a comprehensive term for a recipient of a product or a service from the business.

Cloud Service Footprint (CSF): An invented term intended as a control element that provides client enterprises (CEs), cloud service providers (CSPs) and regulatory bodies with necessary visibility to measure each cloud service independently or collectively in order for stakeholders to make informed decisions.

Cloud Service Provider (CSP): An entity that provides computing services based on their existing platforms and apply certain rules for these services.

Governance: A set of processes, customs, policies, laws, and institutions affecting the way an enterprise is directed, administered or controlled. If added to a specific area such as technology it has similar meaning in addition to alignment between that area and the enterprise strategy.

Middle Circle Contractor (MCC): An external or internal person, group or organization that is appointed to perform work or to provide goods/services at a certain price or within a certain time. The MCC appears as a middle person who usually disappears after the specified task is complete.

Risk Management: The act of handling the risk exposure through mitigation, acceptance, sharing and avoidance. It includes the ability to handle information and technology risks based on stakeholders' risk parameters.

Service Momentum: Is meant to measure the ability of a CC service to deliver value at any point in its life and support the business that is committed for. It complements the service potential landscape to evaluate the CC service capabilities and predict its future.

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Take-Down Policy: A process operated by online hosts including Cloud Service Providers (CSPs) that is developed to balance the risk between continued availability of data content that may infringes certain law and the damage that may result from wrongful take-down. It may be activated as a response to court orders or personal allegations.

Technology Organization (TO): A team either inside the client enterprise (CE) or outside it, that is in charge of establishing, monitoring and maintaining technology systems and services. In addition, the "TO" supports strategic planning to ensure that all technology initiatives support business goals. It was referred to as the information technology (IT) department which does not reflect the entire spectrum of technology usage nowadays.

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Chapter 30
Project Portfolio Management: Tool for Strategy Implementation in Non-Governmental Organizations

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ABSTRACT

Project Portfolio Management is a relatively new practice for the majority of non-government organisations. Project portfolio management is important in the areas of management and education of third sector practitioners. However, project portfolio management, corporate management tools are usually used in the business sector with very little research undertaken in the non-government sectors. This chapter fills that research gap by identifying and analysis of project portfolio management practices in non-governmental organizations. Findings suggest that non-government organisations manage multiple projects simultaneously but that project portfolio management could support them to build their portfolio in accordance with a strategic plan that can fulfil their strategic objectives efficiently and effectively.

INTRODUCTION

The NGO sector in Poland is growing. There are nearly one hundred thousand foundations and associations (100,000), two hundred thousand other organizational forms, including semi-formal, large groups and Catholic organizations (200,000). Despite the increase in number of NGOs in the last 26 years of transformation of the country, Polish NGOs still face many difficulties. In particular the lack of permanent funding for activities, a strong focus on project work, lack of funds for hiring full-time employees, as well as a common distrust of society, resulting from disclosure of unethical and illegal practices of some NGOs. The most important feature of Polish NGOs is their not for profit character, hence the interchangeable use of two terms: non-governmental and non-profit. However, taking into considerations

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diverse conditions of formation and nomenclature of third sector organizations, the term NGO used in this chapter is similar in its meaning to the concept of non-profit organization described by Salamon and Anheier (1999). Many NGOs implement large projects and contributes to building and developing a strong and credible third sector in Poland.

Project management is a widely used business management concept used in NGOs globally and regardless of the type of activities that are managed (Khang & Moe, 2008; Golini, Kalchschmidt, Landoni, 2015). It is not a new approach to the implementation of tasks in organizations in general – dating back to the construction of the Egyptian pyramids and Roman aqueducts. Traditional project management was focused on the management of a single project in a single location. However, the 1990's technological change, the globalization process and the different needs of customers projected project management into new forms (Kloppenborg & Opfer 2002). In the field of project management, three main areas have been identified (tactical, operational, strategic) and particularly, project management, program management and project portfolio management have increasingly attracted attention. One important differentiating point as pointed out by Jugdey (2003) is that program management and project portfolios concern the management of groups of individual projects and differ from managing a single project (Jugdev, 2003). This is an important distinction in understanding project portfolio management in non-government organizations, which is the main objective of this discussion.

Although project management has been traditionally used in NGO's globally, Project Portfolio Management (PPM) is a relatively new practice for the majority of non-government organisations, and particularly so in Poland. PPM is important in the areas of management and education of third sector practitioners. However, project portfolio management, corporate management tools are usually used in the business sector with very little research undertaken in the non-government sectors. This chapter fills that research gap by identifying and analysis of project portfolio management practices in non-governmental organizations.

Following the introduction, the concept of projectification provides an overview of the conceptualisation of project portfolio management and its application in non-government organizations. This is followed by a discussion on project portfolio management, stages of project portfolio management and project portfolio management in non-government organizations. The chapter concludes with the importance of project portfolio management in non-government organizations and provides future research recommendations.

BACKGROUND

Similarly to the business and the public sector, the sector of non-governmental organizations is strongly influenced by projectification processes. Projectification is a phenomenon that can be observed in all areas of economics, and which results in an increasing, sometimes even predominant, part of organizational tasks being executed in the project-based form. Moving away from operating on the basis of repeatable processes, organizations execute short, one-off projects. In the case of NGOs projects are a natural form for their activities, since funds obtained outside the organization have a limited time frame and a specific purpose. Moreover, contracts concluded on performance of public tasks have a form of projects, as do tenders announced by grant-giving foundations (Bogacz-Wojtanowska & Jałocha, 2016). Projectification processes in NGOs also support models and principles of cooperation with other orga-

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nizations, particularly public ones. Projectification of projects occurs in contracts for the performance of public services which exist in the Anglo-saxon model of NGO operations as well as in many Eastern European countries.

Project management, usually as a task performance method, is identified with a flexible, innovative and effective approach to management. However, with increasing frequency these shifts are being criticized, also in the NGO sector, and the criticism does not concern solely governmentalization processes. Project-oriented approaches are short-term focused and influences the stability and sustainable development of non-government organization (Bogacz-Wojtanowska & Jałocha, 2016). Subsequently, the long-term strategic planning and achieving long-term strategic objectives of non-government organisations are impacted by the short-termism of project-oriented approaches. For example, instead of thinking about their long-term development and achieving strategic objectives, NGOs may have to focus on seeking new projects to sustain the funding.

Sustaining income in turn funds the continuity of employment of staff who deliver the services and subsequently achieve the project objectives, organisational objectives and organisational mission. Failure to strategically plan perilously impacts the stability, sustainability and growth of the organization. The continuation of non-government projects is important for another reason, sustaining public trust. Sustaining public trust in services obtained from non-government services, strengthens community confidence and thereby contributes to a balanced approach to delivering services to the public.

Project Portfolio Management (PPM) attempts to shift the focus from the constant pursuit of new funding, and allows management to adopt a strategic approach where each project is observed as part of a jigsaw puzzle which when combined reflects the organisational strategy linked together in as a holistic and balanced phenomenon. Adopting PPM as a method which focuses on an inter-linking of projects to achieve the organisational objectives, prevents a pathological destabilising and distrust of non-government organisations.-

Golini, Kalchschmidt and Landoni (2015) indicate that NGOs apply varied methods related to project work. Golini et al (2015) argued that the level organizational maturity in terms of project management depended on the organisational ability to execute project management processes as well as document, measure, control and continuously development. Furthermore, Golini et al (2015) suggested that better project knowledge management leads to effectiveness of non-government organisations. The contention in this study is that the application of PPM could assist non-government organization in the effective knowledge management, strategic management, strategic planning and strategic implementation of projects and programs. To this end, the next section provides an overview of strategic management followed by a discussion of project portfolio management.

STRATEGIC MANAGEMENT

Strategic management is a set managerial decision-making tools and organizational activities which are used to create an organizational competitive advantage and facilitate long-term operations (Powell 2001; Bryson, Gibbons, 2001; Anheier 2006). Strategic management can be used by NGOs to develop their long-term organisational vision and programs (Powell 2001; Bryson, Gibbons, 2001; Anheier 2006). Furthermore, with the increasing pressure to measure performance and social impact, adopt a business model and professionalise non-government service delivery, adopting a strategic management approach is becoming an important approach for non-government organizations to achieve results (Reid, Brown, McNerney & Perri

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D, 2014). However, according to Zharp and Brock (2012) substantial research demonstrated that nonprofits still exhibit a significant level of resistance in response to strategic planning process.

Bryson (1989) identified that third sector organisations needed to adapt to the application of strategic management as an answer to the changing circumstances and conditions for conducting third sector and non-governmental activities. This is a challenge third sector organizations continue to face. Interestingly, Wilson (1993) argued that there were two distinct sets of strategies which non-government organisations could consider. Wilson (1993) referred to the pluralistic strategies and the competition strategies. Pluralistic strategies was oriented towards the cooperation between organizations executing similar goals while competition strategies were pro-market orientation and focused on acquiring the largest market possible or overtaking market niches of interest to the organization.

However, Mulhare (1999) and Eisenberg (1997), questioned the usefulness of strategic planning in NGOs, indicating that it involved adapting inappropriate commercial practices, and strategic planning is an end in itself, eclipsing the essence of NGOs' functioning. Burdney and Murray (1998) argued that it is difficult for non-government organisations to adopt strategic management as both internal and external stakeholders must be taken into account. Despite the debates for or against strategic management, support of strategic performance management in the third sector has grown over the years Golensky and Mulder 2006, Miller 2002, van der Pijl, Sminia 2004). Fredericks (2008) and Domanski (2009) outlined strategic management application, methods and techniques for third sector organizations. Mara (2000) suggested that one of the most essential functions of strategic management in non-government organisations is the efficient allocation of resources which strengthened the organisational financial capacity and determined organisational survival.

Marucello (2001) suggested that since non-government organisations had to constantly seek new funding to continue the organisational objectives and service delivery outcomes, it has become increasingly more important for non-government organisations to focus on increasing resources than on providing services. Hafsi and Thomas (2005) and Ridder and McCandless (2008) argued that non-government organizations should consider the factors influencing the operations of the organisation. Bryson, Ackermann and Eden (2007) focused on the key competencies of strategic management. Renshaw and the need for strategic knowledge management in these organizations Renshaw and Krishnaswamy (2009), contended that strategic knowledge management in non-government is important to achieve organisational outcomes. However, strategic management, while it allows for the effective execution in long term strategy, strategic objectives focuses on strategic process with two separate process of strategic planning and strategic implementation. Project Portfolio Management, with its focus on achieving-strategic objectives through the executed projects, enhances strategic management.

PROJECT PORTFOLIO MANAGEMENT

Project Portfolio Management (PPM) distinguishes between two phases of the strategic process: strategic planning and strategic implementation (Ansoff, 1987) but relates to both the strategic planning and strategic implementation phases. PPM has its origins in business and particularly from project-oriented enterprise where projects play a key role in the process of executing activities to achieve the desired and planned outcomes. The fundamental objective of project-oriented enterprises is to synergise and execute projects to maximise as profits gained from project execution. PPM is therefore a strategic approach where the emphasis is on the strategic dimension of strategic planning and strategic implementation.

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Meskendahl, (2010) argues that as the main premise of a project portfolio is the maximization of its financial value, combining the portfolio of projects with strategic organisational objectives and balancing the projects within the portfolio, levels the potential profitability, risk and financial gain. To achieve the maximisation of financial gain, PPM treats different projects as a combined and coordinated project which enables the execution of long-term strategic objectives (Meskendahl (2010). Gerais (2007) summarises that PMM is a project portfolio collection of all projects which a project-oriented organization conducts at a given time., and relationships between these projects. Similarly,

Archer and Ghasemzadeh (2007) define a project portfolio as a group of projects financed by a given organization. Meskendahl (2010) adds that a project portfolio is a collection of projects which compete for the same resources of an organization. In this sense, PPM assists organisations to cope with the increasing number of project activities (Meskendahl, 2010, Rad and Levin, 2006). Project portfolios differ significantly depending on the industry (Killen 2008; Archer, Ghasemzadeh, 2007). However, projects and programs are strategic initiatives combined into portfolios to create and maximise value for the organization.

According to Rad and Levin (2006), the portfolios of projects are created for the strategic management of project activity of the organization. PPM scope and objective, as opposed to individual projects, changes with the change of the strategic objectives of the organization. Programs and portfolios are different concepts. Programs are considered as a manifestation of strategic actions of the organization. However, programs restricted to one narrow area or an organisation rather than in a holistic organisational dimension. Project portfolios, on the other hand are considered as holistic organisational dimensions that like a jigsaw puzzle, fit together to make a complete whole. PPM fits the needs of project oriented non-government organisations.

Portfolio Management Process

According to one of the most popular definitions of the Project Portfolio Management formulated by the Project Management Institute, the process is the coordinated management of portfolio components to achieve specific organizational objectives (PMI, 2008). Project Portfolio Management can be defined as a process of managing organizational projects and programs at different stages of their life cycle, which are analyzed, prioritized, monitored and controlled in the course of a dynamic process (Jałocha, 2014). However, PPM is above all a strategic action and requires the organization's management to make a series of strategic decisions.

The most critical decision is to decide whether a particular project is going to be executed or not. This is the most fundamental decision in the entire process, with key impact on the shape of the portfolio and the process of its management (Jafarizadeh, Khorshid-Doust, 2008: 613). Due to the fact that very often in organizations different – both individual and group – interests clash, (e.g., interests of particular divisions, branches, departments), deciding which projects should be approved for execution and which to reject, is oftentimes very difficult. Sometimes the so-called "pet projects" promoted by important employees of a given organization in senior management positions, are chosen for realization, even though they should not.

In a correct PPM process, the selection of project for execution should be decided on the basis of the most objective criteria available, based on strategic organizational objectives. This is undoubtedly no mean feat, especially in the case of organizations whose main criterion of organizational success is not the financial profit, but e.g. social development, or welfare of the people, like in the case of non-

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governmental and public organizations. The selection of projects for the portfolio is usually conducted by a commission – an appropriate committee is appointed, equipped with relevant authorizations for making decisions concerning the choice of projects for the portfolio. In order to ensure the transparency of this process and avoid forcing at all cost only projects favoured by particular decision-makers, it is necessary to provide a set of tools supporting this process and ensuring – as much as possible – impartial assessment of particular enterprises (Jałocha, 2014). The process of selecting projects for the portfolio cannot be too complicated – the selection of optimal projects should be based on relatively simple criteria.

Therefore, to ensure that the process of selecting projects for the portfolio proceeds correctly, a well thought-out concept of its construction and management is necessary. The basic question which should be posed is whether a particular project would allow our organization to develop further, and whether it fits into our strategy. Of course, we should also reflect on what we need to perform a particular undertaking and whether we have the potential and capacities for its successful execution.

Project Portfolio Management is a complex process derived from decision making about the future, operating in a dynamic turbulent environment with constantly changing circumstances, different stages of different project life-cycles, competing for available resources which are limited and decision making about the execution of one project decreased resources assigned to another for completion complexity results, among others, from the following factors (Jałocha, 2014). Jonas (2010: 822) argued that tasks connected with portfolio management can be grouped into four basic phases comprising the life cycle of a project portfolio as follows:

Phase One: Portfolio Structuring

Portfolio structuring involves strategic planning of activities and defining long-term objectives. This phase is also when proposals of projects, which could be placed in the portfolio, are evaluated and selected. It is repeated regularly, according to the cycles of the organization's strategic planning. Due to the importance of this phase and its impact on the final shape of the portfolio, it features strong involvement of senior management (Jałocha, 2014). The selection of projects for the portfolio is a periodic action consisting in making the selection from among new project proposals or organizational programs, as well as ones being currently executed (if it is not the first attempt at portfolio assessment), which comply with organizational objectives and do not exceed available resources and other organizational limitations (Archer, Ghasemzadeh, 1999: 208). Certain elements taken into account in the process of selection are strategic objectives, financial benefits, intangible benefits, availability of resources and the level of portfolio risk.

Phase Two: Portfolio Resources Management

Portfolio resource management involves planning the division of resources between projects, formally confirming the allocation of resources and managing conflicts concerning resource allocation (if they arise). Moreover, resources are allocated again, if a new, previously unplanned, need for them occurs.

Phase Three: Portfolio Steering

Portfolio steering comprises such activities as monitoring the portfolio strategic compliance, determining correction methods in the case of deviations from the set portfolio objective, identifying synergies between projects, or coordinating projects in departments.

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Phase Four: Organisational Learning and Portfolio Exploitation

Organizational learning and portfolio exploitation. Portfolio results are subjected to evaluation; and post-project reviews are carried out to enable tracking the benefits gained. Furthermore, knowledge obtained through project execution is gathered and analysed, for the purpose of later application of best practices in future endeavours.

Problems accompanying the selection process result from several factors (Ghasemzadeh, Archer, 2000:73):

1. The organization has many different objectives which sometimes contradict one another, some of them are qualitative, and not quantitative – hence the difficulty in measuring and comparing them;
2. Uncertainty and risk influence projects – the selected portfolio may need balancing in terms of risk and time remaining until the end of particular projects;
3. The number of possible combinations in the portfolio is often very large, which makes the choice more difficult.

An array of portfolio project selection methods exists, yet there is no single leading method perceived as the ultimate or the most universal (Jałocha, 2014). Each portfolio organization should select its own set of indicators, which would best enable to characterize the executed projects and place emphasis on the most important factors, from the organization's point of view, which should determine the project's place in the portfolio. The largest differences between particular criteria will depend on the industry within which a particular organization operates. In the business sector, the main criterion for building the portfolio will usually be the financial profit generated for the organization. In public and non-governmental organizations, whose strategic principles are based on different objectives, the profit is not always the main criterion of the project selection. Of course, the Project Portfolio Management process does not end at a one-time selection of projects which fit organizational strategic objectives. It requires constant portfolio reviews and reprioritization of projects it contains, as well as including new initiatives.

PROJECT PORTFOLIO IN NON-GOVERNMENT ORGANISATIONS

Research Methods and Findings

Four non-governmental organisations operating in Poland were selected for participation in the Project Portfolio Management project. These organizations were identified as having a previously existing project portfolio. Due to a lack of detailed preliminary research on PPM in non-governmental organisations, an exploratory multiple case study approach (Streb, 2010) was used to investigate PPM in non-government organisations. Exploratory case study is very often applied as a preliminary step of an overall causal or explanatory research design exploring a relatively new field of scientific investigation (Streb, 2010). Exploratory studies provide an initial understanding of the situation.

However, conclusions based on exploratory case study are limited and requires enhanced quantitative and qualitative research. Non-governmental organizations with identified project portfolios of 4-5 projects executed annually provided a purposive sample of non-government organisations that have been operating for at least 7 years and have continuously executed projects for selected groups of stakeholders.

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The participating organisations were socially legitimate non-government organisations with employed paid staff and had reputations as reliable non-government organisations that fulfilled their objectives, worked in a professional manner and adopted an ethical approach and an organisational structure that coped with portfolio management (Suchman, 1995).

Qualitative studies were conducted in 2016 in Poland. On the basis of data analysis four case studies (Yin, 1984) of exploratory character were prepared. The study consisted of:

1. Conducting an in-depth interviews with persons managing the organization (served as our primary source of data in the current analysis);
2. Analyzing organizational documents, in particular strategic and project documents,
3. Analyzing websites and social media profiles.

In-depth interviews were conducted on the basis of a structured interview scheme. Interview questions were based on a preliminary analysis of the literature and related to aspects such as: process of portfolio selection (Archer & Ghasemzadeh, 2007), PMO's role (Desouza & Evaristo, 2006), portfolio management process (Project Management Institute, 2008). At the same time, when a given issue was significant, interviewees were allowed to express free, in-depth reflection on the subject. Each interview lasted at least an hour. Data analysis followed the transcription of the interviews. Due to the small number of interviews, computer software was not used for the analysis. Interviews were repeatedly read in order to identify emerging categories. Among the identified threads, in each of the studied organizations particular attention was brought to such issues as: the process of projects' selection, the role of PMOs, project knowledge management and managing the portfolio risk. These categories are discussed below.

Projects in Researched Organizations

The studied organizations were quite diverse in terms of their size and the number of executed projects. Table 1 features the characterization of the studied organizations.

A common feature of the studied organizations is that projects are very important for them, but at the same time they are neither the principal nor the only way of financing their activities. Contrary to organizations which base the entirety of their operations on projects, the studied organizations are determined to have, apart from uncertain, contract-based initiatives, also stable source of funding for their activities, based mainly on fixed membership fees or the conducted business activity.

Table 1. Characteristics of the studied organizations

NGO	Area of Activity	Number of Employees	Number of Projects Executed (Annum)	Value of Projects Executed (Annum)	Project Budget Within Total Budget (%)
1	Public assistance	80	40	11m	60
2	Local and regional development	31	6	1m	30
3	Financial support for NGOs and social enterprises	3	Between 50-100 micro	Between 500 and 1m	10-30
4	Local government development, support for the Polish diaspora	5	5	900,000	40

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NGOs' leaders are convinced that the key is financial stability obtained by diversification of financial sources. It is quite difficult to achieve, because external sources of funding and projects undergo significant fluctuations, collapses, and by the year are hedged with increasingly complex bureaucratic regulations. According to some leaders, they often do not bring profit to beneficiaries, neither do they bring the organization closer to the fulfilment of its mission.

Diversification of funding sources is very important for the studied organizations and building organizational stability together with projects, but not based on them. In two of the studied organizations, the share of projects in the financing of the activities was usually larger than 50% of the budget. All organizations acknowledge that projects fit the strategic aspects of their activities, although none of the organizations has a formal strategy – they are either documents created by leaders but unpublished, preliminary guidelines for the strategy, or strategic guidelines, functioning in organizations only informally. In two organizations, to a large extent intentionally, innovative objectives are realized through projects – e.g. testing innovative products for stakeholders, which could not have been funded from the primary budget. It can be noted that these are research and development projects, which enable development of innovative services.

It could therefore be concluded that without securing financial stability based on constant revenues, the studied organizations are reluctant to diversify their project activities. In practice, the studied NGOs try to manage the project portfolio in their own way (adjusting structures, implementing regulations concerning planning and project selection), yet very rarely it is a deliberate, planned process of managing all of the organization's projects as a single, cohesive portfolio. PPM in the studied NGOs is partly an intuitive process, deprived of systematic approach.

Selection of Projects for the Portfolio

Ideas for projects emerge both on the part of leaders or managers of the studied organizations, and junior employees. Interviewees remarked as well that sometimes ideas for projects come directly from their stakeholders and beneficiaries, and sometimes they are the result of certain opportunities created by the institutional context. All project initiatives, in each of the studied organizations, align or coincide with key areas of activity, resulting from statutory objectives, as well as the specificity of organizations' operations. Established areas of activity, usually developed by the organization for years, are executed within the obtained own funds, or in the framework of its business activity. In order to strengthen, expand and make their offer more attractive, organizations seek and select projects for these areas.

Role of a Project Management Office

In two of the studied organizations, a separate unit was deliberately formed, to fulfil the function assigned to Project Management Offices. These divisions create projects, prepare grant applications, manage projects and prepare settlings of reports from them. They are a kind of a project centre for the organization. But such divisions exist only in two large organizations. In the case of smaller ones, project tasks are not assigned to divisions – individual persons are in charge of them. The need to create a PMO unit within the organizational structure arises with the increase in the number and the level of complexity of project activities, as well as in the situation where project tasks are doubled in various organizational units. It is noteworthy that one of the studied organizations intentionally left all *de facto*

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project tasks to one person, who in a manner of speaking manages the project portfolio (with the NGO's board mandate), selecting projects in a way which maintains the balance in the area of employment and necessary own contribution.

Project Knowledge Management

Project knowledge management processes are not usually formalized in the studied organizations. Sharing knowledge happens mostly during face-to-face encounters, or via internal training or semi-formal meetings with stakeholders. One of the organizations deliberately introduced weekly managerial staff meetings, also to exchange knowledge.

There are also cases of gradual codification or organizational knowledge, in the form of preparing summary publications or long-standing project activities' portfolios. What is also deemed important for sharing knowledge is networking within mother or partner organizations. However, most frequently even many years of project experience is weakly codified, and sometimes it is mainly focused on the person of the leader or the main manager of the organization. Such cases, when knowledge is informally concentrated in the hands of one person, are quite dangerous for the organization. Most importantly, managers are aware of this situation, partly believing that this is a safety buffer, protecting them from movements of organizations' management boards. Two organizations experienced the departure of employees trained in the area of project management, either voluntarily, or in the situation when project activities were closed. Developed procedures with regard to project management, or knowledge sharing were lacking. This kind of approach may constitute a menace to the stability of portfolio management in the already mentioned, and very common situation for the third sector, namely staff turnover.

Project Reviews, Reprioritization Processes

In the studied organizations, mechanisms of portfolio review and its reprioritization occurred. On the basis of project reviews, preventive actions are undertaken, as well as reactions to problems emerging within projects. However, it has not been found that reviews are conducted on the basis of sophisticated business tools. The most advanced tool used for the analysis was MS Excel software, used for entering current data about the status of particular projects. The studied projects do not use advanced IT tools supporting the management process (e.g. MS Portfolio Server).

Managing Portfolio Risk

The key element of the portfolio management process, which interviewees approach with particular commitment, is portfolio risk management. It is understandable and stems from NGOs' attributes, their functions and ways of securing funds. The risk of losing any financial means can be triply dangerous: the danger concerns not only funds of the organization, but also the abuse of social trust in the NGO, as well as problems with securing other projects from public institutions (institutional limitations). The studied organizations emphasise that the analysis of risk connected to the enterprise is conducted for each project and on this basis, decision whether to initiate the project is taken.

At the same time, similarly to most managerial actions concerning the portfolio, they are not based on advanced procedures. Mainly simple financial analyses are conducted, which enable the organization to establish whether it is financially prepared to take on a particular project, and if so – when. Moreover,

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the risk is assessed mostly before including a particular project into the portfolio, and substantive risk management process is not conducted at any later stage. In the situation when crisis occurs, remedial actions are taken ad hoc.

RECOMMENDATIONS

Adaptation of PPM in NGOs

According to Courtney (2002: 6) in the nonprofit sector "there is perhaps a tendency to create a simple caricature of strategic planning or strategic management in the private sector in order to refute its relevance for the nonprofit sector". To avoid such misunderstanding in terms of Project Portfolio Management, it has to be unambiguously stated that it is impossible to employ business methods of Project Portfolio Management in non-governmental organizations without their prior adaptation and adjustment to the needs of a particular NGO and conditions of the environment in which it operates. At the same time, by building their portfolio in a conscious and previously planned manner, NGOs can fulfil their strategic objectives more efficiently, and effectively work for their stakeholders. Among recommendations which could help in the adaptation of Project Portfolio Management methods, we could list:

Project Registry and Archive

Regardless of their size and the scope of activities, NGOs can create project registries which include planned, currently executed, and rejected projects. Such a registry would enable to gather information about various project initiatives in a systematic way, and allow for cyclical reviews in order to assess which initiatives should be taken up anew, which should be continued, and which – rejected. In addition, NGOs should consider the creation of a project archive, containing information about concluded projects, achieved results or applied methods and project approaches. The project archive can be also an element of a comprehensive evaluation system for organizational activities and the assessment of the progress with regard to fulfilling their mission, which is crucial for any NGO.

Strategy

Strategic planning is the key to portfolio management. Without a well-planned and developed strategy it is difficult to select appropriate projects, leading to the development of the organization and stakeholders' satisfaction. NGOs should have a prepared strategy, which serves as a reference point for all undertaken tasks. Both a certain way of strategy formalization and the participation of numerous stakeholders in its creation should be suggested.

Strategic Analysis of the Projects to be Included in the Portfolio

Such an analysis would be helpful in the process of selecting optimal projects, i.e., those fitting statutory objectives and the resulting strategic objectives of a given organization. Only the execution of projects related to strategic objectives should be recommended. Projects which do not fit the strategy should be rejected, unless they serve to offset the portfolio, e.g., through acquiring funds, which in turn would en-

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able the development of statutory activities. However, the latter solution is ridden with traps connected to the decrease of social trust, the necessity for temporary employment of additional staff, and finally the so-called "grantosis", i.e., project dependency.

Criteria for the Selection of Projects for the Portfolio

When working on the criteria for the selection of projects for the portfolio, particular attention should be devoted to intangible criteria. Apart from purely economic factors, every NGO should establish criteria connected with its mission-related non-material activities. These are difficult to formulate, as their nature is often not measurable. Yet they are indispensable for the proper balance in the project portfolio.

Implementation of Project Knowledge Management Principles

Gathering knowledge in projects can proceed in various ways, both more formalized (e.g., in an electronic application, printouts) and less formal (e.g., during employee meetings in organizations aiming at the exchange of project-related experiences). However, the key is project managers' awareness in this respect. The formalization of knowledge gathering can protect the organization from its loss, in the situation of employee turnover, a very common occurrence in the third sector.

Creation of a Unit Serving as a PPM Office/Center of Project Knowledge

Such a unit could absorb and diffuse knowledge about concluded projects, as well as provide specialist support to project executors. It is particularly important in the case of organizations with significant employee turnover. Since this is when the hidden knowledge acquired by employees in projects is not retained in the organization.

Methodologies and Principles of Project and Portfolio Management

In the case of large NGOs, executing a significant number of projects, it would be beneficial to develop a set of principles concerning their selection and execution. These principles may take the form of a methodology, based on selected elements of widely recognized approaches to project management (Prince2, PMBoK). In smaller organizations, introducing strict methodologies seems unnecessary. However, it would be advisable to develop guidelines for project and portfolio management, based on the gathered experiences and best practices.

Project Portfolio Management Risks

Consistent with the findings of the non-government organisations, Jalocha (2014) pointed out that a lack of project knowledge management, incorrect estimation of the projects' budgets, weak communication process and not using previously acquired project experience are cited as some of the main reasons of project management failures in organizations (Jałocha, 2014).

Dai and Wells (2004: 527) organisations must have a willingness to:

1. Achieve a cohesive approach to project management,

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2. Achieve a more effective way to use organizational resources, including human resources in a multi-project environment,
3. Link project management to strategic objectives and thus building competitive advantage.

Desouza and Evaristo (2006: 416), argued that knowledge management permeated three organisational levels:

1. Strategic,
2. Tactical,
3. Operational.

Strategic level, projects must comply with strategic objectives and growth. Tactical level, the integration between projects, execution and monitoringand compliance are imperative to ensure success. Operational level, integration of knowledge developing a source of expert knowledge, and regularly reports to the senior management on the status of particular projects in the portfolio (Dexouza and Evaristo, 2006:416, Jałocha, 2014).

In order to apply previous experiences and manage new initiatives, projects and programs more effectively, many organizations create Project Management Offices (PMO). A PMO can fulfil various functions – from supporting project managers, to realizing project training, to strategic support for management boards of organizations. Above all, one of its most crucial functions is the role of a knowledge hub, a center for gathering and managing project knowledge (Project Office Management, Jalocha, 2014).

CONCLUSION

The maximization of the portfolio financial value which motivates the idea of building and managing the project portfolio in business organizations has little application in the case of the studied non-governmental organizations. These NGOs do not aim at the maximization of the financial profit as a main criterion in selecting projects to be realized. In their activities, they aim to fulfil their statutory objectives and mission, and their projects are tailored to the needs of the organization's beneficiaries and stakeholders.

Among the studied organisations, in large and professional NGOs with an established reputation, Project Portfolio Management is rather intuitive and informal. There is no standardized approach to portfolio management, neither are there formal methods of comparing and monitoring projects as a whole. However, the study revealed that despite the low level of portfolio management professionalization, NGOs cope well with managing multiple projects simultaneously.

The studied organizations feature both single-person PMO units, and teams or offices charged with project management. Absorption and diffusion of project knowledge is significant in each of the studied organizations, but they are not highly formalized, and largely concentrated in the hands of main leaders or managers of the organization.

Undoubtedly, there is a need to expand the knowledge about Project Portfolio Management in non-governmental organizations. However, we should remember that this approach cannot serve chiefly the maximization of the financial value, and can only be a means to enable more effective realization of strategic objectives for the beneficiaries of a particular organization.

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FUTURE RESEARCH DIRECTIONS

1. Despite the increasing marketization of the third sector, project execution still constitutes the basic form of third sector organizations' activities. It is a certain paradigm in NGO management, both in small and large organizations. The latter increasingly often have a project portfolio, yet they do not achieve the business level of portfolio management. A comparative analysis of large and small third sector organisational project execution would provide further insight into the business level of portfolio management in non-government organizations.
2. There is a shortage of good practices in the area of portfolio management in NGOs, which would facilitate particularly the implementation of management methods, as well as project tools which are useful and universal in business practice. Further research in the definition of good practice in the area of portfolio management in non-government organisations would facilitate and generate knowledge on future implementation of management and business models.
3. The present study is easily replicable, and acquiring data from NGOs is easy, perhaps due to a strong uncertainty of managers in this area, as well as their willingness to share doubts and problems. There are clearly limitations to the exploratory case study, although the propositions formulated in this chapter may be subjected to broader quantitative and qualitative analysis. However, it would be beneficial to consider further in-depth qualitative research of Project Portfolio Management practices in other countries, especially against the background of different institutional solutions in the area of financing projects from public funds, addressed to and executed by NGOs.

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KEY TERMS AND DEFINITIONS

Diversification of Funding Sources: The process of financial management in NGOs involving the intentional exploration and use of funds from various financing sources, i.e. private or public that influences and corresponds to the Project Portfolio Management process.

Economic Analysis of Projects: A kind of simplified financial analysis used in NGOs' projects. It is based in particular on the analysis of their own resources and simple risk analysis.

Project Knowledge Management: The process of capturing, developing, sharing, and using lessons learned and project knowledge in general for continuous improvement of the organization.

Project Management: The process of planning, executing, controlling, and closing the work to achieve specific goals in a specific time under predefined success criteria.

Project Management Office: A department within an organization that defines standards for project management, maintains them and support employees in project execution.

Project Portfolio: A collection of projects and/or programs financed and executed by a given organization.

Project Portfolio Management: A process of managing organizational projects and programs at different stages of their life cycle, which are analysed, prioritized, monitored and controlled in the course of a dynamic process.

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Chapter 31
Risks Assessment using Fuzzy Petri Nets for ERP Extension in Small and Medium Enterprises

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ABSTRACT

In this paper a Fuzzy Petri Net model (FPN) is developed and tested to assess the risks involved during Enterprise Resource Planning (ERP) adoption in Small and Medium Enterprises (SMEs). This model pertains only to the risks and risk factors identified in the extension phase of ERP adoption in SMEs. In other words, this work studied only the risk perception relating to extending the ERP integration between the supply chain partners. This paper addresses the problems of risk identification and assessment during the extension phase. There are two motives for this research namely, one to define the ERP extension risks and two to assess and quantify the risks in a simple yet robust model. The uniqueness of this paper is three dimensional because in addition to presenting and quantifying the risk values in FPN, the risks are categorized and further graded for decision support to SME stakeholders. Realignment and standardization of SMEs business process, lack of support from larger enterprises and incompatibility issues are perceived to be most critical risk factors.

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1. INTRODUCTION

This paper presents an assessment model for risks and the associated risk factors that need to be considered while extending the Enterprise Resource Planning (ERP) functionalities of the Small and Medium Enterprises (SMEs) with their larger counterparts in the automobile industry. This paper is set on the premises of the automobile sector in India, where there is extensive depending on the SMEs for raw materials, component supplies and subcontracting. While that large firms place ERP adoption from an overall business perspective, the SMEs is found to confine such initiatives only at the process layer. Given the tier-wise structure of the automobile industry comprising of players from the large multinational to a very small firm there is a strong need for the SMEs to collaborate in process integration, because larger companies will call for the readiness in their smaller counterparts during supplies (Bharathi et al., 2013). Hence it becomes imperative to study the risks and the embedded risk factors on behalf of the SME segment in order to sensitize them about the risks. SMEs need to examine the barriers during their approach in ERP extension to their supply chain partners (de Búrca et al., 2005). SMEs will have to enhance their maturity in learning the right expectation out of the ERP during the supply chain integration (Lenny Koh et al., 2006). The SMEs need to come out of the traditional mindset of decentralized system and go for a more integrated planning approach to collaborate with the schemes of their supply partners. Yet the SMEs are not really confident to draw out their collaborative support due to the lack of understanding about business process integration. SMEs need to see the relationship between ERP benefits and its impingement on the supply chain performance (Yang and Su, 2007). The SMEs are however not very sure as to what are the risks that could impact in such an integration initiative. The demand for integrating ERP with supply chain management (SCM) has been emphasized to strengthen the existing body of knowledge particularly from the SMEs perspective. The challenges faced by SMEs in ERP adoption and then also trying to reach out the ERP functionality to the supply chain partners are still evolving according to many research studies. Several factors that pose a challenge to such integration are compatibility issues, extent of dependencies between the systems in the material flow, business relationship, percolation ERP usage in SMEs, etc. It was also found that SMEs need to approach and plan the extension strategically keeping the proper balance between its business and IT competencies. Just then the expectations of operational efficiency process integration, customer and supplier integration, etc., can be realized (Chien et al., 2007; Ho et al., 2004; Su and Yang, 2010; Braglia and Frosolini, 2014; Goh, 2002; Nishat et al, 1996).

2. LITERATURE REVIEW

Fuzzy Petri Nets (FPNs) have widespread application in identifying and analyzing parallel and concurrent behaviour of many physical and societal arrangements. A host of control problems has used FPN to model various issues which include control of CNC-milling machines (Hanna et al., 1996), control of nuclear instrumentation for safety (Son and Seong, 2000), autonomous vehicle control (Parhi and Mohanta, 2011, Rigatos 2003, Wai and Liu 2009, Zouaghi et al., 2014), railway traffic control (Fay 2000, Cheng and Yang 2009), control of excavation robot (Wang 2004) etc.

FPN is a fuzzy production rule based system enables us to perform consistency checks using tools for analysis of FPN. This will facilitate the creation of appropriate algorithms while defining the maximum or minimum thresholds of risks in any given phase of ERP adoption. FPN can be built as a graphical

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representation of rule-based system which will also exhibit the analytical power of reasoning, consistency check and learning. FPN is used as a reasoning tool to model dynamic processes which are similar to simulation of a system in a more simplified manner (Fenves, et al., 1997). Ribaric and Pavesic (2007) used FPN to present a formal model of knowledge representation for uncertain and unclear domains. Their study used nine-level truth scale was used ranging from 'always true' to 'not true' with numerical intervals ranging from 1.0 to 0.00 in order capture the fuzziness of knowledge representation. The analysis and simulation on the sequence of the aircraft approach used fuzzy Petri nets to define the rule-based system which considered certain key factors like estimated time of arrival, nominal scheduled time of arrival, normalized separation time, speed difference, and distance to final approach that impact the sequencing of the aircraft arrivals into the terminals with the minimum time delay (Sun and Hua, 2009). FPN is used to study the offshore weather prediction (Chenghua, and Qixiang, 2009). The study considered wind value, cloud orientation, cloud base, wind direction, humidity, temperature value, pressure value and cloud cover do define and simulate the fuzzy production rules. Yan and Yu (2009) used FPN to study the selection process for international procurement selection process. The study used a two-tier model which comprised of the procurement selection constructs in tier 1 (supplier capacity and flexibility, product competitiveness, purchase risks, cooperative compatibility, technology use and innovation) and a select set of 19 variables explaining the constructs in tier 2. The fuzzy factors were defined as excellent, fine, common, bad and worse. Wang (2009) applied FPN model for evaluating the logistics and cash flow performance of automotive supply chain by taking certain critical factors like inventory procurement cycle, production cycle, distribution cycle. Purchase order closing rate, production passed rate, sales order fulfillment rate, cost of distribution, cost of inventory, cash flow cycle and inventory turnover. A study on the private finance initiative (PFI) project used FPN model to evaluate the implementation process of PFI projects in China (Hai-ling et al., 2009). For PFI implementation, evaluation a two-level index was developed which comprised of situational factors relation to implementation, resources, participant unit and project environment in level one and the underlying or contributing factors in the second level. Cai et al., (2010) applied FPN to model and simulate a fault severity degree criterion of self-propelled gun. The study considered four factors of fuzziness relating to the severity of faults namely quite severe, severe, common severe and light severe and applied it on certain evaluation constructs like functional influence, progress influence, economic loss and life loss. A FPN based decision support system for ambulatory treatment of non-severe acute diseases is proposed by Astilean et al (2010). Torshizi and Hejazi (2010) combined the use of fuzzy logic and Petri nets to propose an approach to monitor and track all the risk behaviours that can lead to potential failure of the machining system. A fuzzy decision and controlling strategy of collaborative implementation process for product design is proposed by Guo and Zeng, (2011). The FPN proposition was built using the fuzzy deduction algorithm which included the reliability and deterministic factor in product design.

The earlier works have in fact presented a wide range of risk assessment techniques for ERP adoption (Table 1). These risk assessment techniques were majorly applied on ERP selection and implementation.

Though these techniques are found to be relevant in their own contexts there was still a need for quantification and validation of risk perception of the SMEs. The perception of risk is volatile with the passage of time as well as the maturity and percolation of enterprise system technologies. Hence it is important to embed an element of fuzziness to their responses. A study found that user satisfaction is affected by the caliber of the ERP systems, which took up the use of fuzzy logic as an efficient method of measuring human satisfaction which is influenced uncertainty and vagueness. The study used Matlab tool for analyzing the data (Alimoradi et al., 2012). The fuzzy logic was used for dynamic strategic

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Table 1. ERP Risk Assessment techniques

Author(s) and Year	Techniques of ERP Risk Assessments Used
Salmeron, & Lopez, 2010	Multi Criteria Decision Making (MCDM), Analytical Hierarchy Process (AHP)
Wei et al., 2005	AHP
Xu, 2012	Sand table method and AHP
Tsai et al., 2003	Two-level approach, AHP
Mahmoodzadeh et al., 2007	TOPSIS Technique/ Algorithm. Fuzzy AHP
Adam et al., 2011	UTAUT Model
Ifinedo et al., 2010	Structural Equation Modeling
Karsak, & Özogul, 2009	Principles of QFD, Fuzzy linear regression and zero-one goal programming
Yoon, 2009	Structural Equation Modeling
Velcu, 2010	Structural Equation Modeling
Bueno & Salmeron, 2008	Technology Acceptance Model (TAM)
Plaza & Rohlf, 2008	Object-Process modeling (OPM) methodology
Aloini et al., 2012	A Petri-net model approach
Amid et al., 2012	Exploratory Factor Analytics
Su & Yang, 2010	Structural Equation Modeling
Mabert et al., 2006	Data Envelopment Analysis

supplier selection system for enabling a more informed method of supplier selection because the study recommended that fuzzy logic based system to work well with uncertain parameters (Aksoy et al., 2014). ANFIS model was applied to predict the user satisfaction based on certain causal factors which were used as predictors. The data were collected from ERP implemented firms. The data was trained to predict the user satisfaction based on the pre-defined set of input predictors (Venugopal, et al., 2010). We think that this area needed more research exploration in order to strengthen the quantitative analysis of risk management using Fuzzy Petri nets which motivated us to conduct the research in this field.

However, there is no sufficient contribution to the existing research knowledge on the usage of fuzzy concepts to ERP adoption. One of the works closest to this research is found in the works of Wang et al., (2006). To appraise the human-related factors during ERP implementation a FPN evaluation model and method is projected. In the extension phase of ERP Adoption Life Cycle, expectations are forced back by business relationship of the SMEs with their larger counterparts in the auto industry. Here size does matter in terms of maturity relating to standardization of processes, technology and compatibility between the supply chain partners. Though the large scale industries in the automobile sector depend heavily on the SMEs for their raw materials, the latter is to a great extent determined by size in terms of number of employees, investment in fixed assets, and overturn. From their study, we understand that there is a strong need for the SMEs to collaborate in process integration, because larger companies will seem for the readiness in their smaller counterparts during supplies (Bharathi et al., 2013). De Burca et al., (2005) carried a case based research on four SMEs to analyze the barriers during their approach in running their ERP to their supply chain partners. It was found that SMEs were very cautious in their movement to extend the ERP and adopted a very cautious approach so as to bring into consideration their organizational impact. The SMEs was found to be equally anxious as well every bit excited to reap the

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benefits of the seamless connectedness between their suppliers and clients. Koh et al., (2006) examined the interrelationship between ERP and supply chain. The survey focused on the expectations of SMEs about ERP in extending the information integration in the supply chain. The survey found that SMEs will have to go together in determining the right expectation out of the ERP during the supply chain integration. The SMEs need to get out of the traditional mindset of decentralized system and go for a more integrated planning approach to collaborate with the schemes of their supply partners. A study on the relationship between ERP benefits and supply chain performance was conducted by Yang and Su (2009). Established on an empirical study on the SMEs in Taiwan it was establish that the SME expect operational, tactical and strategic benefits of ERP while extending the integration of the supply chain operations. The challenges faced by SMEs in ERP adoption and then also trying to reach out the ERP functionality to the supply chain partners is still evolving according to many research studies. Various agents that pose a challenge to such integration are compatibility issues, extent of dependencies between the systems in the material stream, business relationship, percolation ERP usage in SMEs, etc. It was also found that SMEs need to approach and plan the extension strategically keeping the right equilibrium between its line and IT competencies. Just then the expectations on operational efficiency process integration, customer and supplier integration, etc. can be realized (Chien et al, 2007; Chin-fu et al, 2004; Su and Yang, 2010; Bernaert et al., 2014; Goh, 2002, Faisal et al., 2007).

Established along the extensive literature review a set of four risks is determined in the extension phase of ERP adoption. Twelve risk factors are identified and grouped into each of the four risks in the ERP. The Table 2 presents the risks and risk components that bear upon the extension phase of ERP adoption in SME.

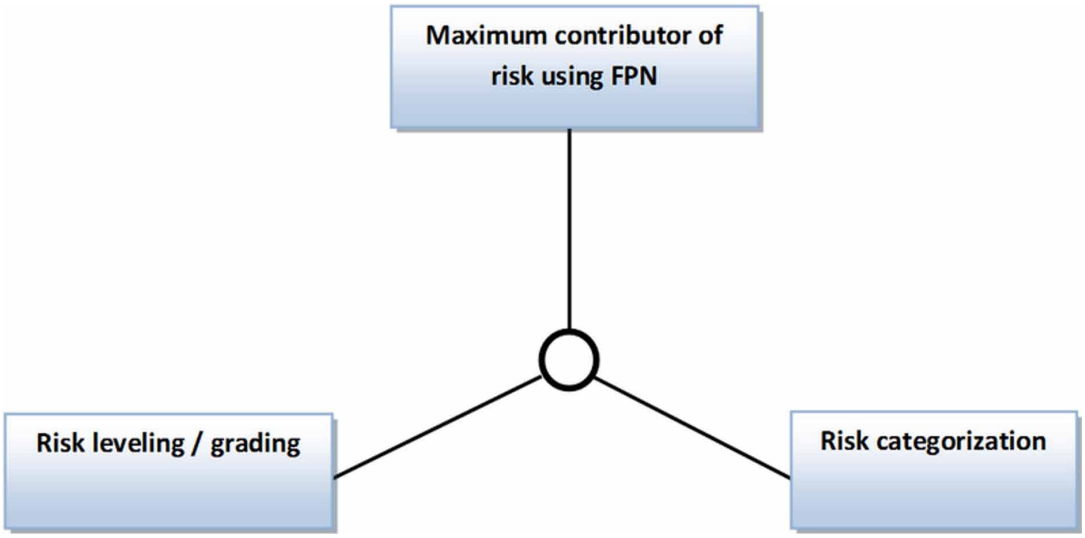
In this study, we discuss in detail the three-dimensional model, shown in Figure 1, which includes the Fuzzy Petri Net rules for the risk assessment model, the risk categorization and the leveling or grading of the risks.

Table 2. Risks and risk factors in the extension phase

S. No.	Risk	Code	Risk Factors	Code
1	Nonalignment with supply chain partners	E_1	No clarity about what processes to be interfaced	e_{11}
			Mismatched business strategy with technology strategy	e_{12}
			Very less involvement by SMEs in supply chain decision	e_{13}
			Less bargaining power of SMEs	e_{14}
			No collaborative planning by SMEs with their large buyers	e_{15}
2	Losing business due to non-adoption of technology	E_2	Pressure from large customers (OEMs)	e_{21}
			Lack of support from large buyers	e_{22}
			Technological incompatibility	e_{23}
3	Realignment and standardization	E_3	Realignment of processes	e_{31}
			Inequalities of information flow efficiency due to technological imbalances	e_{32}
			Compatibility issues in web-interfaces of large buyers with the ERP system of SMEs	e_{33}
4	Cost implication on extension	E_4	Lack of planning for the additional investment in IT	e_{41}

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Figure 1. Three-dimensional model for risk assessment



3. METHODOLOGY

This stage involved three major activities, namely the development of a structured questionnaire, identification of the sample and the size of the sample and conduct of the survey using the structured questionnaire for collection of data. The questionnaire design is one of the critical activities of this research because it directly impacts the response rate and explains the validity and reliability of data (Saunders et al., 2007).

The population comprises of several SMEs where decision-making is fully entertained with the proprietor or director and the management of ERP adoption is fully vested with the IT director. In fact, the IT managers of the SMEs have more awareness and acceptance about ERP and also deliver a fuller and deeper perception towards the risks embedded in the various phases of ERP adoption.

The SMEs operating in the auto-component cluster in Pune, India are the most appropriate parts of the sampling frame. The accurate number and the details of the total number of SMEs operating in the auto-component cluster was not available, in other words, there is no "single" authentic reference source to arrive at the total number of units in the cluster because of various agencies involved directly and indirectly in the census data. Established on the sources available with the Pimpri-Chinchwad Small Industries Association (PCSIA) and the auto-cluster development and research institute (ACDRIL) and Mahratta Chamber Of Commerce Industries & Agriculture (MCCIA), it is found that more than 7,500 SMEs are engaged in the job of manufacturing and trading auto-components in the auto-component cluster. In the beginning the target sample size was set at 10% of the total population, yet only 609 are found to be perfect and desirable for further analysis.

Both qualitative and quantitative methods were adopted for the development of the survey instrument. The qualitative research involved semi-structured interviews. From a targeted total of 20 interviewees only 11 interviewees consented to give time. These 11 interviewees comprised of subject matter experts from SMEs, industry associations like PSCIA, ACDRIL, Automotive Component Manufacturers Association of India (ACMA), MCCIA, and ERP consultants who had the adequate and required knowledge about the working of the SMEs in the auto component cluster, their linkages with the different tiers in

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the industry and the extent of information technology adoption. The final questionnaire comprised of questions about the risks inherent in extending the ERP from an inter-firm perspective. The primary contribution to the questionnaire is from the extensive review of literature enumerated in the previous paragraphs as well from the semi-structured interviews with the experts. The questions are discussed in the subsequent section. A reconciliation of the experts' insights' and the study findings are later tabulated in the discussion section.

4. ANALYSIS, FINDINGS AND INTERPRETATION OF DATA

Earlier in Figure 1 we stated that the uniqueness of this paper is to present a three-dimensional model for risk assessment of the extension phase of ERP adoption in SMEs. In the subsequent paragraphs of this section, we will sequentially present the analysis of data to validate each of the three dimensions.

4.1. The First Dimension

The first dimension is the quantitative assessment of the risk based on the Fuzzy Petri Net model. The analysis of data is explained in paragraphs 4.1.1, 4.1.2 and 4.1.3 respectively. The paragraph 4.1.1 describes the data reliability. In paragraph 4.1.2 we present the risk assessment model using fuzzy Petri net production-rule system which is developed and tested using the VBA tool. Paragraph 4.1.3 presents the analyzed results in three levels namely risk-factor, risk and phase levels.

4.1.1. Data Reliability

The reliability of data was supported by applying the Cornbach's alpha (α). Alpha was developed by Lee Cronbach in 1951 to provide a measure of the internal consistency of a test or scale; it is expressed as a number between 0 and 1 (Bryman and Bell, 2000; Santos, 1999; Tavakol and Dennick, 2011; Cortina, 1993; Gliem and Gliem, 2003; Cronbach, 1951). There are different reports about the acceptable values of alpha, ranging from 0.70 to 0.95. In social sciences research an alpha value of 0.60 is considered as the minimum accepted value of reliability. The alpha value in this study is 0.862.

4.1.2. Risk Assessment Model

Basically, FPN is also a bipartite graph that comprises of two nodes namely place and transition. Additionally, in FPN a token incorporated with a place is associated with a real value between 0 and 1; a transition is associated with a certain factor (CF) between 0 and 1. As stated in the earlier paragraphs FPNs have wide usage in modeling for expert systems for fuzzy knowledge representation and reasoning due to their key properties like representation power, explanation power, reasoning, and learning. The representation of Fuzzy Petri net as a fuzzy production rule based system enables us to give consistency and representativeness to the problem under study (Gao et al., 2003; Shen, 2006). It enables the researcher to convert the logic into a simple yet robust graphical representation in order to perform modeling and simulation. It has been found that machine learning and artificial intelligence methods is that it is difficult to explain the processes that happen behind while results interpretation and reaching a conclusion. Some researchers have suggested the use of rule-based system with graphical representation to

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overcome the issue of explanation (Konar and Chakraborthy, 2005; Shen, 2006; Yeung al., 2004). Fuzzy Petri nets are a solution here because the logic and process of obtaining the result can be represented graphically, but also be simulated for testing purposes which enhances the explanation power as well analysis power. The purpose of fuzzy reasoning is to make inferences by applying Fuzzy Petri nets to a process commencing from configuration of places to a terminal state. The reasoning algorithm provided in the FPN ensures the accuracy and appropriateness of the model to solve the given research problem. Moreover, the reasoning tools also facilitate the simulation of the system with dynamic processes (Konar and Chakraborthy, 2005; Yeung et al., 2004). There are many methods of providing learning algorithms for Fuzzy Petri nets. The learning environment is equivalent to the adaptive neural network training which is done for the purpose of reducing the errors between the trained and testing environments. In FPN, the fuzzy rules are applied from the user's experience and perception about the research problem under study and hence the fine tuning of the rules over a period of time enables better learning to the simulation methods (Wang et al., 2001; Gao et al., 2003).

FPN: FPN brings the synergies of fuzzy sets and Petri nets. A fuzzy Petri net structure can be defined as an 8-tuple. The representation of a data structure with a specific number and sequence of values is termed as a Tuple. In other words it is a finite ordered list of elements with a sequence:

$FPN = (P, T, D, I, O, f, \alpha, \beta)$

where:

$= \{p1, p2, \ldots, pn\}$ is a finite set of places

$= \{t_1, t_2, \ldots, t_m\}$ is a finite set of transitions

$=\{d_1, d_2, \ldots, d_n\}$ is a finite set of propositions

$\cap T \cap D = \Phi$, $|P| = |D|$,

: $T \rightarrow P\infty$ is the input function, a mapping from transitions to bags of places,

: $T \rightarrow P\infty$ is the output function, a mapping from transitions to bags of places,

: $T \rightarrow [0,1]$ is an association function, a mapping from transitions to real values between 0 and 1

: $P \rightarrow [0,1]$ is an association function, a mapping of places to real values between 0 and 1

: $P \rightarrow D$ is an association function, an objective mapping of places to propositions

Fuzzy Production Rule: It explains the fuzzy relationship between two propositions:

- If d_{j1} or d_{j2}, …, d_{jn} then d_k (C.F = μ_1). This rule type is modeled in fuzzy Petri-net and the fuzzy reasoning process of this type of rule is modeled Figure 2A & 2B;

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- If d_{j1} and d_{j2}, …, d_{jn} then d_k (C.F = μ I). This rule type is modeled on fuzzy Petri Net and the fuzzy reasoning process of this type of rule is modeled in Figure 3A & 3B.

Fuzzy Production Rule: The fuzzy relationship between two propositions is described through the Fuzzy Production Rule. The notations of the 8-Tuple are explained in relation to the risk assessment model in the subsequent paragraphs.

At the place P_0, d_0 is the risk of failure in the extension phase of ERP Adoption. At place P_i (i = 1, 2, …, 4). D_i represents Risks identified that are associated with an ERP adoption phase. These factors will collectively lead to validate the risks of failure. At place p_{ij} (i = 1, 2, …, 4), (j = 1, 2, …, n), dij represent the risk factor and n represents the number of risk factors identified to explain the risks. At place p_{ijk} (i = 1, 2, …, 4), (j = 1, 2, …, n) (k = 1, 2, …, 4) where d_{ijk} represents the responses (options) for a risk factor viz., strongly agree (SA), agree (A), disagree (D) and strongly disagree (SD) and k represents the number of options (here 4) for recording the response to a risk factor. In other words:

- i = Number of risks in each phase
- j = Number of risk factors per risk
- k= Number of response options = {SD, D, A, SA}

which implies for i^{th} risk, j^{th} risk factor the options are as follows:

$d_{ij1} =$ SD

$d_{ij2} =$ D

$d_{ij3} =$ A

$d_{ij4} =$ SA

SA and A are defined as negative which implies that they will contribute/lead to risk while D and SD are defined as positive because they will not contribute/lead to risk.

If d_{j1} or d_{j2}, …, d_{jn} then d_k (C.F = μ_1). Figure 2A depicts the fuzzy Petri Net rule type and Figure 2B denotes the fuzzy reasoning process of this type of rule.

If d_{j1} and d_{j2}, …, d_{jn} then d_k (C.F = μ_1). Figure 3A depicts the fuzzy Petri Net rule type and Figure 3B denotes the fuzzy reasoning process of this type of rule.

The above model state that d_{ijk} (i = 1, 2, …, 11), (j = 1, 2, …, n) (k = 1, 2, …, m) where d represents the percentage of responses (ratio of number of responses to an option to the total responses recorded for all the options). If the percentage of responses are evenly spread in all the four options, namely SA, A, D & SD or if the sum of the response proportion of negative and positive options is equal (SA+A) = (D+SD) then that factor may or may not contribute towards risk. If for a risk factor, the proportion of responses in SA and A is greater than D & SD, then that element will contribute towards risk and vice versa (Bharathi et al., 2014, Torshizi and Hejazi, 2010; Bharathi et al., 2012, Bharathi et al., 2013):

μi (I = 1, 2, …, 9) represents the certainty factor, μi Є [0,1] that is the intensity of the belief in the principle

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Figure 2. Fuzzy Production Rule – First proposition

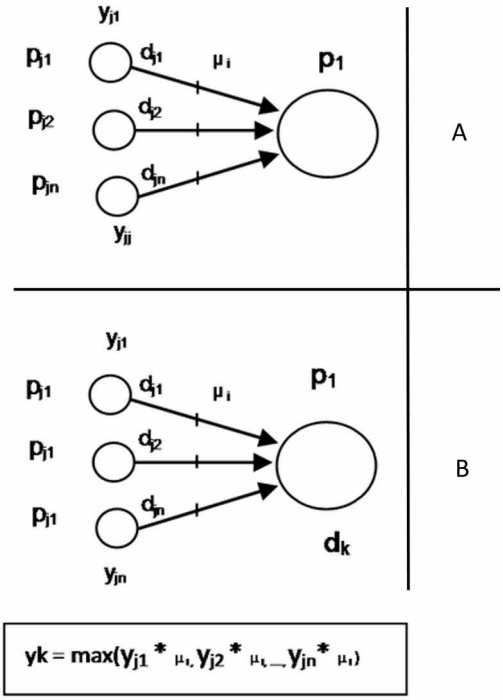
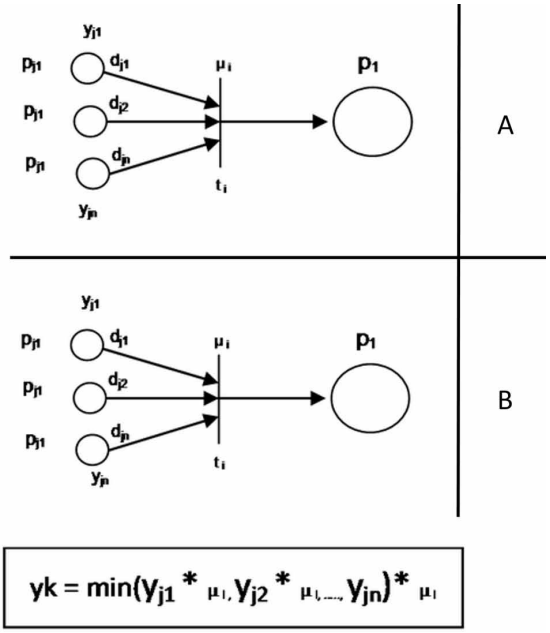


Figure 3. Fuzzy Production Rule – Second proposition



T_i (i = 1, 2, …, 9) represents the transition from input place to output place

μ_{ij} (I = 1, 2, …, 9), (j = 1, 2, …, n) where μ represents the certainty factor of the responses to fire a risk factor

Several research works have used a certainty or confidence factor (Pramod et al., 2014; Looney, 1988; Chen et al., 1990; Andreu et al., 1997; Pedrycz and Gomide, 1994) or a truth-value (Kouzehgar et al., 2011; Garg et al., 1991) associated with the transitions. As a transition in a FPN corresponds to a rule in production systems, the firing of a sequence of transitions, considering the confidence factor of each one, defines a fuzzy firing sequence which is more or less likely to be fired (Bugarin and Barro, 1994). In this study, for experimental purpose 9 (as a proportion 0.9) is fixed throughout, because the respondents are well informed and are fully cognizant of the context and their reactions can be extremely reliable.

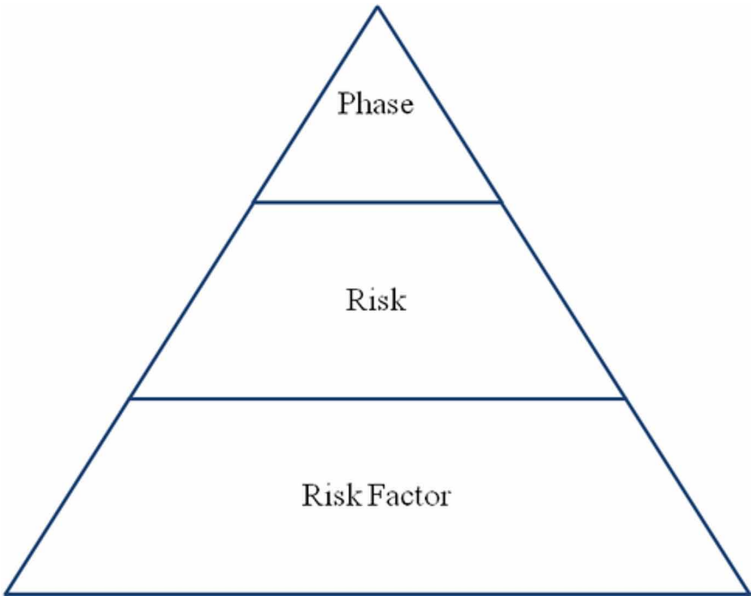
4.1.3. Analyzed Results

The analysis of the data provided critical findings at three different and interrelated levels, namely the risk factor level, the risk level and the phase level which is given in Figure 4.

Risk Factor Level: At the RISK FACTOR LEVEL the maximum impact value is arrived based on the following rules:

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Figure 4. Interrelated levels for risk findings and interpretations



1. The proportion of responses with regard to strongly disagree, disagree, agree and strongly agree is codified as 1, 2, 3 and 4 respectively;
2. The proportion of each of these four responses mentioned is multiplied by the certainty factor which is fixed at 0.9 the product of which will be the "weighted response value" (WRV):

WRV = max ((%SD*0.9), (%D*0.9), (%A*0.9), (%SA*0.9)

3. The WRV will be considered for risk assessment purposes only if it is arrived from the responses agree and strongly agree. This is because Strongly Agree and Agree WILL contribute to RISK while, Strongly Disagree and Disagree WILL NOT contribute to RISK;
4. The maximum of these WRV amongst all the given risk factors is defined as the most impactful risk factor.

Risk Level: At the RISK LEVEL the minimum value of risk (MVR) to be foreseen is arrived based on the following rules:

1. The WRV is adjusted with the certainty factor and the minimum of the adjusted WRV is defined as the minimum value of the risk:

MVR (P_1, …, P_7) = min ((WRV of each of all the risk factors*0.9)

2. All the values arrived as above will be listed at the phase level.

Phase Level: At the PHASE LEVEL the maximum risk contributor is arrived by selecting the maximum values of all the risks as arrived from the risk level determinations.

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4.2. Second Dimension

The second dimension is the leveling or grading the risk values. We studied some of the risk leveling or evaluation methods like failure mode effect analysis (FMEA), Operationally Critical Threat, Asset, and Vulnerability Evaluation (OCTAVE) and the National Institute of Standards and Technology (NIST) evaluation methods. Most of these frameworks have high, medium and low levels of risk evaluation (Dey et al., 2013). However, considering the SME context which calls for simplicity and also comprehensiveness, we selected the the A-9 member linguistic term set (Cardoso et al., 1996; Umano et al., 1998; Zadeh, 1965; Xu et al., 2010; Garibaldi and John, 2003; Kumar Sahu et al., 2014; Liu and Rodriguez, 2014) for risk evaluation which is given in Table 3.

4.3. Third Dimension

In the third and last dimension of risk assessment, careful choices of certain relevant heading in which the ERP adoption risk factors are categorized. In other words, the risk factors in extension phase of ERP adoption are related to a particular dimension or category (Zeng, 2010, Amid et al., 2012; Chang et al., 2015; Arachchi et al., 2015). These dimensions are organisational (includes top management, culture, structure, strategic planning, business partner relationship etc.), managerial (project planning, organizing, decisions, financial, direction and leading, etc.), operational (project execution, process, workflow, procedural, documentation etc.) technological (hardware, software, compatibility, legacy systems) and personnel (human related involving owners, managers, users, competencies, efficiencies, psychological, sentiments, etc.) Further to bring in clarity in the understanding of the risk assessment, the quantified risks are also placed according to their appropriate categories.

5. FINDINGS AND INTERPRETATION

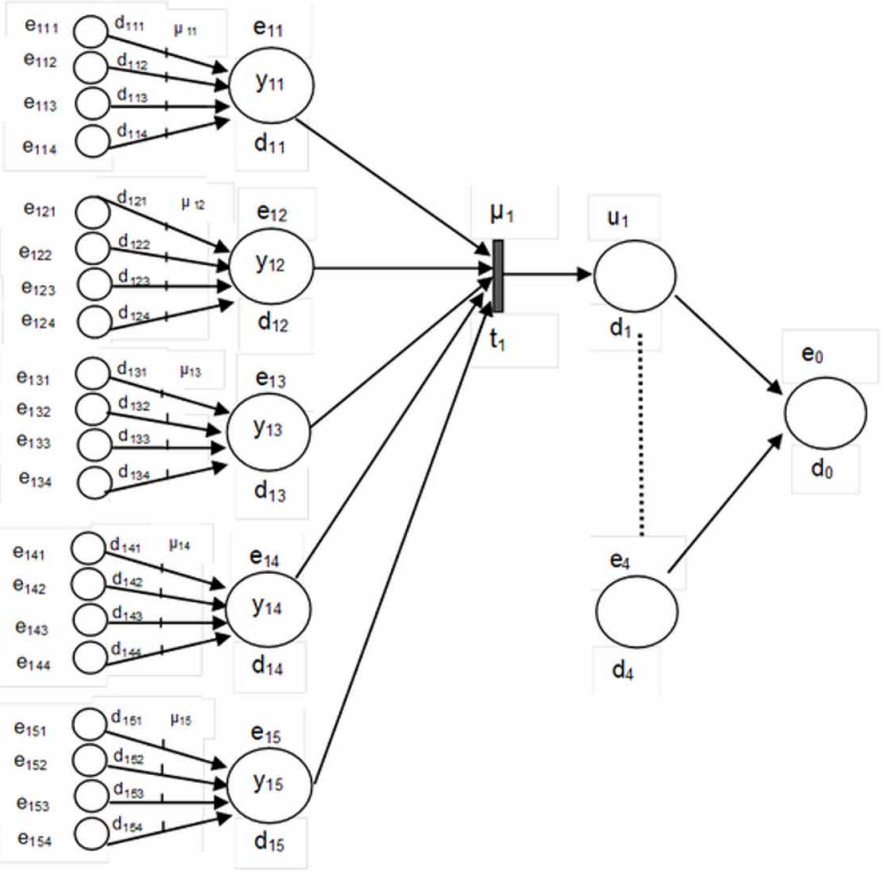
In the subsequent paragraphs we present the findings and interpretations of the three risk assessment dimensions stated in section 4. The first dimension which is Fuzzy Petri Net for modeling the risk assessment in the extension phase is shown in Figure 5.

Table 3. A-9 member linguistic term set

Linguistic Terms	Linguistic Values (Fuzzy Numbers)
Absolutely-low	(0,0,0,0; 1.0)
Very-low	(0,0,0.02,0.07; 1.0)
Low	(0.04,0.1,0.18,0.23; 1.0)
Fairly-low	(0.17,0.22,0.36,0.42; 1.0)
Medium	(0.32,0.41,0.58,0.65; 1.0)
Fairly-high	(0.58,0.63,0.80,0.86; 1.0)
High	(0.72,0.78,0.92,0.97; 1.0)
Very-high	(0.93,0.98,1.0,1.0; 1.0)
Absolutely-high	(1.0,1.0,1.0,1.0; 1.0)

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Figure 5. Fuzzy Petri Model for Risk assessment in extension phase



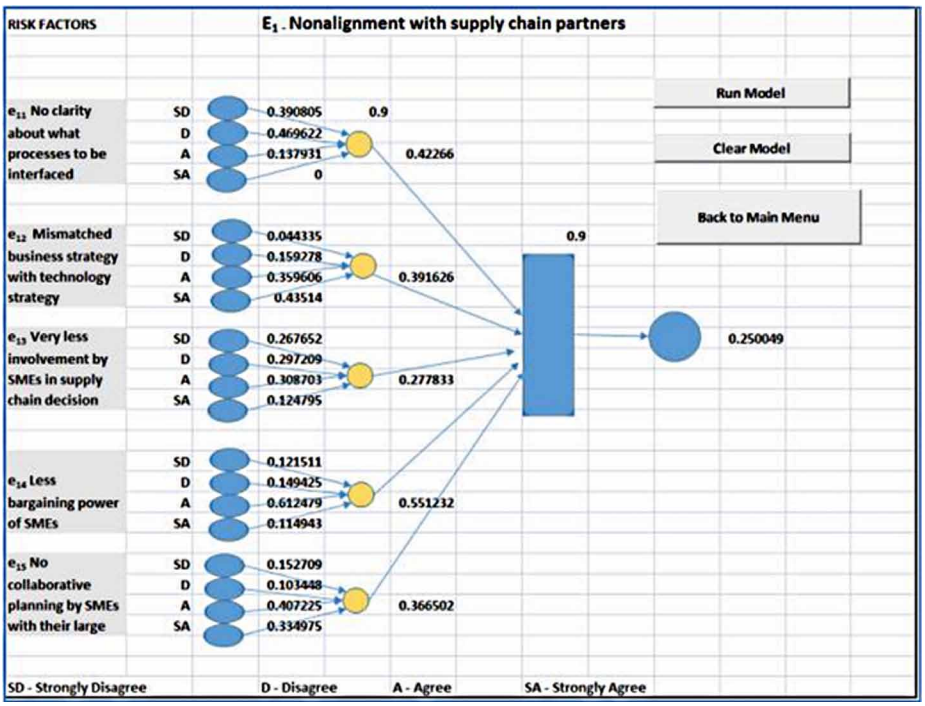
In the extension phase of ERP Adoption (E_0), the risk called nonalignment of business processes with supply chain partners (E_1) is explained by means of five risk factors, namely no clarity about what processes to be interfaced (d_{11}), mismatched business strategy with technology strategy (d_{12}), very less involvement by SMEs in supply chain decision (d_{13}), less bargaining power of SMEs (d_{14}) and no collaborative planning by SMEs with their large buyers (d_{15}) (Forslund and Jonsson, 2010; Saleh Shatat and Mohamed Udin, 2012; Seuring et al., 2008). The test result is given in Figure 6.

The values for predicting the risk is based on the responses which range from strongly agree to strongly disagree (d_{111}, ..., d_{114}) given by the respondents. For d_{11} it is found that 14% of respondents say agree so the value of d_{112} is 0.15, 47% of the respondents say disagree, then the value of d_{113} is 0.47 and 39% of the respondents strongly disagree, the value of d_{114} is 0.39.

The strength of responses or truth value is denoted by μ, the value of which is the weight assigned based on the dependability of the responses. For example, if μ_{11} is assigned a value of 0.9 then it implies a high degree of dependability of responses. And so the value y11 is the maximum of (0.14*0.9), (0.47*0.9), (0.39*0.9) which is 0.42. This value of 0.42 is arrived from the response option disagree (D). As stated earlier, since SD and D denotes positive it means that no clarity about what processes to be interfaced (d11) is unitary of the decisive factor will not contribute to risk of nonalignment with supply chain partners (E_1).

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Figure 6. FPN based RAM for the risk E_1



The values of all the other four risk factors, d_{12}, d_{13}, d_{14} and d_{15}, are arrived based on the ratio of responses. Then the y values which are the maximum of the proportion-of-response values multiplied by the μ_{11} value are arrived at 0.39, 0.28, 0.55 and 0.37 respectively. Interestingly, we see that for d_{13} though the maximum value is resulted from the response option agree, the proportion of the positive attributes, namely strongly disagrees (SD) and disagree (D) are higher than the proportion of agree (A) and strongly agree (SA) in other words (SD+D) > (SA+A). Hence, based on the rules defined earlier, we decide not to consider d_{13} as a contributor to the risk E_1. The other three risk factors, namely d_{12}, d_{14} and d_{15} are found to be contributors to the risk because their y values are resulted out of the response options agree. Figure 6 depicts the FPN model for the risk E_1.

In a similar manner, the risk analysis of the other risks, namely Losing business due to non adoption of technology (E_2), Realignment, and standardization (E_3) and the cost implication on extension (E_4) is carried out to arrive at the risk values.

After taking into consideration, all the risks and their contributing risk factors in the extension phase, the findings and interpretation template is presented in Table 4. The following step by step approach is followed to interpret the table:

Step 1: The table comprises of 5 columns namely Risk Factor, Weighted Response Value (WRV), Perception to Risk, Risks and Minimum Value of Risk.

Step 2: The Weighted Response Values for each of the risk factors. These values are arrived as explained in section 4.1 above.

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Step 3: The Perception to Risk (+ / -) is given in the third column. (*) Negative (-) denotes that the answers relating to SA and/or A is greater than SD and/or D and hence will contribute towards risk. While positive (+) denotes responses relating to SD and D that will not conduce to the danger. The "y" value with negative perspectives only is considered for risk measurement. Accordingly of the twelve risk factors identified for the extension phase of ERP, we found that the risk perception to five factors, namely e_{11}, e_{13}, e_{23}, e_{32} and e_{41} are positive so these do not contribute to the risk.

Step 4: The 4 risk that is represented by the risk factors are enumerated.

Step 5: In the last column the Minimum Value Risk is arrived, which is a product of the minimum response value of the risk factors multiplied by the certainty factor.

From Table 4 we interpret the values based on the first and second propositions stated in section 4 above. Accordingly, lack of support from large buyers (risk factor e_{22}), software compatibility issues between SMEs and OEMs (risk factor e_{33}) and less involvement of the SMEs in the supply chain decisions with their larger counterparts (risk factor e_{13}) as the top three risk contributing factors. This is quite justifying from the previous works that SMEs will certainly seek support from the back and forth of the supply chain particularly in the automobile industry as large player like OEMs and tier 1 suppliers are already matured with advanced enterprise system enablement. Amongst the other factors perceived as risky include, inadequate funding from larger counterparts in information integration, compatibility issues relating to network interfaces, etc. It is comprehended that there is no risk relating to lack of clarity on the selection of process to be interfaced, additional IT investments etc. Our findings corroborate to the existing knowledge that one of the central challenges for SMEs is the lack of process standardization requirements to fulfill the expectation of their supply chain partners particularly the OEMs. This purports to the first proposition of the FPN model. For the second proposition of the FPN model we state that the SMEs are subjected to a minimum risk of 0.25 out of 1 in this phase which is related to non-alignment to the supply chain partners' requirements. This is evident because of the disparities due to the varying

Table 4. Findings and interpretation of risk assessment in the extension phase

Risk Factors (1)	WRV (2)	+ / - (3)	Risk (4)	MVR (5)
No clarity about what processes to be interfaced (e_{11}) Mismatched business strategy with technology strategy (e_{12}) Very less involvement by SMEs in supply chain decision (e_{13}) Less bargaining power of SMEs (e_{14}) No collaborative planning by SMEs with their large buyers (e_{15})	0.42 0.39 0.28 **0.55** 0.37	+ - + - -	Nonalignment with supply chain partners (E_1)	0.250
Pressure from large customers (OEMs) (e_{21}) Lack of support from large buyers (e_{22}) Technological incompatibility (e_{23})	0.37 **0.58** 0.38	- - +	Losing business due to non adoption of technology (E_2)	0.329
Realignment of processes (e_{31}) Inequalities of information flow efficiency due to technological imbalances (e_{32}) Compatibility issues in web-interfaces of large buyers with the ERP system of SMEs (e_{33})	0.51 0.51 **0.57**	- + -	Realignment and standardization (E_3)	0.455
Lack of planning for the additional investment in IT (e_{41})	0.48	+	Cost implication on extension (E_4)	0.428

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levels of information technology adoption of SME and larger enterprises. Realignment of SMEs systems and processes to suit the standardization requirements of the large buyers in the automobile industry is perceived as highest (Figure 7).

Finally, the second and third dimension is presented interpreted through categorization of the risk factors and their leveling. The results are presented in Table 5.

From Table 5, we interpret that out of the total twelve risk factors considered under the reference phase of ERP adoption seven are risk contributors according to this survey. Out of these a majority of them numbering five risk factors are organizational, only one relate to managerial and three each relates to operational and technological category. With regard to the leveling, only one out of 7 risk factors is leveled as medium to fairly-high which is the lack of support from large buyers.

Figure 7. Extension phase result summary

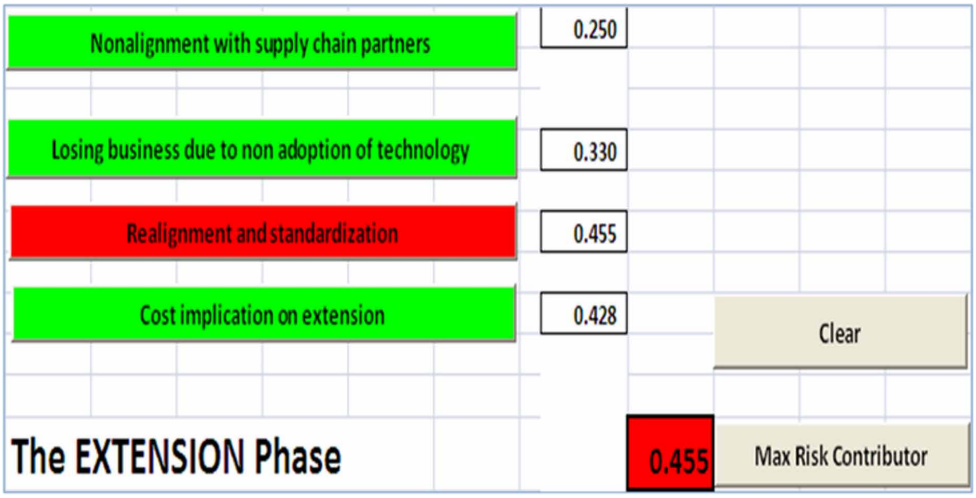


Table 5. Risk categorisation and leveling in extension phase of ERP adoption

Risk Factor Codes	+ / -*	Organisational	Managerial	Operational	Technological	Human	Risk Levels
e_{11}	+			0.42			NA
e_{12}	-	0.39					Fairly-low to medium
e_{13}	+	0.28					NA
e_{14}	-	0.55					Medium
e_{15}	-			0.37			Fairly-low to medium
e_{21}	-	0.37					Fairly-low to medium
e_{22}	-	0.58					Medium to Fairly-high
e_{23}	+				0.38		NA
e_{31}	-			0.51			Medium
e_{32}	+				0.51		NA
e_{33}	-				0.57		Medium
e_{41}	+		0.48				NA

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6. DISCUSSION

Clear understanding of the risk factors is critical wherein this research paper has provided answers to (i) what risk factors are identified, (ii) how representative are these to ERP adoption in SME, (iii) which of these risk factors contribute to a particular risk, (iv) which risk factors and risks are perceived as critical by the SME respondents, (v) how to represent and understand the risks. The taxonomy of risk and risk factors provided the initial impulse for the development of the survey instrument which subsequently furthered by administering the questionnaire to empirically collect the answers from the SME participants to realize their perception (fuzzy nature) towards a given risk factor in the extension phase of ERP adoption.

The semi-structured interviews with the subject matter experts brought certain valuable insights like inadequate support from SME industry associations, non alignment with supply chain partners, business loss due to non adoption of ERP, lack of awareness, lack of business process interrelationship, ineffective ERP scope definition, inadequate knowledge on ERP vendor selection, unrealistic budget and schedules, user resistance, project failure, inefficient ERP project leadership, ineffective external consultant etc. Most of these insights matched with the respondents' risk perception about them. The reconciliation between experts' insights and respondents' perception is presented in Table 6.

From a contextual viewpoint, the contribution of this research thesis is an integrated approach to the risk assessment of ERP adoption in SMEs. The results provide a decent understanding in exploring the possibility of extending the integration of ERP in the supply chain. The research is of immense use to the SMEs who are in the different phases of ERP adoption (some considering to integrate with their supply chain, some already adopted, many keen interested to integrate) because the risk assessment of ERP adoption specifically to extension phase is distinctively identified, addressed and assessed. From a conceptual viewpoint this research contribution very comprehensive in the sense that it enabled the design, development, building and testing of a simple, yet robust risk assessment model through the application of fuzzy Petri nets.

The outcome of this paper offers an authentic source of reference for risk assessment of ERP adoption for an extensive scope of stakeholders, namely, SME participants, SME consultants of both business and technology, industry and cluster associations in India. The technique of risk assessment using the fuzzy Petri net to measure the risk perception of the respondents is very useful for practitioners. This is because it is easy to use and test the model for a broader scope of research roles. Also, our results provide a meaningful analysis of the synergies and deviations in the risk perception of ERP adoption in particular and other IT projects in general. The capability of the assessment model to arrive at the risk values is proved by getting it tested with live survey data. This enlarges the horizon of the research contribution to real-life business scenarios.

Table 6. Experts' insights vs. respondents' perception on ERP risks

Risk Code	Risk Factor Recommended by Experts	Respondents' Risk Perception
e13	Very less involvement by SMEs in supply chain decision	No
e14	Less bargaining power of SMEs	Yes
e21	Pressure from large customers (OEMs)	Yes
e22	Lack of support from large buyers	Yes
i112	No clarity on ROI from ERP Investment	Yes

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6.1. Limitations of the Research

The limitations are related to paucity of time, data accessibility, generalization and bias in primary research. The robustness of the research findings is with regard to a definite time horizon only. In other words, technological advancements may alter the perceptual experience of ERP extension decision in SMEs which will result in redefining the risks and risk factors. This study is specific, with respect to country, region, industry and size of units. Hence the consequences cannot be extrapolated to the cosmos at large. Since the scope of this research work is limited only to assessment and quantification of risks and risk factors, the mitigation based on scenario analysis is not included and can be taken as the future scope only. Currently the tool is developed on proprietary software. Any modification to the underlying software can interrupt the working of the assessment model. This research result can also be utilized as a launching pad for further empirical researches in the same way, but can be differed by the similarities and differences in perceptions of the decision-makers across different SMEs clusters and geographies. Currently this research considered the risk assessment distinctively for the extension phase of ERP adoption. As part of an ongoing research the interrelationship between the risks and risk elements in the preceding phases like planning, acquisition, implementation and usage have not been considered as part of this study. Since this research is administered to the SMEs the profile of the respondents is restricted only to a restricted number of stakeholder-types, namely the director and IT manager of the unit whose perceptions can have limited generalization.

7. CONCLUSION AND SCOPE OF FUTURE WORK

The paper investigated the perception of risk elements associated to the extension phase of ERP system in small and medium enterprises, particularly those working in an auto component cluster. Besides this study took the important risks, risk factors that are perceived to be critical during supply chain collaboration between an SME and its larger counterparts. The possibility of extending this research work to other auto component clusters can be explored to bring out the similarities and divergences in the risk perception of the SMEs units. Grounded along the application foundations of the risk assessment instrument used in this research, the possibility of developing a comprehensive software tool can be explored which can get the responses of risk perception through an online survey and can execute real time analysis of outcomes. Also in the future, a structured hypothesized research model can be developed and validated to bring out the inter-relationship between the risk factors to the ERP adoption perception in all the five phases.

Further, the risk assessment model adopted in this study can be tested for other information technology solutions like customer relationship management, supply chain management, business intelligence and also to newer software deployment models like cloud or software-as-a-service. It would be a worthy attempt to investigate the risk perception about ERP adoption in different industry clusters.

Finally, to conclude, this research has designed and developed a risk assessment model using FPNs to the extension phase of ERP adoption. The model is tested and validated for its purpose by means of quantifying the risks and further classifying and grading them by applying the SMEs responses about the risk perception.

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Chapter 32
Information Management for Network Transformation in Industrial Enterprises Associations:
The Case of the Internationalization Process

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ABSTRACT

There is no doubt that nowadays internationalization is increasingly attractive for companies that want to become more competitive. However, many small and medium enterprises (SMEs) still are resource-constrained, lacking adequate information and facing problems to establish and manage relationships to operate in a sustainable way in international markets. Despite receiving some support from governments and from other institutional entities, these difficulties faced by SMEs call for a stronger support, which can be played by industrial enterprises associations (IEAs). This chapter brings the perspective of five different companies that are associated with IEAs. The main objective is to have their opinion about the role of IEAs as information managers and promoters of collaborations, mainly for internationalization processes. Another objective is to understand the acceptance by these companies regarding the use of collaborative platforms, managed by IEAs, for supporting their information and collaboration management activities.

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INTRODUCTION

Small and medium enterprises (SMEs) are one of the main driving forces in economic development, representing in many economies all over the world an important pillar of growth and employment (London, 2010; Sommer & Haug, 2011). Globalization of markets and the consequent rise of competitive pressure lead SMEs to look at internationalization as a main priority to sustain their business (Costa, Soares, & Sousa, 2016a). However, only a few number of firms have been succeed in internationalize to foreign markets (Rodriguez, Barcos, & Álvarez, 2010). In comparison to multinational enterprises (MNEs), SMEs are typically regarded as resource-constrained, mainly lacking market power and adequate information and knowledge to operate in a viable way in international markets (Hessels & Terjesen, 2010).

To compensate the lack of information about foreign markets, SMEs can form collaborations and establish network relationships with different types of entities, such as suppliers (Hultman, Johnsen, Johnsen, & Hertz, 2012), customers (Cannone & Ughetto, 2014), competitors (Casillas, Acedo, & Barbero, 2010), foreign firms (Castellacci, 2014), institutional agencies (Santos-Alvarez & García-Merino, 2010), and government bodies (Child & Hsieh, 2014). Collaborations can be established between firms to complement core competencies, providing complementary and attractive products or services to markets and increasing competitive advantages to internationalize (Spence, Manning, & Crick, 2008). Networks are valuable sources of information about market conditions and information sharing is then crucial in collaborations to create trust and synergy to sustain relationships. Therefore, successful collaborations require using a collaboration-based mentality instead of a conflict-based one, with information sharing and not information controlling (Spence et al., 2008).

Despite of this, SMEs still face difficulties in managing both collaborations and information generated in a collaborative network context (Costa et al., 2016a). Due to the imperfect access to information, internationalization can be a risk for SMEs, representing extra costs associated with the collection of foreign market information and seeking and evaluation of partnerships (Hessels & Terjesen, 2010). Internationalization requires large amounts of information but many firms have a lack of suitable tools for managing information and knowledge from partners or from previous experiences (Rodriguez et al., 2010). When moving into new international markets the information processing demand increases and become more complex (Hsu, Chen, & Cheng, 2013), requiring suitable management approaches and information technologies tools to better predict and evaluate problems arising from internationalization strategies. Additionally, among all difficulties in managing internationalization information (Costa, Soares, & Sousa, 2016b), SMEs face significant barriers related to the lack of contacts and lack of adequate institutional support (Djordjevic, Sapic, & Marinkovic, 2012; London, 2010). Moreover, in Portugal, although representing 99% of the total number of enterprises, only 20% of SMEs are performing internationalization processes (Banco de Portugal, 2015).

These difficulties faced by SMEs in managing internationalization processes, with specific emphasis on managing information and on creating collaborations, call for a strong facilitating role that can be played by industrial enterprises associations (IEAs). IEAs can have an important role in fostering more collaborations among their associated companies, by disseminating opportunities and acting as an intermediary for establishing good relationships (Costa, Soares, & Sousa, 2015). Some previous studies have been studying the role of institutional networks in internationalization processes of SMEs, e.g. Oparaocha (2015), Makhmadshoev, Ibeh, and Crone (2015), and Gardó, García, and Descals (2015). However, these studies are not specifically focused on IEAs, i.e. results are concentrated in understanding the institutional network support of governments and other supporting agencies in general.

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Internationalization processes require managing large amounts of information (Xie & Amine, 2009). Costa et al. (2016) state that a collaborative platform may allow better information management in collaboration, contributing to the effectiveness of these processes. Accordingly, the authors of the present chapter argue that by using a technological and collaborative platform, IEAs can act in a more active way in processes of internationalization of their associates (both SMEs and MNEs). This by providing advanced brokering, facilitation and coordination services, instead of only mere advices and basic services.

Therefore, the main objective of this chapter is to understand the perspective of five different companies associated with IEAs about two aspects:

1. The role of IEAs as information managers and promoters of collaborations;
2. The use of a collaborative platform for supporting information and collaboration management activities, with focus on internationalization processes.

The research questions are:

RQ1: What is the perspective of companies about IEAs as information managers and promoters of collaborations?

RQ2: What companies think of using collaborative platforms, managed by IEAs, for supporting their internationalization processes?

The motivation is then based on three main pillars:

- **Information:** SMEs need to access, organize and use information from their collaborative networks to achieve better internationalization processes.
- **Tools:** SMEs need to have new tools to convert information into knowledge for making better internationalization decisions.
- **Support:** SMEs need a more active support from institutional networks, mainly from IEAs.

The structure of this chapter is as follows. First, literature on internationalization of SMEs with focus on networks and information management processes is presented, as well as some background on IEAs as institutional network support for SMEs. After that, the research methodology applied for this paper is described and the selected five cases are analyzed according to the research questions. Finally, a discussion and the main conclusions of the chapter are presented.

BACKGROUND

This section provides a brief literature review about the topics under study in this chapter. First, recent developments on the internationalization process of SMEs are provided. After that, the information management process, as well as the network and collaboration processes in internationalization are discussed. Finally, this section ends with literature on IEAs, with focus on their institutional network support in the internationalization process of their associated companies.

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Internationalization Processes of SMEs

The world is becoming increasingly globalized and the international markets more and more open and accessible. Domestic saturation and the need to reduce competitive pressures lead companies to expand their businesses across borders, in order to increase sales and gain visibility in foreign markets (Olejnik, 2014). Internationalization is the process of adapting firms' operations to international environments, increasing awareness in terms of direct and indirect influences of international transactions on their future (Beamish, 1990; Calof & Beamish, 1995). However, internationalization is a complex and hard process dealing with a large variety of decisions and, most of the times, requiring a great amount of resources (Andersson, 2011; Santos-Alvarez & García-Merino, 2010). Particularly in the case of SMEs, standing out in this competitive environment can be quite difficult, with the lack of information and the lack of contacts representing the main hindrances to internationalize (OECD, 2009).

The definition of SMEs differs across countries. E.g. SMEs are defined as firms with fewer than 250 employees in Europe, with fewer than 500 employees in the USA, and with fewer than 900 employees in New Zealand (Jabar, Tajuddin, & Paino, 2016). In the European context, in addition to representing firms that employ fewer than 250 employees, SMEs have an annual turnover not exceeding EUR 50 million and/or a total annual balance sheet not exceeding EUR 43 million (Kushnir, Mirmulstein, & Ramalho, 2010). Compared with MNEs, SMEs have limited managerial, financial, network and information resources (Knight & Liesch, 2016; Olejnik, 2014).

Internationalization processes and activities of MNEs have long been studied by many researchers and strong theory was developed on this. However, SMEs are structurally different and behave differently from MNEs, precluding the possibility of theory transferring (Knight & Liesch, 2016). MNEs have a highly internalized organization form (Liesch, Håkanson, McGaughey, Middleton, & Cretchley, 2011) while SMEs might invest abroad (not to the extent of MNEs) but opting for more basic forms of internationalization, such as exporting and other non-equity modes (Lu & Beamish, 2001).

The internationalization process model of Johanson and Vahlne (1977) is well established in the research area of International Business (IB). This model is incremental, describing that firms start the internationalization process with a low commitment involvement into close markets, progressing (through a learning process) towards higher commitment levels into more distant markets.

Nevertheless, in the last decades external environments where firms operate have changed and consequently more research have been made on cases that display other patterns of internationalization and on updates of the model of Johanson and Vahlne (1977).

Knight and Liesch (2016) present a comprehensive summary of the evolution of research on early internationalization and born global firms. "Born global firms" is a term used in the internationalization literature that is applied to firms (mostly SMEs) aiming for international markets right from their birth or very shortly thereafter (Andersson, 2011; Cannone & Ughetto, 2014; Kaur & Sandhu, 2013). The authors present a conceptual framework that summarizes future research on born global firms. The main conclusion of this study is that the internationalization process is evolving and born global firms are emerging around the world. This because companies of any size, age, experience and resources can participate in an active way and benefit from international business.

Olmos and Díez-Vial (2015) examine the relationship between the internationalization pathways and the performance of SMEs. Empirical findings show that the "export intensity-export performance" relationship can be characterized by a U-shaped curve for SMEs that have a gradual internationalization pathway and by a S-shaped curve for SMEs that have an accelerated internationalization pathway. Based

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on the configurational theory, Cerrato, Crosato and Depperu (2016) develop an important framework that identifies four archetypes of SME internationalization: (i) marketer; (ii) investor; (iii) networker; and (iv) weak internationalizer. This framework allows to analyze the firm-level internationalization, according to six indicators: internationalization from the demand side, resources located abroad, geographical scope, international orientation, internationalization of the business network, and financial internationalization.

Nevertheless, many SMEs still face major challenges and internationalization barriers. In particular, they often do not know how to start an internationalization process, what are the decisions and entry modes involved, and which are the main types and sources of information about foreign markets that enable more confident decision-making (Child & Hsieh, 2014; OECD, 2009; Olejnik, 2014). In other cases, the lack of suitable tools, methods and practices for managing information and knowledge, both from previous international experiences and from partnerships with other firms, represents another problem in their internationalization processes (Nguyen, Barrett, & Fletcher, 2006; Rodriguez et al., 2010; Souchon, Dewsnap, Durden, Axinn, & Holzmüller, 2015).

Information Management in Internationalization of SMEs

Having value information is crucial for successful internationalization processes. Decision-makers in SMEs need to search and acquire information for identifying appropriate foreign market opportunities and to reduce internationalization uncertainties (Xie & Amine, 2009). In addition, SMEs with value information are able to increase creativity in decision-making and to reduce risk, facilitating the international expansion (Child & Hsieh, 2014; Perks & Hughes, 2008; Saarenketo, Puumalainen, Kyläheiko, & Kuivalainen, 2008).

However, as found by many authors in the literature, SMEs have imperfect access or have difficulties in managing information regarding internationalization processes (Hessels & Terjesen, 2010). The reasons for this to happen can be centered in the poor development of suitable information technology tools (Rodriguez et al., 2010), in the lack of organizational capabilities to process information (Aspelund & Butsko, 2010), or even by not allocating the right efforts to gather this information (Santos-Alvarez & García-Merino, 2010).

Recent studies show the importance of information in internationalization processes. Souchon et al. (2015) examine the key antecedents for generation of export information, concluding that export experience, export complexity, and export specificity are positively related with knowledge of export information sources. They point out that in cases of lack of export experience, companies should contact and recruit entities with experience in internationalization or with knowledge of specific markets. In addition, these authors state that firms exposed to many export markets may face some complexity and challenges regarding information management processes, mainly in what regards the organization and dissemination of knowledge internally. The study of Peschken, Shukla, Lennon and Rate (2016) explores the decisions of SMEs' decision-makers in internationalization using a cognitive perspective. Based on the structural alignment theory and regulatory focus theory, a conceptual model is developed by these authors. Scenarios are identified and findings show that the structure of the available information to internationalize has a strong influence on decisions regarding cognitive resource requirements.

Decision-makers have characteristics that influence the information management in internationalization, such as this age, tenure, international experience, information processing capability or organizational memory (Chen, 2011; Cui, Li, & Li, 2013; Hsu et al., 2013). In order to learn and develop new knowledge about markets, SMEs can use different internal and external sources of information, which can come

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from social and business relations, from previous international experiences or experience of others, or from externally available information (Akerman, 2014; Santos-Alvarez & García-Merino, 2010). The main information subjects that SMEs seek within their sources are (Aspelund & Butsko, 2010; Cannone & Ughetto, 2014; Ibeh & Kasem, 2011; Peng, Yang, & Liang, 2011; Xie & Amine, 2009):

- Foreign market conditions.
- Host countries attractiveness.
- Internationalization strategies.
- Internationalization obstacles.
- Support programs.

To gather information from different sources, a possibility is to use formal techniques, such as market research, or informal ones, such as relying on gatekeepers (Rodriguez et al., 2010). Nevertheless, it seems that for gathering and sharing information about foreign markets, SMEs give more priority to their already established networks (Costa et al., 2016a). Information shared in networks allows to increase commitment in foreign markets (Hultman et al., 2012) and to reduce information asymmetry (Child & Hsieh, 2014), which is more important in internationalization due to the individual difficulties of SMEs in searching information (Casillas et al., 2010). Spence et al. (2008) consider that information sharing is crucial for developing trust and synergy to sustain collaboration relationships, requiring a collaboration-based mentality instead of a competition-based one.

Internationalization Networks

Another important development in the literature of internationalization of SMEs is to consider markets as networks of relationships (Johanson & Vahlne, 2009). There is growing evidence that SMEs need to create relationships and establish collaborations to gain competitive advantage in internationalization (Costa et al., 2016a). These collaborations can be (Spence et al., 2008):

- **Vertical Alliances:** Alliances with upstream and downstream partners.
- **Horizontal Alliances:** Relationships with competitors.
- **Other Alliances:** Collaboration forms with firms from different sectors.

Successful collaborations are achieved when value for all the parties is created, which can be obtained by choosing the right partners, by managing the relationship, and by accumulating relational capital (Townsend, 2003). Quite different types of intermediaries can be used in internationalization to form these collaborations, such as distributors, customers, competitors, managers' contacts from previous jobs or experiences, external parties, foreign firms, institutional agencies, government bodies, consultants, personal contacts, and friends (Cannone & Ughetto, 2014; Casillas et al., 2010; Castellacci, 2014; Child & Hsieh, 2014; Hultman et al., 2012; Ibeh & Kasem, 2011; Kaur & Sandhu, 2013). Some of the main reasons for establishing collaborations in internationalization processes are to achieve rapid international expansion and growth, to obtain information about foreign markets, to provide access to new knowledge, and to assist in mitigating the costs and risks of cross-border activities (Andersson, 2011; Child & Hsieh, 2014; Ibeh & Kasem, 2011; Musteen, Francis, & Datta, 2010).

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The study of Oparaocha (2015) illustrates the differences and interconnections between the three main perspectives of network research in IB: (i) social networks (individuals, family, friends, colleagues, and employees), which influence the creation and development of social capital and business know-how; (ii) business networks (suppliers, competitors, strategic partners, and customers) that have an effect on the business deal and on supplementing or acquiring resource advantage and business know-how; and (iii) institutional networks (government, incubators, research institutes, agencies for international development, and business associations) that have influence through supporting functions and the institutional-based business environment. Since the work of Coviello and Munro (1997), business networks are those that are more explored in the literature. A recent study shows that, in order to reduce risks, SMEs imitate the internationalization modes of their peers based on formal network relations (Oehme & Bort, 2015). Social networks have been also receiving much attention. Pinho and Pinheiro (2015) highlight the importance of using social network analysis as a different methodological approach to understand the numerous complex interactions that occur in internationalization processes. Xie and Amine (2009) suggest that social networks must be properly recognized as one of the primary sources of information, knowledge, and fast learning. Nonetheless, the institutional network perspective is still in an early stage of research.

The importance of governments and institutional supporting agencies in the internationalization processes of SMEs have been recognized in the literature (Casillas et al., 2010; Child & Hsieh, 2014; Loane & Bell, 2006). However, more studies on the influence of institutional networks in internationalization processes are needed (Oparaocha, 2015). Current studies examine how this kind of networks are interacting with the internationalization activities of SMEs, in the context of international entrepreneurship (Oparaocha, 2015), transition economies (Makhmadshoev et al., 2015), and retail internationalization (Gardó et al., 2015). The focus of this chapter is on IEAs addressed as institutional networks for supporting the internationalization of their associated companies. This is a different contribution to the knowledge of internationalization as tendency of previous research is to consider institutional networks in general, or to give more emphasis to governments and other agencies.

Industrial Enterprises Associations as Institutional Network Support

The authors of this chapter consider an IEA, also known as business association (Bennett, 1998) or trade association (Lacerda, 2013), as being both an organization that represents different companies of a specific industrial sector (sectoral IA) or an entity that act as an intermediary within a multisector network of companies in a specific area of activity (multi-sectoral IA). In both cases, membership for companies is voluntary (Bennett, 1998).

IEAs act as an intermediary between individual business action and state action (Bennett, 1998), adopting a multilevel strategy of lobbying across different national and international government levels (Grossman & Woll, 2007). Therefore, the potential benefits of IEAs to governments are an enhanced level of compliance with regulations, as well as lower administrative costs of regulation (Bennett, 1998). In addition to establish standards and self-discipline and to promote an effective communication between industrial firms and local governments, one of the main focus of IEAs is to strengthen collaboration among members (Bell, 2006; Wang & Gooderham, 2014). An IEA also promotes activities such as advertising, publishing, and formation (Lacerda, 2013). According to Bell (2006), a capable or well-developed IEA is able to encourage associated companies to collaborate and achieve wider, medium-term collective goals, instead of working only in their narrow short-term interests. Irwin (2014) also considers that to be effective, IEAs must have capacities to represent the interests of their members, must have proper governance

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arrangements, and must deliver appropriate services and information to their associates. In the specific case of SMEs, it appears that due to their resource constraints, SMEs are more dependent than large firms on the services, information and contacts generated through IEAs (Gashi, Hashi, & Pugh, 2013).

The recent study of Inomata et al. (2016) explores the channels and practices for knowledge sharing in Science and Technology Parks, as well as in IEAs. Knowledge sharing is the process when individuals mutually exchange tacit and explicit knowledge, creating new knowledge in collaboration (van den Hooff & De Ridder, 2004). In this study, based on empirical data, the authors conclude that companies in an IEA share technological knowledge (such a scientific knowledge, technological solutions, and patents), as well as market knowledge (such as investors and investments, business contacts, and business opportunities) with the other associates. Different channels are used, such as the personal contact, email, phone, cloud, videoconference, and websites. In fact, results of this study show that an effective process of knowledge sharing in IEAs is mainly facilitated by the existence of collaborative physical workspaces and informal and face-to-face interactions. Moreover, regarding the impacts of knowledge sharing in the organizational results, those are more related with continuous improvement, technology development and increased knowledge base of the associated companies.

Although it is common knowledge that IEAs promote activities and initiatives that are important for the internationalization of their associates (such as fairs, missions and market research), literature on the role of IEAs in internationalization processes is still very scarce.

RESEARCH METHODOLOGY

The research methodology applied for this study was exploratory interviews with five Portuguese companies associated with some IEAs. Therefore, the main goal was to understand the perspective of these companies on the possibility of considering IEAs as information managers and promoters of collaborations. In addition, it was intended to perceive the suitability of using a collaborative platform for supporting activities such as information and collaboration management in their internationalization processes. Table 1 characterizes the different companies interviewed.

Empirical evidence was collected using semi-structured interviews with different kinds of interviewees, such as CEOs, CCOs, and advisors. The open-ended style of the interviews allowed the respondents to describe their experiences and ideas freely, without being limited to standardized categories (Hutchinson,

Table 1. Companies interviewed

ID	Type of Organization	Industrial Sector	Position of the Interviewees	Duration of the Interview (min)
C1	Large enterprise	Textile industry	Chief Commercial Officer (CCO)	42
C2	Large enterprise	Textile industry	Chief Executive Officer (CEO), CCO, Chief Technology Officer (CTO), Chief Marketing Officer (CMO), Advisor	76
C3	Small enterprise	Information technologies	CEO	51
C4	Small enterprise	Information technologies	Business Manager	33
C5	Startup	Medical devices	Chief Operating Officer (COO)	71

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Alexander, Quinn, & Doherty, 2007). These companies were selected to have a sample representing different types of organizations, i.e. the sample is composed by one startup and by two SMEs, and two large enterprises. The startup C5 is not currently a member of an IEA but it was interesting to have a perspective from this different type of organization. All the interviews were carried out personally and were recorded for accuracy purposes. After that, these were transcribed and coded using the qualitative data analysis software MAXQDA.

FINDINGS

This section describes the main findings of the performed interviews.

Case 1: Large Enterprise 1, Textile Industry

C1 is a large company with 80 years of experience in the textile and clothing industry. It is a successful company in Portugal that has been focused in the last years in creating textile innovative solutions for the automotive industry. C1 has also many experience in internationalization processes with subsidiaries all over the world.

Regarding its membership with the association from the respective industrial sector, the interviewee considers that this IEA does not have the necessary human structure to deal with their needs to develop new projects. In terms of promoters of collaborations among associates, the technological center of this sector, which works in close collaboration with the IEA, seems to be more adequate for this task.

C1 is mainly interested with information about legislation and customs rules. Due to their growing interest in the automotive sector, another valuable information content is the one regarding patents. Therefore, the IEA can play an important role here, acting as an information manager to share this important information with C1.

The interviewee thinks that a platform for supporting information and collaboration management aspects can be relevant for their activities, since people are very closed in what concerns the process of information sharing. The perspective is that a technological platform can facilitate the task of finding partners and opportunities, creating good synergies among all the stakeholders. However, there must be the ideal of all parts sharing something meaningful to each other.

Despite having experience in internationalization processes, C1 considers that these are most of the times difficult processes. The interviewee knows that many companies have been had bad experiences in internationalization. In the specific case of C1, they had a negative situation in Brazil, where companies were very closed, without sharing information, which made it difficult to perform an international project with success.

Case 2: Large Enterprise 2, Textile Industry

C2 is a large textile company with more than 40 years of experience. The technological level and the know-how acquired throughout four decades of activity have positioned C2 in the forefront of the clothing industry in Europe. Today the company exports almost all its production all over the world. Therefore, C2 has many experience in internationalization.

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In this case, five members of the company were interviewed at the same time, allowing to have a broader scope in the thematic being discussed, representing the longest interview performed.

For C2, the internationalization is an adventure, a challenge often inglorious. One of the interviewees gives the example of China, where they made some four or five attempts to enter this market but have never been successful. So, they point out the need to understand the tangibility and how a person values the brand, but also to understand the distribution philosophy of each country. This last aspect because nowadays the logistics and distribution costs are very high. Therefore, it is in this lack of knowledge about markets that collaborations can have an interest for the company.

The interviewees consider that the IEA needs to expand its scope by helping companies to execute specific activities because C2 still has some reluctance in terms of associative schemes. In their opinion, one situation is when a company wants to move to a particular market and knows that it cannot do it alone and needs some support. An example can be the United States of America, which is a hard and large project for one company alone. So, the need here is for the IEA to create over there a physical space or showroom to present and disseminate the activities of a small number of specific companies. This could allow to create more collaborations among associates, mainly in terms of resource and risk sharing.

According to the interviewees, another possible way to improve the importance and the visibility of the IEA could be to promote the sector and not specific brands. The IEA can study a specific market, analyze and collect data, present this data to the Portuguese companies, and invite the press and companies of the market under study to come to Portugal and meet the industry, not specific brands. In Portugal, one of the most successful cases is in the footwear industry, where the IEA acts like this. One of the interviewees thinks that this approach can be more interesting for the sector, by giving a bad example that happened for example in a fair (one of the traditional support provided by IEAs): "there were situations in the past where I was representing the company in events organized by different IEAs and I remember of a fair that I stayed for six days and did not have a single customer… because it was out of context, we spent a lot of money…" So the perspective from the interviewees is to have quality, not quantity, i.e. the IEA needs to choose and take the best companies of the sector and present Portugal. After that, naturally, other companies will go after and will gain more visibility.

In the evolution of this, the interviewees see a platform as being interesting to make the positioning and alignment of the companies that have the same philosophy in terms of both resources and strategies. They think that the IEA can moderate meetings between associates with the same philosophy and with the same resources that can be complemented to reach specific markets, promoting here more fruitful collaborations.

These collaborations with other associates of the IEA are seen as a good possibility to create joint strategies and structures for making investments in markets to benefit the specific brands. This by complementing resources, sharing risks and also sharing investments. One of the interviewees reinforces the importance of having in these situations companies with the same strategy: "in this sense, companies must interact and collaborate according to their dimension… this only results if the companies are aligned at all aspects… if they conjugate companies that sell completely different products… it is a completely different world. Then, despite of wanting to share, there will be no benefit between the parties." So, the perspective of C2 is that for creating collaborations, companies should have common interests, since companies with a different economic power will probably have different requirements and objectives, but also different approaches, values and resources.

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In terms of information sharing in IEAs, C2 has interest if it is information about experiences in specific markets. The interviewees consider that if an associate is in a specific country, he knows the rules and the particularities of this country. Therefore, through a knowledge sharing process, C2 can learn with him, understand the problems and barriers to face, and consequently avoid making the same errors. So, they approve that the IEA can act as an information manager, by organizing and filtering information according to the needs of the associates. However, the interviewees think that it will be difficult to transpose all this management of information into a platform. They agree with the IEA sharing institutional information and opportunities but they have doubts about the willingness from companies for sharing their information. This mainly due to their lack of time for structuring the information in a pleasant and easy way to read, as well as due to the fact that some information may be confidential. Moreover, they believe that the interactive part, the exchange of experiences, could be easier if performed in a more informal way.

A platform can be interesting for C2 if it is not a generalized platform, i.e. if it has the ability to create groups and create market segments, where information is directed to and created within these segments. Other fundamental aspects are the platform to be the way where companies create synergies to approach markets or where all the funding opportunities for the sector are aggregated.

Case 3: Small Enterprise 1, Information Technologies

C3 is a small software developer and software consulting company with 15 years of experience with the objective of providing IT solutions to organizations, based on the latest technologies. Right from the start, the company has been present in international markets. Nowadays C3 has offices in 10 different countries, exporting to a wide range of foreign markets.

The interviewee considers that the creation of collaborations with other companies of the IEA is important for the development of the company. It is indicated that in terms of software development companies, there is a set of problems that can be solved in collaboration, such as the management of updates and versions. So, the opinion is that the IEA needs to foster these relationships by disseminating and promoting the skills of its associates, in order to increase their visibility for other companies in foreign markets. Therefore, the interviewee points out two important aspects to be improved in the context of IEAs:

1. First, the IEA can identify the innovation vectors and the competences of each associate to allow crossing opportunities with the interests of each company;
2. After that, using some collaborative tools, the IEA can perform a matchmaking process to help in the identification of different actors that can collaborate in a specific opportunity.

Therefore, the IEA can play here a crucial role for establishing good conditions for the collaboration among associates, by "finding the opportunities, present these opportunities to those who may have an interest, and have a collaborative tool that allows the matchmaking."

In terms of information sharing, the interviewee clearly thinks that C3 has not yet felt the impact of the IEA as an adequate information manager. When approached with the question for the value information to also be originated by the associates themselves and transform this information sharing into a knowledge sharing process, the interviewee thinks that this is a viable situation. However, the IEA knows the associates and can be responsible for most of the information, by giving itself more wealth

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to its content. The interviewee considers that this can work for an example in a platform but only if the information is really useful: "And how, from my point of view, is it useful? If I receive once a week in my mailbox… a project, its title, its budget… does this and in 30 seconds I'm able to know that is this call, is for this, when, how, where, what time, values… a smart picture… and then have an option to say "I'm interested" or "like"." But this kind of information needs to be related with the activity of each associate, i.e. C3 does not want to receive emails or information about calls or other topics from other areas. Therefore, a platform managed by the IEA for supporting information and collaboration management can be very useful. For example, a platform may push the information that is on the websites of the European Union, i.e. to get this information and re-organize it for the interests of the associates. So, having a way of performing this matchmaking process between European projects with the research interests of companies, as well as alerting companies to these opportunities in an IT platform may represent relevant factors for the users' acceptance.

Another opinion from the interviewee is that the IEA of the sector has a long way to go because in this technological area there are issues that are useful for all associates and that need to have more focus. The IEA may have the role of knowledge aggregator both in terms of state-of-the-art and in terms of future prospects, such as pointing possible paths and markets of interest.

For the topic of internationalization, C3 has many experience in foreign markets and the first advice is that the internationalization is a multidisciplinary chain where some specific skills are required. The interviewee recommends that a company needs to have a product or service prepared to be internationalized and to have people with proficiency, at least, in English: "we must be prepared either from the product point of view and from the people (skills) point of view… be prepared for the process of internationalization." These have been the two main pillars for C3 to achieve successful internationalization processes. But in practice, the interviewee indicates the following key success factors:

1. **Critical Mass in the Domestic Market:** "In the first place, achieve critical mass in Portugal that was our first concern, i.e. have customers here in Portugal that somehow allow us to have really adjusted tools to real market needs.";
2. **Financial Capital:** "Internationalization is indeed a very expensive thing, for example, last year we participated in twelve international fairs... each fair costs 10, 15, 20 thousand Euros, from the stand, logistics, hotels,… therefore we must have financial resources to cope with these things.";
3. **Creativity:** "Another key aspect is not worth going to sell things that are abundant in another country and therefore we have to be creative… have innovative solutions, or that somehow differs from the rest, is crucial".

For these processes, C3 collaborates with different institutional entities such as governments and other support agencies to obtain support in terms of financing. In fact, the internationalization strategy of the company, besides this financial support obtained mainly through projects, has also been using human resources of these support agencies. These agencies have offices around the world and in many cases C3 used their offices and contacted some of their human resources to assist the company in getting new contacts. The interviewee has the opinion that this can be an interesting approach to be adopted by IEAs. Despite not having interest and capacity to have human resources in many countries, IEAs can have shared resources (offices, people, etc.) in key markets. The internationalization processes of C3 have been performed in most of the cases without the support of the IEA or of any other member (company) of the IEA. Nevertheless, the interviewee thinks that companies can share information and

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knowledge about the markets where they are present, and consequently, share their experiences and the problems faced. This will allow to avoid making the same errors in a specific foreign market. This can be very useful for C3 but they consider that for reaching this situation, the IEAs must have a closer monitoring process to foster these partnerships and exchange of experiences: "The association may have here technological skills to push companies forward."

Case 4: Small Enterprise 2, Information Technologies

C4 is a small enterprise with 15 years of experience in the area of software consulting. This company aims to design, implement and optimize information systems for management support. Currently, C4 wants to attract international clients with high technological know-how, so the process of internationalization has been one of the main priorities to increase its turnover.

In this case, the IEA is very important for them, mainly to promote companies' complementarity and collaborations. Therefore, C4 has been maintaining close relationships with the IEA of the sector. The interviewee considers that small IT companies need to join efforts to gain competitive advantages and reinforces that C4 needs to promote more collaborations. However, the opinion is that many companies fear to share their know-how, which represents one of the consequences for the low levels of partnerships and collaborations that we still assist nowadays. In addition, the cultural aspect and the lack of promotion of entrepreneurship in Portugal can be other problems.

The interviewee points out to the need for improving the mission of the IEAs, transforming them into more collaborative networks. The IEA of the sector must understand who is really interested in participating in internationalization initiatives (for example) and then promote these successful initiatives for its members. If the IEA is able to present a real added value for companies, its members can really recognize the importance of its services and even pay more to have access to the services of the IEA. Therefore, the interviewee considers that "the IEA needs to foster this sense of collaboration and inject adrenaline into its associates… this is also essential for the own promotion of the association."

Regarding the information sharing process, the interviewee thinks that, currently, the IEA fails to be a good information manager. Having information content with quality is fundamental for the activities of C4. For example, the IEA has no relevant information about the associates themselves, such as the results obtained with specific initiatives. One suggestion from the interviewee is the IEA to have reports about internationalization experiences and share this information with its network of associated companies.

Finally, analyzing the possibility of using a platform, the interviewee thinks that C4 must be able to feel a real need to work with this kind of solutions. Moreover, it only makes sense if Universities and research institutes can participate in the development of such platform. This approach of bringing together the business world with the academic world is very important in the interviewee's opinion. Another relevant aspect for this topic is the governance part of the platform. The interviewee refers that a content manager is critical and that the IEA must have this role of information manager. However, companies must have interest and also contribute with content.

Case 5: Startup, Medical Devices

C5 is a startup that aims to develop biomedical engineering solutions to aid medical diagnosis. The internationalization process of this company has been a challenge but with successful initiatives in the last years.

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C5 is not currently a member of any IEA. Nevertheless, this startup has interest in being associated with one IEA or even with one science and technology park. The board of C5 is now trying to understand what makes sense to decide at this stage for meeting the company's interests. The perspective from the interviewee is that C5 is not associated with the IEA of the sector because of its life stage. This startup made some errors and wrong choices in the past, which made it difficult to reach a good baseline for obtaining successful associative schemes. However, C5 was able to learn with its own errors and now can think in some collaborative and associative arrangements. The interviewee thinks that another good possibility is for C5 to be part of a science and technology park. C5 is a startup that started in a University, through a spin-off, but it is now integrated in a business center. But the problem is that the other organizations of this business center are mostly medium and large enterprises, which have completely different thinking and functioning strategies. The opinion of the interviewee is that being in a Science and Technology Park can be better for them as a matter that *"it is the same air that we breathe"*. The interaction with other startups can be better in terms of ideas and knowledge sharing. However, this is a difficult decision for the manager of C5 as it maybe represents a step back for the company's path and objectives, as it requires some changes in the management and in the structure of the company.

Regarding collaborations with other companies the interviewee considers that this is very important, even in cases of bigger companies helping smaller ones in specific aspects and vice-versa. An example is when there are two companies, one MNE and one SME, which work in the same area but targeting different customers. The MNE can help the SME in terms of specific consulting services, such as quality norms, through a process of knowledge sharing. The problem is still the lack of willingness to collaborate and to help others. The interviewee thinks that large companies already understand the importance of these collaborations. For the rest, people want this work to be done and it is nowadays gaining more acceptance: "What is missing is to point out and to know the path to make this type of infrastructures, be it with the use of technology or with other forms, and understand how you can insert this in people's social and professional life".

Therefore, the possibility of using platforms can help C5 because, according to the interviewee, in many cases, a textile enterprise does not know where to find technology and the technological enterprise probably has difficulties in making the pinpoint for where interested companies are. So a platform may be useful for this matchmaking process. However the problem stills remain in what concerns the collaboration. The interviewee insists that, although having some successful cases, many companies still face problems in moments when information or knowledge needs to be shared or even to create simple collaborations with others. The reason is that each company only cares about its own business and there is no enthusiasm in "wasting time to help others". The interviewee recognizes that maybe this is a matter of countries' culture because in some countries (at least in some cases) things happen in a different way, where associations work well and companies give priority to collaboration processes.

Another opinion is that SMEs have not the same management model of the MNEs and some business managers and economists do not understand this, i.e. general theory and concepts learned in their courses are difficult to transpose to the reality faced by SMEs. So, the interviewee thinks that "we need someone who encourages and motivates, someone who creates new dynamics… and electronics and technologies can create this dynamics".

From the perspective of the interviewee, a platform for information management can be very useful for sectors such as the food industry, where companies need every day to follow and be aware of updates in legislation. Nevertheless, from other side, a platform like this always needs human resources, someone exclusively dedicated to content, and at a national level, many failures happen at the level of content management.

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Lastly, in terms of internationalization, the first approach of C5 was to start with the national market but soon realized that, with the intention to increase sales, it would not be possible to only be limited at a domestic level. Therefore, after deciding to start to internationalize, the next decision was to find a way to commercialize the product, i.e. to decide if it would be better to use a distributor, to contact another company, or to choose a door-to-door approach. The first approach was to have an external commercial team to perform door-to-door sales, but it did not work. After that, C5 tried distributors but the doubt here was "Who is going to sell your product? It is the one that sells similar products or the one that will get your product as a differentiator and will leverage other products that already have sales?" So, in this internationalization process there are always issues and doubts, and today is still a challenge for the company.

According to the interviewee, there are many difficulties for people dedicated to the international markets because it is necessary to understand how it works, how the collected information is filtered, and where this information is primarily collected. In the case of C5, information and contacts are collected in three different ways:

1. By being present in conferences and fairs;
2. By direct contact, using their website, where customers and distributors can contact them;
3. By their own search, for example extensive search in the Internet to find partners.

However, there is still many problems and this internationalization process has been lonely for C5. The interviewee considers that "if there is an IT tool (like a platform), where you can understand, maybe find what is your best market, which has a global list of distributors… but at least direct to a right path… today we would be elsewhere in terms of the company's development".

DISCUSSION

Based on empirical evidence from five companies, one of the objectives of this chapter was to have first impressions on the role of IEAs as information managers and promoters of collaborations, mainly for internationalization processes. Accordingly, it defined the following research question: What is the perspective of companies about IEAs as information managers and promoters of collaborations?

The other objective was to understand the acceptance by these companies regarding the use of collaborative platforms managed by IEAs. For this objective, the research question defined was: What companies think of using collaborative platforms, managed by IEAs, for supporting their internationalization processes?

Therefore, regarding the first research question, there are mix feelings. C1 sees the technological center as having good resources and being more adequate than the IEA to promote collaborations among companies. In fact, the two interviewed large enterprises (C1 and C2) do not take many advantages from the services provided by the IEA and have some reluctance in terms of associative schemes. According to C2, a new strategy for the IEA could be to promote the sector instead of promoting specific brands. This by studying specific markets of interest for the sector and by disseminating and inviting foreign companies and the press to come to know this specific industrial sector. Nevertheless, creating collaborations with other associates, mediated by the IEA, is considered by C2 as being important to

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create joint strategies and to share resources and risks. But to promote more fruitful collaborations, C2 thinks that the IEA should join associates with common interests and with similar economic capacities and resources, in order to reach specific foreign markets of interest.

On the other hand, both C1 and C2 agree that the IEA can play an important role as information manager. C1 considers that the IEA can share mainly legal information (legislation and customs rules, patents), which is one of the main interests of the company. In the case of C2, they think that the IEA can organize and filter some information according to the needs of the associates, such as information about the countries in which each associate is present or have sales. Actually, the sharing of experiences among associates about particular markets is clearly one of the key interests from the perspective of all the interviewed companies. This can allow to understand specific features and rules of markets and to avoid making the same mistakes.

For C3, there is no doubt that the IEA has capabilities to establish good collaboration conditions among the associates and these collaborations are of great importance for the development of the company. Again, the IEA needs here to foster these collaborations by disseminating the skills of each associate to increase their visibility within the sector but also for foreign markets. Regarding the perspective about the IEA as an information manager, C3 considers that the IEA must improve this part and be responsible for providing more wealthy information, for example information related with the activity of each associate and not general information.

In the case of C4, the IEA has been clearly a good promoter of collaborations. However, they think that small companies like C4 need to join more efforts to gain competitive advantages. But the problem is that many companies still have some reluctance in sharing information and this is considered by C4 as being a cultural aspect. So, in this case they consider that the IEA must have a different mission by presenting a more real added value for companies, such as understanding the interests of the associates in participating in specific initiatives and, after that, promoting collaborations for these initiatives. Like the previous cases, C4 considers that currently the IEA does not meet the requirements for being a good information manager. Again, they feel a lack of information about internationalization experiences (reports) of other associates, but even a lack of some information about results obtained with specific initiatives.

Regarding the second research question, all the interviewed companies recognize the potential of using a collaborative platform for supporting not only their internationalization processes but also some other activities. For C1, a tool like this can improve information sharing and facilitate the search for partners and opportunities. C2 also points out that, with the support of a platform, the IEA can share funding and research opportunities, as well as some institutional information. In addition, they think that it can also be interesting for the IEA to align companies with same strategies, resources and philosophies, by creating synergies to approach specific markets. This specific matchmaking process is also pointed out by C3 as one of the possible functions of such platform, but also the function of having another matchmaking between European projects with the research interests of companies. In the case of C4, the possibility of using a collaborative platform only makes sense if entities such as Universities or research institutes have some participation in its development. In their opinion, joining the business world with the academic world is crucial for achieving the success.

Although recognizing the value of such solution, for the interviewed companies there are some important aspects to have in consideration. C1 considers that all parts must share something meaningful in this platform. For C2, transposing all the information management into a platform can be very difficult because they think that most of the companies have no desire in sharing their information for confidential reasons but also due to the lack of time for structuring it in a simple and pleasant way to read.

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Another reason is that people may prefer to exchange experiences in more informal ways, with personal contact. Therefore, for C2, a collaborative platform may result if it has not generalized information, but functionalities to create and direct information within groups and market segments. In the case of C3, an important issue is the platform to allow pushing information from different websites of interest and re-organize it for the associates' interests. Finally, C4 thinks that for using a platform, they must be able to feel there a real need. Moreover, in their opinion, the governance part of such solution can be difficult because both the IEA and the associates have resources problems in terms of time, people and finances.

To end this discussion, the case of C5 was interesting to include in this study to understand the perspective of a startup not currently involved in any IEA. Interestingly, C5 is now considering to join an IEA or a Science and Technology Park. In their opinion, they need first to measure all the pros and cons, according to the life stage of the company, to be able to decide. But C5 really believes that collaborations with other companies is fundamental for startups, not only with other startups and SMEs but also with large enterprises. Although remaining the problem in some companies for not wanting to share information, this aspect of collaboration is gaining more importance and acceptance, and C5 thinks that everybody wants this work to be done. Consequently, a platform is considered as a possible good solution, mainly for the matchmaking process of companies finding each other out, as well as for information management activities (e.g. for some sectors, daily follow ups in legislation). However, C5 considers that, to avoid failures, a solution like this needs great human power mostly dedicated to content management.

CONCLUSION

This chapter contributes to the scarce literature of IEAs. Based on empirical evidence from companies associated with IEAs, the contribution is to understand if IEAs can be considered as information managers and promoters of collaborations. Another contribution is to have the perspective from these companies about the possibility of using collaborative platforms, managed by IEAs.

In addition, this chapter also contributes to the scientific knowledge of International Business (IB) by focusing on IEAs as the institutional network support for the internationalization of SMEs. This by discussing the perspective of associated companies and by understanding how this specific institutional context is influencing their internationalization processes.

This chapter shows that IEAs can improve their role in the promotion of more collaborations between their associated companies. This supported by better information management practices. In the specific context of internationalization, SMEs can maximize the success of their internationalization processes and face competitive pressures. With a more active support of IEAs, SMEs can then access and interpret market information, decide on the best internationalization strategy and join competencies with other companies. A collaborative platform managed by IEAs may foster information sharing and also sharing of experiences between associates. This can be general information about foreign market conditions, but also some more specific subjects, such as attractiveness of specific locations and host countries, internationalization strategies or support programs for helping firms to internationalize.

However, there is a lot of work to do in these areas. It seems that many companies still fear to share their information and knowledge with others. The cultural aspect has been indicated as one of the main problems. Therefore, future work must be done in studying different contexts and different countries to understand these cultural problems or other possible problems that are precluding the creation of

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more collaborations among companies. Regarding the use of collaborative platforms or other types of technologies, companies recognize the impact that these kind of solutions can bring to their activities. Nevertheless, there is important aspects to consider for developing these solutions, such as the informational needs, governance model, information organization, information life-cycle, solution's usability and decision-makers' informational behavior. Finally, future work can also be done in trying to discover new ways for promoting information sharing and collaborations, not only in internationalization but in other contexts such as product development, innovation or research project development. Moreover, networks from different institutional contexts can be explored such as, clusters, incubators, science and technology parks or innovation networks.

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Chapter 33
A New Maturity Model for Project Risk Management in the Automotive Industry

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ABSTRACT

The purpose of this article is to present a new maturity model for the assessment and ongoing management of project risk management capability in the automotive industry. The research design is based on a multi-project case study analysis in a major German automotive company. The approach is qualitative and inductive, using 12 in-depth interviews with major stakeholders in the project management function in the company to provide data for the construction of the initial maturity model. This model is then verified and refined via an on-line survey and three follow-up interviews.The findings provide material for the construction of a new maturity model that can be used for the assessment of project risk management capability and as a tool for on-going monitoring and improvement. The model is structured around four dimensions of risk management – identification, assessment, allocation and appetite – and has four maturity stages – rudimentary, intermediate, standardised and corporate. The model is based on a detailed analysis of in-depth interview material in a specific industry sector. It can be used as a basis for similar research in other industries. The model adds to existing risk management maturity models and is unique in being specific to the automotive industry. It can be used by risk and project managers, and can also be adapted to other industry sectors.

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1. INTRODUCTION

The management of risk is an integral part of the project management process and project failure remains an area of considerable concern in contemporary project management literature (McClure, 2007). Comprehensive risk management increases the probability of project success, and recent empirical studies show a significant positive relationship between project risk management and project outcomes (Jen, 2009). Risk management has become a significant element of some of the most widely deployed industry standard methodologies, yet there is no universally agreed method for managing risk; and, in part because of this, there have been some attempts to suggest more flexible and creative approaches to risk management (Bollinger, 2010).

Project risk management is a fundamental discipline in most industry sectors and can be defined as the process that dynamically minimizes risk levels by identifying and ranking potential risk events, developing a response plan, and actively monitoring risk during project execution (Zwikael & Ahn, 2011). It has implications for the effectiveness of the project management process itself, and for the management and communication of knowledge that is an inherent part of that process. Several organizations have developed industry specific formal policies and supportive analytical tools. Application of integrated risk management methods can support early risk identification and assessment, thereby improving project outcomes and avoiding delays and cost overruns (Zayed, Amer, & Pan, 2008).

Practitioners and researchers agree on the potential of risk management concepts and methods to improve the likelihood of project success in practice (Bannerman, 2008; Aloini, Dulmin, & Mininno, 2012; Martínez Lamas, Quintas Ferrín, & Pardo Froján, 2012). This research focuses on the development of a new maturity model for the assessment, monitoring and management of project risk capability in the automotive industry, specifically in a European context. The maturity concept first appeared in business and management literature in the 1980s and has become a mainstream concept for assessing organizational capability, and is thus appropriate for the study of risk management in a corporate setting. The following section explores relevant literature in this field, followed by a detailed explanation of the research methodology employed, and how the initial model was developed. It also then discusses how data from the in-depth interviews was analyzed, and how the initial maturity model was verified. Section 4 applies the model to one in-company project as an illustration of how the model can be used, in a manner that can be built upon by other researchers and practitioners. The final section draws together key themes covered in the article and assesses the contribution to research and practice.

2. LITERATURE REVIEW

2.1. The Key Dimensions of Risk

Risk identification is often viewed as the starting point for risk management in projects and is considered to be the most influential risk management activity for project outcomes (de Bakker, Boonstra, & Wortmann, 2012). It is recognized by many project managers as one of the key areas in need of improvement in complex projects (Harvett, 2013). The risk identification process was therefore seen as a key element of the maturity model. Holzmann (2012) views risk management as comprising five main activities, encompassing risk identification, risk assessment, risk allocation, and risk control. Other authors (Bannerman, 2008; Harwood, Ward, & Chapman, 2009) see risk appetite or treatment as an

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important dimension for overall risk management. This research combines elements drawn from these sources to focus on four main dimensions of risk management: risk identification, risk assessment, risk allocation and risk appetite; and it does not see risk in a purely negative context, but also recognises the potential of positive risks or opportunities.

Risk identification is the process by which the project team detects prospective events which might affect the project and documents their characteristics (Holzmann, 2012). Risk identification is considered to have the highest impact on the effectiveness of project risk management and involves the detection and classification of all known and - as far as is possible - unknown, risks, thus producing the foundation upon which the overall risk management process can be established (Chapman, 2001). Risk identification is also perceived as the most influential risk management activity (de Bakker, Boonstra, & Wortmann, 2011; de Bakker et al., 2012), and particularly in complex projects is seen as an area in need of improvement (Harvett, 2013).

There is a clear link in the extant literature between risk identification and the "risk as a subjective construct" concept. The identification of risk as a subjective phenomenon coincides with its creation – the risk exists only once the stakeholder has identified it. However, as Khan and Burnes (2007) put it, whether one views risk from a subjective or objective standpoint, the key question for organisations is: how can risk be managed? Risk identification can be performed in a number of ways, such as filling in questionnaires, consulting experts or available documentation from previous projects, doing brainstorming sessions, or conducting interviews.

The concept of centricity can also be applied to risk identification, and the other dimensions of risk discussed below. Centricity in a managerial context can be defined as the mind-set or attitude that characterises the manager's or organisation's outlook and motivation in relationship to others (Berntzen, 2013; Olsen & Roper, 1998). The identification of risk as a subjective phenomenon can be seen as person-centric, whereas objective risk identification is at the other end of the centricity spectrum. Visual aids like the Visual Ishikawa Risk Technique (VIRT) can overcome the person-centric identification issue and promote objective risk identification (Jen, 2009). Centricity has been extensively analysed and applied in relation to customer, user and citizen concepts, and also in process and network contexts (Berntzen, 2013; Blakemore, 2006; Lamberti, 2013; McDonald, 2006).

Project *risk assessment* is the stage in the risk management process at which each identified risk is assessed for its probability or likelihood of occurrence, and its impact - in terms of time, cost and quality - on either the project phase or the entire project, should it occur (Patterson, 2002). Risk assessment entails the study of the probability of occurrence and any associated consequences. Generally speaking, two broad categories of risk assessments have been used - qualitative risk assessment and quantitative risk assessments (Dawotola, Gelder, & Vrijling, 2012). Qualitative risk assessment makes use of descriptive scales for the assessment of probabilities, such as risk scores. These scores or rankings are subject to interpretation and therefore entail an inherent level of subjectivity (Dawotola et al., 2012). The application of qualitative risk assessment suffers some serious limitations, mainly the subjectivity of the values estimated. Qualitative risk analyses are flawed in the sense that they can produce wildly different results (Emblemsvåg & Kjølstad, 2006).

Organizations have developed checklists based on which type of risk assessment is performed. Research shows that perception of risk varies between stakeholder groups, over time, across project and life cycle stages, and between cultures. This leads to the conclusion that risk assessment based on published checklists may be biased and/or limited in scope (Bannerman, 2008). Risk matrices are one of the most popular risk assessment methodologies employed across many industries, providing the

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graphical output that enables the communication of risk assessment. The development of risk matrices (RMs) has taken place in isolation from academic research in decision making and risk management – risk matrices produce arbitrary decisions and risk-management actions. These problems cannot be overcome because they are inherent in the structure of RMs (Thomas, 2013). Their theoretical basis is superficial and the validity of the qualitative information they employ is highly suspect. Assessments of the likelihood of occurrence and their impacts suffer all the shortcomings associated with subjective assessment (Wall, 2011).

Risk allocation is a major task in the overall risk project management process (Harvett, 2013), and is based on the recognition that different parties have different objectives and perceptions of project risk, as well as varying capabilities for managing associated sources of uncertainty. Chapman and Ward (2007) consider risk allocation (or risk ownership as it is sometimes termed) a relevant phase within their formal process framework SHAMPU (Shape, Harness, And Manage Project Uncertainty). It involves allocating responsibility for managing project uncertainty to appropriate project parties. These allocations are fundamental because they can strongly influence the motivation of parties and the extent to which project uncertainty is assessed and managed by each party.

Risk allocation is related to the more general concept of business ownership which has seen a range of business functions take responsibility for various aspects of project delivery. In the past IT or engineering functions often owned exclusively the risk in their related projects. Now, it is often the case that the function in charge of the project helps business partners to take ownership of specific risks and assists them in making assessments and in following compliance mechanisms by themselves (Chobanova, 2014).

Project *risk appetite* (sometimes called risk treatment or risk propensity) reflects an organisation's attitude and strategy towards risk. It encompasses how risk is managed and whether exposure to risk should be reduced, or the impact of risk should be mitigated, transferred, externalized or accepted. These responses can be supported by a framework providing risk factor dependencies and priorities (Aloini et al., 2012). Harwood et al. (2009) see risk propensity as the organizational behavioural tendency towards taking reasonable risks, by recognising, assessing and managing risks. A risk-averse organisation is seen to have low risk appetite, and will take only those risks that are judged to be tolerable and justifiable.

A balanced treatment of risk would focus both on risk and reward. An overemphasized focus on risk versus reward may have considerable influence on strategic decisions such as entering new markets, developing new products or targeting new mergers and acquisitions (TowerGroup, 2014). Resultant executive inaction may lead to loss of potential revenue growth. Education and training in project risk management with subsequent additional experience in the organization can produce a better understanding of risk and reward. Risk management can then be understood as a protection shield, not an action stopper. Manager and employees learn through education and training to take and manage risks, not to avoid them. The organization will treat risk appropriately and not try to circumvent it.

2.2. Existing Maturity Models

The maturity concept has featured in a range of models used for assessing organizational capabilities encompassing the collective skills, abilities and expertise of an organization. Maturity can be understood as a measure of organizational performance in applying these capabilities. There are two major approaches to organizational maturity. The Organisational Project Management Maturity Model (OPM3) measures organisational maturity based on the level of best practices deployment, while the Capacity Maturity Model Integration (CMMI) assesses maturity based on organisational process effectiveness

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(Man, 2007). Further, organisational capabilities may refer to both processes and projects (Maier, Moultrie, & Clarkson, 2012). Assessing an organization's project risk management maturity level can help develop its project capability and performance. Risk management maturity reflects the organization's understanding of its risk portfolio and its attitude towards those risks. Organizations intending to implement or improve their project risk management need a framework against which they can benchmark their current practice (Zou et al., 2009), and maturity models can be used to identify the priority areas in need of improvement, and remedial actions can then be taken to increase performance (Hopkinson, 2012; Ciorciari & Blattner, 2008).

Hillson (1997) was an early proponent of risk maturity models. His approach consisted of four attributes (culture, process, experience and application) and four levels of maturity. His model (Table 1) is not industry specific and does not focus on risk in projects, but is a general organisational approach to risk. Yeo and Ren (2009) developed and tested a five-level maturity model (initial, repeatable, defined, managed, and optimizing) with three key capability areas: organization culture; risk management process; and risk management knowledge and technology, based on research of Asian offshore and marine projects. Similarly, Zou et al's. (2009) risk management maturity model was industry specific, in this case the construction industry in Asia and Australia. It had four maturity levels (initial, repeated, managed and optimized), and encompasses risk identification, risk assessment and risk appetite - but not risk allocation - in projects.

An extension of Hilson's maturity model is Hopkinson's (2012) Project Risk Maturity Model, which establishes a framework for assessing risk management capability against recognised standards. Hopkinson's model offers a working model to assess risk management capacity and applies it to an equipment procurement case study. Crawford (2006) identified some key issues for developing and applying project management related maturity models. One is the intrinsic subjectivity associated with the determination of an organisation's maturity. Crawford also concluded that, rather than necessarily striving to achieve the next level of maturity, organizations should instead determine their minimum level of maturity at which optimum value can be achieved (Crawford, 2006). Maier et al. (2012) established a roadmap to develop maturity grids for assessing organizational capabilities. They review existing maturity models and conclude that they offer a contemporary representation of different conceptualizations of organizational practices and capabilities that are viewed as important for success.

2.3. Provisional Conceptual Framework

Whilst some of these maturity models are of value in certain industry contexts, there is no maturity model specifically geared to project risk management in the automobile industry. This research addresses this gap by building and verifying a maturity model for the automotive industry in Europe. The initial conceptual framework for this model builds upon the four dimensions of risk discussed above – identification, assessment, allocation and appetite. These can be defined as:

- **Risk Identification:** The process by which the project team detects prospective events which might affect the project and documents their characteristics (Holzmann, 2012).
- **Risk Assessment:** The stage in risk management at which the identified risk is assessed for its probability (likelihood) of occurrence and its impact, in terms of time, cost and quality (Patterson & Neailey, 2002).

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Table 1. Attributes of Hillson's Risk Maturity Model (Hillson, 1997)

	LEVEL 1 - NAIVE	LEVEL 2 - NOVICE	LEVEL 3 - NORMALISED	LEVEL 4 - NATURAL
DEFINITION	Unaware of the need for management of risk. No structured approach to dealing with uncertainty. Repetitive & reactive management processes. Little or no attempt to learn from past or to prepare for future.	Experimenting with risk management, through a small number of individuals. No generic structured approach in place. Aware of potential benefits of managing risk, but ineffective implementation, not gaining full benefits.	Management of risk built into routine business processes. Risk management implemented on most or all projects. Formalised generic risk processes. Benefits understood at all levels of the organisation, although not always consistently achieved.	Risk-aware culture, with proactive approach to risk management in all aspects of the business. Active use of risk information to improve business processes and gain competitive advantage. Emphasis on opportunity management ("positive risk").
CULTURE	No risk awareness. Resistant/reluctant t to change. Tendency to continue with existing processes.	Risk process may be viewed as an additional overhead with variable benefits. Risk management only used on selected projects	Accepted policy for risk management. Benefits recognised & expected. Prepared to commit resources in order to reap gains.	Top-down commitment to risk management, with leadership by example. Proactive risk management encouraged & rewarded.
PROCESS	No formal processes.	No generic format processes, although some specific formal methods may be in use. Process effectiveness depends heavily on the skills of the in-house risk team and availability of external support.	Generic processes applied to most projects. Formal processes, incorporated into quality system. Active allocation & management of risk budgets at all levels, Limited need for external support.	Risk-based business processes. "Total Risk Management" permeating entire business. Regular refreshing & updating of processes. Routine risk metrics with constant feedback for improvement
EXPERIENCE	No understanding of risk principles or language.	Limited to individuals who may have had little or no formal training.	ln-house core of expertise, formally trained in basic skills. Development of specific processes and tools.	All staff risk-aware & using basic skills. Learning from experience as part of the process. Regular external training to enhance skills.
APPLICATION	No structured application. No dedicated resources. No risk tools.	Inconsistent application. Variable availability of staff. Ad hoc collection of tools and methods.	Routine & consistent application to all projects. Committed resources. Integrated act of tools and methods.	Second-nature, applied to all activities. Risk-based reporting & decision-making. State-of-the-art tools and methods.

- **Risk Allocation:** The assignment of the responsibility for managing specific project risks or uncertainty to appropriate project individuals or parties (Harvett, 2013).
- **Risk Appetite:** The organizational (or individual) behavioural tendency regarding how to take reasonable risks (Aloini et al., 2012).

The research attempts to identify typical risk characteristics that can be associated with each of these four dimensions of risk at different stages of maturity in the risk management process. Like some of the models discussed above, the proposed model was assigned four stages with provisional stage labels of Rudimentary, Intermediate, Standardised and Corporate. Maturity models typically have either four or

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five stages, but in the five stage models, the difference between stages one and two is generally minimal, with stage one often describing a non-existent or minimal initial capability. Four stage models have the additional benefit of avoiding an assessor's tendency to select middle values (Zou et al., 2009). These stages can be defined as follows:

- **Rudimentary:** The organisation has no sense of need for risk management; teams do not follow any common approach in managing risks. Project risk activities are reactive and no lessons learned or improvement process is established. Typically no project risk plan exists.
- **Intermediate:** Some project management practitioners undertake certain project risk management activities. Neither these activities, nor the systems and applications used to support risk management, are standardised. The organisation does not gain the full benefit of implementing these risk management activities.
- **Standardised:** Risk management is seen as part of core business processes, and risk responses and their effectiveness are reviewed in most projects. Systems and applications supporting risk management are accessible and lessons learned are established to improve the overall risk management process.
- **Corporate:** The entire organisation recognises and values risk management, which is integrated into other processes. Executives actively audit and support risk owners. Multi-user risk databases are widely available and used as part of continuous improvement programs.

3. RESEARCH METHODOLOGY

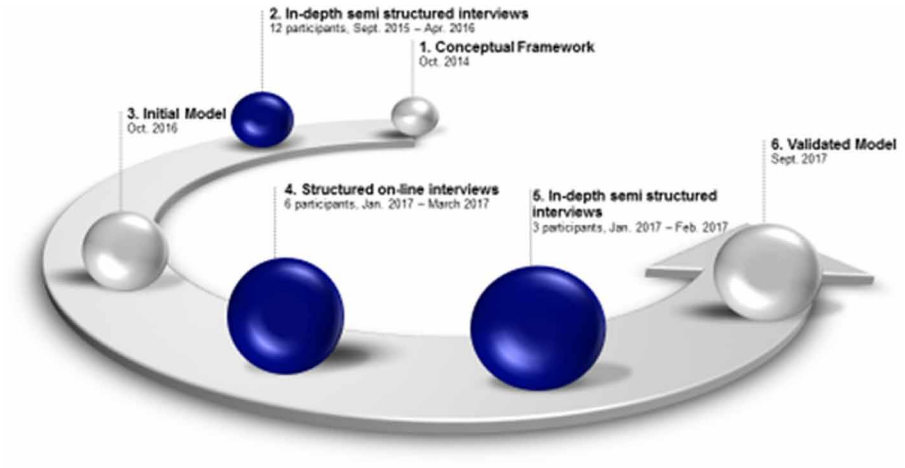
3.1. Overview of the Research Process

The overall research process (following the literature review) is depicted in Figure 1, and consists of six main steps. The process was largely sequential, although the interviews in steps four and five were conducted partly in parallel but independent from each other. The research centres on a single company case study, with two projects within that company analysed. The case study entails a "…detailed investigation of one or more organisations, or groups within organisations, with a view to providing an analysis of the context and processes involved in the phenomenon under study…" (Hartley, 2004, p. 323). This is exploratory research that adopts a qualitative approach. Project management success is complex, messy, and involves a range of stakeholders with different concerns and perceptions (Skinner, Tagg, & Holloway, 2000). A qualitative approach is particularly appropriate for research that seeks to explore real organizational goals, linkages and processes in organizations; to understand the failure of policies and practices (Marshall & Rossman, 2014).

The research is inductive, in that it builds explanations of risk management in practice from the ground up, based on interview evidence, observations, and analysis of available documentation. The interview is an important source for collecting data, and may take several forms (Yin, 2012). To achieve quality in data collection, interviews must be carefully planned. Data collection was undertaken through 12 semi-structured interviews, three follow-up in-depth interviews, an on-line survey, informal discussions, secondary material, and participant observation. The first batch of interviews, involving the 12 participants, were conducted in 2015/2016 (step 2 in Figure 1).

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Figure 1. Research design, model development and validation process



This research took place within the automotive industry, one of the leading manufacturing industries worldwide, where scientific method has an undeniable influence in manufacturing industry development. Operational research and systems engineering are two of the main academic disciplines that provide the basis for process improvements in this industry. The underlying theoretical perspective of these disciplines is positivism (Taylor, 1911), and the concept of separating planning from doing is reflected in the emphasis on planning and control in modern project management. Furthermore, rationality, universality, objectivity, value-free decision making, and the possibility of generating law-like predictions in knowledge are basic assumptions of modern project management (Gauthier & Ika, 2012). The traditional project management paradigm has been described as "rational, normative, positivist and reductionist" (Harvett, 2013, p. 51).

The study aligns with recent academic research from authors such as Harvett (2013), Niebecker (2009) and Olsson (2006) all of which explicitly characterize their work on project risk management in practice as post-positivist. These authors criticise the existing methodologies as putting forward a too mechanistic and simplistic view of the risk management process. In similar fashion, although addressing different questions, this study complements the bald prescriptions from guides and methodologies through a qualitative research approach that identifies descriptive labels specific to different risk management contexts. Some may suggest this is an interpretivist approach, but interpretivism, as an alternative to the positivist orthodoxy, assumes there is no absolute truth, but multiple realities and is based on subjectivity (Biedenbach & Müller, 2011). However, this research assumes there is an answer to the questions posed, even if the researcher must seek for the consensus views of the practitioners to validate what is known. For the interpretivist, all meaning is believed to be subjective, based on subjective perceptions and experiences with external environmental factors. This research adopts a post-positivist stance which looks for an objective, singular truth, thus differentiating it from the interpretivist paradigm (Phoenix et al., 2013).

De Bakker et al. (2011, 2012) argue that individual risk management activities generate communicative effects which contribute to the effectiveness of instrumental actions and thus to project success. This communicative effect, not considered by the positivist tradition, is a significant component of the post-positivist view, and creates the context which influences the setting, itself an integral component of

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activity that cannot be ignored. This study takes the post–positivist view of the world as open to interpretation in line with the observations of Krane, Olsson, and Rolstadås (2012) regarding different perspectives of risk held by project teams and project owners. The understanding of risk in the automotive project environment can be enhanced by the project stakeholders' subjective explanation of the phenomenon. This broader view of risk helps to better deal with threats and therefore to improve project outcomes.

The projects which serve as context for the case study are the implementation of SAP - a mainstream Enterprise Resource Planning (ERP) system - in several manufacturing facilities in Europe, and the launch preparation for serial production of new driver assistance systems for international car makers. The unit of analysis is the entire organisation. Following Yin's (2012) distinctions of designs for case studies, the one chosen in this research is holistic as opposed to embedded, in which more than one unit of the organisation are the units of analysis (Saunders, Lewis, & Thornhill, 2009). To obtain a general understanding of project risk management, project managers from the Research and Development (R&D) departments and also from the Information Technology departments were interviewed and their projects analysed.

In the selection of the organisation as the case study, several factors were considered - its regional presence, customer mix, and product catalogue. These characteristics make it a fair example of a global automotive supplier organisation. The company has over 135,000 employees, around 200 production facilities in some 40 countries, sales of €35.2 billion in 2016, and a yearly investment on R&D of about €2 billion. It is highly dependent on the success of its new projects and the smooth launch of serial production for global customers. Project risk management is a fundamental aspect of its project management process, and is applied globally. Project risks are documented, evaluated and risk controls are applied, and the risk management process is reviewed regularly to adapt it to the market challenges. A recent and dramatic example of the criticality of project risk management in the global supplier automotive industry has been the well-publicised failure to apply risk controls by one of Volkswagen AG's suppliers, resulting in the halting of production at six VW plants and a cut in hours for 28,000 workers.

3.2. Data Gathering and Interviewing Procedures

This research entails the collection of data on one single case from several groups in the organisation. The research phase was conducted over an eighteen month period with the results considered as having been obtained in a single point in time (Bryman & Bell, 2011), although do not focus on showing changes over time (Rübesam, 2015). Fourteen potential interviewees were initially invited, and 12 of them accepted the invitation. These business leads were chosen because collectively they represented project managers of major projects with high impact to the organization. An initial semi-structured interview took place with these 12 personnel (Table 2), in which their previous experience with regards to project risk management and their understanding of the risk management dimensions were explored. The Participant Consent form and the project information sheet were sent in advance to the participants, together with an interview agenda and questionnaire.

These interviews were conducted between April and November 2016 using responsive interviewing (Rubin & Rubin, 2011). This form of interviewing assumes that people interpret events and construct their own understanding of what happened, and that the researcher's job is to listen, balance, and analyse these constructions in order to understand how people see their world. Different from an ordinary conversation, responsive interviewing seeks detail, depth, vividness, nuance and richness. This technique encourages the researcher to adapt to new information and change directions if necessary to obtain greater depth on unanticipated insights.

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Table 2. Roles and experience of the 12 interviewees

*1. **Program Manager:** 8 years' experience as Project Manager – published articles on project risk management, PMP*
*2. **European ERP Manager:** 12 years' experience in IT and project management as project manager and Steering Committee member, PhD in IT, PMP*
*3. **VP Program Management Global:** 25 years' experience in Project Management, responsible for the Project and Project Risk Management methodology, training, templates and business process methods defined/deployed through the global organization, PMP*
*4. **Global ERP Manager:** 20 years' experience, responsible for ERP competency center, responsible of several ERP rollouts worldwide, PMP*
*5. **Director, Global Program Management of business unit:** 20 years' experience, responsible of the global business unit programs, manager of 15 program managers, experience with Project Risk management quantitative methods such as Monte Carlo, PMP*
*6. **Chief Engineer, PMO lead:** 15 years' experience, responsible of the PMO, engineering programs methodologies and systems, PMP*
*7. **PMO / Program Systems Coordinator:** 10 years' experience, responsible for standard program management training and Program management systems development, PMP*
*8. **Senior Program Manager:** 15 years' experience – responsible for major programs, PMP*
*9. **Senior Program Manager:** 15 years' experience – responsible for major programs, PMP*
*10. **Director, Global Program Management business unit:** 10 years' experience, responsible of the global Engineered Fasteners & Components programs, manager of 10 program managers, PMP*
*11. **Applications Engineer and Project Manager:** 5 years' experience, Project Risk management expert, co-author of the internal project risk management procedures.*
*12. **Senior Vice President, business unit:** 15 years' experience - ultimate responsibility for 12 sites in 9 countries, acting as Sponsor and/or senior Steering Committee member on major customer programs.*

The questions were grouped according to the four sequential project risk management dimensions. To support and balance these main questions, follow-up questions were developed to ensure breadth of discussion of each of the risk dimensions. The interview was introduced by a brief presentation using PowerPoint slides, to set the scene. Just four slides were discussed initially, and the remaining three slides were discussed in combination with questions. The interviews finished with a debriefing, requesting whether anything else could be relevant to the questions discussed, any other aspect that should be mentioned, or any question needing further elaboration. All 12 stakeholder interviews were transcribed verbatim, resulting in 135 pages of transcripts. These were then analysed and the initial version of the maturity model was constructed.

Having built the initial model from data collected through the 12 semi-structured interviews, this was then tested for validity and relevance (Maier et al., 2012). First, an online survey was undertaken involving six practitioners who were contacted by phone where the maturity model and the aim of the online survey was discussed. The responders were then requested to assign each of the 151 statements emanating from the interviews to one of the four maturity stages via an online form distributed via Google forms; a simple tool used to create and distribute questionnaires. The respondents answered the survey on their own with no influence from the researcher, and the responses were collected and stored in a repository.

Out of the six practitioners who participated in this on-line survey, four had already participated in the previous in-depth responsive interviews conducted to develop the initial risk management maturity model. The other two participants were project managers from the same company with relevant experience that could provide a broader perspective in answering the survey questions. These on-line surveys were conducted between January and March 2017. In a further step to verify and refine the model, additional in-depth structured interviews were carried out with another three of the 12 participants from the first interviews. The interviews were conducted in January and February 2017.

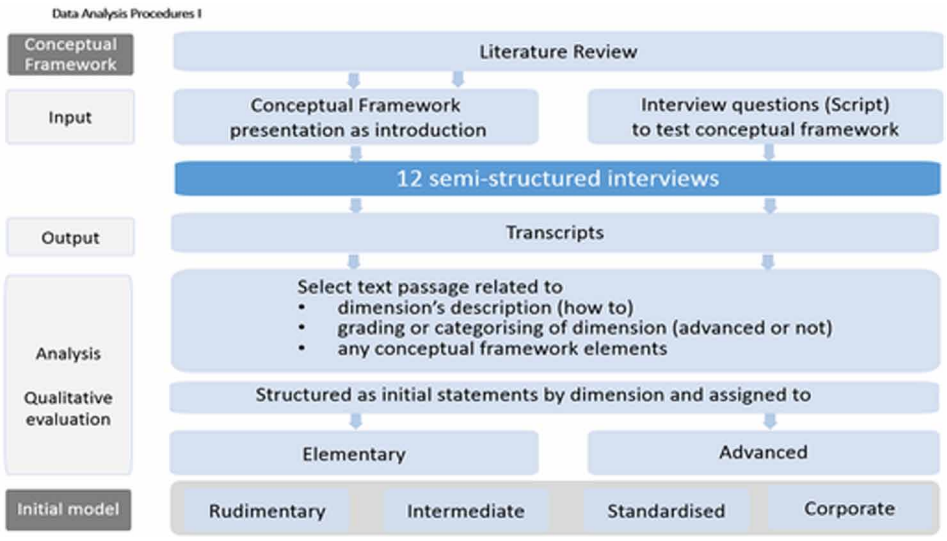
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3.3. Model Development

The qualitative analysis to develop the initial model is depicted in Figure 2, and followed the ideas of Hopkinson (2012) and approach of Maier et al. (2012) on how to develop maturity grids based on organisational capability assessments. The responsive interviews included discussion of project related experiences of risk management, open-ended questions, and supplementary ratings to affirm and clarify meaning, particularly regarding the four dimensions of risk, and the maturity model stages. The data collected through interviews with practitioners and executives were analysed in line with the three step approach recommended by Creswell (2007): prepare and organise the data in transcripts, reduce the data into themes through coding and condensing the codes, and finally represent the data in figures, tables, or discussion. Continual synthesis of the data, thematic analysis, data reduction and coding were the basis for the data analysis. Building on the initial conceptual framework, the model was developed using initial categories for thematic analysis in searching through the transcript data. The transcripts were carefully read looking for keywords, trends, themes, or ideas in the data.

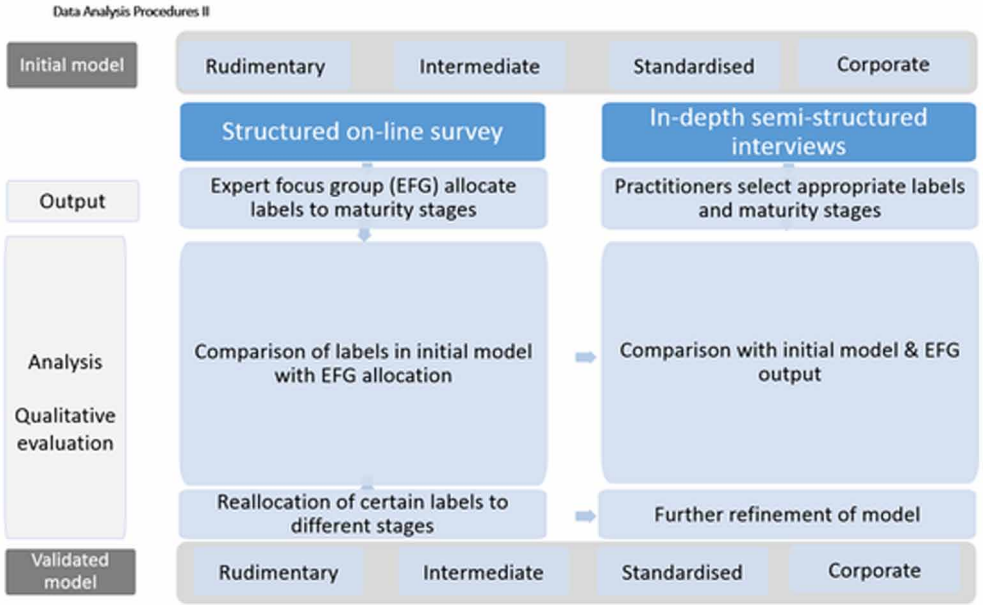
Certain data reduction techniques were applied without deemphasizing the importance of the context and richness of the data themselves (Namey, Guest, Thairu, & Johnson., 2008). The primary structural coding used was based on the four risk dimensions analysed. A secondary coding was done in the form of statements that were assigned to one of two extremes, either elementary (left) or advanced (right). This process then refined in a third stage that took the two extreme categories (elementary and advanced) and extended them to encompass the four categories or stages in the provisional model: rudimentary, intermediate, standardised and corporate. The data was assigned to the four stages by comparing the statements with the literature and quotes from the transcripts. The data was further processed into a set of "labels" or summary statements, and these were grouped into four types: people, organisation, process and systems. Finally, these labels were structured into a matrix form to build the maturity model. In order to simplify the number of label types, these were reduced to two: "process and systems" and

Figure 2. Data analysis procedures for development of the initial project risk maturity model



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Figure 3. Data analysis procedures for validation and amendment of the initial model



"organisational and people" aspects. The initial maturity model was then subject to assessment and validation in two stages – via an on-line form circulated to six participants (the expert focus group in Figure 3), and then with three follow-up in depth interviews.

4. RESULTS AND MODEL APPLICATION

The resultant model comprises 156 labels allocated to one of the four dimensions of risk and to one of the four stages in the model. Following the verification process, the positioning of 51 of the labels was changed, 49 being changed by one stage in the model and 2 by two stages. For purposes of illustration, the model is now applied to one of the in-company projects, entailing the product development of a mechanical steering gear product for an international automotive Original Equipment Manufacturer (OEM). It encompasses formal customer confirmation of product technical and quality requirements, initial contractual forecast of volumes in a multi-years-period, and engineering product development through the start-of-production. As the steering system will finally be assembled in different countries with specific requirements and technical specifications, such as in the UK or Russia, several product variations needed to be validated.

The project team consisted of about 20 individuals with representatives of all functions involved in the project: Program Management; Sales; Engineering; Purchasing; Finance; Manufacturing and Logistics. The project followed a formal product development and introduction management process, which included risk management. The program manager reported directly to the Program Management Director, while the other team members reported into their departmental managers, with only a dotted line reporting to the project manager.

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4.1. Risk Identification

The overall assessment regarding risk identification indicated the project was at the intermediate stage, with several characteristics of the standardised stage (Figure 4). Most project team members have several years' experience in project management, several of them are formally trained in project management, in which however only basic notions of risk management were discussed. The notions of risk management included providing instructions on how to use the risk register and fill in risk required information during the project phase exits. Mainly due to their professional experience, team members felt comfortable reviewing or discussing risks. When requested, they contributed openly with their input. Only the project manager had been specifically trained in project risk management. Management recognises the value of project risk management, but advanced training in risk management is not considered.

Risk descriptions are clear and address key issues in most cases. The documented risks in the risk register were generally well understood by the involved parts, e.g. regarding a risk associated with a new non-validated required technical solution the two involved functions - sourcing and sales support - coordinated the required risk response plan. This ensured the integration of all stakeholder views. End users, in this case the OEM, were informed about certain existing risks.

There is evidence in the risk register that a majority of risks have been identified and documented far in advance of their potential occurrence. Risk registers and phase exits required documentation to classify risk. Risk items were updated regularly and discussed with senior management as part of the phase exits. Lessons learned were supported by standard processes. Risk management was rarely the subject of review in lessons learned exercises or continuous improvement initiatives. Lessons learned

Figure 4. Risk identification capability assessment in the new product development project (blue labels match current project status; red labels are relevant but do not apply to current project status; black labels are not relevant to the particular project environment)

IDENTIFICATION						
	RUDIMENTARY	Negative perception of risk	End users no involvement with risk identification process	Fear of raising risk concerns	Compliancy risks not identified even though may exist	Risk identification is ad-hoc, basic, hit and miss
	INTERMEDIATE	People make full use of their freedom to act	Lack of integration of all stakeholder views	Disagreement among stakeholders if an event is a risk, subjectivity	Some compliancy aspects addressed but may have omitted significant ones	Potentially significant risk items may be omitted in reporting
		Lack of knowledge regarding what risk or uncertainty mean	Risk identification process characterised by subjectivity	No visibility of risk identification tasks / activities in project plan	Isolated non coordinated risk identification	Risk description is ambiguous, misleading
			New risks identified as they occur	Some remaining subjectivity (cultural differences)	Only focused on individual risks, managed at lower levels within team	Lessons learned not standardised. Unstructured documentation
	STANDARDISED	End users have an active role in the identification process	Timely integration of previous phases	Clear risk classification (standard risks)	Set minimum frequency risk identification rules with senior members	Shared understanding of group approach to risk identification
		Recognises risk management but not ready to invest resources	Instructions with project categorization / risk sources identification	Routine planning reviews to aid risk identification	Bridge from the lessons learned into the risk identification process	Mechanism identifies gaps between planned tasks and resources available
		Use quantitative risk methods (Montecarlo) to avoid subjectivity	Established procedure for contradictory views (objectivise)	A risk identification process guide may be available Visibility on new sourcing, 'make-or-buy' decisions	Visibility of implications of risks associated with all relevant suppliers	Structured accessible lessons learned & risk registers database (DB)
	CORPORATE	Earned Value (EV) monitoring highlights project performance shortfalls	Integrated process with involvement of all stakeholders	Formal communication regarding risk interrelations between projects	Top down approach related to project purpose and strategy	Real time reporting based on realistic data from all stakeholders

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documentation was not easily analysed, and no specific risk management lessons learned were in place. Formal communication of potential risk interrelations between relevant personnel responsible for risk was missing.

Risk identification remains subjective in certain cases. One reason for this is the cultural differences which are accentuated by the virtual character or the team, with groups in dispersed geographical locations and infrequent face-to-face meetings. Analysis of the project's risk register shows five risk documented items which could be adjudged as subjective or subjectively identified. Four out of these five risks can be classified as "project schedule risks" (where timescale is a major uncertainty), and the fifth one can be classified as a "specification risk" (where completeness of specification is at risk). A lack of collective, objective assessment is indicated by the fact that, in the risk register, the risk type or risk category was not adequately maintained or updated by the project manager or any other team member during the project life cycle; and once the countermeasures agreed to mitigate the risk items were completed, these risks were then eliminated from the register without adequate consideration. From the risk register, examples of "project schedule risks" included "risk of delay in design verification due to component prototype timing" and "potential misalignment between supplier key product characteristics matrices". In the first example, once the manufacturing team had confirmed the prototype timing was not an issue for design verification, the risk item was closed. In a similar manner, for the second item, after the engineering representatives confirmed that there was no misalignment between the two lists with the responsible suppliers, the risk item was closed. The result of this confirmation was risk elimination. Project risk identification was not supported by use of any causal decision method, quantitative risk method, or earned value monitoring.

The computer applications supporting project management documentation were very limited in providing project risk management data. There were no intelligent systems which could enable querying and analysis of project risk management data in available project documentation. The involvement of certain stakeholders in risk identification was suboptimal, and the identification process did not reflect the overall project purpose and strategy, but the concerns isolated assessment of individual risks.

To fully reach the standardised stage, the model indicates a number of possible initiatives relevant to this project context and environment: first, increasing knowledge and usage of quantitative risk methods; second, improved usage and availability of lessons learned; and third, visibility of planned tasks against committed resources. Applying, for example, a first pass approach to estimate and evaluate uncertainties using the net present value (NPV) and Monte Carlo simulation is a simple and effective way to establish a simple risk model. Assessing and applying available lessons learned data and developing a reporting tool would also provide immediate benefit and require relatively little additional resource

4.2. Risk Assessment

As regards project risk assessment, the project exhibited most characteristics at the intermediate stage, but with some also at the standardised and rudimentary stages (Figure 5). The project risk management plan and risk register instructions exclusively consider risk items with negative impact, but not the potential of positive risks or opportunities. A higher focus on project issues than on risk is reflected in considerably higher time and resources dedicated to manage open item lists rather than on assessing and updating risks. The documented risk descriptions provide an indication of the source of risk and these are useful for qualitative risk analysis. Schedule analysis considers the documented risks using solely qualitative analysis. There is evidence of risk register maintenance, and consequently the identified risks

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Figure 5. Risk assessment capability assessment new product development project (blue labels match current project status; red labels are relevant but do not apply to current project status; black labels are not relevant to the particular project environment)



are allocated to prescribed risk categories. Experts assess risk using mainly qualitative methods. Few quantitative methods are used in quality management in the product design phase. Probability estimation is weak, the lack of standard impact and estimation methodologies increases the risk estimation subjectivity. There are shortcomings in the methods used for risk prioritisation and quantification. The secondary effects of risks are not considered. Data on risk items which subsequently became project issues, or on the linkage and clustering of risks, is not available and existing computer applications do not support advanced data searches and queries. There is a clear procedure for risk assessment which establishes a minimum frequency for assessment activities, and evidence of the risk assessments is available. The project risk management plan is adapted to the project complexity, defined by the project categorisation.

To advance the risk management process and move to a consistent standardised stage for risk assessment, the model suggests several initiatives that could be pursued. First, improve risk analysis with the use of risk quantification and quantitative analysis. This analysis would allow improved integration risk management and cost planning. Second, the risk assessment would improve with a better understanding of the identified secondary risk effects, e.g. potential delays in new parts development may retain resources planned for next planned tasks and exacerbate other identified risks. Another opportunity would be to improve the risk management data structure and its reporting ability.

4.3. Risk Allocation

The model indicates that risk allocation resides between the intermediate and the standardized stages, and near to being fully aligned to the standardized stage (Figure 6). Risk allocation is equitably distributed among the business streams active in the project with participation of the purchasing, engineering,

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sales, and manufacturing functions. The risk allocation process is led by the project manager who is open to others' inputs. The project manager demonstrates the ability to identify groups not involved in risk allocation and has experience in assigning risks across several groups. Project management and engineering are the drivers of risk allocation.

Expertise within teams is recognized and harnessed, but some functional representatives with dotted line reporting to the project manager limit and negatively affect their level of involvement in risk management activities. All risks have a risk owner with authority who accepts responsibility. Existing prescriptive risk classification of the documented items in the risk register does not enable allocation automation to existing job roles. There is evidence that risk item allocation is systematically reviewed according to the risk management plan. The project is characterized by fluid communication between customers and vendors. The contractual agreements specify financial liabilities for all parties, supplier with OEM, and sub-supplier with supplier. However, this is mainly about transferring risks from customer to vendors instead of developing risk sharing arrangements. The suppliers provide risk information, albeit sometimes late or incomplete.

To achieve a consistent standardized stage, the maturity model indicates a number of possible beneficial initiatives. First, improve the overall organisation attitude towards risk management. This is clearly reflected in the low recognition or support for appropriate risk management practice during steering committee meetings, and the very loose collaboration with suppliers to undertake complementary risk management. Further, within the project team, not all people working in the project actually use the risk management plan. With the exception of the engineering and project management team members, there is no evidence of autonomous risk allocation within other groups. There were no existing business guidelines regarding the risk taker.

4.4. Risk Appetite

As regards risk appetite, the project exhibited mainly characteristics of the intermediate stage, but also some from the standardized stages (Figure 7). Executives responsible for the project failed to challenge the risk process, and did not review risk details or their prioritization. The risk management knowledge in the team only allowed it to perform simple qualitative risk analysis. There were no standard quantitative methods available, and their use is dependent on the project manager's knowledge and decision making. Not all project team members were trained in risk management. The risk responses and risk mitigation activities were not properly monitored and controlled. As a consequence, the number or issues increased which required increased management attention, reducing further time and resources dedicated to project risk management. This situation has been depicted as a "self-fulfilling prophecy".

There were some characteristics of the standardized stage that were evident in the project. Identified risk items had adequate visibility during the formal project phase exits, and certain team members had shown their ability to commit resources prior to receiving customer order confirmation. On the other hand, there was no formal risk appetite statement at organizational level. Risk data was available on diverse non-integrated systems with limited access to limited team members.

Risk mitigation activities with impact on cost, schedule, quality or regulatory compliance were not considered as part of change management, and the integration of risk management and change management was weak. Lessons learned sessions were not formally documented and data was not easily available. Historical valuable information for risk analysis, such as original scope vs. outcomes in previous projects, was also not available. Decisions relating to risk management are sometimes not considered in

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Figure 6. Risk allocation capability assessment new product development project (blue labels match current project status; red labels are relevant but do not apply to current project status; black labels are not relevant to the particular project environment)



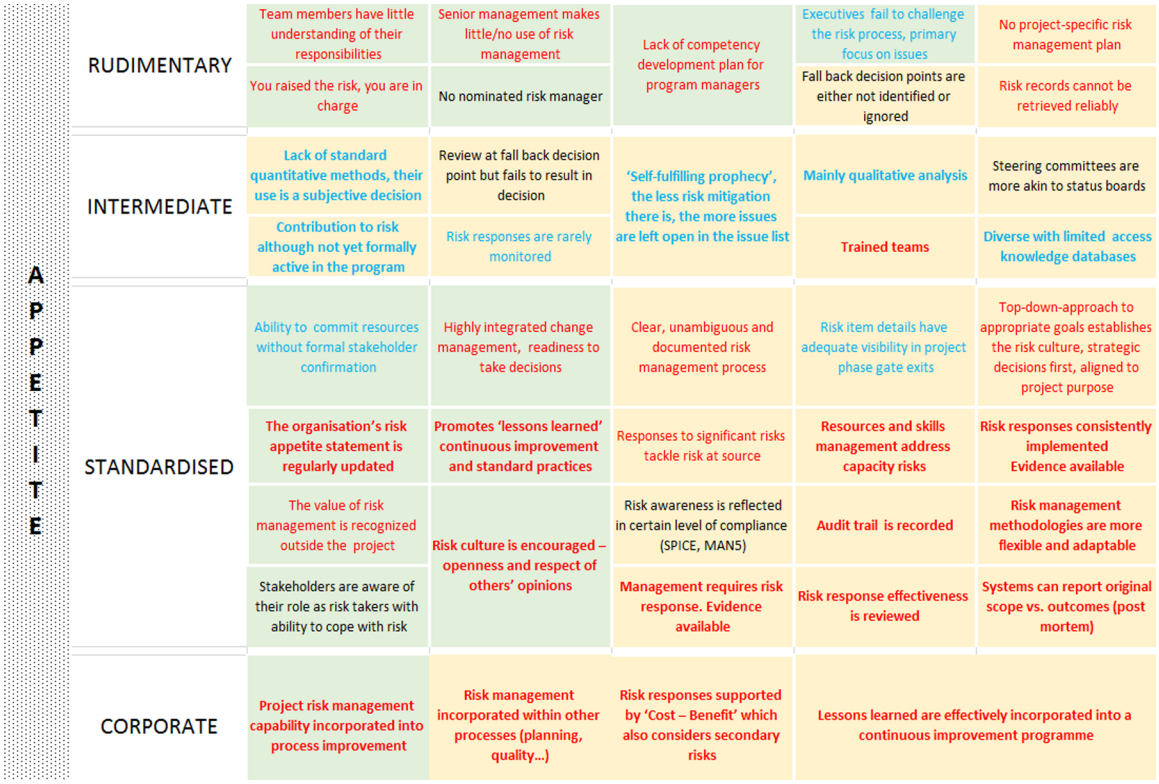
a timely manner in the change management process. A comprehensive programme of risk management training for all the project team members was required as a first step to move risk appetite to a consistent standardized stage in the maturity model.

Overall, the model has limitations. It has been developed from a small sample of practitioners in the German automotive industry. However, the participants have over 200 years of relevant project management experience between them, providing a unique knowledge base that was explored in depth in the interviews. Although the focus was on two current projects in their current company environment, previous knowledge and experience also informed judgements on the significance of specific factors, processes, or capabilities. The model is also aligned to the automotive industry and the particular type of projects that operate in this environment. The qualitative model provides a set of characteristics (labels) typifying different stages of risk management maturity, relating to both processes and systems, and to organisational and people aspects.

Future research directions will focus on using the model in different business environments, and developing its pedagogic and operational potential. The application of the model to date has provided valuable insights into the subjective phenomena of success and failure, and the link to the maturity concept has added to this area of knowledge. The model will be applied by the authors in other contexts in the host company, but would also benefit from application in other automotive organizations in other countries, and then in different industries. It has the potential to be developed into a more generic model with wider applicability, with more industry specific variations at a secondary level.

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Figure 7. Risk appetite capability assessment new product development project (blue labels match current project status, red labels are relevant but do not apply to current project status; black labels are not relevant to the particular project environment)



5. CONCLUSION

This article sets out a new maturity model for assessing risk management capability in the automotive industry in Germany. The model is based on 12 responsive interviews that provided the base material for model construction. The model was then validated and refined through an on-line survey and follow-up interviews with three of the original interviewees. The model can be used to gauge the capability level of an organization as a whole, or can be used to assess a particular project. Once an initial assessment of maturity stages has been made, the model can be used as a guide or for the development of action plans and initiatives to improve different aspects of risk management.

The model can be used in practice in a variety of ways and contexts and for different purposes. Company project practitioners may select the appropriate labels from each dimension to assess their risk management capability. Senior management and project practitioners can identify a desired maturity stage; identify gaps in their capabilities with the help of the label descriptors; and develop a list of actions required to reach the chosen stage. In a training or workshop session, the model can also be "deconstructed", removing the allocation of labels to specific maturity stages, and project participants to select labels that appear most appropriate to the environment in which they work. Ensuing debate can then suggest the current maturity level for that particular project risk management environment.

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Joustra (2010, p.3) refers to project risk management as a set of activities often perceived as a "bolt-on-extra" rather than being integrated with the project management process and organization. This maturity model can be seen as an integrating matrix that encompasses a range of elements relating to process and systems and to organizations and people. The matrix can also be viewed as a means of achieving improved communication within and across a project team, termed the "instrumental effect of risk management" by de Bakker et al. (2011, p.76). A communicative effect occurs when stakeholders deliberately use risk management to convey messages to others, with the aim of influencing their behaviour, synchronizing their perception, and making them aware of the context and their responsibilities. The matrix stimulates action and increases the effectiveness of the action, synchronizing stakeholders' actions and perceptions, making a situation more predictable which can lead to less uncertainty (de Bakker, Boonstra, & Wortmann, 2014).

This article provides new knowledge on how to integrate multiple rationalities of risk management coexisting in a project with the objective of supporting rational and consistent decisions in projects. As a contribution to theory, the maturity model complements existing models, and is specifically oriented to the automotive industry, one of the major sectors in the global economy which is currently experiencing dramatic disruptions. Supplier dependencies and legal and normative changes are some of the issues constituting serious risk to this industry. The aim of this research was to support automotive companies in the management of project risk.

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Chapter 34
E-Commerce in Small and Medium Enterprises in Sri Lanka

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ABSTRACT

The growth of information technology in the business world is spreading at a phenomenal rate. The success of a business organization stands at the usage of IT in their business. Growth of e-commerce is the new born business method, which has originated through an extensive usage of IT in their business. This study will focus on the level of adoption of e-commerce in a population of 30 SMEs under the BOI, the relationship between firm-based characteristics and the adoption of e-commerce and also more importantly find out the critical success factors and discover potential benefits of adoption of e-commerce in SMEs. The results on the adoption of e- commerce showed a significant relationship with the two firm-based characteristics. That is management involvement and adoption of IT. The study also identified e- marketing and supplier service as the critical success factors in adoption of e-commerce.

1. INTRODUCTION

Today telecommunications are the keystone of the current technological revolution. The Sri Lankan government is currently on the process of upgrading the Internet infrastructure and developing it in the form of installation of super-fast telecommunication network using fiber optic cables and other necessary hardware. This is mainly due to the fact that Sri Lanka is unable to meet the changing requirements in the World Wide Web due to its weak and poor infrastructure. The rapid advancement in both Internet software and hardware has also lead to more and more organizations allocating resources to meet the changing requirements in E-Commerce. Large corporations, Small and Medium Enterprises (SMEs) and individuals are all investing more and more in the Internet business. The main challenge for these SME s in adoption of E-Commerce is the lack of facility and resources in according to changing needs of the customers. The large corporations are finding no difficulties in their concurrence in E-Commerce world mainly because they have large resources and facilities compared with the SMEs. Senarathna and Wickramasuriya (2011) indicated that in Sri Lankan context there is a positive correlation between the

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adhocracy cultural characteristics among the SMEs and the level of e-commerce adoption. The lack of resources has been the major cause that has restricted SMEs in competing with their competitors. It is necessary to provide sufficient information and resources for SMEs by the BOI, since SMEs play a very vital role in the development of our country.

The main problem statement of this research would seek to understand, why and what are the reasons for SMEs to be reluctant to adopt E-Commerce to develop and grow their businesses in Sri Lanka and to identify the relationship between firm-based characteristics and adoption of E-Commerce in SME. It is hoped that with this information, more SMEs would be better prepared before venturing into E-Commerce activities. This information could also be useful for the larger corporations in Sri Lanka and those from abroad who wish to invest in E-Commerce in Sri Lanka. Through this research the SME will understand E-Commerce and its benefits. In the same time in the social benefit point of view this research will help make consumers more Internet friendly by making organizations push for E-Commerce adoption. Online purchasing will be the national shopping mall of the world. E-Commerce will increase consumer convenience and variety in choices; which will lead to the development of the economy of Sri-Lanka. This study will also help contribute to the little literature that exists on the Sri Lankan E-Commerce situation. It will help readers understand the E-Commerce landscape in Sri Lank and build on the studies conducted so far including this research.

2. LITERATURE REVIEW

There have also been a number of perspectives investigated with regard to e-commerce adoption and SMEs in recent studies. Of particular interest is the study by Wymer and Regan (2011) who have investigated the influential factors in the adoption of e-business and e-commerce technologies by SMEs. Further to this, Grandon et al. (2011) have compare e-commerce adoption theories, While Neilson et al. (2010) have examined the international perspective of the development of e-business by wine industry SMEs, and Beynon-Davies (2010) has considered e-business as a regional development driver. Additionally, scupola (2009) has studied the perspectives of e-commerce adoption by SME s in Australia and Denmark, and Williams et al. (2010) have explored small business sale growth in the UK and internationalization links to web site functions.

Sterrett and Shah (1998) and Stockdale and Standing (2004) have argued that micro-sized SMEs can compete with larger organizations through e-commerce as their size enabled them to be more adaptable and responsive to changing condition. Effective e-commerce deployment thus means that enterprises are no longer restricted by geographical locations and are able to compete in new national and global markets, both for customers and suppliers (Damanpour, 2001: Dholakia and Kshetri, 2004). In terms of financial support, Schneider and Perry (2001) and Galloway and Mochrie (2005) have suggested that SME owner/managers require support from government and support agencies to enable an effective transition in mindset. Such support can take multiple forms including business advice and/ or financial backing in grants and loans.

Daniel and Grimshaw (2002) found ICT adoption required consideration of a formal and appropriate ICT strategy (Chaffery, 2002) enterprise culture (Coates, 2001) and potential restructuring (Gulati and Garino, 2001). It was noted that SME owner/managers were reluctant to provide the time and finance to ICT development (Wolcott et al, 2008), without indications attainable benefit (Lockett and Brown, 2000). Lesjak and Vehovar (2005) recognized that ICT use contributed to the creation of current and future

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economic benefits, which was reflected in increased market value. Lewis and Cockrill (2002) identified that 71 per cent of SMEs surveyed realized quality benefits in terms of reduced costs, increased efficiency and increased customers. In terms of key success factors, Daniel (2003) identified that integration of ICT services with internal information systems, was an important determinant of eventual effectiveness. Lee (2001) described the change process as a potentially disruptive innovation which could radically alter operating procedures. Indeed, several examples of highly innovative SMEs that were prepared to adopt higher levels of ICT technologies (Loebbecke and Schafer, 2001), and thereby potentially change the nature of their business operations have also emerged

Sadowski et al. (2002) and Bengtsson et al. (2007) suggest that successful adoption of ICT varies according to enterprise size, exporting activity, awareness of benefits, industrial sector, customers and influence of trading partners. Hadaya and Pellerin (2008) for example, considered the understanding of the role of virtual enterprises in supporting manufacturing SMEs' internationalization processes. Furthermore, Poon (2000) identified that customer participation in ICT was critical to success including relationships with suppliers, customers, partners and competitors, as was the nature of the business environment (Furnell and Karweni, 1999). These studies demonstrate that enterprises benefited from ICT deployment (Daniel and Grimshaw, 2002), but specific conditions had to be met to achieve significant benefit. Drew (2003) also noted differences could result in different internal requirements for SMEs, in relation to strategy development, training and support. Whilst adoption success has been reported in non-SMEs (Van Beveren and Thomson, 2002), however, doubt has been expressed regarding SMEs, particularly micro-sized enterprises' ability to exploit ICT successfully, given their limited access to in-house expertise and resources (Beckinsale and Levy, 2004). Levy et al. (2004) recounted that fewer than half the SMEs they surveyed believed that ICT was important.

Kleindl (2000) points out that the internet presents SMEs with a number of challenges, larger, technology enabled business are able to encroach on areas once held only by small companies. As transaction costs fail, it is becoming cost effective for large companies to enter niche markets in which SMEs traditionally had advantages. At the same time, customers in these markets are enabled to search for alternative suppliers. ICT & SMEs enterprises where ICT has a central focus it is employed to support business goals, and objectives as a reaction to customers and competitive forces (gale and Abraham,2005) Poon and Joseph (2001) and Simmons et al. (2011) also reported ICT benefits as increased competitiveness and improved performance. Mehrtens et al. (2001) identified three ICT SME drivers as perceived benefits (Poon and Swatman, 1999a) organizational readiness and external pressures (Ibbotson and Fahey, 2004) The ability of the SME owner/manager to recognize and understand benefits and relevance of ICT utilization also, however, represents an obvious driver towards usage and increased uptake (Bharati and Chaudhury, 2006) within this, owner/manager attitudes were a critical variable in deciding the competitive position of the enterprise. Fillis and Wagner (2005) concluded, for example, that some SMEs were only prepared to grow to a certain size, due to lifestyle influences and consequently the ICT adoption rate varied. Lifestyle business identified that they might adopt a particular level of ICT attainment, but would not actively pursue growth as a business objective (Chibelushi and Costello, 2009). Moreover, they noted the complex variables and relationships within SMEs meant that investment decisions, such as ICT, were not made in isolation. Hodson and Whitelock (2003), for example, differentiated between SMEs that operated as lifestyle businesses and entrepreneurial ventures which actively pursued growth.

It is stated in Cashman, et al (2004) that e-commerce facilitates SMEs to compete with large organization and operate globally. Globalization of tourism is a driver for e-commerce adoption (Gunawardana, 2000). Adoption of E-Commerce tools enables customers to more easily communicate to others involved

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in the tourism industry (Gunawardana, 2003). As stated by Cloete et al. in 2002 E-Commerce can deliver the tools to provide cost effective ways for SME s to market them, launch new products, improve communications, gather information, and identify potential business partners. Research findings of Lawrence (1997) conclude that e-commerce adoption leads to tremendous improvement in marketing and the ability to reach new customers. He further stated that trading partners such as suppliers who have adopted e-commerce force SMEs to adopt e-commerce as it provides cost saving in huge margins in long term. These cost savings are not only through external communication processes but also through internal communication processes. External communication is enhanced through EDI, online sales, whereas internal communication is enhanced through the use of internet rather than traditional telecommunication

According to Calvin B. Lee (2002) higher customer service levels lead to greater revenue and net income. The above stated research finding elaborates the extent to which customer service can lead to the company development. In every business, the customer service is very important. Without the help of customer service profit-oriented businesses cannot acquire leading positions as the ultimate objective of any business would be to satisfy user requirements in order to earn profits. For an internal Research & Development department to operate successfully, customer service is an important element as it provides the necessary feedback required from the customer to generate a useful product or service. When the customer service is in electronic form the difference is that the feedback provided is faster. According to Estep and Castleberry (1999, p. 13) one primary benefit of e-commerce is the potential for an improved relationship with customers.

2.1. Factors Influencing Firms' E-Commerce Adoption

Paynter and Lim (2001) in their research finding states that e-commerce technology which plays a major role in selling of their products through internet is significantly increasing the growth of the company. They also predict that growing number of Internet users, who are mainly buyers provide the opportunity for the organization to expand the marketplace by deploying a cost effective and efficient solution. With relevance to above arguments the following hypothesis would be developed.

2.2. H1: Relationship Between Adoption of IT and Adoption of E -Commerce

Based on an analysis carried on a number of researches, it can be generally stated that successful E-Commerce adoption by SMEs involves the active participation of the CEO or the owner of the company in their investment in IT. According to Cloete, Courtney, and Fintz (2002) it is stated that even though the CEO or owner identifies the potential of e-commerce usage in their company, but due to their lack of understanding in technology they will be reluctant to adopt e-commerce. With relevance to above arguments the following hypothesis would be developed.

2.3. H2: Relationship Between Management Involvement and Adoption Of E-Commerce

According to Mukti (2000) has pointed out that one of the main barriers in adopting E-Commerce is the Legal issues which surround them. When E-Commerce mode of communication is used, legal issues are of special importance; even though the communication originates through a computer there are no physically documents to make a business deal legally binding. With relevance to above arguments the following hypothesis would be developed.

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2.4. H3: Relationship Between Legal Requirement and Adoption Of E-Commerce

Adoption of IT will enhance the internal efficiency of the organization by utilizing the Internet for IOS (Inter-Organizational Systems). The Korean Ministry of Commerce pointed out that the adoption of E-Commerce will help the organization; thereby it will build efficient and effective relationships between the customers and suppliers within the company.

Customer service is an important element as it provides the necessary feedback required from the customer to generate a useful product or service. When the customer service is in electronic form the difference is that the feedback provided is faster. With relevance to above arguments the following hypothesis would be developed.

2.5. H4: Relationship Between Adoption of IT and Customer Service

The customer satisfaction is one of the main priorities of the management; Estep and Castleberry (1999, p.13) states that one primary benefit of E-Commerce is the potential for an improved relationship with customers. Today most of the customers are involved in the E-Shopping or E- business. The management involvement in providing the best service according to the customer s expectations is one of the top priorities of the management team. This involves effective adoption of E-Commerce in their SMEs.

2.6. H5: Relationship Between Management Involvement and Customer Service

With relevance to findings of Estep and Castleberry (1999) a primary benefit of e-commerce is potential for improved customer relationship. Since Gunawardana (2000) express in his findings that country to country e-commerce legal conditions are different. The e-commerce law in Sri Lanka is currently weak and its effectiveness in the business has not reached to the companies and consumers. Basically, there are no awareness about it, which has led to less trust among the parties involved in the e-commerce transaction. Therefore, legal requirement would be important over customer service. With relevance to above arguments the following hypothesis would be developed.

2.7. H6: Relationship Between Legal Requirement and Customer Service

According to Chan and Al-Hawamdeh (2002), e-commerce totally depends on the digital communication and IT. When considering E-Marketing this is a very important feature of E-Commerce. Gunawardana (2000) stated that one also could conclude that marketing a product or service through internet is easier than any other way. E-marketing is the vast cost-effective way. These arguments on adoption of IT and E-Marketing would facilitate the below developed hypothesis.

2.8. H7: Relationship Between Adoption of IT and E-Marketing

Findings on Osmonbekov (2003) stated CEO or Manager are taking key role to adoption of IT in SMEs. Standing and Stockdale (2003) points out the at E-Marketing is the cost-effective marketing strategy and it provides an opportunity to SMEs by providing avenues to compete with larger firms by making

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marketing, communication and information resources available for comparatively low financial cost. Establishing an effective E-Marketing practice involves a greater management involvement by providing the best IT for their SMEs. These arguments would facilitate the below developed hypothesis.

2.9. H8: Relationship Between Management Involvement and E-Marketing

Adoption of E-Commerce is mainly for few main purposes, of which to market the company themselves by providing company information and to mark et the products and services offered by the companies. Since the company is advertising in the internet and selling its product without any physical documents, the legal requirements plays a major part during the adoption. These arguments would facilitate the below developed hypothesis.

2.10. H9: Relationship Between Legal Requirement and E-Marketing

The relationship with the supplier is also extended by adoption of E-Commerce. Another research finding of Stricker (2003) states that cost of delivery may be saved due to E-Commerce adoption The communication and access of business deals between the two parties through the most cost effective E-Commerce operations turns the relationship with the supplier well-organized. These arguments would facilitate the below developed hypothesis.

2.11. H10: Relationship Between Adoption of IT and Supplier Service

According to Estep and Castleberry (1999) they point out that one of the primary benefits of e-commerce is that it improves the potential for an improved Relationship with suppliers and the management. The adoption of e-commerce will facilitate both the parties by giving up-to-date detail of every transaction, where the business deals with both the parties will be more cost-effective. These arguments would facilitate the below developed hypothesis.

2.12. H11: Relationship Between Management Involvement and Supplier Service

Estep and Castleberry (1999) in their study states that one of the primary benefits of the e-commerce is that it improves the relationship with suppliers and the management stronger, the legal requirements play a major role between these two p arties since there are no physical documents as evidence of the Transactions held between the two parties. These arguments would facilitate the below developed hypothesis.

2.13. H12: Relationship Between Legal Requirement and Supplier Service

The increase of E-Commerce today has also built a greater demand for e-currency. It has opened up an opportunity to SMEs global network by allowing payments worldwide. E-payment methods are essential in E-Commerce to attain the speed of processing payments and for accuracy of transaction information (Singh, 2002, p. 443). Also, the electronic payment system provides opportunities for new global and national trading relationships (Paynter, Lim, 2001, p.3). This creates a high importance of E-Payment in E-Commerce. This arguments would facilitate the below dev eloped hypothesis.

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2.14. H13: Relationship Between Adoption of IT and E-Payment

According to Singh (2002), E-payment system has induced customers to purchase online at their convenience. The management involvement is necessary since today E-payment is considered to be the fastest mode of transaction. Paynter & Lim (2001) states e-payment system provides opportunities for new national & international trading relationships, these sorts of opportunities are out for grab when SMEs are not adopting the e-commerce.

2.15. H14: Relationship Between Management Involvement and E-Payment

According to the research carried out by Silveira, 2003 it is stated that currently in Sri Lank a, there is culture of cash payments. The different modes of carrying out e-payment are for e.g.: credit cards, e-money, etc. According to Singh (2002) generally it is accepted norm that credit cards are the most preferred method of making payments in the current business environment. However, it is stated that it has to be reliable and secure payment systems (Brendan & Hussain, 2001). According to Singh (2002, p. 443) Payment information via e-mails or automated responses are greatly appreciated by Customers the legal requirements should be clearly defined as when the customer or the supplier involves in the transaction process, since it is still considered as an insecure method of payments. These arguments would facilitate the below developed hypothesis.

2.16. H15: Relationship Between Legal Requirement and E-Payment Methodology

The section provides information on collection of data, data gathering procedure, dimensions of variables, research instrument, data analysis and guide to adoption of E-Commerce activity level. Data were collected from twenty-one companies through interviews. The population of the research will be all small and medium enterprises registered with BOI in Sri Lanka. However, due to budget and time constraints, the sample of the research was obtained only in the Colombo Metropolitan area. The total population of the Board of Investment registered SME s are 30.

In this research non-probability sampling technique was carried out. In that, particularly convenience sampling method is used because of time and budget constraints. A survey questionnaire was developed and data was gathered through personal interviews. The table 1 shows the total sample size, enterprise on the operation, response received from the enterprise and response rate.

For the research purpose after collecting the 10 data set questionnaire from companies, the reliability test carried out. The Conbach's Alpha is 0.8955. Therefore, questionnaire is reliable.

Table 1. Survey response rate

	Total sample size	Enterprise on Operation	Response received	Response rate
SME Survey	36	30	21	70%

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The questionnaire was the main element for this research. It has divided into three sections. Section I is divided into subsection on the basis of variables. This is to make it easy to fill the questionnaire. Subsections are the variables to collect information related to the e-commerce adoption. There are 50 statements, which are categorized into Customer Service, Supplier Service, Management involvement, adoption of IT, e-marketing, legal requirement, and e-payment. Every item required the respondents to choose one answer out of five alternatives. The scale used is called the Likert scale, where the five alternatives are strongly disagree, disagree, moderate, agree, strongly agree respectively. Section II is designed to collect information related to the benefits received from using E-Commerce applications. There are 14 items where the respondents choose one answer from each item which is of Likert scale type. Section III is designed to collect information related to the company profile. There are 16 questions where the respondents are required to tick one answer or fill in the blank.

3. DATA ANALYSIS

All data from the respondents are coded and entered into the data sheet of the SPSS program for statistical analysis. To evaluate the entire variable, each variable has set of Likert scale questions. On that, got the mean of each set of variables and convert that to ratio type data. The following analysis and tests are carried out:

1. The first part of the analysis consist various tabulation of data, where frequency and percentage will be displayed.
2. In the second part of the analysis, Simple Linear Regression analysis will be carried out to identify the relationship between the adoption of E-Commerce and the firm-based characteristics.

From Table 2, it can be seen that among the respondents, those from the manufacturing sector constitute the highest percentage at 57.1%. That is more than half of population in the SME industry. Continue with this followed by the IT sector. This is current growing sector in Sri Lank a. The figures reflect the current trend that IT is becoming a major sector in the economy. One of the reasons could be that many companies now venture into IT related business because the government is providing all kinds of incentives to promote IT to transform the economy into knowledge economy. Another obvious reason is the global trend of Information revolution where Internet is becoming a part of everybody live and IT is becoming the basic enabler of every business, the demand for IT related products is increasing, naturally more and more companies are investing in the IT sector.

3.1. Company Ownership

From Table 3, Private Limited Company is the highest form of company ownership among the respondents, which constitute 76.2%. The second highest respondents rated the Partnership. The lowest are public Limited Company and Others, which constitute only 4.8% each category among the respondents.

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Table 2. Sector

Industry	Frequency	Percentage
Finance	1	4.8%
Information Technology	4	19.0
Manufacturing	12	57.1
Education	1	4.8
others	3	14.3
Total	21	100.0

Table 3. Ownership

Company	Frequency	Percent
partnership	3	14.2%
Private limited company	16	76.2%
Public limited company	1	4.8%
others	1	4.8

3.2. Number of Employees

From Table 4, it can be seen that among the respondents, most of them have 50 - 250 employees, while only 23.8% have more than 10 - 50 employees. It shows that most small and medium Enterprise has more employees as the extent of operation.

3.3. Connection of Internet Service

Table 5 shows the 52.4% respondents have using Dial-up Connection for the internet usage in companies. With that 33.3% respondents are using data service (leased line) and 28.6% respondents are using ADSL. The lowest connection usages are IP-VPN and ISDN. If we consider all these facts, all these SMEs are well known the Internet advantages and its benefits. That is why at least in the companies has minimum dial-up connection

3.4. E-Commerce Activities Usage by SME s

As per Table 6, it can be concluded that most frequently used E-Commerce activities in SMEs are e-mail, internet and web site activities. The percentages are respectively 95.2%, 90.5% and 71.4%. It can be generalized that the usage of e-commerce in relation to these three activities are above 70%. These are the most commonly used activities in SMEs. The leased used e-commerce activities in SMEs are the following: EDI (electronic data interchange) 28.6%, making purchase online 23.8%, online payment 14.3%, CRM (customer relationship management) 14.3%, e-customer service 14.3% and video conferencing 9.5%.

Table 4. Employees

No. of employees	Frequency	Percent
Less than 10	2	9.6%
10-50	5	23.8%
50-250	7	33.3%
250 and more	4	19.0
Data unavailable	3	14.3

Table 5. Connection types

Connection	Usage	Non-Usage	Usage %	Non-Usage %
Data Service	7	14	33.3%	66.7%
IP-VPN	1	20	4,8%	95.2%
ADSL	6	15	28.6%	71.4%
IDC	0	21	0.0%	100.0%
ISDN	1	20	4.8%	95.2%
Dial-Up	11	10	52.4%	47.6%

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Table 6. E-commerce activity usage

Activity	Usage	Non-usage	Usage in %	Non-usage in %
E-mail	20	1	95.2%	4.8%
Internet	19	2	90.5%	9.5%
Web site	15	6	71.4%	28.6%
On line payment	3	18	14.3%	85.7%
Purchase online	5	16	23.8%	76.2%
E-customer service	3	18	14.3%	85.7%
Video Conferencing	2	19	9.5%	90.5%
CRM	3	18	14.3%	85.7%
EDI	6	15	28.6%	71.4%
others	1	20	4.8%	95.2%

4. HYPOTHESES TESTING

Prior to conducting the statistical analyses, the three major assumptions of a multiple regression analysis, namely, normality, linearity and homogeneity of variance were examined and found no major violations. Consistent with the well-established procedure in creating interaction terms (Aiken and West, 1991), the variables were first mean-centered before creating the interaction term. Along with mean-centering, the variance inflation factor (VIF) and tolerance levels were also checked for the presence of multicollinearity. Accordingly, it was found that all tolerance values were well below 0.1, which is considered as the rule-of-thumb cut-off point (Hair et al., 2006). Table 7 below shows the results of simple liner regression analysis. First hypothesis proposed a significant, positive relationship between adoption of IT and adaption of e-commerce. To further test the first hypothesis (H1), a one-way analysis of variance (ANOVA) was conducted in order to see whether there is a statistically significant. Hypotheses 1, 2, 8.10 and 11 were statistically significant and proved that there is relationship among the two variables. Other remaining variables proved that, there is no relationship.

5. CONCLUSION AND IMPLICATION

The main issue addressed in this study was why SMEs are reluctant or are not prompted to adopt e-commerce to develop of day to day business. The most frequently used e-commerce activities are the internet, email and websites. The least used activities are electronic data interchange, making purchases online, online payment, customer relationship management, e-customer service and video conferencing. Overall, what was found that the SME s use only the basic or low-level e-commerce activities to carry out day to day operations.

The next finding is to identify the relationship between firm-based characteristics and adoption of e-commerce in SME. Under this first one is adoption of IT has a relationship with the adoption of E-Commerce. There is evidence that the level of adoption of E-Commerce is influenced by the adoption of IT. It was found that there is a 25.5% impact of adoption of IT on the adoption of e-commerce. It is also

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Table 7. Adoption of IT on adoption of E-Commerce

Hypotheses	R^2	Sig F
H_{1-} Adoption of IT on adoption of E-Commerce	0.255	0.010*
H_{2-} Management involvement on adoption of e-commerce	0.212	0.023*
H_{3-} Legal requirement on adoption of E-Commerce	0,0000	0.955
H_{4-} Adoption of IT on customer service	0,128	0.175
H_{5-} Management involvement on customer service	0,242	0.051
H_{6-} Legal requirement on customer service	0,105	0.225
H_{7-} Adoption of IT on E-Marketing	0,221	0.074
H_{8-} Management involvement on E-Marketing	0,295	0.033*
H_{9-} Legal requirement on E-marketing	0,002	0.868
H_{10-} Adoption of IT on Supplier service	0,137	0.023*
H_{11-} Management involvement on supplier service	0,233	0.001*
H_{12-} Legal requirement on supplier service	0,021	0.423
H_{13-} Adoption of IT on e-payment	0,003	0.836
H_{14-} Management involvement on e-payment	0,001	0.901
H_{15-} Management involvement on e-payment	0,001	0.901
H_{1-} Legal requirement on e-payment	0,001	0.935

*Significant at 95% confidence level

clear that the adoption of IT is vital for successful implementation of e-commerce activities. Companies who have less access to advance information telecommunication infrastructure and lack of technological expertise are likely to have low level of adoption of e-commerce and low level of e-commerce activities. This is supported by the fact that there is an impact of 25.5% of adoption of IT on adoption of E-Commerce in Sri Lanka. On the contrary, companies who have better access to Information Telecommunication infrastructure that support e-commerce and have better knowledge in technology are likely to have higher percentage of e-commerce adoption and higher e-commerce activities. This is not seen in the Sri Lankan context where adoption of IT is mostly confined to day to day business activities that do not involve high usage of e-commerce. This is further supported by the earlier finding that e-commerce activities are mainly concentrated on e-mail, internet and websites in Sri Lanka.

The second one is management involvement has a relationship with the adoption of e-commerce. There is evidence that the level of adoption of e-commerce is influenced by management involvement. The finding was that there is 21.2% impact of management involvement influencing the adoption of e-commerce. This could be explained from the management aspect. The lack of IT knowledge amongst top management was seen as an obstacle to adopt e-commerce and denotes the commitment shown towards the adoption of e-commerce. The majority of the respondents also believe that top management commitment is important for the adoption of e-commerce. However, the lack of IT knowledge at the top management level in using the technology or literacy of IT has hampered the adoption of e-commerce activities. The third one is to find out the critical success factors of adoption of e-commerce, for SMEs in Sri Lanka. The significance of critical success factors of e-commerce and firm-based characteristics are studied. The factors which had significance impact on adoption e-commerce are given below:

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1. E-Marketing and Management Involvement

There is evidence that management involvement has an effect on e-marketing. The analysis shows that management involvement has 29.95% impact on e-marketing which is a critical success factor of e-commerce. The current business environment is such that in order to be competitive, fast communication and global connectivity is an important factor. E-Marketing enables managers to identify niche markets. This has been proved; since data collected shows that most companies agree that e-marketing immensely assists them in identifying niche markets. Likewise, companies have agreed that advantages derived through E-Marketing such as cost minimization, self-marketing and launching products; encourage managers to increase their involvement with e-marketing. These are the reason as to why there is significance between management involvement and e-marketing.

2. Supplier service and Adoption of IT

There is evidence that supplier service determines the adoption of IT. The analysis shows that supplier service has 13.7% impacts on adoption of IT. It is always best for a company to find the best fit supplier, since output and timely customer delivery depends on the quality and reliability of the supplier. By adopting IT, the company introduces new methods of running a business. The use of computers and the internet opens up the opportunities of finding relevant, reliable and quality suppliers. In order to be able to find key suppliers and be in touch with them, most companies agreed on the fact that IT needs to be adopted.

3. Supplier service and Management Involvement

There is evidence that supplier service determines management involvement. The analysis shows that supplier relation service has 23.3% impact on management involvement. Here again the management emphasizes on the need to have reliable, relevant and quality suppliers. Therefore, the benefits derived through supplier service, which relies on IT, will definitely increase the management involvement in this regard.

The Top executives and the top management in the target SME companies pointed out that the adoption reduces the cost and at the same time it also increases the efficiency in dealing with suppliers. These were seen as the two primary benefits in adopting e-commerce in their companies. They also identified that it also increases their service to the customer and also increases the relationship with the customer, and it goes to the level of making the customer loyal towards the company. The other main benefits should also be noted since the respondents showed a very favorable response to them. The benefits shown in the moderate level should also be noticed and SME companies should take the advantage in gaining by adopting E-Commerce in the best strategic way.

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Section 4
Utilization and Applications

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Chapter 35
Addressing Risks in Global Software Development and Outsourcing:
A Reflection of Practice

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ABSTRACT

This article describes how outsourcing and offshoring for software development is a widely used business strategy implemented by many organizations worldwide. Due to its significant benefits, project managers can accrue greater flexibility, lower labor costs, and have access to skilled workers, which are the advantages of outsourcing and offshoring in global software development (GSD). Though there are advantages and benefits to incorporating this business practice, there are risks associated with it as well. Therefore, it is necessary and vital to discuss the challenges and risks that may arise which the project managers should consider before establishing and implementing such a project, to ensure a successful project result. The objective of this research is to identify the challenges and risks involved in GSD and discuss a risk management plan based on these factors. This article has found that communication issues and cultural differences are primary causes of most risks identified. To minimize the risks associated with GSD, these factors must be minimized.

1. INTRODUCTION

1.1. Background

Due to the advancements made in technology and its expanding worldwide use especially in the field of software projects, there has been an increasing trend in using global software development (GSD) by many companies. The term global software development emerged as a concept that is defined as "…software development that uses teams from multiple geographic locations…" Nidhra Yanamadala,

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Afzal, and Torkar (2013). Verner, Brereton, Kitchenham, Turner & Niazi (2014) states that GSD is used to describe a software development business strategy where "…organizations shift all or part of their software development to another country (referred to as offshoring), to lower cost destinations and/or to destinations where the required skills are more readily available." An example of GSD is when multinational organizations distribute their software development activities across multiple subsidiary sites (Verner et al., 2014). Many of these sites are located in different countries. Distributed software development (DSD), distributed software engineering (DSE), and global software engineering (GSE) are other terms used to describe this same software development business strategy (Verner et al., 2014). For simplicity, the term GSD is used throughout this paper.

In businesses that utilize GSD, teams that are located in different geographic locations perform the software development work tasks. The distribution of these software development activities to other teams in another location is increasingly becoming a common practice recently. However, there are risks involved when managing a GSD project due to the teams being located in separate locations. The risks that can be encountered include organizational, cultural, temporal, language, political, and geographical barriers. These barriers that can arise when managing a GSD project present as risks.

Software outsourcing refers to the method in which part of the software development work task is allocated to another team in a different location. The benefits obtained from software outsourcing, which are cutting costs and increasing efficiency, can help companies, maintain their competitive advantage in the field. This advantage is the driving factor for incorporating the use of this software development business strategy for GSD. However, the benefits associated with GSD will not be attainable if the risks involved with GSD are not managed during the life cycle of these projects (Verner et al., 2014). But, if project management account for these risks to be managed correctly, offshore software development can produce high-quality work and product that is beneficial for the software organization. Evidence from research and literature portray the risks and challenges of managing outsourcing and offshoring in GSD projects.

This study identifies and analyzes the risks associated with outsourcing and offshoring in global software development projects. This paper is organized as follows. Section 2 describes the literature review to summarize and synthesize literature analyzed in this paper. Section 3 describes the research methodology used in the study. Section 4 presents findings from the selected literature, which are presented and analyzed with the discussion. Lastly, Section 5 addresses conclusion, future work, limitations, and risk assessment.

1.2. Problem Statement

There is a wealth of literature that shows the crucial role that risk plays in software development projects. However, there is an evident gap in knowledge regarding how risk enables the smooth progression of software development projects. This research stems from the knowledge gaps that exist within the related literature on global software development projects and risk management. The focus of this article is to evaluate the elements and applications of the most current risk management in the area of global software development projects. The article seeks to examine the overlaps and disparities of these risks in order to understand the differences and similarities between them. From there, this study seeks to propose solutions that encompass the best practices and elements of the current arguments in order to outline a proposed "universal" framework that could applicable to all forms of global software development projects and to all industries/business sectors. The research will focus on providing evidence-based answers

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to the primary questions that experts in global software development projects and risk management ask. For example, how to maximize on the expertise of risk in order to achieve the goals and objectives of global software development projects. Additionally, the findings of the research will provide a platform for building further research relating to global software development projects and risk management.

To understand the risks and challenges involved in global software development projects, the following research questions have been identified:

1. What are the common risks involved in outsourcing and offshoring in global software development projects?
2. What are the recommendations to mitigate known or identified risks in outsourcing and offshoring in global software development projects?

1.3. Originality

The purpose of this study is to contribute to existing literature regarding the effectiveness of global software development projects and risk management. Moreover, it seeks to compare project global software development projects and risk management features by focusing on their assessment tools. Data is derived from different studies and combined in a well-mannered approach. This paper is based on original research conducted to check the hypotheses.

The study has taken the viewpoints from different researchers and recommends new ways to resolve already existing issues. The purpose of the study and hypotheses are described. In the paper, the methodology is discussed along with its findings. Using a design-science-investigate strategy, authorizing a valuable growth reveal for both reasonable and hypothetical applications, develops a valid assessment model of global software development projects and risk management. This paper initially provides an outline of development models with attention to their evaluation instruments as an answer to the examination question. An explanation is provided about the strategy utilized for the outline and assessment of the evaluation instrument. The consequences of the meetings are also laid out in the analysis. This is trailed by the initial discoveries and suggestions in the conclusion, which also plots investigative limitations and future research ideas.

This paper contributes to the profession by adding to the slender body of literature on the subject to applying global software development projects and risk management. There are findings within this study that highlight some of the benefits of utilizing global software development projects and risk management, and the pitfalls that can occur with global software development projects without thinking of risk and sustainability. This study uses real-world examples to highlight the value of taking the theories that we work with and examining them in the context of the real world. The practice of risk management in global software development projects is inherently practical, so there is significant value in a study that not only examines these subjects in theory but also in practice.

1.4. Contribution to the Industrial Engineering Profession and Research Field

The current study is a significant contribution to the Industrial Engineering (IE) profession and research field. The study saves engineers' time, so they can work more effectively and focus on their goals. It helps engineers in organizing and maintaining the system with the use of the latest technologies. Moreover, it helps engineers save time, materials, machine time, money, energy, work hours, and other resources

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that hinder generating productivity. Finally, the research helps engineers improve the productivity and quality of their overall work. This model helps organizations make innovations in their products and other essential aspects. It would assist practitioners in finding effective strategies that provide benefits to the organization.

Hence, in the research field, this article is helpful. First, it would be a beneficial piece of writing providing information and awareness to industrialists and all readers. Easy to understand and user-friendly vocabulary and writing are utilized to accommodate all readers. This research reveals a new side of the global software development projects and risk management and sheds light on the effectiveness and requirement of this model for the management and production of companies. Moreover, a clear theoretical framework is provided in this research to help readers know the relevant information. Additionally, readers and researchers can use this study as a reference in future studies. It would be helpful for companies to boost their performance and achieve a competitive advantage in commerce. Undoubtedly, this paper is a valuable contribution to the IE profession and research field.

2. LITERATURE REVIEW

Nidhra et al. (2013) conducted a Systematic Literature Review (SLR) to identify the challenges faced in project management relating to Knowledge Transfer (KT) in GSD as well as mitigation strategies to overcome such challenges. SLR is a research methodology, which involves finding the most relevant published literature using search strings based on research questions. The collected information from literature is then analyzed to support and respond to the research questions (Khan and Khan, 2017). The study identifies the similarities and differences in challenges and strategies by comparing the findings and observations from interviews with industry experts. Similarly, studies conducted by Betz, Oberweis & Stephan (2014), Khan, Mahrin, & Chuprat (2014), Chadli, Idri, Fernández-Alemán, Ros, & Toval (2016), and Kamaruddin, Arshad and Mohamed (2012) highlighted the problems encountered in KT that related to issues involved with communication, trust, time zone difference, and lack of proper documents in IT offshore outsourcing projects. Likewise, Betz et al. (2014) interviewed experts from German companies who had experience in offshore outsourcing in software development projects as clients. From these German experts, the researchers were able to identify problems involved in the process of KT and associate each problem to an activity within the field of knowledge management. A follow-up study was then carried out to deduce their findings in which they came up with recommendations to increase the project's success in the future. Khan et al. (2014) also identified language barrier, culture difference and communication, and KT as the biggest risks from their SLR. Similarly, Chadli et al. (2016) identified language and terminology differences, lack of effective communication and KT as the biggest risks from their SLR.

Betz et al. (2014) came up with five problems areas involved with KT based on their research study where they conducted interviews with German clients involved in offshoring and outsourcing software development projects. They first identified the problems encountered due to the different geographic locations of the two parties. Because of time difference and distance issue, there is only a limited time window for the teams to communicate. This can result in project delay, which is inefficient. For example, when a decision is needed by a member but cannot be made because of this limited time window, the decision cannot be confirmed promptly. It is also much more difficult to meet and discuss issues in person because of the geographic distance. Companies may also have only a limited budget for travel expenses

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so most of the time, video calls are used for conferences between the two teams but it is not as effective as meeting face to face. Thus, this temporal and spatial distance can result in additional costs for KT.

The language barrier is another main problem area identified by Betz et al. (2014). The study conducted by Khan and Azeem (2014) identified 'language and language proficiency,' 'national culture' and 'organizational culture' as the three biggest risks faced by vendors in GSD. English is not the primary language in many of these countries that companies seek to outsource their activities. Therefore, miscommunication or misunderstanding of directions can frequently occur. Being able to convey the work task efficiently properly is challenging between team members with different linguistic backgrounds. So, it is hard for information to be exchanged properly because of this inability to share knowledge. Likewise, another problem area identified is that offshore team members may not understand specifications given by the provider. This is partly due to the cultural difference but occurs because communication is already poor and since domain knowledge is highly variable among different countries, it is difficult for clients to determine how much domain knowledge is available at offshore locations.

Verner, Brereton, Kitchenham, Turner & Niazi (2014) conducted a similar study to investigate and discover risks and risk mitigation advice to guide organizations involved with GSD. The authors address risks relevant to GSD such as communication, culture, language, and lack of trust. Limited face-to-face meetings due to geographic distance negatively impact project management. Not being able to hold face-to-face meetings can create trust issues and makes collaborating on a project difficult to do. Verner et al. (2014) claim that distance makes meetings hard to plan and coordinate due to the time difference which leads to unproductive waits, delays in feedback, and complications in simple tasks. Different cultures and the language barriers between development sites result in miscommunication, misunderstanding, and lack of KT in essential project related information. These challenges eventually make developers lack trust among them. Mutual trust is an important factor in GSD because developers need to collaborate and work together on a project to be successful.

Blomqvist, Peterson, and Dhar-Bhattacharjee (2015) conducted a research study where they investigated the experiences of employees in Swedish companies that offshore IT services to India. The results from Blomqvist et al. (2015) show that regarding the organizational dimension of offshoring; the company allocated mainly non-strategic work tasks to India. Blomqvist et al. (2015) conducted interviews with four companies of which two were small start-up companies, and the other two were big multinational companies. They interviewed employees and managers in Sweden and India. The subjects that were interviewed were mainly software developers that were managers in Swedish onsite companies and employees from Indian offshore companies. The interviewees were asked questions about their job, work, background, experience with offshoring and on shoring, working environment, and personal feedback. Each interview was one hour long on average and was recorded and transcribed for analysis. The purpose of this research study was to gain a better understanding of how work was conducted and organized in a Swedish company based off of the interviews from 18 Swedish manager and employees. The Swedish company offshores its activities to a company in India. The interviews were analyzed and main issues that arise from the experiences of both the manager and employees were identified. The researchers organized the findings among four primary dimensions that dealt with the organizational, operational, cultural and economic aspects of offshoring services.

Matthiesen, Bjorn & Peterson (2014) conducted an ethnographic study to discuss cultural blind spots through an interview and observation between an Indian IT vendor and an IT development division of a Danish bank from project management perspective. The study identified and investigated challenges that were neglected due to the cultural blind spots. The cultural blind spot is defined as "an unidentified

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knowledge of our cultural behavior and practices within organizations" (Cultural Blind Spots, 2017). Cultural blind spot causes tensions between the home ground organization and remote vendor because the home ground organization focuses on preparing and improving the remote IT vendor site while paying less attention to the changes that come along at the home ground. According to Matthiesen et al. (2014), the Danish IT developers believe "extra work" was created for them because collaborating and working with a remote Indian IT vendor increased communication and coordination with remote colleagues. Their findings confirmed that cultural blind spot causes tension, inefficiency, and obstruct KT among home ground organization and remote vendor in GSD. The authors conclude that to address organizations' cultural blind spots, an active effort is required to take actions. For an organization to become a truly global organization, the organization must continuously improve to take a critical stance toward one's practices, and continuously make changes (Galli, 2017).

Focusing on social risks, Mantalay and Chakpitak (2015) conducted a study to identify the cultural discontinuities from the perspective of both German managers and Thai software developers. By interviewing primary stakeholders such as German managers working in Thailand, locally recruited Thai staff, German software developers working at the headquarters, and German managers in Berlin, the authors were able to identify different types of cross-cultural discontinuities and how cultural differences such as differences in communication style, learning style, and time management can affect GSD projects. The authors argue that many small and medium enterprises consider overlook cross-cultural discontinuities when proceeding with GSD projects and recommend that organizations consider cultural aspects as a critical feature contributing to their success or failure in GSD.

Similarly, Niazi, Ikram, Bano, Imtiaz, & Khan (2013) conducted an SLR to see what factors help to establish trust. Through their research, they were able to identify factors that are important for establishing trust in offshore software outsourcing relationships. A total of 39 factors were identified which were then categorized by continent to see if any of these factors were more common in one continent than the other (Galli, 2017).

Another study analyzes IT outsourcing from the perspective of an Indian company and its relationships with its European clients. Soderberg, Krishna & Bjorn (2013) conducted a research study in which they investigate how these relationships are maintained thru their partnership by also using data from qualitative interviews. With outsourcing becoming a major industry since the mid-'80s, India is considered as the primary supplier for outsourced IT services. The country produces profits of 100 billion dollars in US money, and their clients are mainly from developed countries such as the US, Japan, and European countries.

The researchers drew their conclusions by conducting 17 interviews with the general manager, the head of presales, various heads of the engagements as well as with project managers and team leaders to conclude how the Indian company dealt with the near-shore outsourcing of a great variety of business process outsourcing services to European clients. Furthermore, empirical material collected during visits to the Indian company's site and its on-site vendor teams close to European clients were used for analysis. Their research approach is qualitative and interpretative. Thru the analysis of the interviews conducted, the researchers found that the Indian company vendor was able to maintain strong relationships with its clients by having a long-term engagement with the field of banking and insurance as well as through conscious relationship management with the clients.

There were three major aspects identified for having this solid partnership, which was: senior management commitment and employee identification with projects, mutual trust and transparency, and cross-cultural understanding and sensitivity. Thus, collaboration is the key factor in providing success when offshoring activity is being done in the field of global IT development projects.

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Another study conducted by Niazi et al. (2016) using SLR approach identified challenges of project management in GSD then validated the results using a questionnaire-based survey. In the research, lack of trust was identified and verified as one of the biggest challenges GSD. Total of 19 challenges important to the success of GSD project management was identified and concluded that the results from SLR and the questionnaire had no significant difference.

Colomo-Palacios, Casado-Lumbreras, Soto-Acosta, Garcia-Penalvo & Tovar, (2014) conducted a 360-degree feedback evaluation analysis to provide an overview of the implications of GSD for project managers. The 360-degree feedback provided a comprehensive performance assessment by taking into account of all individuals who can reasonably provide comment on the individual evaluated, including self-assessment, assessment from below (subordinates/staff), peer or co-worker assessment, and assessment from external agents (Colomo-Palacios et al., 2014). The results of the study show that geographic distance can have negative effects on productivity and efficiency, which consequently affects the overall project performance. However, despite the productivity losses incurred, the substantially lower labor costs that GSD projects benefit from still provides an incentive for organizations to continue utilizing GSD (Colomo-Palacios et al., 2014).

Soderberg et al. (2013) study on analyzing the complex relationships that arise in IT outsourcing from an Indian vendor perspective also reinforce how trust and transparency, commitment and identification, cultural understanding and sensitivity were important factors that are critical for the maintenance of the strategic partnerships. They interviewed to gather qualitative data and their results revealed that vendors were able to ensure strong relationships by having committed senior management and employee identification with projects, mutual trust, and having a cross-cultural understanding with sensitivity (Galli & Kaviani, 2017).

2.1. Research Gap

The current literature highlights the current gap in research. While there is a wealth of literature that shows the crucial role that risk plays in global software development projects. However, there is an evident gap in knowledge regarding how risk enables the smooth progression of global software development projects. This research stems from the knowledge gaps that exist within the related literature on global software development projects and risk management. The focus of this study is to evaluate the elements and applications of the most current risk management in the area of global software development projects. The study sought to examine the overlaps and disparities of these risks in order to understand the differences and similarities between them.

3. METHODOLOGY

The literature review was approached using two plans. The first plan was an unstructured plan where its aim was to find useful information of global software development projects and risk management. The second plan was structured plan where it is referred to databases and specific search methods.

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3.1. Unstructured Plan for Literature Review

It was based on searching for publications that are related to global software development projects and risk management tools because this paper aims to find the relationship between the two concepts. We identified some important fields within our area such as project management; risk; risk management; software development; outsourcing; risk analysis. We identified 45 articles, which are relevant to our study. Then we eliminated some of them according to the next step.

3.2. Structured Plan for Literature Review

In this plan, we used three steps to systematically create a structured plan. The three steps are explained as follows:

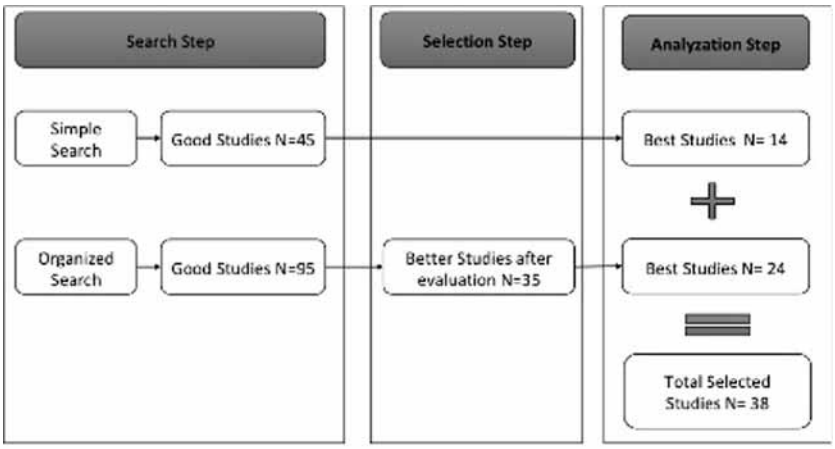
1. **Plan and Scope:** This step was limited to research that was relevant to global software development projects and risk management. One of these concepts had to be the major focus in the determined articles. Our aim was to successfully get articles that have valuable information to our study.
2. **Conceptualize the Review:** Secondly, we enhance the knowledge of our research by looking for other concepts that are related to the main two concepts. Examples of other concepts are project management; risk; risk management; software development; outsourcing; risk analysis. We eliminated some specific terms that are not helpful to our study such as size of firms and periodic measurement.
3. **Search, Evaluate, and Select Literature:** Thirdly, we devoted our effort to have our results to be relevant. Various databases were used to have these results such as ABI/Inform Global, ProQuest and ScienceDirect. Then we evaluated the journals by looking to the abstract and conclusion to make sure that any relevant journal, which has valuable information, had to be considered. We finally selected the most relevant journals to be 95 journals. Figure 2 shows the process we used in the search and selection.

Figure 1. Risk topics discussed in literature

	Research method				Risk topics discussed					
Article	SLR	Interview	Survey	Observation	Communication (KT, Language difference)	Cultural difference	Geographical distance / Time difference	Lack of trust	Human resource	Efficiency, productivity, quality of work
1		x			x		x			
2		x			x	x				
3	x				x	x	x			
4			x							x
5			x		x	x	x	x		
6	x				x	x				
7	x				x		x			
8	x				x	x	x			
9		x				x				
10				x		x				
11	x				x			x	x	
12	x		x		x	x	x	x	x	
13	x	x			x	x	x	x		
14		x				x		x	x	
15	x				x	x				
Total	8	5	3	1	11	11	7	5	3	1

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Figure 2. Research appropriate for literature review



Following the three phases in Figure 1, the final total selected studies were 38 publications. In the selection process, the selected studies after evaluation was 35. Journals were excluded because of title, abstract, or duplication. Also, we aimed to focus on the peer-reviewed articles, academic articles and literature reviews. In the analyzation phase, we narrowed down the selectee studies to be N= 14 and N= 24 by scanning for the most important journals. We completely appraised each journal to reach this number N=38.

3.3. Risk Identification and Risk Analysis

The thirty-eight kinds of literature selected using the criteria defined above were thoroughly reviewed to identify the challenges and risks discussed. During our research, it was necessary to categorize literature by the risk topics discussed in each literature to identify common known risks of project management in GSD. Since our research focuses on risks relevant to project management in GSD, only risks pertinent to outsourcing and offshoring were identified and analyzed. Other project management risks that are operational or technical, such as dealing with management or risks of different project methods were omitted in our research.

4. FINDINGS

4.1. Identifying Risks

The results of this study were divided into categories with subcategories that address the risks and challenges involved in outsourcing and offshoring activities in global software development projects. The six categories were: communication, cultural difference, geographical distance, and lack of trust, software quality, and human resource. Thru a systematic literature review of research addressing this topic, results were organized into these six categories and presented with mainly qualitative data thru SLRs, interviews, or surveys.

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Among the fifteen-selected literature, eleven kinds of the literature identified communication risks such as KT and language difference as a common risk, followed by eleven of literature identifying social risks as a common risk. Seven of the literature identified geographical distance and time difference and five of literature identified lack of trust as a common risk. Three articles identified a human resource, and lastly, one article identified efficiency, productivity, and quality of work as an additional risk involved in GSD (See Figure 1). SLR and Interview methods were the two most common methods used to investigate risks involved when managing a GSD project. Table 1 indicates the summary of publication year, research methodologies used, and risks identified in each of the fifteen research papers referenced in this study.

Table 1. Risk topics discussed in literature (Continued next page)

Authors	Title	Publication year	Research method	Risk topics identified and discussed
Betz, Oberweis & Stephan, 2014	Knowledge transfer in offshore outsourcing software development projects: an analysis of the challenges and solutions from German clients	2014	Interview	Communication (KT, Language difference) Cost Geographical distance / Time difference
Blomqvist, Peterson, & Dhar-Bhattacharjee, 2015	You Feel The Threat From Asia: Onshore Experiences of IT Offshoring To India	2015	Interview	Communication (KT, Language difference) Cultural difference
Chadli, Idris, Fernández-Alemán et al., 2016	Identifying Risks of Software Project Management in Global Software Development: An Integrative Framework	2016	SLR	Communication (KT, Language difference) Cultural difference Geographical distance / Time difference
Colomo-Palacios, Casado-Lumbreras, Soto-Acosta et al., 2014	Project managers in global software development teams: a study of the effects on productivity and performance	2014	360-degree feedback (Survey)	Efficiency, Productivity, Quality of work
Kamaruddin, Arshad, & Mohamed, 2012	Chaos issues on communication in agile global software development	2012	Survey, Feedback	Communication (KT, Language difference) Cultural difference Geographical distance / Time difference Lack of trust
Khan & Azeem, 2014	Intercultural challenges in offshore software development outsourcing relationships: an exploratory study using a systematic literature review	2014	SLR	Communication (KT, Language difference) Cultural difference
Khan & Khan, 2017	Critical challenges in managing offshore software development outsourcing contract from vendors' perspectives	2017	SLR	Communication (KT, Language difference) Geographical distance / Time difference
Khan, Naz'ri bin Mahrin et al., 2014	Factors generating risks during requirement engineering process in global software development environment	2014	SLR	Communication (KT, Language difference) Cultural difference Geographical distance / Time difference

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Table 1. Continued

Authors	Title	Publication year	Research method	Risk topics identified and discussed
Mantalay & Chakpitak, 2015	Cross-Cultural Discontinuities within International Knowledge Work: Firm-Level Evidence from a German Software Developer in Thailand	2015	Interview	Cultural difference
Matthiesen, Bjørn & Petersen, 2014	Figure out how to code with the hands of others: recognizing cultural blind spots in global software development	2014	Empirical observation	Cultural difference
Niazi, Ikram, Bano et al., 2013	Establishing trust in offshore software outsourcing relationships: an exploratory study using a systematic literature review	2013	SLR	Communication (KT, Language difference) Human resource Lack of trust
Niazi, Mahmood, Alshayeb et al., 2016	Challenges of project management in global software development: A client-vendor analysis	2016	SLR, Survey	Communication (KT, Language difference) Cultural difference Geographical distance / Time difference Human resource Lack of trust
Nidhra, Yanamadala, Afzal et al., 2013	Knowledge transfer challenges and mitigation strategies in global software development—A systematic literature review and industrial validation	2013	SLR, Interview	Communication (KT, Language difference) Cultural difference Geographical distance / Time difference Lack of trust
Søderberg, Krishna & Bjørn, 2013	Global software development: commitment, trust and cultural sensitivity in strategic partnerships	2013	Interview	Cultural difference Human resource Lack of trust
Verner, Brereton, Kitchenham et al., 2014	Risks and risk mitigation in global software development: A tertiary study	2014	SLR	Communication (KT, Language difference) Cultural difference

4.2. Risk One and Two: Communication and Cultural Difference

Effective Knowledge Transfer (KT) is essential for success in software development projects. KT, which is defined as "the delivery or passage of information and knowledge skills among members" and can be done through a systematic exchange (Bresman, Birkinshaw, and Nobel, 1999; Makino and Delios, 1996; Wang, Tong, and Koh, 2004). KT involves the transfer of knowledge with a clear idea to a specific recipient (Nidhra Yanamadala, Afzal, and Torkar, 2013). It is important that thoroughly reviewing and fully understanding the software requirements and specifications before initiating a project, is an important yet challenging task that many project managers can experience when working with a local software developer. It is obvious then that working with a team outside of the primary geographical location may have added challenges creating multiple levels of difficulty in an already complex project environment.

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This concept is a crucial factor involved when outsourcing or offshoring activities within an organization. KT is especially significant in project management for GSD because there is two parties in different geographic locations involved that need to effectively communicate and work together over a period to successfully finish the project. Being able to transfer technical knowledge accurately, for example, can significantly affect the results of the software development and project success (Galli, 2017).

KT can prevent the delay of deliverables by facilitating the process and eliminate the communication gap that can occur which can lead to delay. E-mail, intranet, and Internet can all be used to increase the efficiency of transferring knowledge. But, these technological methods cannot be used solely to eliminate the problems associated with KT. Their needs to be structured organization and disciplines to facilitate transfers, or it could lead to failure. For example, if the subject with the knowledge does not know how to transfer the knowledge to a receiver, then this results in decreased efficiency and effectiveness of KT. If KT is not carried out correctly, this can also result in miscommunication or misinterpretation, which is detrimental to project management. For example, if knowledge and information that is crucial to complete a project, but it not properly transferred to its complexness, the deliverable of the project may not be what the project manager have anticipated. Likewise, if the subject cannot adequately transfer knowledge or if the knowledge receiver cannot comprehend the knowledge due to language barriers, this makes KT ineffective and more challenging (Galli, 2017).

KT incorporates the risks involved with communication, language barrier, and cultural differences, which are all factors intricately, related and influence each other. Asian countries such as India and China have been the largest host countries for software development industries in offshoring activities (Veloso, Botelho, Tschang, Amsden & Stefanuto, 2003). Thailand is an emerging economy that has a significant potential for growth in knowledge-based industries. Therefore, Thailand's economy has geared to focus on software development and has been developing to incorporate more knowledge-based work. Although Thailand is becoming one of the host countries used for software outsourcing, there have been issues reported with producing high-quality deliverables that are probably attributed to the lack of effective knowledge transfer due to the difficulty in getting appropriately trained and skilled workers for the work tasks. Being able to manage international knowledge workers to perform effectively is challenging and especially for Thailand, it is important to understand the cultural differences to effectively implement outsourcing knowledge work. The Southeast Asian locations like Thailand offers high prospects for success for companies who want to offshore their software development activities. Thailand provides relatively low-cost labor compared to other Asian countries like Singapore and a large pool of skilled employees as well that is suitable and attractive to many small firms.

Because there has been little research conducted on how the cultural discontinuities affect knowledge work, Mantalay and Chakpitak (2015) conducted a case study at German small and medium enterprises (SMEs) that outsourced its activities to Chiang Mai, Northern Thailand to explore these cross-cultural discontinuities. They followed a German case firm whose work activities were allocated to a Thailand software development company. Their research highlighted the potential cultural disparities and impacts found on work performance and quality in the workplace. The researchers gathered qualitative data for analysis from four primary stakeholders: German managers working in Thailand, locally recruited Thai staff, German software developers working at the headquarters, and German managers, also in Berlin. Data were collected thru semi-structured interviews and focus groups that were conducted among each four main sample groups. Besides the focus groups, interviews were held to question further the Ger-

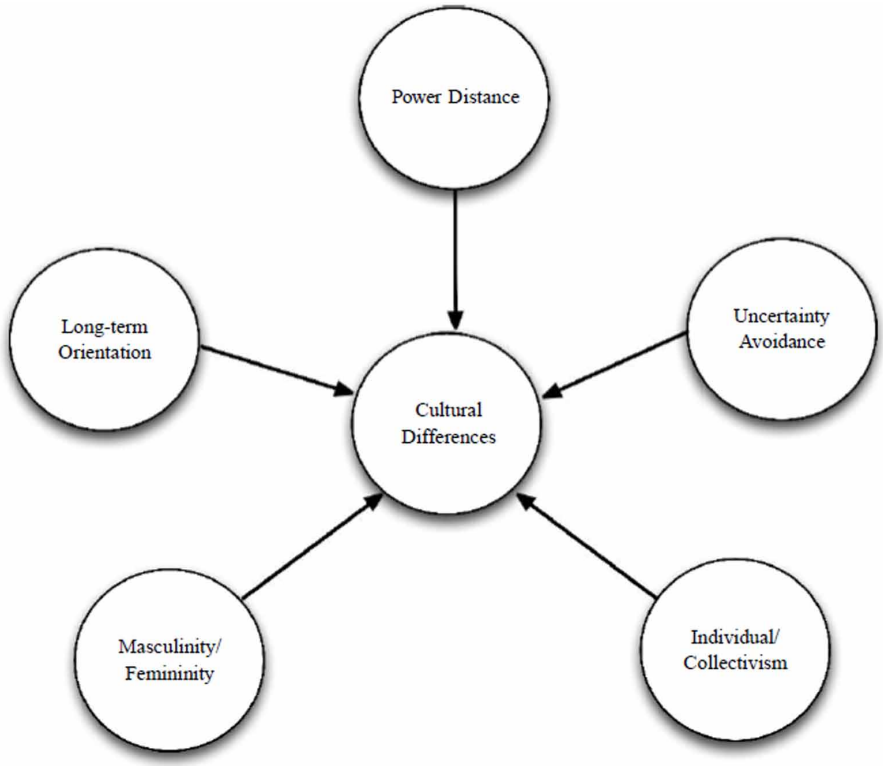
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man managers on topics such as how they felt work performance and qualities were affected by culture. After collecting data from focus groups and conducting interviews, analysis of cultural discontinuities was performed using Hofstede's cultural dimensions theory.

Hofstede's cultural dimensions theory is a well-known cultural theory used to assess cultural findings, and it was used for this case study to analyze the cultural disparities between the German and Thai knowledge workers. There are five main parts of this theory that were used as a reference to understand the behaviors of the manager and employees in a cross-cultural business workplace. The five parts of the Hofstede's cultural dimensions theory are power distance, uncertainty avoidance, individual and collectivism, masculinity or femininity, and long-term orientation (see Figure 3). From this analysis, the researchers were able to identify and link cultural discontinuities and work performance issues.

Analysis of the case study using the Hofstede's cultural dimensions theory shows that there are significant differences in four out of the five cultural dimensions. The culture had a significant impact on the work performed as shown thru the results of this case study. The quantitative differences between every five dimensions were calculated among the Germans and Thai workers. The cultural dimension of individualism had the greatest difference between the two groups with a difference score of 47 (see Figure 4). The cultural dimension of individualism encompasses the value of individuality placed by society. Therefore, a society that has high individualism encourages individual achievement and initiative. A culture that has low individualism stresses group loyalty and group dependence more. This significant difference portrayed between the two groups is evident and shown by the Thai software develops who in comparison to the Germans, prefer communicating as a group, while the Germans communicate strongly

Figure 3. Hofstede's five cultural dimensions (Mantalay & Chakpitak, 2015)



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Figure 4. Differences between German and Thai national (Mantalay & Chakpitak, 2015)

DIFFERENCES BETWEEN GERMAN AND THAI NATIONAL CULTURES (Data Adapted from Hofstede, 1984)			
CULTURAL DIMENSIONS	GERMAN SCORE	THAI SCORE	DIFFERENCE BETWEEN CULTURAL DIMENSIONS
• Power distance	35	64	+29
• Individualism	67	20	+47
• Masculinity	66	34	+32
• Uncertainty avoidance	65	64	+1
• Long-term orientation	31	56	+25

as individuals. The importance of this highlights the differences in learning styles and needs between the German managers and Thai software developers. For example, the German managers try to promote innovation and creativity as methods to use when developing software for the Thai employees but they prefer rather follow commands than think individually (see Figure 5).

The Thai employees place a low value on individualism and naturally prefer groups while the Germans place a high value on individualism. Therefore, these cultural traits, which relate to the power distance relationship and the Thai's preference for autocratic management style and low emphasis on individualism, must be taken into account when proper project management is constructed.

Masculinity also had a big difference of 32 between cultural dimensions (see Figure 4). This dimension refers to how important society places on either achievement or nurture. For example, a society that has high masculinity stresses ambition, achievement, and wealth while a society that has low masculinity stress on nurture for growth and higher quality of life. The results portrayed that Thai employees settled standard work as an adequate job and focused more on quality of life while German managers sought for perfection and achievement in work.

There also was a significant difference between the power distance relationship between the German and Thai cultures with a difference of 29 (see Figure 6). Power distance is related to the equality expectations within a working group usually addressing the issue of less powerful members of the group expecting inequality from their superiors. The Thai employees had a score of 64, which is much higher than the German, which had a low score of 35. So, the Thai employees expect a higher level of inequality and unequal distribution of power. This result can reflect and highlight the autocratic management style that is used in their culture. In comparison, the Germans expect each to be treated more equally. These differences drawn from observations of this study suggest the different needs and expectations from Thai employees and German managers (Galli & Kaviani, 2017).

Figure 5. Interview of a Thai senior software developer (Mantalay & Chakpitak, 2015)

"Learning is somehow involved with cultural issues. Thais work mostly in silence and stay quiet despite difficulties. They try to sort out the solution, but with an empty head. However, when I sit and advise them closely, they seem to work with more confidence and even more quickly when I show them working steps such as 1,2,3..."

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Furthermore, the importance of the power distance relationship is evident due to the different communication styles preferred between the German managers and Thai software developers. For example, an observation was noted that during conference calls or meetings, Thai software developers were hesitant to share their knowledge and would usually appoint a few representatives from their team to speak on their behalf (see Figure 6).

On the other hand, the Germans were more eager to share and discuss problems and issues when needed. This cross-cultural discontinuity creates further distance in communication.

Uncertainty avoidance assesses the extent to which an individual deal with ambiguity or uncertainty in situations. The German and Thai scored similarly with a score of 65 and 64 respectively (see Figure 6). Therefore, both of these groups have a similar dislike of uncertainty. But thru the responses recorded from interviews and focus groups, the reasons for their high uncertainty avoidance are related to different aspects of their work. The Thai employees do not like ambiguous instructions or uncertainty when their superiors give them orders. On the other hand, the German managers do not favor uncertainty or ambiguity in the Thai employees understanding their commands or whether an activity is fully completed.

There was a significant difference in the long-term orientation dimension of the cultural theory. A culture that has long-term orientation emphasized persistence, ordering relationships by status, and adaptability. A culture with a short-term orientation follows tradition, focus on quick results, and not save for the future. The difference of 25 in this category suggests that there are implications for the performance of the Thai knowledge workers and the most appropriate ways to motivate them.

The researchers summarized five cross-cultural discontinuities from the data collected. The first cross-cultural discontinuity determined was the concept of work completion. There were differences between the two groups in what was the expected outcome of work completion. The German managers were unsatisfied with the completed work that they received from the Thai software developers. They stated that the completed work was not complete according to their standards for the software products had important missing components or non-functional parts. Thus, there is a difference with the standard of product accomplishment between the Thais and Germans. To overcome this cultural discontinuity of work completion, a checklist can be utilized for the Thai workers to make sure the work is complete and of high quality according to what the Germans would expect to be a finished product. This can also be related to the long-term orientation cultural dimension that Germans encompass in their society, so they are more likely to persist in completing their work thoroughly while the Thais who have a short-term orientation finish when they think their work is good enough. Furthermore, Germans have scored high in masculinity, which relates to success and accomplishment while Thais focus more on better quality of life and personal relationships. The important conclusion to take from this observational study is that when offshoring practice is adopted into business practice, the business must be cognitive of the cultural traits and be expected to accommodate these differences to manage their project outcomes. By under-

Figure 6. Interview of German team member (Mantalay & Chakpitak, 2015)

> "...I have not spoken to some team members, but they seemafraid to speak. If we have group meetings or videoconferences they don't talk, and this means they are not communicating. So you only have one or two people who are communicating with us and these people have to communicate for the others..."

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standing these cultural aspects, it can increase the effectiveness of management, which is necessary to have success in offshore business activities. Understanding culture is useful for developing economies like Thailand to ensure productivity and high-quality service is met (Galli, 2017).

The second cross-cultural discontinuity noted by the researchers is the power distance relationship due to the differences in communication styles. The Thai software developers tend to rely on a few members of the group to represent their team to speak on their behalf during group meetings or discussions for work. The Germans are more open to taking active discussions about work while the Thai developers feel hesitant to share their thoughts or ideas. Language is primarily the main barrier to this communication problem that is present.

The third cross-cultural discontinuity addresses the differences in learning style and needs. The Thai developers have a business style where they are accustomed to following orders and commands than carrying out the work by themselves. German managers will try to engage the Thai employees in creative ideas to finish their activities, but this is not always efficient or successful. Their work style differences can negatively impact the project's success if not taken into account because if clear instructions are not given to the Thai software developers, many flaws and glitches are found in the final product, or the product is not completed because they cannot finish the work without given clear work tasks. Better work outcomes can be accomplished possibly if German managers oversee the Thai employees work and give them guidance thru their work. As the results from the interviews and discussion groups showed, the Germans place a high value on individualism while the Thais prefer groups that can be attributed to their autocratic work style.

The feedback needs differ between the Germans and Thai, which can cause strain in their work relationships. This fourth cross-cultural discontinuity shows that Germans are more direct and expressive when giving their workers comments about their work. They expect changes to be made when they feel the work is not satisfactory giving constructive criticism. But Thai employees take these feedbacks personally and feel like the German management do not like them and are discouraged to continue their work. This can lead to less contact with the management, confidence levels dropping, and frustration. These effects will be detrimental to the project management and create a negative work environment for the workers. With unhappy and frustrated workers, they will be less inclined to be innovative and efficient in their work performance. With less contact with management, relations are not solid, and trust is not formed between the team members. These effects will ultimately lead to low-quality products that are mainly attributed to the cultural dimension of masculinity and femininity where the Thais value working environment and relationships.

Because of the cultural differences, time management is a cross-cultural discontinuity experienced and evident from offshoring practices. Problems can be encountered when Thai software developers are unable to complete their final version of a software product. They spend a longer time than the Germans in completing a project. Thus, this creates a delay in the project's completion, which decreases efficiency. Proper time management must be constructed to ensure work activities can be met on deadlines and that the Thai employees have the information and instructions to complete the projects correctly properly (Galli & Kaviani, 2017).

Khan and Azeem (2014) also explored the intercultural challenges in offshore software development outsourcing relationships thru a systematic literature review study. They identified intercultural challenges in OSDO (Offshore Software Development Outsourcing) relationships by calculating their frequencies thru past literature and found that "national culture" is the most common challenge mentioned. More than half of their sample mentioned national culture as an intercultural barrier with the frequency of 55% (see Figure 7).

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Figure 7. List of challenges along with reference (Khan & Azeem, 2014)

Sl no.	Intercultural challenges in OSDO relationship	Freq. ($n = 60$)	%	References
1	national culture	33	55	(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12)(13)(14) (15)(16)(17)(18) (19)(20) (21)(22)(23)(24)(25)(26) (27)(28)(29)(30)(31)(32)(33)
2	language and language proficiency	31	52	(1)(2)(34) (3) (35) (5) (36) (37) (38) (39) (7) (8) (9) (40) (41) (42) (10) (43)(44)(45) (46)(11) (47)(48) (49) (50) (51) (12) (13) (52) (14)
3	organisational culture	20	33	(1)(34)(3)(5)(53)(6)(39)(8) (10) (49)(14)(17)(19)(20) (27)(30)(54) (55)(43) (56)
4	difference in social behaviour	15	25	(1) (3)(8) (35)(5) (39) (9)(45) (12) (52)(15)(25)(57)(58) (59)
5	communication style	14	23	(1) (34) (38) (8) (9) (10) (41) (44) (12)(52)(16)(17)(20) (54)
6	difference in mutual understanding	14	23	(4)(5)(8)(36)(39)(43)(11)(14) (15)(19)(54)(55)(60)(57)
7	attitude towards authority	12	20	(1) (2) (3) (5) (37) (6) (38) (43) (12) (52)(25)(10)
8	work ethics	12	20	(1)(2)(3)(4)(35)(5) (36)(37) (53) (6)(38)(52)
9	response to time	9	15	(4)(8)(11)(12)(15)(17)(30) (44) (56)
10	education system	3	5	(1)(2)(3)
11	professional culture	2	3	(1) (34)

Language, ethnic group's norms and values are all encompassed in the national culture dimension. Language and language proficiency was the 2nd most common intercultural challenge identified with a frequency of 52%. Language barriers can potentially lead to miscommunication or misunderstandings. In an OSDO relationship this is more common because even if both parties speak English as their common language, there can still be misunderstandings because of cultural differences. Strong accents and slang terms can also be problematic and hinder communication as well. Team members that are less proficient in the language being used to communicate may also feel reluctant to ask for help when needed because of the fear of looking incompetent and thus results in poor work outcome. 52% of the papers describe language as a critical intercultural challenge. Therefore, ensuring that language is properly translated, so knowledge transfer is effective, miscommunication can be prevented and avoided. Com-

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munication is especially important in software development because proper instructions and commands must be understood for the work to be completed correctly and to construct a high-quality product. So if one team member does not understand another team members, knowledge transfer does not occur, or communication gets lost in translation which can lead to defects in the work product. This will lead to increased costs to fix these problems and setbacks in project's deadlines.

Organizational culture has a frequency of 33% suggesting that culture can be a hindering factor in collaborating on a project for there can be clashing views on how to approach a problem between the team members due to cultural differences. For instance, engineers from America versus engineers from Europe had different methods on up-front design. While the Europeans lean more on the initial design effort, the Americans proceed quickly on implanting the design. This cultural difference can interfere with collaborating with each other when organizational cultural norms conflict in problem-solving methods. This difference can create conflict and negativity among the group thus being a negative impact on the project management process. Ways to approach a task are different between organizational cultures. Therefore, it is necessary for teams to know the other team's methodology in approaching tasks to construct proper coordination. If you ignore these differences, it can end up jeopardizing business relationships so knowing these cultural differences will help to accomplish objectives.

The difference in social behavior is another challenge identified in 25% of the papers. The different social behaviors such as social norms or social relationships affect the collaboration effort seen in the relationship among the team members and thus their ability to share and transfer knowledge effectively. Different cultures also result in different communication style and attitudes which both are mentioned 23% frequency that can lead to decrease in trust, collaboration, and communication. Having mutual understanding is critical for being to communicate in OSDO relationships effectively.

Furthermore, Niazi et al. (2016) findings thru a systematic literature review on the challenges involved with project management in global software development showed that the most common project management challenge identified in global software development was the "lack of cultural understanding in teams" with a 62% frequency in the 101 studies selected. Cultural difference is a major problem that arises because the teams are separated by a large geographical distance and thus have different cultural backgrounds. These cultural differences are a challenge for project managers because it can lead to miscommunication, misunderstanding, and language barriers. For example, in some culture, if you talk or intervene when someone else is speaking, it is considered rude. Especially in Asian countries where cultural norm is to listen and not interrupt the speaker and to follow orders from their superiors, this can pose a problem when communicating for many managers want feedback or criticism from their employees, but the employees are used to just following orders and not providing opinions. In European cultures, directness is a sign of honesty, trust, and respect. But in many other cultures, directness is taken for rudeness and disrespect. This type of misunderstanding causes unnecessary conflict, high levels of distrust and friction between the head office and offshore management. This can be avoided with an increased understanding of how people from other cultures communicate.

Also, many times the offshore vendor do not speak English well so communication can be a challenge for messages or instructions can be interpreted differently leading to unanticipated or unwanted results. Therefore, lack of cultural understanding" can lead to other risk and challenges to project management such as lack of communication and lack of trust which both negatively impact the global software development process (Galli, 2017).

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Lack of communication was the second most commonly mentioned challenge with a frequency of 54%. The geographical distance and time difference are the reasons for the cause of this challenge, which leads to problematic issues when dealing with executing project management properly. There is a direct relationship with the degree of communication on the results of the global software development project's success. Without adequate communication, projects can potentially fail as presented by Ericksen and Ranganathan (2006) who described a case where an offshore software development-outsourcing project did not succeed due to lack of communication. Communication can involve face-to-face meetings or thru media sources as e-mail or instant messenger systems. Whatever communication style is being used, it must be done appropriately to make sure messages are being relayed and understood correctly. Without doing so, this could cause more delay in the project's timeline or misunderstanding of requirements and can even jeopardize the relationships between the two parties.

Similarly, Chadli et al. (2016) identified risks and categorized them into subcategories of "task-actor interdependency" and "task-structure interdependency." For the risk factors related to "task-actor interdependency," the most commonly cited risk was "language and terminology differences between the development sites which can result in misinterpretation and uncovered information" (See Figure 8). Language differences can lead to ineffective communication, which can negatively impact all aspects of the project management lifecycle. Difficulties can also arise caused by different knowledge levels or knowledge transfer problems. Related to the language barrier, lack of effective communication such as decreased communication spontaneity, frequency, or richness can cause problems with knowledge management. Furthermore, due to the different locations, inability to communicate in real time due to

Figure 8. Risk factors related to "Task – Actor" interdependency (Chadli et al., 2016)

Risk Factors	Reference
1. Language and terminology differences between development sites can result in misinterpretations and unconveyed information	[6], [20], [26]–[32]
2. Difficulties caused by different knowledge levels or knowledge transfer problems	[6], [20], [27], [33]
3. Lack of effective communication (decreased communication spontaneity, frequency and richness) causes problems with knowledge management	[5], [6], [20], [26]–[28], [31], [32]
4. Inability to communicate in real time due to limited overlapping work hours causes collaboration problems	[6], [20]
5. Task uncertainty represents lack of information needed to develop the software, and it can result in slow change coordination and process and relational conflicts	[6], [20], [34]–[36]
6. Poor documentation	[26], [27], [31]
7. Limited working experience in a GSD environment	[6]

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limited overlapping work hours causes collaboration problems. Poor communication can lead to task uncertainty because of the lack of information needed to develop the software. This can result in slow change coordination and process and relational conflicts as well. Other risk factors identified were poor documentation and limited working experience in a global software development environment, which can all negatively impact the project's success.

Betz et al. (2014) identified language problems as a major problem area involved in offshoring activities. English is not the primary language in countries like Germany so misunderstanding can occur more frequently. Thus, it can be frustrating when the vendor and client are trying to communicate, but they cannot understand because of the different dialects. And sometimes the original meaning of communication can get lost in translation further creating a language barrier. Problems reported with offshore representatives include not being able to understand their reasons for calling, their accent, and their natural, cultural affinities. Information cannot be exchanged properly because of the different linguistic background of the team members, which is a problem. The third problem relates to the second problem of the language barrier where it addresses how offshore team members do not understand specifications. Since communication is not allowing knowledge to be exchanged, the team members receiving the instructions or work tasks do not know how to meet the demands. Usually, this results in limited feedback as well which will result in poor deliverables (Galli & Kaviani, 2017).

Khan et al. (2014) also were able to identify certain risks associated with global software development thru a systematic literature review approach. Similarly, to other researchers, they were able to identify that communication is a challenge especially when there is the geographical distance between the teams because cultural backgrounds are different, language preference may not be the same, and also the time difference can present as a challenge as well. Lack of cultural awareness and intercultural skills is a major obstacle to successful communication between project members. Project management such as coordination skills, technique, and competence is required because decisions need to be dealt effectively. Group relationship, team member's value, and team's collaboration effort are other factors identified that can affect the global software development project's life cycle.

4.3. Risk Three: Geographical Distance and Time Difference

Geographical distance category takes into the account of risks involved with different time zones and geographic location which are inevitable challenges associated in global software development companies that have vendors and clients in two separate locations Blomqvist et al. (2015) portrays this challenge thru their study that highlight the experiences of employees and managers in a Swedish company that offshores its IT services to India. The researchers divided their findings into four dimensions from the impacts of offshoring, which include: organizational, operational, cultural, and economic aspects. The first highlight how offshoring results in changes to the organization of work and labor in companies. Like other past researchers, their case study firms have allocated non-strategic and routine work tasks to India while the onshore company handled the more executive software development tasks. Since the onshore site handled work tasks that required more technical expertise, this creates a division of labor that increases job enrichment for onshore employees who are assigned to more critical responsibilities. Thus, the onsite employees feel they play a bigger role in part of the project management work duties.

Because the onshore and offshore sites are geographically distant from each other, there are many problems that can arise because of this distance. The third dimension the researcher's highlight is the cultural dimension. Miscommunication is common and often a result of cross-cultural communication

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problems. The work ethics and backgrounds among the Swedish and Indian teams are significantly different which can lead to decreased efficiency and strain in the work environment for both teams. Language is also another barrier. For example, many of the Swedish employees find it hard to understand the Indian pronunciation of English. Some employees never got used to the Indian accent or could not understand what their Indian colleagues were saying. To deal with this language barrier, some teams resorted to using only written forms of communication and never even talked with each other. Many of the team used media forms of communication such as chat room or e-mails rather than phone calls. This method seemed to work well and was easier than talking and trying to understand what their counterpart was trying to convey. However, this decreases face-to-face meetings and minimizes interactions, which can present some drawbacks especially when trying to resolve conflicts. Businesses can lose sales or money because of miscommunication, and there's a greater risk of that when relying on electronic means to carry the conversations.

Thru another case study report about an outsourcing global software development between an Indian IT vendor and an IT development division of a Danish bank. Matthiesen et al. (2014) reinforce the idea of how global software development with ITS presented a challenge for IT developers because they had to find ways to collaborate globally and make their project management go well. Another result from outsourcing is increased work for IT workers because of effort required to handle the dependencies across geographic distance and time differences. There are challenges especially in understanding the contextual information correctly about the work task given to IT developers in the Indian sites by the business employees in Denmark. The ITS workers frequently wait for the Bank IT employees in Denmark to respond to them on matters that concern documentation or answers to their questions about the work assignment. The researchers attended a meeting at the Danish site to observe how tasks were clarified between the business developer in Denmark and the IT developer in India. Although the Danish worker tried to explain and provide additional information on a work task to the Indian worker, both parties could not understand the instructions for the work tasks as shown by the observational notes taken during their interaction (see Figure 9). The observation highlights that the Indian worker does not understand the issue and that there is miscommunication that needs to be addressed.

Figure 9. Work Instructions (Matthiesen et al., 2014)

James says he will then ask his system manager who initially made the design decision [...] "I understand, there is no reason for us to go through it!" James says. It seems like he is explaining to Nikhil that he fully understands the issue; however, he is not able to give more relevant information before he has discussed this matter with the system manager. (Observation notes, Denmark, 10/04/2012)

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The Indian IT developers rely on the Danish business developers to receive the correct instructions or information to perform the work task. But the one who creates the work task and its description is the systems manager who rarely attends these kinds of clarification meetings because of other responsibilities that need to be attended to in the company. Therefore, since the correct information is not being exchanged or understood by both parties, the work task is not accomplished correctly or not met, and thus problems arise. This challenge ultimately forces the Indian developers to continuously ask for clarification of work tasks which delays the project and efficiency overall. For example, the Indian IT developers were eager to get more information about the work task during an observation between the developers in a voice meeting (See Figure 10):

Furthermore, a lot of time is spent waiting for the Indian IT developers for the Danish team to respond back to them, but they cannot receive the information making it hard to proceed with the work. The language barrier is a common obstacle faced by the IT developers and project managers. Observation from audio conference meetings with IT developers illustrate the frustration faced by the IT developers (See Figure 11):

Many prefer other forms of communication like email or instant messaging system. Communicating thru this social media tool is highly preferred by most employees.

Niazi et al. (2016) also discussed the issue of the geographical distance and "lack of management of time differences" which is potential risks to global software development in 40% of the articles. Because the client and vendor are usually in different locations, there are inevitably in different time zones so it will create a challenge in coordinating activities. Usually, the hours that the client is working do not overlap with the hours that the vendor is working so there is no ideal time where communication can be involved. This leads to delay in responses when immediate or urgent action is required to proceed with an activity. Because of this factor, it negatively impacts global software development projects by causing delays in response time.

Figure 10. Work Instructions (Matthiesen et al., 2014)

> *As Shashi gets to speak, it's really mostly about some other tasks than what the meeting would be about, and it is welcomed by James [...] Shashi sees a chance just to get some updates on some other issues, a kind of briefing, as well as to get some advice from James. (Observation notes, India, 10/03/2012)*

Figure 11. Work Instructions (Matthiesen et al., 2014)

> *Martin says several times that it is "difficult" and that he normally tends to evade these kinds of meetings. "It is different for Allan [the Danish colleague also present at the meeting]: he talks to them every day and has done so for a year or more." (Informal talk, Denmark, 10/04/2012)*

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Chadli et al. (2016) discussed the risk factors related to "task-structure interdependency" and the most common risk factor mentioned is the temporal and geographical distribution which complicates the project manager's ability to plan, coordinate, and control project progress. This also relates to the different time zones and limited face-to-face interaction, which incurs extra traveling cost, makes virtual meetings harder to plan and thus weakens social relations. Poor risk management, traceability, and quality management are also risk factors mentioned that can lead to poor detailed planning that negatively impacts task allocation and leads to some work being done twice and other work being omitted. More time and cost must then be spent on fixing these problems that could have been avoided if proper project planning was implemented. Because additional costs are incurred and additional time is needed to re-do the work, this will lead to decrease in the efficiency of a project which is an undesirable result (Galli, 2017).

Betz et al. (2014) discuss the temporal and spatial distance challenge of knowledge transfer in offshore outsourcing development projects in the perspective of German clients. Because the time zones are different, there is usually only a limited period to allow for the teams to communicate. This becomes problematic when a member of the offshore team needs to decide an onshore team and cannot do so because of the time difference. Usually, the working hours or the offshore site is opposite to the working hours of the onshore base. An offshore employee may be working on off-hour times of an on-shore employee, so when the off-shore employee needs a conflict to be resolved or more information to proceed with the next step in the software development, the issue cannot be attended to immediately. Thus, the decision is delayed, and the project cannot be completed on time. Meeting face-to-face becomes a challenge as well because large geographical distances separate the teams, and thus communication must be done thru other informal means such as electronic emails, videoconferences, and instant messaging network.

Kamaruddin, Arshad, and Mohamed (2012) carried out a literature survey to gather information about the communication challenges that arise in Global Software Development particularly in a company that uses the agile method where communication is very vital between the software developer and its client. Issues that were related to the communication process in Agile Global Software Development were identified from forum feedback information primarily. Being able to identify these issues is important because it highlights the real problems that had occurred in Agile Global Software Development. Communication is an important aspect of the global software development because knowledge transfer can only be performed correctly and efficiently if there is understanding of the work activities between the team members. The researchers identified 13 issues that were challenges faced by workers in Agile Global Software Development which included: different culture, different language, different project background, lack of frequent face-to-face contact, lack of trust, lack of customer involvement, lack of commitment or teamwork, different working hours or time zones, miscommunication of requirements, low quality of telecommunication or bandwidth, high communication cost, unprepared communication tools, and poor communication infrastructure (see Figure 12 and Figure 13). Based on these identified issues that are related to communication, it will somehow help researchers and business managers to acknowledge these real problems that had occurred in Agile Global Software Development (Galli, 2017).

Figure 12 present the issues that are current challenges due to the vast geographic distance between the two teams that potentially create chaos to the project's lifecycle. The table highlights many of issues addressed in literature, but the main issues that relate to the issue of far distance are the lack of frequent face-to-face contact, lack of trust, lack of customer involvement, lack of commitment/teamwork, and different working hours/time zones. Because of the vast distance between the teams and low budget for travel to cut costs, instead of communicating face-to-face, the teams would conduct video confer-

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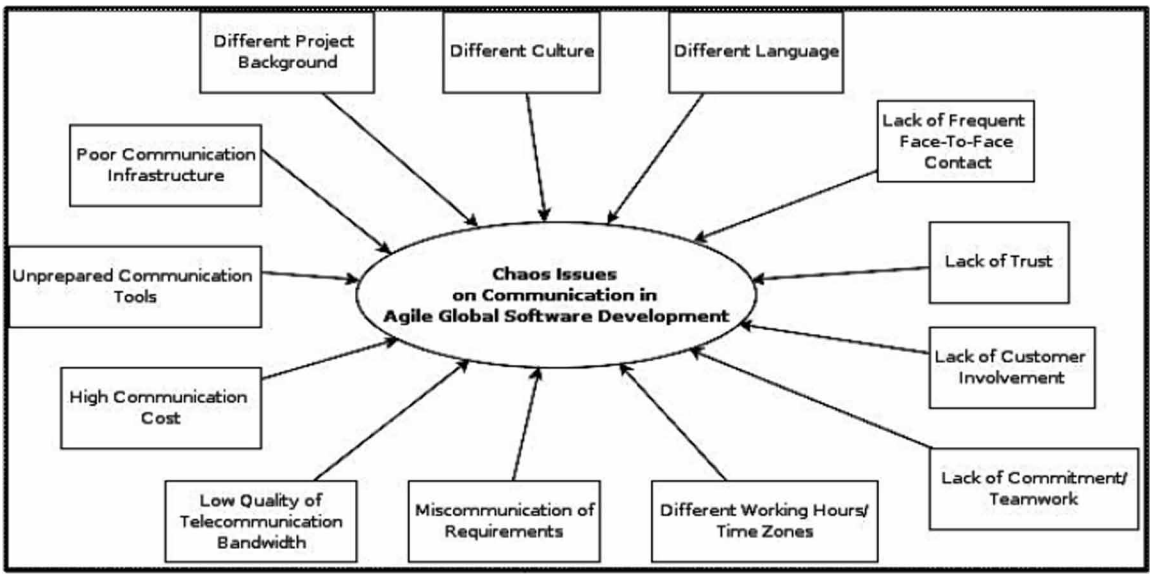
Figure 12. Chaos issues in communication (Kamaruddin et al., 2012)

Authors	Issues												
	A. Different project background	B. Different culture	C. Different language	D. Lack of frequent face-to-face contact	E. Lack of trust	F. Lack of customer involvement	G. Lack of commitment/teamwork	H. Different working hours/time zones	I. Miscommunication of requirements	J. Low quality of telecommunication bandwidth	K. High communication cost	L. Unprepared communication tools	M. Poor communication infrastructure
[25]		✓		✓			✓				✓		✓
[27]		✓		✓	✓			✓		✓	✓	✓	✓
[20]				✓	✓								
[28]				✓	✓					✓			
[4]						✓							
[18]		✓		✓	✓	✓		✓					
[17]	✓												
[19]	✓	✓	✓	✓									
[20]	✓												
[12]	✓	✓		✓	✓			✓					
[30]		✓						✓			✓		
[24]			✓				✓	✓				✓	
[31]	✓			✓	✓				✓				
[32]		✓	✓					✓		✓		✓	
[33]						✓			✓				
[26]	✓	✓	✓					✓				✓	

ence calls and uses more asynchronous communication methods to communicate. This informal way of communication used because of lack of face-to-face meetings would impact the teams by decreasing relational bonds and collaboration, which can lead to lack of trust. Also, because communication relies more on asynchronous methods, this leads to lack of customer involvement because of infrequent interactions. Customers will be less inclined to be fully committed during the project development because the relationships are weak. Although teamwork is required to produce a good quality product, the software development teams communicate and collaborate less because of the distance. This informal communication leads to lack of team spirit because there is no sense of teamwork established. The remote

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Figure 13. Conceptual model for communication issues (Kamaruddin et al., 2012)



distance inevitably results in time zone difference, which increases the communication gap. This will lead to difficulties in scheduling group meetings that is during a time where both teams are in working hours (Galli & Kaviani, 2017).

4.4. Risk Four: Lack of Trust

Another challenge that outsourcing and offshoring of software development face are establishing trust with vendors. Trust is imperative in successful outsourcing and offshoring of IT projects. Working and dealing with a project team in another country or location itself is challenging enough due to the time difference, culture difference, and language barrier. Niazi et al. (2013) states that trust plays a vital role in establishing the offshore software outsourcing relationships between client and vendor organizations. According to the research conducted by Niazi et al., 2013, researchers agree that trust plays an important role in GSD in establishing relationships. Client and vendor that are willing to establish a relationship, in general, are more likely to result in a positive desired outcome. By having a strong trust with the vendor, it is more likely to complete projects.

In the research conducted by Nidhra et al. (2013), the authors found that trust plays an important role in KT. As discussed above, KT plays a key role in GSD, and yet it is one of the biggest challenges project manager's face when working on a GSD project. Through the SLR they conducted, the authors were able to learn that there is a strong relationship between trust and knowledge sharing among the client, onshore, and offshore team members. Mutual trust is essential for knowledge sharing and success in outsourcing and offshoring. Also, the authors conducted Interview to compare challenges identified from the SLR. The interviewees also mentioned how trust is important in success in KT, which leads to success in GSD. The Interviewees mentioned that trust is essential to the project success in GSD because if knowledge is sensitive or confidential, lack of trust affects transferring such knowledge. Similarly,

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Blomqvist et al. (2015) also Interviewed managers and software developers involved in GSD to identify challenges involved in GSD. Their study also argues that trust is another factor that plays a key role in KT, which leads to success in GSD.

Because of the distance and minimal interactions, offshoring presents the challenge of creating confidence and trust among the onshore managing company and the offshore software outsourcing team. To further enlighten the factors involved that are important to establishing trust in offshore software outsourcing relationship, Niazi et al. (2013) identified a list of factors thru a systematic literature review study. Understanding these factors is necessary to help guide offshore software outsourcing companies in handling these issues that are related to establishing trust. By being aware of these challenges that are related to human resource, this may also help ensure a successful project result and maintain positive long-term relationships between the client and vendor.

Their results showed that 50% of the factor was attributed to "face-to-face meeting" which was the most common factor (see Figure 14). The second most common factor was "better communication" which was identified in 44% of the literature. Communication is important for the establishment of trustworthy relationships between a client and its vendor. The third most common factor was "contract management between client and vendor" with 39% of the literature citing this factor. There are many risks involved when a contract is made between a client and vendor that can happen during the preparation for the outsourcing business practice, during the contract phase, or after the contract phase where there can be overlooked mechanisms and increase risks.

Furthermore, 33% of the literature have identified "reliable management," "mutual expectations," and "better client and vendor relationship" as critical factors. When using outsourcing tactics in business, most companies do not take into account unanticipated results that can occur. They fail to recognize unexpected outcomes and projects fail because of factors such as physical time, cultural differences, organizational difference, and lack of knowledge transfer, which are not anticipated. Therefore, these outsourcing problems can be addresses thru "reliable management," "mutual expectations" and "better client and vendor relationship" which will help to create trust in relationships between the client and its vendor.

Other factors important for establishing trust are "knowledge sharing" which was reported in 33% of the literature as well. By sharing knowledge, it helps the team members to have the important information and skills they need that need to be used to develop software. It also confirms an effective and well-communicating outsourcing relationship over time, which establishes trustworthy bonds. "Training programs" can also help to establish a trust for having a skilled staff is what will determine the impact of quality on the project's result. Being able to provide the training to increase an employee's technical skills to better compete in the offshore software outsourcing world will benefit the project's outcome and the company itself. The IT industry requires highly skilled employees who can competently produce products with high-quality performance. Offshoring outsourcing companies need to be trustworthy and have reliable management methods to maintain good relationships between a client and its vendor.

Trust is the main factor needed for having a successful outsourcing relationship. 39% of the literature has cited "defining processes, tools, procedures, and policies" as another crucial factor that is important for building trust in these relationships. By having defined and structured mechanisms, this can increase the success of outsourcing activities, which will ultimately lead to higher quality products and client service. Because of globalization and advancements in the software technology, companies must consider using outsourcing strategies to take advantage of the cost savings and potential high-quality products

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Figure 14. List of factors for establishing trust (Niazi et al., 2013)

Number	Factors for establishing trust	Frequency ($n = 18$)	%
1	face-to-face meeting	9	50
2	better communication	8	44
3	contract management between client and vendor	7	39
4	defining processes, tools, procedures and policies	7	39
5	reliable management	6	33
6	knowledge sharing	6	33
7	mutual expectations	6	33
8	better client and vendor relationship	6	33
9	training programmes	6	33
10	bi-directional travelling/visits	5	28
11	cultural bridge	3	17
12	conflict resolution	3	17
13	common values	3	17
14	realistic expectations	2	11
15	working environment	2	11
16	creativity	2	11
17	giving faces	2	11
18	organisation chart development	2	11
19	investments and initiatives by vendor	2	11
20	future planning	2	11
21	using references	2	11
22	change of control modes exerted by the client	1	6
23	business improvement	1	6
24	a system to monitor cost	1	6
25	eliminating power hierarchy	1	6
26	employees' security and satisfaction	1	6
27	maintaining consistency	1	6
28	corporate intranet for shared understanding	1	6
29	home processes and coordination/control systems establishment at developer site	1	6
30	governance	1	6
31	measurement charter	1	6
32	change management	1	6
33	anticipated change plan	1	6
34	feedback plan	1	6
35	foundation characteristics	1	6
36	service level objectives	1	6
37	process ownership plan	1	6
38	service level contents	1	6
39	integration activities	1	6

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they can obtain from offshore vendors. For example, Indian software companies participate as being vendors for offshoring companies because they produce high-quality software and thus they dominant as the primary offshore software-outsourcing provider.

As the number of software outsourcing contracts between companies is increasing, there is a greater understanding of how trust in software outsourcing relationships plays a pivotal role and is critical to success. Understanding the factors that are required for building trust between a client and its vendor will increase the project's success in offshore software outsourcing projects. As shown thru the results of their study, there are many factors involved that are of vital importance when establishing relationships between offshore software outsourcing parties. To have a solid and stable relationship, the offshore software outsourcing company needs to have clear management strategies, strong communication skills, and be trustworthy. Therefore it is indicated for companies to focus on the factors identified thru the systematic literature review study of the most frequently cited factors to incorporate into their business strategy when they offshore software activities.

"Lack of knowledge management and transfer among teams" was identified in 38% of the literature according to Niazi et al. (2016) (See Figure 15). Knowledge transfer refers to transferring of knowledge from one part of the organization to another. If knowledge transfer of a particular task or role is not done properly, then the quality of the work is diminished, or products are not made properly. 35% of the article mentioned "lack of coordination" which can be caused by the time difference as well which is present in many different development sites. Another key challenge and addressed in Niazi et al. (2013) study is creating confidence and trust among the client and vendor relationships. They found that 34% of the articles identified this as a project management challenge. Trust is a critical factor in a client-vendor relationship for a well-established one will yield a positive outcome. It is difficult to create a strong, trustworthy relationship however when the members are separated by a big geographical distance.

4.5. Risk Five: Software Quality, Efficiency, and Productivity

The software produced in the global software development is affected by factors that include quality, cost, and vendor partners ability to deliver the product. In their study, Blomqvist et al. (2015) addressed the operational aspect of offshoring where there is need to make new methods or processes for knowledge transfer. One way to address this challenge is to increase documentation. From their study, two companies used this strategy to confine the work tasks in a way that they can be offshored to an off-site and decrease the company's reliance on an individual employee. Some companies invest a lot of time and effort into implementing increased documentation, but there are some problems associated with it, which are decreased efficiency, increased work labor, and deskilling. Thru the analysis of interviews conducted for this case study, the employees stated that it was very time-consuming to document knowledge to transfer it to another cultural context. By doing so, it also removed the core focus of the original intent of the work task.

In other companies, documentation was less of a problem. Instead of incorporating an increased documentation strategy, the companies included their Indian colleagues as part of their team throughout the whole process. By having their clients team members more active and participate actively in their partnership, this resulted in increased teamwork, cooperation, and communication. The knowledge transfer was handled more frequently thru a face-to-face or voice-to-voice basis, which minimized the need for documentation in KT activities. This method of handling KT also increased pride among the employees in their work and accomplishments, which yielded positive results.

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Figure 15. List of challenges identified (Niazi et al., 2016)

Challenges	Freq. (n = 101)	%
Lack of cultural understanding in teams	63	62
Lack of communication	54	54
Lack of management of time differences	42	42
Lack of knowledge management and transfer among teams	38	38
Lack of co-ordination	35	35
Lack of trust	34	34
Geographical distance	28	28
Requirement engineering activities	28	28
Lack of control	27	27
Lack of team awareness	23	23
Change management activities	22	22
Lack of a uniform process among different development sites	19	19
Allocation of tasks	18	18
Conflict management	17	17
Cost and effort estimation	15	15
Integration activities	14	14
Risk management	14	15
Lack of proper IT infrastructure	10	11
Protection of intellectual property	8	9

Khan and Khan (2017) conducted a systematic literature review where they highlighted a list of challenges faced in offshore software development outsourcing (OSDO) in globalized software engineering companies (see Figure 16). As shown in the results of the table, 64% had the highest frequency, which was due to lack of project management. There are many factors associated with this challenge, which include miscommunication, time differences, miscoordination, and lack of knowledge management. The 2nd highest frequency reported was poor monitoring system with 51% and the 3rd highest frequency was due to the lack of outsourcing relationships management with a reported 50%. More than half of the articles reviewed by the authors mentioned "poor monitoring system" as a challenge that negatively impacted outsourcing companies. This can be explained by the lack of cooperation or proper monitoring system for outsourcing work tasks. Reasons for lack of outsourcing relationship management can be attributed to the under-resourcing of contract management, staff that is not qualified or inexperienced, which are major concerns for the success of OSDO.

The researchers further analyzed the challenges in OSDO based on time periods to determine whether or not these challenges carried with the passage of time. They divided the time into two periods in which the first half spanned from 1992-2002 and the second half spanned from 2003-to mid-2012. Results from their linear-by-linear association chi-square test to determine the significance of the challenges across the time periods revealed that there is no significance determined. It is significant in the frequencies of the challenges across the passage of time. The challenge of "lack of project management" significantly decreased from 71% to 63% from the two time periods suggesting that this challenge is recognized and thus work was done to minimize it (see Figure 17). The "lack of outsourcing relationship management"

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Figure 16. List of challenges in OSDO contract (Khan and Khan, 2017)

S no.	Challenges in OSDO contract	Explanation of the challenges	Frequency: $n = 127$	Percentage of factors occurrence
1	lack of project management	poor project management by vendor organisation	81	64
2	poor monitoring system	lack of control and checking	65	51
3	lack of outsourcing relationship management	poor outsourcing relationship between the stakeholders	64	50
4	cultural and linguistic issues	lack cultural understanding and language barriers	54	43
5	non-competitive price	high cost	54	43
6	IPR and regulatory issues	lack of knowledge of intellectual property rights and conde of conduct can effect outsourcing contract	49	39
7	failure to manage end-user expectation	failure to fulfil user's requirements in full	47	37
8	lack of negotiation strategies	lack of negotiation policies in case of conflict that may occure in outsourcing relationship between client and vendor organisations	46	36
9	unforeseen contingencies	hidden costs such as employee turnover, system crash, financial problems, political problem	41	32
10	contractual inflexibility	static contract increases the failure rate	37	29
11	political instability	instable situation in country decrease the chance of contract completion	34	27
12	lack of vendor's capability, viability and responsiveness	poor intreset of vendor in contract management reduce the chance of its success	33	26
13	high turnover of vendor employees	switching of vendor employees effect the project success in due time	30	24
14	inadequate specification and outsourcing plan	incomplete requirement also effect the smooth completion of contract	21	17
15	lack of quality control process	inproper check on quality control effect the success of contract	19	15

Figure 17. Period wise list of the challenges in OSDO contract (Khan and Khan, 2017)

Challenges in outsourcing contract management	Sample size find through SLR ($n = 127$)				Chi-square test (linear-by-linear association) $\alpha = 0.05$, df = 1	
	First period (1992–2002) ($n = 14$)		Second period (2003–2012) ($n = 113$)		χ^2	p
	Freq	Percentage of occurrence	Freq	Percentage of occurrence		
lack of project management	10	71	71	63	0.395	0.529
lack of outsourcing relationship management	6	43	58	51	0.355	0.551
cultural and linguistic issues	7	50	47	42	0.357	0.550
poor monitoring system	9	64	56	50	1.073	0.300
IPR and regulatory issues	7	50	42	37	0.859	0.354
non-competitive price	8	57	46	41	1.366	0.243
lack of negotiation strategies	5	36	41	36	0.002	0.967
unforeseen contingencies	3	21	38	34	0.841	0.359
failure to manage end-user expectation	7	50	40	35	1.130	0.288
high turnover of vendor employees	5	36	25	22	1.265	0.261
lack of vendor's capability, viability and responsiveness	5	36	28	25	0.768	0.381
contractual inflexibility	7	50	30	27	3.292	0.070
political instability	2	14	32	28	1.241	0.265
inadequate specification and outsourcing plan	2	14	19	17	0.057	0.811
lack of quality control process	3	21	16	14	0.513	0.474

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challenge increased from 43% to 51%. All the other challenges identified such as culture and linguistic issues, poor monitoring system, IPR and regulatory issues, non-competitive price, lack of negotiation strategies, and failure to manage end-user expectation are reduced in the second period also suggesting that the software companies are learning to deal with these challenges and how to handle them properly.

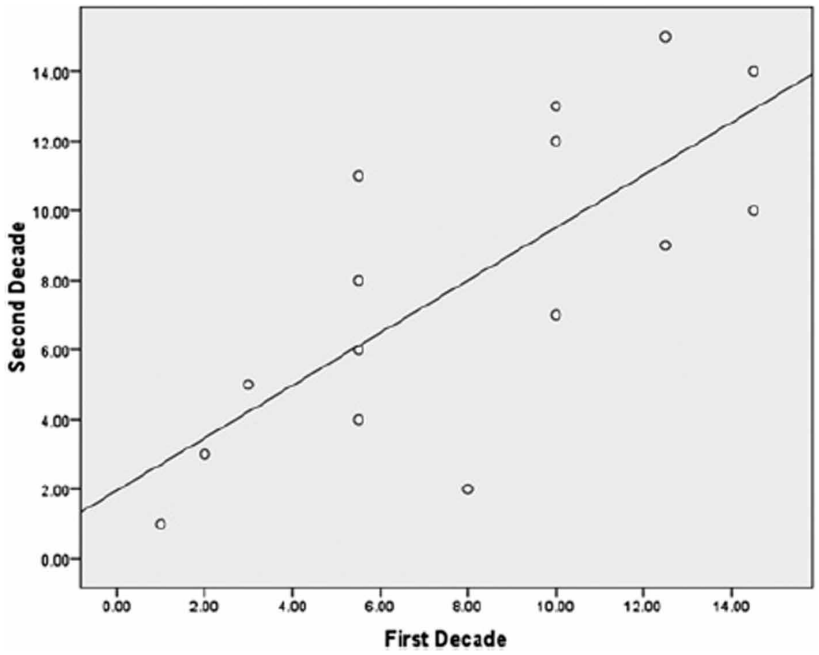
Performing a correlation analysis using Spearman's rank correlation coefficient performed further analysis. The results from the correlation analysis between the ranks of the challenges over the two time periods were 0.745 showing that there is a strong positive association that is present among the challenges across the two time periods (see Figures 18 and 19).

Figure 18. Spearman's rank correlation (Khan and Khan, 2017)

Challenges in the adoption of outsourcing contract management	Sample size find through SLR ($n = 127$)			
	First period (1992–2002) ($n = 14$)		Second period (2003–2012) ($n = 113$)	
	Percentage of occurrence	Rank	Percentage of occurrence	Rank
lack of project management	71	1	63	1
lack of outsourcing relationship management	43	8	51	2
cultural and linguistic issues	50	5.5	42	4
poor monitoring system	64	2	50	3
IPR and regulatory issues	50	5.5	37	6
non-competitive price	57	3	41	5
lack of negotiation strategies	36	10	36	7
unforeseen contingencies	21	12.5	34	9
failure to manage end-user expectation	50	5.5	35	8
high turnover of vendor employees	36	10	22	13
lack of vendor's capability, viability and responsiveness	36	10	25	12
contractual inflexibility	50	5.5	27	11
political instability	14	14.5	28	10
inadequate specification and outsourcing plan	14	14.5	17	14
lack of quality control process	21	12.5	14	15

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Figure 19. Scatter diagram of relationship among the challenges across the two periods (Khan and Khan, 2017)



When the challenges were analyzed based on the size of the organization, the results showed that there were nine challenges associated with small organizations whereas there were nine challenges associated with medium-sized organizations and 11 challenges associated with large sized organizations. Size was not a determinant for the first five challenges such as "lack of project management", "lack of outsourcing relationship management", "culture and linguistic issues", "poor monitoring system" and "IPR and regulatory issues" for they were all equally critical factors for small, medium, or large organizations. Lack of project management was the biggest challenge for the small organization, but all the challenges were significant so small organizations must be prepared to avoid or prevent these thru proper planning skills. More challenges were associated with the size of the organization increased. The challenge "unforeseen contingencies" was determined to be significantly different between the different sizes of organizations. The small-sized companies had 0%, which means they do not encounter this challenge at all possible because they only deal with small projects where there is a fixed cost while larger organizations are usually dealing with outside contractors, and thus have more likelihood of encountering unforeseen contingencies (see Figure 20).

Niazi et al. (2016) further explored the challenges by categorizing the challenges into client-vendor categories. They identified the viewpoints of both the client and the vendor using a Fisher Exact test (See Figure 21). Comparing the challenges identifies in client and vendor organizations, there were more similarities identified than differences. The most common challenges in client and vendor organizations were: lack of communication, lack of cultural understanding in teams, lack of knowledge management and transfer among teams, and lack of management and time difference. There were two significant difference notes thru the analysis comparing the client and vendor organizations. Vendor organizations are more concerned about the cost and effort estimation challenge than the client organizations, which are

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Figure 20. List of identified challenges in OSDO contract based on organization size (Khan and Khan, 2017)

Challenges	Distribution of the SLR papers based on organisation's size ($n = 127$)						Chi-square test (linear-by-linear association) $\alpha = 0.05$, df = 1	
	Small ($n = 03$)		Medium ($n = 35$)		Large ($n = 30$)		χ^2	p
	Freq	%	Freq	%	Freq	%		
lack of project management	03	100	17	49	20	67	2.088	0.148
lack of outsourcing relationship management	02	67	14	40	17	57	0.853	0.356
cultural and linguistic issues	01	33	15	43	14	47	0.159	0.690
poor monitoring system	02	67	14	40	17	57	0.748	0.387
IPR and regulatory issues	01	33	17	49	12	40	1.337	0.248
non-competitive price	00	00	14	40	15	50	0.877	0.349
lack of negotiation strategies	02	67	11	31	12	40	0.006	0.936
unforeseen contingencies	**00**	**00**	**09**	**26**	**10**	**33**	**3.865**	**0.049**
failure to manage end-user expectation	02	67	09	26	14	47	0.393	0.531
high turnover of vendor employees	00	0	11	31	07	23	0.488	0.485
lack of vendor's capability, viability and responsiveness	01	33	12	34	07	23	1.904	0.168
contractual inflexibility	00	00	10	29	12	40	0.001	0.982
political instability	01	33	10	29	09	30	0.594	0.441
inadequate specification and outsourcing plan	00	00	03	9	07	23	0.813	0.367
lack of quality control process	00	00	05	14	06	20	0.079	0.778

Figure 21. Fisher exact analysis of challenges concerning client-vendor categories (Niazi at al., 2016)

Challenges	Vendor (n = 40)		Client (n = 61)		Fisher Exact Test $\alpha = .05$
	Freq.	%	Freq.	%	
Allocation of tasks	10	25	8	13	.183
Change management activities.	12	30	10	16	.140
Conflict management	10	25	7	12	.103
Cost and effort estimation	10	25	5	8	.025
Geographical distance	13	33	15	25	.496
Integration activities	8	20	6	10	.238
Lack of a uniform process among different development sites	8	20	11	18	.801
Lack of communication	20	50	34	56	.684
Lack of control	11	27	16	26	1.000
Lack of co-ordination	15	38	20	33	.672
Lack of cultural understanding in teams	28	70	35	57	.216
Lack of knowledge management and transfer among teams	19	48	19	31	.141
Lack of management of time differences	18	45	24	39	.680
Lack of proper IT infrastructure	6	15	4	7	.188
Lack of team awareness	12	30	11	18	.225
Lack of trust	18	45	16	26	.057
Protection of intellectual property	4	10	4	7	.709
Requirement engineering activities	18	45	10	16	.003
Risk management	6	15	8	13	.778

expected because there is much risk, involved in their investment. Also, requirements engineering was identified as an important factor in global software development because most of the failures encountered are associated with requirements involved in the engineering process that can affect the effectiveness of the software development process.

Colomo-Palacios et al. (2014) analyzed the project performance from different perspectives in global software development. Their results showed the gap between the planned duration and actual duration is greater in offshore teams than in-house teams for global software development projects. This shows the challenges in project management that are faced for global software development teams because of

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its complex work activities leading to difficulties in meeting deadlines. Previous literature had shown that there is a difference in the performance of the offshore and inshore teams regarding the difference between planned duration and actual duration. Because of this, more effort is required in offshore teams, but as a result, it leads to lower performance consequently. Offshore teams also require more effort than in-house teams (see Figure 22). Data also shows that there is lower productivity measured in the offshore teams than in-house teams. In-house teams are managed more promptly than offshore teams, which lead to higher production rates. Therefore, the low production rate seen in offshores teams can be attributed to management challenges in communication and coordination. There was greater number of defects in the results of the projects seen in offshore teams versus the in-house teams because probably the offshore teams handle projects with fewer function points, which decrease the quality of the software product. Thus, the challenges faced by global software development teams manifests in the low level of quality and productivity seen thru the results.

Betz et al. (2014) identified problems concerned with the backflow of knowledge that does not take place because the knowledge is not transferred. Because of this, it can potentially result in an increase in labor costs due to more cost spent on communication between the team members. Situations will arise where the knowledge is not transferred, and thus project planning ends up not being accurate. Thus, more expenses must be made to fix this problem. So, thru this process, there is the risk of the cost of knowledge transfer not being known or accounted for.

Companies that seek to expand their business globally have been forced to outsource or offshore activities to outside countries because of increasing competition. Particularly Asian countries have been appealing to many companies, especially small and medium enterprises or SMEs, who are attracted to the global opportunities offshoring offers but may not have the resources to deal with certain obstacles, in particular, the management of employees in a cross-cultural work environment (Mantalay & Chakpitak, 2015). Therefore, a risk many companies face when incorporating offshoring/outsourcing business practices is cross-cultural discontinuities.

While the benefits of offshoring or outsourcing are well known, the challenges that arise are not well recognized regarding cultural discontinuity. Cultural differences are a significant barrier and risk that can be prevalent when businesses resort to dealing with activities abroad that manifest particularly in staff management. Understanding of culture awareness requires experience and practicality that does not become natural within a short period. It is important to develop this cultural awareness and understanding of cultural issues when operating overseas because it is fundamentally crucial to firms to manage staff and projects appropriately. It becomes more important to SMEs especially because they are most likely unable to have the expertise or financial resources to address these cultural issues that can potentially decrease their work quality and performance (Mantalay & Chakpitak, 2015). Therefore, understanding and dealing with cultural differences between recruited local knowledge workers and the firm's' expatriate management is a significant issue affecting SMEs who decide to offshore their activities.

Case studies have been conducted that highlight the cultural discontinuities that exist and how it affects the company's work performance and quality. A case study of a German software developer operating in Northern Thailand has addressed this particular risk focusing on knowledge work, which is highly susceptible to cultural differences because of its heavy reliance on communication, which can lead to notable conflicts.

Furthermore, there is an intimate relationship that exists between culture and work performance that is related and complex. Managers must lead the group by managing locally recruits human resources. Therefore, managers must be competent in understanding how to effectively lead these newly recruit local

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Figure 22. Project 1 & 2 outputs for in-house and offshore teams (Colomo-Palacios et al., 2014)

	PM1	PM2	PM3	PM4	PM5	PM6	PM7	PM8
Project 1								
In house								
Planned duration	14	16	12	20	13	23	9	7
Actual duration	16	17	14	21	17	31	11	8
Personnel	7	6	9	9	5	8	6	7
Required effort	85.5	85.2	108.4	157.3	73.2	181.2	50.7	34.2
Function points	376	387	499	532	301	643	209	161
Productivity	4.40	4.54	4.60	3.38	4.11	3.55	4.12	4.71
Defects per function point	4.52	3.75	3.73	4.77	3.99	3.88	5.20	3.53
Offshore								
Planned duration	13	14	12	17	15	18	8	7
Actual duration	16	18	16	21	20	26	12	8
Personnel	7	7	9	9	5	8	6	7
Required effort	103.2	124.2	144.9	157.3	83.5	169.2	61.7	43.8
Function points	352	401	453	432	289	601	172	155
Productivity	3.41	3.23	3.13	2.75	3.46	3.55	2.79	3.54
Defects per function point	6.66	3.74	4.73	5.44	5.90	4.97	6.26	4.22
Project 2								
In house								
Planned duration	12	12	12	15	14	37	10	7
Actual duration	13	12	15	18	16	42	12	7
Personnel	6	7	8	8	6	6	6	6
Required effort	72.1	76.9	126	134.8	80.9	191.4	54.5	31.3
Function points	323	346	476	459	323	761	228	150
Productivity	4.48	4.50	3.78	3.41	3.99	3.98	4.18	4.79
Defects per function point	4.18	4.11	3.37	4.69	3.84	3.94	5.21	3.72
Offshore								
Planned duration	12	12	12	14	12	29	9	6
Actual duration	14	14	16	19	15	33	12	7
Personnel	7	7	9	9	5	7	6	6
Required effort	89.9	94.1	143.9	156	62.1	210.7	58.1	38.4
Function points	306	319	449	451	220	687	180	137
Productivity	3.40	3.39	3.12	2.89	3.54	3.26	3.10	3.57
Defects per function point	6.54	3.78	4.90	5.21	5.92	4.51	6.14	4.25

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employees to perform well in activities allocated to them. However, many of these local employees have different expectations of management and conflicting differences in their work preparedness that is related to cultural disparities. Rodsutti and Swierczek (2002) observed that there is an association between the characteristic of managers and their cultural background with the work performance of the employees.

4.6. Risk Six: Human Resource

Human resource category incorporates risks related to managing workforce and functions of team members. A systematic literature review study conducted by Nidhra et al. (2013) stated that during an interview, one of the participants suggested that for a medium sized project, at least thirty percent of human resource at each tier of knowledge ranging from novice to expert should be maintained. This is because knowledge transfer is not properly managed most of the times. For instance, when an employee takes leave from a company, a replacement must be able to carry out the work tasks of that employee's position to continue the project. To do this, the knowledge must be transferred to the replacement so that he or she can continue the work and not hinder the project's lifecycle. It is necessary for knowledge transfer for a replacement be ensured so that when an employee takes leave, tasks can be continued efficiently and properly. To further address this issue, another interviewee mentioned that a well-planned knowledge transfer protocol should be implemented to account for the employee turnover. Thus, much collaboration effort is required especially in partnerships that work in remote distances to complete the complex tasks involved in IT development projects.

4.7. Risk Assessment Analysis and Evaluation

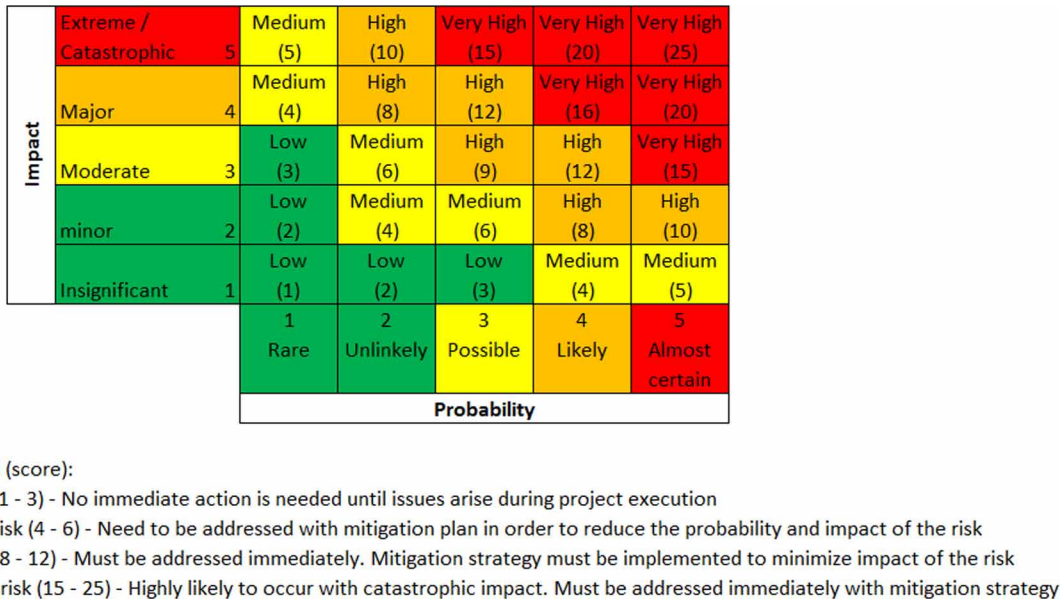
After the risks involved in the outsourcing and offshoring in GSD were identified, a qualitative analysis was conducted to analyze and evaluate each identified risk. The qualitative risk analysis tools and techniques from PMBOK, 5th edition was used. To further analyze the risks identified thru literature and past researchers, a risk assessment matrix was used as a project tool to prioritize and develop an effective strategy. A risk assessment matrix was created based on the probability and impact matrix described in PMBOK, 5th edition to evaluate the likelihood or probability of the risk and its severity of consequences (See Figure 23). Because this research focuses on the risks involved with outsourcing and offshoring in GSD, the identified risks were grouped based on their likelihood and the extent of damage or consequences it can incur. This is an effective way to determine the potential risks and its impact on the project.

Based on probability and impact matrix described in PMBOK, 5th edition, the level of impact is divided into five categories, which indicate the severity of damage that can occur, by the potential risk. These five categories are insignificant, minor, moderate, major, and extreme/catastrophic. The probability is the chance of the risk occurring during the project's lifecycle. This is also divided into five categories, which depend on the likelihood of the event occurring, which are: rare, unlikely, possible, likely, and almost certain.

Thus taking the probability and impact level into consideration, a formula can be used to determine the risk assessment level for each potential risk. A low-risk level, which is the green colored boxes, indicate that the level of risk is low, so no immediate action is needed until issues arise during project execution. A medium risk level, which is the yellow colored boxes, indicates that the level of risk of the medium so the risk needs to be addressed with a mitigation plan to reduce the probability and impact of

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Figure 23. Risk matrix (probability and impact matrix, PMBOK 5th edition)



the risk. A high-risk level, which is the orange colored boxes, indicates that the level of risk is high so that must be addressed immediately. A mitigation strategy must be implemented to minimize the impact of the risk. Lastly, a very high-risk level, which is the red colored boxes, indicate that the level of risk if extremely high so it is highly likely that a catastrophic impact will occur due to the risk so it must be addressed immediately with a mitigation strategy.

Using this risk assessment tool, the identified risks were given a score for its probability and impact to determine its risk level. For probability, the risk that was most frequently identified will have the "Almost certain" and the risk with the least frequently identified will have the "Rare." The impact was based on our qualitative analysis above. Then, each risk is assigned with recommended risk strategy as described in PMBOK 5th edition. There are four strategies for negative risks (threats) and four strategies for positive risks (opportunities). The four risk strategies for negative risks are avoided, transfer, mitigate, and accept and the four risk strategies for real risks are exploit, enhance, share, and accept (PMBOK 5th edition).

Each identified risk can be undertaken by any one of these risk strategies. A risk mitigation plan is proposed for each risk, which is discussed in Section 5, Conclusion.

5. CONCLUSION

5.1. General Conclusions and Risk Mitigation Plan

Global software development is becoming the forefront of IT business world due to globalization. Many software developers are drawn to the benefits of offshoring and outsourcing their work activities, but they do not have the resources or methods to handle the risks and challenges associated with it. These risks

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and challenges are harmful to the project's success so project manager should recognize these factors to ensure they are capable of dealing with it and not jeopardize their efforts. Besides identifying these risks involved, our aim of this research study is to provide a strategy to mitigate these factors.

Our findings contribute to the understanding of the risks involved in project management in outsourcing and offshoring business practice in IT software development projects. Through a systematic literature approach, we have categorized the risks into six main categories. Although there has been much research conducted on identifying these risks, not much research has been conducted as to how to manage these risks. Therefore, we proposed a risk response based on PMBOK, 5th edition to deal with these risks that firms can reflect on and refer back to when planning a global software development project.

After identifying and analyzing the identified risks from outsourcing or offshoring in IT project management, a risk mitigation plan was proposed for each risk. For the knowledge transfer risks, all of them can be mitigated thru an organized risk management strategy for they are all determined to be of the high-risk level category. Regarding the miscommunication that often occurs, we propose that by providing a translator during conference calls or during important meetings can help to mitigate this risk. A translator can bridge or ease the communication process thus facilitating meetings and helping to transfer knowledge more efficient. Although there may be an increased cost in using a translator, it would be expected that it is a necessary investment because communication is a primary risk factor that can result in negative consequences. Therefore, any means to mitigate this risk will increase the project's success and potentially ease the frustration felt by the team members when effective communication is not achieved.

The language barrier is almost always expected to occur in outsourcing or offshoring projects because the team members are located in two locations that are usually in different time zones and separated miles apart. The team member's primary language usually does not overlap contributing to the communication risk problem and thus the different linguistic backgrounds present as a challenge when communicating. Thus, to mitigate this risk, a translator can be hired to convey messages for the team members in English and local language to ensure proper communication. This will ensure that nothing is lost in translation and that both teams fully understand each other's messages as accurately as it can be to carry out their work tasks and activities. By doing so, it will facilitate the communication process and make sure that knowledge transfer is being completed appropriately.

Training departments can also deal with this situation by first incorporating a deeper understanding of the English language characteristics combine with basic linguistics training which will greatly improve the trainer's understanding of the needs of their trainees and how best to address those needs. The training programs should also be checked for effectiveness and be upgraded as needed regarding content, length of training, and performance objectives. The key to this is ensuring that all training material is contextualized for the industry in which the trainees will be working. Continued support should also be provided for the trainees and representatives. Language and communication raining is a long process, involving the adaptation and adoption of new skills and new ways of thinking and speaking that take time to become a natural part of a person's communication. Training departments and offshore centers cannot have the mindset that once initial training is over, the skills learned will remain. It is a continuous process that must be maintained with constant monitoring, coaching, feedback, and revision to make sure that all members retain their new communication skills. Ongoing coaching sessions and regular mandatory assessment will engage employees and reinforce positive behaviors while at the same time it will help prevent agents from slipping back into undesirable habits.

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The risk of cultural differences presents a challenge when outsourcing or offshoring activities are involved in business practice. Because the team members are from two different geographic locations, they come from different cultural backgrounds. Their cultural differences influence their thinking in their work practice. So, the work ethics in a team member of the client will be different from the work ethics in a team member of the vendor. These differences decrease the knowledge transfer process as well so to mitigate this risk; a training program is recommended to introduce the project teams to each other's cultures by implementing a cultural education program. By increasing the cultural sensitivity among the team members, they can understand each other better and thus be able to work better together which will result in a positive effect on the project's success.

A mitigation strategy is proposed for the time zone difference risk, but an avoidance strategy is proposed for the geographic location risk identified for the remote distance category. Since the team members are often separated by great geographic distance, they are also in different time zones, which can be a risk in delaying the project's timeline for team members have different working hours. So when immediate response or action is required from one team member to proceed with a work task but it cannot proceed immediately because the other team member is off hours due to the different time zones, this delays the project's timeline, and thus deadlines are not met. Time is wasted which decrease efficiency and also frustration has been expressed by team members because responses are delayed. To mitigate this, we propose that conference calls be arranged on a time that can accommodate both time zones appropriately to discuss project issues. By setting a designated conference meeting in which all team members can participate will help to mitigate the time zone difference problems experienced.

Geographic location is a project management risk that can be dealt with by implementing an avoidance strategy. This is the only identified risk that we proposed to use an avoidance strategy because you can avoid working with a team that is located in a region that is less likely to be affected by local political, weather, or any other events or incidents that can negatively affect the project. Decisions can be made to use clients that are located in regions that won't affect the project's schedule negatively due to local events or incidents. Also, it can allow for the vendor team to easily visit the location if needed.

Trust issues are a common risk identified in the human resource category due to the team members' increase in doubt when the project's run into problems. A mitigation strategy is proposed for this potential risk by arranging face-to-face meetings for a project manager to increase trust in building relationships. Physical interaction increases the bond relationships between team members and thus increases trust among each other. By being able to trust another team member, it not only creates a positive environment for the workers but also significantly increases the collaboration effort displayed by the team members when problems arise, or issues need to be handled.

Likewise, the risk of losing key personnel because of their leave during the project's lifecycle is another risk-identified part of the human resource category. To mitigate this risk, we propose a mitigation strategy where all project progress and important documents are backed up so that another team or person can continue working on the same project to minimize delays and halts in the project's schedule if necessary. By doing so, the replacement personnel for that team member's position can easily continue the work tasks without much back-tracking or time spent in trying to figure out what to do. This will keep the project's intended schedule intact and not delay anything in progress.

The risk of low quality due to software builds having numerous bugs, and crashes is a negative effect that is part of the software quality category. We propose to use a mitigation strategy to address this problem by training team members on quality management. Most IT projects require certain technical expertise so ensuring that the team member has a well-trained background and can perform tasks requir-

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ing specific technical skills is necessary for the products to have high-quality results in the end. Training programs to increase these necessary skills required to develop software can benefit the project's goal in the end by eliminating potential malfunction, bugs, and crashes that are often seen in products made by incompetent team members.

Unforeseen project cost increases are often unaccounted for when carrying out IT projects developments. Thus, project cost limit is increased, and project managers need to put in extra work effort to accommodate working with the remote team. The plan to mitigate this risk factor is to prepare cost contingency plan in case of scope changes, schedule changes, or unknown probably risks are encountered. By doing so, the unexpected cost is unaccounted for and not encountered as a barrier in the project's life and can be dealt with easily.

Lastly, mitigation can be used to address the risk factor of vendor or collaborating teams no longer being involved in the project. We propose a similar strategy used for the turnover of key personnel by also ensuring that the project's progress and important documents are backed up so that the replacing worker can continue the project's tasks to minimize delay in the project's schedule is necessary.

Risks are always involved when carrying out projects involved in the field of IT development. Thus, it is important for businesses and companies to recognize these potential risks that can negatively impact the project and even have a catastrophic event if not addressed immediately. Although these risks cannot be eliminated, they can be mitigated or avoided by implementing appropriate risk management strategies. We have proposed a risk mitigation plan based on the risks identified and categorized into different risk levels, that we believe will increase the project's success and be a platform for others to consider and use when dealing with outsourcing and offshoring activities in IT development projects.

Regardless of the scope and size of the project, there are risks involved in every project. Risk management is one of the main areas of project management that is focused on this study. The Project Management Institute (PMI) has stated project risk management as one of the main project management knowledge areas that must be considered if a project is to be completed successfully (PMBOK, 5th edition). Risks cannot be eliminated from projects but it can be identified, and a mitigation strategy can be developed to minimize these risks.

A risk, which is defined as "An uncertain event or condition that, if it occurs, has a positive or negative effect on one or more project objectives", must be identified as part of the risk management process (PMBOK, 5th edition). Risks must be taken into account to determine risk management and thus be used for project development so appropriate actions can be taken to minimize risk and increase the project's success. Using the risk matrix (Figure 1) described in Section 3, Results, a risk register was created to help project managers to plan and manage risks involved in GSD (See Table 2).

In the communication category, knowledge transfer had the very high-risk level. Most literature has mentioned communication as a potential and primary risk involved in GSD project management. The trigger for this is that project managers find themselves explaining the project requirements and expectations repeatedly. Related to this is the risk of a language barrier, which is related to communication for a project manager, and team members have difficulty communicating with collaborating team members in remote locations because of the different languages being used. The risk level score for language barrier was 20, which is also very high-risk level. Cultural risk arises from the fact that collaborating team members in remote location often think differently due to their different cultural backgrounds. This risk also had a score of 20 which makes all the communication risks have a very high level of risk thus these factors should be addressed immediately, and a mitigation strategy should be implemented to minimize the impact of these risks.

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The third category of geographical distance has two risks identified, which are the different time zones and geographic location. The different time zones means that time is frequently wasted due to the waiting for a response from a collaborating team in the remote location. The trigger for geographic location is that the project schedule is affected due to local events or incidents. These two risks have a risk level of 8 and 12 respectively, which places them in the high-risk category, which means they need to be addressed with mitigation plan to reduce the probability and impact of the risk.

The fourth category is a trust, which addresses the risk of trust. The risk of trust issues due to the project team members starting to doubt collaborating project team members when a project runs into problem had a risk level score of 9 which is a high risk. The next category, Human resource addresses turnover of key personnel which is due to the key personnel no longer being involved in the project in the middle of the project which resulted in risk level score of 8 which is also high risk.

In the next category, software quality has two risks identified, which are quality and efficiency/ productivity. The trigger for quality is that software builds have numerous bugs and crashes often resulting in the risk level score of 4 which is medium risk level. Similarly, efficiency/productivity risk has the trigger for the project is being delayed due to software developers not working efficiently resulting in the risk level score of 4 which is also medium risk level. Cost is the next risk has the trigger of project cost

Table 2. Risk register

Category	Description of risk	Trigger	Probability	Impact	Risk level	Strategy	Risk mitigation plan
Communication	Knowledge transfer	Project managers find themselves constantly explaining the project knowledge area requirements to team members.	Almost Certain (5)	Major (4)	Very High (20)	Mitigate	Document project knowledge area and have it readily available for all team members.
	Language barrier	Project managers and team members have difficulty communicating with collaborating team members in remote locations due to the language difference.	Almost Certain (5)	Moderate (3)	Very High (20)	Mitigate	Hire a translator to write messages (such as emails) in English and local language to ensure proper communication. Select a vendor with knowledge of the client's language and culture.
Cultural	National cultural difference	Collaborating team members in remote location often think differently due to cultural background.	Almost Certain (5)	Moderate (3)	Very High (20)	Mitigate	Train and introduce project team to other cultures by implementing a cultural education program. Select a vendor with knowledge of the client's language and culture.
Geographical distance	Different time zone	Time frequently wasted waiting for a response from collaborating team in a remote location.	Likely (4)	Minor (2)	High (8)	Mitigate	Arrange conference calls on time that can accommodate both time zones to discuss project issues.
	Geographic location	The project schedule is affected due to local events or incidents.	Likely (4)	Moderate (3)	High (12)	Avoid	Select a vendor in a stable country - Avoid working with a team that is in a region that is less likely to be affected by local political, weather, or any other events or incidents that can affect the project.
Trust	Lack of trust	Project team members start to doubt collaborating project team members when the project runs into problems.	Possible (3)	Moderate (3)	High (9)	Mitigate	Arrange face-to-face meetings for project managers to build relationship and trust.
Human resource	Turnover of key personnel	Key personnel are no longer involved in the project in the middle of the project.	Unlikely (2)	Major (4)	High (8)	Mitigate	Ensure all project progress, and important documents are backed up so that another team or person can continue working on the project to minimize project schedule if necessary.
Software quality	Quality	Software builds have numerous bugs and crash often.	Rare (1)	Major (4)	Medium (4)	Mitigate	Train team members in quality management.
	Efficiency and productivity	The project is delayed due to software developers not working efficiently.	Rare (1)	Major (4)	Medium (4)	Mitigate	Train team members on working more efficiently to increase productivity.
Others	Cost	Project cost limit is increased due to unforeseen cost. Project manager finds extra work effort is necessary to accommodate working with a remote vendor or team.	Rare (1)	Moderate (3)	Low (3)	Mitigate	Prepare cost contingency plan in case of scope changes, schedule changes or unknown probable risk.
	Vendor/partner failure to deliver	Vendor or collaborating team is no longer involved in the project.	Rare (1)	Major (4)	Medium (4)	Mitigate	Ensure all project progress, and important documents are backed up so that another team or person can continue working on the project to minimize project schedule if necessary.

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limit is being increased due to unforeseen cost. This is a low risk with the risk level score of 4. Lastly, vendor or collaborating team is no longer involved in the project creating the potential for deliverables failed to be delivered. This is a medium category risk with the risk level score of 4.

The risk response determined for these risks were to mitigate the risk for all of them except the risk of the geographic location, which was, determined to use avoidance as a strategy.

5.2. Implications and Relevance to Project Management

Based on the acquired skill and management strategies from the research, there is a need to make use global software development and risk management in conducting business projects and project management. This can be achieved by ensuring a global software development and risk management approach that utilizes distinct skills to create a team that sees the company or projects ultimate goals. In this case, there is a need to invest substantially in global software development and risk management before thinking of the mode of technology to use in the project or management. More specifically, these results highlight the importance of a top-down and bottom-up approach to leadership and strategic planning especially when it comes to elements of global software development and risk management, operations management, and process improvement. The results of this study highlight the criticality of integrating global software development and risk management into the leadership styles and tools leaders use to manage their global software development and risk management.

The findings from this study also highlight the importance of global software development and risk management throughout all aspects of an organization; obviously, global software development and risk management is one element in an organization's business model, but this study shows that the global software development and risk management element directly impacts many other elements of an organization. Management and leadership of any organization need to have the training and skill sets, to not only manage their global software development and risk management, but to effectively manage their overall organizational project management. This study has shown that many of the current-state issues seen within an organization's global software development and risk management stemmed from the leadership's lack of effectively leading and managing their employees and operational issues. If the leadership has the tools and knowledge to effectively manage their global software development and risk management instead of focusing on the bottom line (i.e., profits and costs), then the performance of an organization will improve and, as a result, the profits and costs will also improve.

Most importantly, this study highlights that business leaders tend to focus mainly on the financial elements of their business while ignoring or minimizing the global software development and risk management element; this might work in the short-term, but the research shows that it is not a good long-term strategy. Over the long-term, leadership must have a multi-faceted approach where they manage all elements of the business, including: global software development and risk management, operations, HR, financials, performance, and strategy from one overarching understanding that all of these elements are critical and they are all related. By understanding this view, a business leader will be better equipped to lead a successful company in both the short- and long-term.

5.3. Contribution and Relevance

Though extant literature has been devoted to the studying these variables, attention has not been paid to global software development and risk management and the relationships these concepts have. Review

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of the literature showed that there is limited amount of research that explored the variables and their relationships. Therefore, this study sought to further analyze different global software development and risk management and presented a proposed unified framework as well. This study sought to fill a void in the research that was identified earlier on this study; previously, this void has left some risk and uncertainty when studying the variables and these relationships, but this study sought to alleviate that.

The results of this research study contribute to several different bodies of knowledge, including: global software development and risk management, project management, leadership, team dynamics, capability levels, and risk. By performing this study, the results help to enhance and evolve these bodies of knowledge since this study not only build on existing research but it attempted to expand and fill a gap in the research that was identified earlier on this study. By more thoroughly understanding these variables and their relationships, we can understand the advantages and disadvantages of the variables and their relationships, which in turn should help improve the effectiveness of these variables.

This study also contributes since it introduces new ideas and avenues for future research in each of these bodies of knowledge. Not only did this study seek to explore different variables and their relationships, but it also sought to understand the relationships and identify new ways of thinking about the factors under study. The results of this study were also valuable from a practitioner perspective since the understanding of these variables and relationships helped to introduce ideas and strategies that a practitioner can deploy to be more effective in their profession. The results from this study help a practitioner to understand the relationships and variables but also the implications related to these variables and relationships.

5.4. Limitations

Limitations of this study are that the sample size was small and may not be enough to conclude the themes and patterns generated through this systematic literature review research. Future work should focus on expanding the sample size to strengthen the conclusions and gain results from different sample groups. There also may have been a tendency for bias because most of the data collected were from self-reported experience reports, case studies, and empirical studies. Therefore, by expanding the sample size and using a variety of different groups will help to generalize the conclusions better with stronger validity. Although much effort was made to cover as many related papers that discuss the risks involved in outsourcing and offshoring, it is possible that some published papers were missed as well due to the ongoing and increasing research in this field.

Nevertheless, the sample size used for this research was sufficient to meet our objectives of this study with qualitative data to provide understanding to the potential risks frequently encountered by businesses that incorporate outsourcing and offshoring of their business activities. Thus, it is expected that our conclusions are relevant and can be applied to many firms in a similar situation to recognize these risks and provide guidance in devising a mitigation strategy to minimize the potentially detrimental effects these risks can have on their global software development projects.

5.5. Future Work

Future work should continue to study the effectiveness of these mitigation strategies through empirical research which will further help project managers to develop a better risk management plan catered to their project needs. Also, the risks identified are general categories so further research can explore each

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category more thoroughly by highlighting specifics to gain a better depth of understanding. Future research should explore a few different arenas. For example, future research could investigate these factors and the relationship but in the context of other industries and managerial settings. In these settings or contexts, it would be interesting to study the strength of these variables and the relationship as well as the factors that impact these factors and their relationship. Another avenue of research could be to explore these factors and their relationship but from different perspectives, such as from an organizational, strategic, or cultural point of view. This would shed further light into the how this relationship is perceived across many different views and further understand the degree of impact that factors such as culture, strategy, human resources, operations have on the key variables and their relationship.

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Chapter 36
Continuous Improvement Relationship to Risk Management:
The Relationship Between Them

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ABSTRACT

In order for a company to economically survive, it needs to compete with a highly competitive market. The world is changing fast, adding different types of risks to companies. So, companies need to not only meet requirements but also exceed them. At the same time, companies are required to lower the level of risks they may encounter. As a result, continuous improvement and risk management should be key factors to insure company success. This study explores the relationship between the two concepts and gives examples where the interconnections between them exist. Also, the study explains the important key components of continuous improvement and the classifications of risk management. Finally, this article focuses on three aspects, managing complaints, developing strategy, and creating a suitable culture. These aspects are evaluated based on the relationship between continuous improvement and risk management.

1. INTRODUCTION

Continuous improvement and risk management are widely used by companies to improve their products or services compared to competitors. In addition, these concepts focus on eliminating the wastes and lowering prices to meet customer needs (Avanesov, 2009).

In the past few decades, the concept of continuous improvement was a common method to improve the quality of an organization. At that time, Deming was the most influential person to the quality world. Deming established 14 principles for improving quality. The fifth principle stated that improvement should be constant and forever (Galli & Kaviani, 2017). Another idea was introduced by Juran, who initiated the trilogy concept relating to a quality plan. Its main focus was on improvement and controlling

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a continuous loop. Toyota system and ISO 9000 initiated two more ideas. For companies to economically survive, ISO certification is required where this certification becomes a main requirement for such companies to run their work. ISO 900-2015 supports the notion of continuous improvement (Galli & Kaviani, 2017). It focuses on continuous improvement and mentioned the idea of PDCA, standing for plan, do, check, and act for process. Quality-oriented programs such as Lean Six Sigma, Total Quality Management, and Kaizen are used to meet the customer requirement and make them satisfied about the services or products (Choi et al., 2016).

On the other hand, in 1994, risk management for any project was defined as an organized process to identify, analyze, and respond to different classes of risks (Galli & Kaviani, 2017). But a recent study in 2013 (Filho & Uzosoy, 2013), categorized risk management into six critical steps. They are: plan, identify, perform qualitative analysis, perform quantitative analysis, response, and monitor and control (Avanesov, 2009).

In literature, the classes of risks for one study (Galli et al., 2017) are classified in term of risk related to politics, construction, operation and maintenance, contracts and policies, financial issues, and force decisions. In another study, the classifications are different, in three levels (Raval et al., 2010). The first level is high risk, which involves political, and government risks macroeconomic risks, legal risks, social risks, and natural risks (Raval et al., 2010). The second level is medium level risks which involves project selection risks, financial risks, residual value risks, design risks, construction risks, and operation risks. The third level is low risk level, which involves internal risks and 3rd party relationship risks.

Risk management aims to maximize and enhance the probability of getting positive events and to minimize and eliminate the probability of getting negative events. As a result, a successful project has the ability to manage these risks effectively. The literature has mentioned that the identification step in risk management is a critical step because after identifying the risk, the risk could be properly managed. In addition, if the risks are identified in the early stage, the cost and time related to the risk would be reduced (Choi et al., 2016).

Overall, by looking to the studies, we conclude there is no perfect approach that leads to successfully handle risks. There is a need to have a standard classification and definition of risk management for all kind of projects from small to large.

The objective of this research paper is to explore the relationship between continuous improvement and risk management (Raval et al., 2010). The approach is structured in three aspects. Firstly, technical complaint management is discussed in term of its main targets and structure. The second aspect is how to create a culture that leads to a continuous improvement. The last aspect that will be explained is how to implement a development strategy to support the notion of Continuous improvement to get high quality products and service.

The primary contribution of this paper is to find the gaps in implementing continuous improvement by taking into account risk management principles (Raval et al., 2010). Firms usually improve their quality of products or services by implementing change for the better, a continuous improvement concept. This paper will evaluate and prove that the lack of relationship between continuous improvement and risk management is a high concern to firm growth. Results of this study may contribute in management aspects, culture aspects, and strategic improvement aspects.

All recent research focused on either continuous improvement or risk management and there is no literature combining both or applying them simultaneously (Raval et al., 2010). This study will examine the relationship between the two and discover the hidden issues which should be considered as a major effect to organizations and/or firm growth.

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The rest of this paper is structured as follows: section 2 provides information about the literature review; section 3 provides information about the research methodology, hypotheses and the research focus; section 4 shows the results: section 5 evaluates and discusses the result; section 6 presents a summary and conclusion based on the evaluation of the result.

2. LITERATURE REVIEW

2.1. Continuous Improvement

The origin of the phrase continuous improvement was created in Japan. It was derived from the Japanese term Kaizen. Kaizen is two words in Japanese that means: Kai (change) and Zen (to improve). The person who created the concept of continuous improvement is Masaaki Imai, the father of continuous improvement (Lahidiji & Tucker, 2016).

2.1.1. Continuous Improvement Triggers

The time that a company or organization needs to apply the concept of continuous improvement is related to two main triggers. Firstly, changes in the business environment of the firm (for example: technology improvement, globalization, and time and quality aspects). Secondly, new management systems are introduced (for example: a considerable development in quality-oriented programs).

2.1.2. Most Important Definitions of Continuous Improvement

From 1982 to 2007, many specialists defined the term continuous improvement (Kattman, 2014). Each focused on certain points. Table 1 shows definitions of continuous improvement for five specialists:

As shown in Table 1, there are three main principles of continuous improvement. Firstly, process related aspects (such as: the process and the activities that should be identified and controlled). Secondly, time related aspects (for example: constant activity that must be done over time). Thirdly, aspects related to people orientation, which means all people from the organization should participate (Lahidiji & Tucker, 2016).

Table 1. Continuous improvement definitions

Year	Author	Definitions
1982	Deming	Improve constantly and forever the system of production and service (Principle 5 of transformation)
1989	Imai	Progressive improvement involving everyone in the company (including both workers and managers)
2000	Juergensen	Improvement initiatives that increase successes and reduce failures
2003	Brunet	Pervasive and continual activities, outside the contributor's explicit contractual roles, to identify and achieve outcomes he believes contribute to the organizational goals
2007	Manos	Subtle and gradual improvements that are made over time

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Since there are many definitions of continuous improvement, the definition we use in this study is a cycle of continuous controlled activities to be progressed by all employees over time to minimize waste and find new approaches of improvement (Formento et al., 2013).

2.1.3. Continuous Improvement Main Components

Some research papers help identify the major components to implement continuous improvement. There are 9 main components, explained in Table 2:

2.2. Risk Management

2.2.1. Risk Management Definition

A common definition of risk is an uncertain event that if it occurs, can have an impact on a project's goals (Kattman, 2014). Impacts are generated by different risk categories where these categories are either external, internal, or procedural risks. For example:

- External risk that is related to market and partner risk.
- Internal risk that is related to technological and human resources risk.
- Procedural risks that is related to cost and quality risk.

Table 2. Continuous improvement main components

Component	Explanation
Formalization	Without formalization, the continuous improvement may be intermittent. It might depend in the employee's attitudes or surroundings. To improve any project, we need to formalize programs and have clear structure.
Continuity	The improvement should be continuous as it is named and it should be forever. Without continuity, the improvement will not be effective and it will lead to negative impacts.
Deployment	Deploying the continuous improvement must be properly managed into all over the organization. As a result, all employees in all positions can do improvement for daily activity.
Training	Firstly, top management should be trained in how they can implement the continuous improvement. Then they need to identify the weaknesses which have the main negative impacts to the process. Thirdly, train the people who are involved in producing that impact. It is recommended to start training with primary tools but once the process requires more advanced tools, advanced tools must be used.
Commitment	Top management, leaders and other employees must show commitment. In this case, team work and suitable culture would be improved.
Specialist	Specialist in continuous improvement must be a member in any organization. Specialists can support the progress of the daily work to give advices. Also, they have the knowledge to give a daily recommendation that are related to continuous improvement.
Best Method	Scientific methods must be used. PDCA, DMAIC methods are examples of the best approaches that could be used to support continuous improvement.
Evaluation	When applying the concept of continuous improvement for any process or system, it should be evaluated.
Sharing	The result must be shared among all members. This will enhance the member knowledge for future perspectives in dealing with continuous improvement.

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Uncertainty can become a possible risk source in two ways. Firstly, we are not sure if an event would occur or not. Secondly, we are not sure what the consequences would be. Also, International Organization for Standardization (ISO) has a definition of risk management as a specific activity to manage and control an organization relating to risk, where risk refers to an uncertain event or group of events, which could occur and will have an impact on the achievement of goals (Linder et al, 2014).

2.2.2. Risk Management Process

To overcome these risks, a process developed with five basic steps (Linder et al, 2014), as follows:

Step 1: Identifying each Risk. Recognize and describe risks that might affect a project or its outcomes.
Step 2: Analyzing each Risk. Determine the consequence of each risk and understand the nature of the risk and its potential.
Step 3: Evaluating or Ranking each Risk. Firstly, determine the risk magnitude. Secondly, make decisions if the risk is accepted or rejected.
Step 4: Treating each Risk. Highest ranked risks should be determined and then the risks must be treated to achieve appropriate risk levels.
Step 5: Monitoring and reviewing each risk. The final step is to monitor, track, and review risks.

In general, the risk management process is beneficial to the firm's management and success. Recent studies produce a methodological development to risk management.

2.2.3. Trends of Risk and Uncertainty

Implementing risk would only be required when uncertainty exists in a company. The surrounding environment is not perfect and usually there is uncertainty (Filho & Uzsoy, 2013). Based on the certain level of uncertainty, companies need to manage them and pay attention to their impacts.

Recently, businesses in the world are faced with a lot of change. These changes introduced trends in risk and uncertainty. Five main trends are explained as follows:

- **The Pace Is Rapidly Changed:** The world is dramatically changing especially in the last decade, and even there is no visibility for future stability. Rapid changes such as technological improvements, environmental changes, and competition increase will hinder the firms to accurately predict future scenarios. With less accuracy of prediction, firms will surely face considerable risk (Sanchez & Blanco, 2014).
- **Complexity Is Increased:** One source of risk is complexity itself. Practices and business processes would be very complicated if they use new technologies. The more complex the process, it is harder to discover the types of risks that may impact the business.
- **Economic Power:** New entrance of economic powers will lead to unexpected events resulting from rivalry and interaction with other powers around the world.
- **Globalization:** The interconnections between businesses all over the world are increased which would initiate a certain level of local or international disruption.
- **Risks Interconnection:** Increasing the risks that are interconnected is a key concern. Different types of risks are dependent on each other. As a result, the interconnection of rick will lead to higher risk.

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All of these trends affect firms, but they are not equal because organizations have different goals and procedures. As a result, they may look at risk differently (Sanchez & Blanco, 2014; Elahi, 2013).

2.3. Research Gap

A lot of researchers studied continuous improvement concepts and risk management. However, no study identified how continuous improvement is related to risk management. Thus, this study will focus on identifying that relationship. Applying the continuous improvement concept will produce some risks, so this study will address certain problems or risks that arise.

3. RESEARCH METHODOLOGY

3.1. Research Focus

In this paper, we focused on continuous improvement and risk management in complaint management, culture, and strategic improvement sectors. It analyzed the interaction between firms and customers regarding quality perspectives and also pointed out risks. In order to prepare for this research, several scientific papers that are peer-review were examined. The last step was collecting data and designing our research model based on literature.

3.2. Hypothesis

One assumption is presented, which is that all firms and organizations should pay attention and work to perform risk management analysis once they are ready to implement any continuous improvement tools. A second assumption is about policies and standards. Each company or organization must provide training to employees on how to use and understand policies and standards related to the concept of risk management and continuous improvement.

3.3. Research Approach

The literature review was organized in two approaches. The first approach was simple search where its main focus was to find useful information about continuous improvement and risk management. The second approach was organized search. In this step, we got all the helpful information from databases.

3.3.1. Simple Search for Literature Review

This step was based on searching for papers that show useful information about continuous improvement and risk management. Important areas such as quality, uncertainty, and types of risks, classifications of risk, and principles and key components of continuous improvement were identified. 15 articles were found. After that, we excluded some of papers in an organized search.

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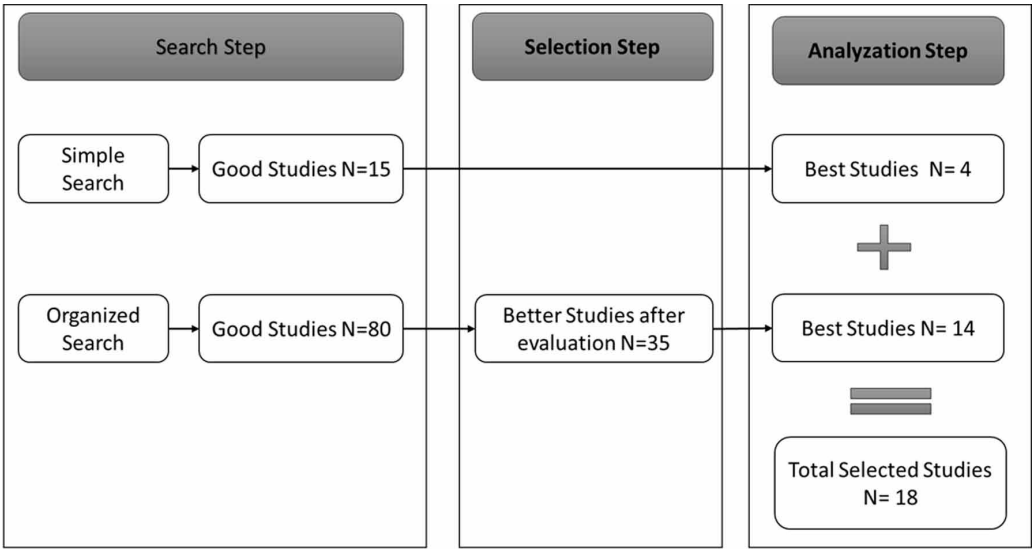
3.3.2. Organized Search for Literature Review

In this search, three steps were used. Explanation for the three steps are:

1. **Planning the Search:** All continuous improvement and risk management papers were identified. One of these topics had to be the major concentration. The goal was to successfully get papers that add valuable information to this study.
2. **Conceptualizing the Review:** We defined new terms to support the knowledge of our study by looking for other concepts showing relevance to the two concepts. For example, quality programs, uncertainty, classifications of risk, and components of continuous improvement. Elimination of some specific terms was done, such as sustainment and optimization, because they are not helpful to our study.
3. **Searching, Evaluating, and Selecting the Literature:** Several databases were used to have these results, such as ABI/Inform Global, ProQuest, and ScienceDirect. Then, we evaluated the papers by looking to the abstract, introduction, and conclusion to make sure any relevant study with valuable information was considered. Finally, we selected the most relevant papers to be 80 papers. Figure 1 shows the process we used in the search and selection.

The three steps are summarized in Figure 1, and the final total selected studies was 18 papers. In the selection step, we selected 35 studies. Papers were eliminated because of title, abstract, or duplication. Also, our goal was to focus on the peer reviewed articles, academic articles, and literature reviews. In the analyzation step, we narrowed down the selectee studies to be N= 4 and N=14. We finally appraised each paper to have N=18 articles.

Figure 1. Research approach for literature review



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4. RESULTS

Overall, the results are arranged to start with technical aspects in complaint management and then implementing development strategy. The third result deals with suitable culture aspects for continuous improvement.

4.1. Technical Complaint Management

Technical complaint management deals with reception, handling, analysis, and use of customer complaints. Customer's complaint is very helpful to measure the performance of the firm and improve the areas, which lack quality (Pakocs & Lupulescu, 2016). The most relevant theory is Hirschman's exit-voice theory which is a major theory studying Customer's complaints. If a customer is dissatisfied with services or products provided by an organization, the customer may stop dealing with the organization (which is exit or complain, which is voice) (Filho & Uzsoy, 2013; Brajer-Marczak, 2014).

Technical Complaint Management focuses on targets such as, customer-oriented target, finance-oriented target, and quality-oriented target, but it does not focus on risk management-oriented target. However, the model of technical complaint management is well structured. The structure is divided into four sections (Elahi, 2013). They are data organization, failure identification, failure correction, and long-term knowledge transfer and process controlling (Brajer-Marczak, 2014). Overall, following this structure will lead to a partial success because it only focuses on continuous improvement without taking into account the importance of risk management analysis.

4.2. Implementing Development Strategy

The company's staff specialists have the responsibility and ability to improve and develop strategies for continuous improvement. Usually, qualified employees have impacts on business success. The most important strategy is staff training. Effective staff training is beneficial to both the company and employees for short or long-term effects (Pakocs & Lupulescu, 2016).

Implementing a development strategy has a main goal to make continuous improvement of product and service quality. In addition, risks may arise during implementation of staff training. Training staff should be highly qualified to give such training to target employees. Also, not all employees are willing or capable to participate in that training. In this situation, managers are responsible to select the best training provider and appropriate subordinates who should participate to avoid any risk (McLean & Antony, 2014; Brajer-Marczak, 2014).

4.3. Suitable Culture for Continuous Improvement

This area includes studies focused on the relationship between continuous improvement and other topics. There are five strategies to make a suitable culture that supports continuous improvement:

- Leadership corroboration
- Infrastructure programs, such as training and effective tools
- Maintenance issues and reporting guidelines
- Getting feedback from customers

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- Hiring specialists in the continuous improvement area

All these strategies need effective management procedures that let managers, leaders, employees, and even the customer participate in enhancing continuous improvement and risk management. These procedures are usually issued by top management and might be with a specialist in the area of quality and continuous improvement. No doubt that both top management and specialists have the ability to change outcomes, but only if they successfully create a suitable culture to support their activities (McLean & Antony, 2014. Lack of authority of specialists may create barriers between specialists and target employees. Therefore, the work would be performed under risk and a non-suitable culture (Carvalho & Rabechini Junior, 2015).

Specialists in the field of continuous improvement must be qualified to insure the success of creating a suitable culture, especially when there are differences in culture. There are two classes of culture that can have a major impact on firms. The first is the culture inside the organization which effects the process of continuous improvement. The second is national or international that exists when the firm has many branches within the same country or in international countries. Furthermore, firms deal with suppliers either in the same country or in international countries and must insure they are dealing with cultural issues generating risks. So, specialists must have experience in dealing with differences in cultures and improve new methods to integrate the idea of continuous improvement.

5. DISCUSSION OF RESULTS

This study offers a review of the relationship between continuous improvement and risk management in relation to technical management compliant, development strategy, and culture.

5.1. Technical Management Compliant

5.1.1 Technical Management Compliant Targets

There are three major targets, and they are evaluated as follows:

1. **Customer-Oriented Target:** A successful complaint management in term of responses and immediate interaction can retrieve customer satisfaction. In addition, a complaint-handling procedure is well managed and counts the number of complaints. The more complaints, the more chances a firm gets information about product failure (Anca, 2016). This target aims to identify new approaches of improvement by getting information from the complaints and avoiding product failure where this is continuous improvement. Identifying new approaches of improvement is not enough. We also need to identify risks. External risks such as market risk must be identified (Carvalho & Rabechini Junior, 2015). For example, in a rental company that rents a heat exchanger, and the Technical Management Compliant collects the feedback where most stated the heat exchanger has a lack of quality. Getting this information is not enough to make the right decision whether the company should purchase a better-quality heat exchanger or not. Market risks should be identified if there is any change, for example, inflation rates, changes in interest rates, foreign exchange rates, and so on.

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2. **Finance-Oriented Target:** Cost failure related issues are considered, such as external failure cost and internal failure cost where these impact profit margin. Failure costs are generated if the product or service don't meet the customer needs. Technical Management Compliant will find an approach to avoid the external failure cost by collecting information from the complaints and conducting continuous improvement to the product or service. On the other hand, internal failure cost must be analyzed. In this case, analyzing the risk of getting internal failure will be the right approach. In order to eliminate the failure, we need to determine the consequence of each risk and understand the nature of the risk and its potential. For example, internal risk such as human resources risk may lead to internal failure, and as a consequence an internal failure cost will result (Anca, 2016). A recruiter in the human resource department of manufacturing company hired unqualified technician who produced a product with different specifications than the client wanted, which causes internal failure and risk.
3. **Quality-Oriented Target:** Information about perceived or expected quality of a product or a service is collected from customer complaints. This information can be used for long-term improvements of products and processes. How customers perceive product quality or what their expectation should be treated and ranked to priories our efforts in dealing with continuous improvement (Elahi, 2013). Treating the risk and ranking the risk will give an area for continuous improvement to develop. Technological risks should be presented to illustrate how continuous improvement is related to risk management in terms of quality-oriented targets. Customer complaints about technological issues may need experts to solve them. Therefore, a firm should gather information about perceived or expected quality of a product or service from customer complaints. After that, treat the issues and make decisions if the risk is acceptable (Brajer-Marczak, 2014). Then, the highest ranked risks should be determined, and the risks must be treated to achieve appropriate risk levels (Sanchez-Cazorla et al., 2016).

5.1.2. Technical Management Compliant in Term of its Structure

There are six major phases, and they are evaluated as follows:

1. **Data Organization:** The first phase of technical management compliant is data gathering from complainant. These data are critical factors to the whole process, so the data are stored on a database. Appropriate action in terms of risk management should be considered, such as risk based internal auditing approaches for the data stored (Shivaani et al, 2015).
2. **Failure Identification:** Its main objective is to standardize failure patterns and prioritize the critical problem. This phase depends on the quality of information taken from the database. This phase is integrated because it combines the idea of continuous improvement in making a failure pattern and risk management in prioritizing the critical problem.
3. **Failure Correction:** The root cause of the failure should be identified, which is the first step in this phase. The second step is to involve different quality management methods which help in creating a systematic and efficient root cause analysis. The third step is that the prevention of the failure needs to be defined and measured. Finally, the process that handles the complaint makes the implementation of an appropriate method. By doing these steps, Technical Management Compliant

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is following one of the core principles of continuous improvement, process orientation (Lam et al., 2015). Management should understand the process and activities should be identified and controlled. However, the failure correction is not complete by implementing an appropriate method. To successfully complete this phase, we need to monitor, track, and review the risks arising within implementation (Shivaani et al, 2015).

4. **Long Term Knowledge Should Be Transferred by Appropriate Methods:** Failures which have been corrected for one product may be repeated again. In order to solve this issue, compliant needs to be linked to a knowledge management system which helps to transfer solutions to future product lines. As a result, every user is allowed to make adjustments. This phase is closely aligned with the continuous improvement concept where activities should be controlled by all staff over time to reduce the waste and identify new approaches of improvement. On the other side, an effort to manage the risk initiated from transferring the solution should be considered. For example, procedural risks related to cost risk is a major factor. Involving all staff over time will add cost. An analysis in the cost of risk should be implemented to guarantee success of this phase (Carvalho & Rabechini Junior, 2015).
5. **Process Controlling:** Process controlling system is required for complaint management because complaint management is a reactive process. This system includes the key performance indicators for the assessment of efficiency and effectiveness. At this point, technical complaint management uses the continuous improvement approach to improve the quality of product or service (Lam et al., 2015). Without process controlling system, lack of resources will present in failure correction projects. Creating such a system will cost money, a risk cost. This is procedural risk and to avoid it, we need to follow risk management approaches.
6. **Validation:** The term 'quality' is represented by an effectiveness and efficiency which consists of four determining factors. They are customer satisfaction, product improvement, product quality level, and compliant management efficiency (Pakocs & Lupulescu, 2016; Shivaani et al, 2015).

5.2. Implementing Development Strategy

5.2.1. Continuous Improvement Vs. Development Strategy

Strategic objectives are defined in various directions that are related to the continuous improvement concept. The first one is to achieve the highest levels of performance in terms of quality, and as a result, increase success and reduce failures (Filho & Uzsoy, 2013). The second one is in terms of product quality where the problem is related to renew some products, so that new products meet the needs of both old and new customers. In this direction, a company process of focused and continuous incremental innovation for a product is applicable. The third one is related to developing strategy to meet general environment and competitive environment requirements where this is considered a culture of sustained improvement aimed to eliminate waste in all organizational systems and processes. The general environment relates to external impacts such as the economy, technology, society, and political issues. On the other hand, the competitive environment refers to main competitors of the company and main suppliers.

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5.2.2. Risk Management against Staff Training

There are various reasons to perform staff training sessions. Reasons such as, employees do not know their duties and responsibilities, data referring to quality are not registered in reports, and employees are not properly trained when new machines are being used (Galli & Kaviani, 2017; Sanchez-Cazorla et al., 2016). Identifying new approaches of improvement such as staff training is considered a continuous improvement for the company.

To implement a training program for staff in the company, the company should focus on the following objectives:

- Assess the level of knowledge in quality management of operating staff
- Identify business concerns and ways for training
- Assess the degree of involvement of staff in quality development and improvement.

Training is considered a learning process. From training, employees get new knowledge and skills. It will help the company meet specific duties of the current job. As a result, the employees become knowledgably and skillful of their work and how they will participate to get the achievement of company quality goals.

Identifying the risks is considered a primary stage of risk management, because once a risk is identified, it can be managed. Risks may arise by implementing staff training as follows:

- Technical failures of equipment available to the lecturer during training
- Failure to meet the deadlines and financial provisions of the proposed activity
- Different level of knowledge between the participants in the training sessions
- Lack of money or specified budget for employee training.

Effective risk management relies on risks being identified before implementing staff training (Sanchez-Cazorla et al., 2016). These risks are evaluated and decisions are made to take proactive actions to eliminate the potential impact of risks.

5.3. Suitable Culture for Continuous Improvement

Building a culture of continuous improvement is usually established by developing strategies that support leadership, program infrastructure, maintenance and customers opinions, and hiring specialists in continuous improvement area. All of these strategies are explained as follows:

Leadership Corporation: In order to enhance building a suitable culture for continuous improvement, the leaders should be empowering innovators. Leaders who have open-minded, flexibility, and ability to adopt any new ideas are critical indicators to the success of developing a suitable culture (Galli et al., 2017; Dixon & Fargen, 2017; Van Kleef, 2009).

Infrastructure Programs such as training and specific tools: Three critical ways could be used to help the infrastructure programs which are training, monitoring, and continuous education. Leader member exchange theory could be used in this strategy. Its main goal to develop a strong relationship between the manager and the subordinates (Dixon & Fargen, 2017).

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Maintenance issues and reporting guidelines: High-level monthly strategic meetings will improve the quality of the product or services by fixing the maintenances issues and generating monthly report. Also, there are two more benefits. One should be friendly competition between departments to generate the best success. The other one is ownership of the company which can see the issues that affect time and money of any product the company produced.

Getting the feedback from customers: meeting with external and internal customers to get the proper feedback from customers about company performance will add value to the company. Discussions of possible areas of improvement often result in the making new processes and to improve the performance (Dixon & Fargen, 2017).

Hiring specialists in the continuous improvement area: qualified specialist must have appropriate skills in dealing with national and international policies and standard to positively create a suitable culture within the firm. One good approach to identify culture issues is to do benchmarking, and this task should be performed by specialists to apply all advantages from benchmarking and avoid all disadvantages from benchmarking (Van Kleef, 2009).

However, working with strategies to develop suitable culture may take years to build. Also, the larger the organization, the more difficult to make changes and may take longer to develop that culture. In this situation, time and cost risk are introduced.

Risks of creating suitable culture must be considered. Categories of risks that are related to culture are five and they are listed as follows:

- Authority power distance which measure who people are comfortable regarding the decisions of specialists
- Uncertainty which measure who people are capable in dealing with unknowns
- Individual or team work which measure who the culture enhances both of the team work and individual work.
- Gender aspect which measure how comfort are the roles being performed by male or female.
- Time period which measure the projects based in time, long term or short-term projects.

In general, this gap between continuous improvement and risks is a major issue. The two concepts must be combined to eliminate the problems generated when applying one concept without the other (Van Kleef, 2009).

6. CONCLUSION

Even though continuous improvement has been studied well in the previous studies, studies have not been mentioned the interconnection between continuous improvement and the types of risks that might be introduced when implementing continuous improvement. For any continuous improvement-oriented program, it should have a section that deals with risk management. Risks must be identified, analyzed, evaluated, ranked, treated, monitored, and reviewed.

The results of this study to a certain extent are limited, there are three main limitation to this study. The first limitation is about our focus, since it is based on profit organization to determine the relationship between continuous improvement and risk management. Attention was not paid to nonprofit organization or other governmental sectors. The findings to this study will be applicable to the profit organization but

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it might be applicable or not to the nonprofit organization. Another limitation should be that this study selected the journals and articles that were published in the time period 2012-2017, except one journal, which was published in 2009.

Two main recommendations for future research could be introduced from this study. The first could be studying the relationship between continuous improvement and risk management for the nonprofit organization and governmental agencies. The second recommendation is finding a scientific approach that shows a standard classification of risk management for both profit and nonprofit organization.

Finally, this research explores new approaches that will let the profit organization take into account each aspect of the projects, especially when dealing with continuous improvement and simultaneously focusing on risk management. Risks are not all the same and each profit organization has its own perspective of risks. Further understanding of the risks related to nonprofit organizations will add value to the overall business.

Future research should explore a few different arenas. For example, future research could investigate these factors and the relationship but in the context of other industries and managerial settings. In these settings or contexts, it would be interesting to study the strength of these variables and the relationship as well as the factors that impact these factors and their relationship. Another avenue of research could be to explore these factors and their relationship but from different perspectives, such as from an organizational, strategic, or cultural point of view. This would shed further light into the how this relationship is perceived across many different views and further understand the degree of impact that factors such as culture, strategy, human resources, operations have on the key variables and their relationship.

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Chapter 37
Internet Finance

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ABSTRACT

New developments in the Information and Communications Technology industry have substantially increased the importance of the internet over the last decade. As a result, the finance sector has developed its technological capability to be able to compete in an online marketplace with other financial services providers and to be able to serve their customer. This chapter examines the use of technology in the financial industry and the various factors associated with it, as well as introducing the reader to the main types of project initiators-contributor business relations in online crowdfunding.

INTRODUCTION

E-Banking also written as electronic banking refers to the usage of computers in carrying out bank transactions. Examples of such transactions include withdrawal of money through cash dispensers or engaging in funds transfer through a point of sale. Electronic banking is also known as internet banking or online banking (Ainin, Lim & Wee, 2005). Therefore, this illustrates the complex nature of the concept of financial services as there is not a universal definition of E-banking. However, it is significant to note that internet or E-banking refers to the use of various electronic services that allow a financial account holder with a particular bank to access all his or her information through a computer. Therefore, in the context of this discussion E-banking will be defined as a self-service activity that permits bank account holder to get access to their accounts, as well as their updated general information on a financial institution's products and services. In addition, these users have the liberty of conducting financial transactions without time or geographical limitation by accessing the bank's website (Kallstrom, 2000, p. 20).

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The technological advancement and the use of the Internet have raised a new platform for fundraising known as crowdfunding. Crowdfunding involves three parties: the project initiator or owner who needs funding, the contributor who is willing to give their money and the moderating organization that facilitates the engagement between the contributor and the initiator (Young, 2013, p. 33). Moderation can also be done through technology by the project initiator himself, using Web 2.0 and outside of platforms. The platform involves entrepreneurs or potential business owners asking for funding for their projects from the "crowd" or users from all over the world who may be interested in supporting their cause or business. Crowdfunding allow individuals the possibility to develop into their business ideas, even if it is only with a small amount of money. Governments encourage crowdfunding due to its positive impact on the economy as a whole, as it creates new jobs and fosters the economic growth of countries.

This chapter seeks to introduce the reader to e-banking services, online investments, and the main types of project initiators-contributor business relations in online crowdfunding.

BACKGROUND

In the late 1970's home banking was the only way of offering financial products without the customer being present at the banking hall (Xu, Wikes, & Shah., 2006, p. 19). Financial institutions call this service home banking; however banks offer this service through phones.

Banking customers were able to transfer money, pay their invoices or check their account credit through touch-tone telephone while they were at home. New software was created that permitted connecting customer to the bank through a dial-up connection. Although in the late 1980s this service was not very popular for several reasons. First, home banking was only allowed for some services agreed by the bank. Second, this new service needed an important investment in technology, and only few financial institutions could afford this cost.

The use of computers was not common at the time in many households (Laopodis, 2013, p. 26). Among the financial institutions that offered home banking services are the leading banks like Citibank, Manufacturers Hanover and Chase Manhattan. All of them had its origin in America, thus showing the contribution of the United States to the e-banking industry. In the mid-1990's banks were starting to realize the need to move their financial services into the virtual realm. Apparently, e-banking was becoming an attractive concept as it helped banks diminish transaction costs; it was helpful in promoting easy integration of services as well as introduced interactive marketing capabilities. Additionally, online banking was instrumental towards boosting the bank's customer lists and profit margin faced by the businesses. Furthermore, internet banking allowed institutions to bundle their services into single packages; thus, attracting more customers at minimal overheads. The period of late 1990s saw the advent of the clicks and bricks euphoria; as a result, many banks realized that e-banking was a strategic and imperative innovation (Lassar, Woodford, & Moschovitis, 2005, p. 15). More so, during this period there were a lot of mergers and acquisitions within the financial industry that resulted in expanding customer base Therefore, financial firms viewed the World Wide Web as the only channel that would help in maintaining customers, as well as build loyalty. However, in the wake of the banks realizing the potential of e-banking a lot of customers across the globe remained hesitant to conduct their financial transaction over the internet. For example, there was the Y2K scare that was a disambiguation about a world crisis by the year 2000. In this connection, many customers feared online transactions because of the fear that all computers would fail. Therefore, to avoid this problem a number of financial consumers

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were reluctant to move into the virtual world of financial service provision. Companies such as America Online, eBay and Amazon.com invested in marketing purchase of items through online platforms. For example, Bank of America took about 10 years to reach 2 million e-banking clients. In 2009 as per a report by Gartner Group, at least 47 percent of American adults were banking online.

Computational investing is another topic that provides insights on investing and stocks. It includes a collection of theories that have effectively been used as strategies for investing. For instance, John Bogle's passive investment approach recommends that entrepreneurs should allocate resources to assets that have minimum trading expenses. The reason for that is that active involvement in market-stock trade cannot match the returns of the market (Laopodis, 2013, p. 32). In other words, Bogle advocates for a long-term view approach to investing – one should pay attention to taxes and costs. Therefore, according to him, a well-diversified portfolio is an assortment of low-cost assets that have been in the market for a considerable number of years. That is, investors should adopt a buy-and-hold strategy.

Another theory of computation investing is value investing. According to Warren Buffet, who developed the idea, investors should exercise discipline, intelligence, and patience in relation to buying stock (Laopodis, 2013, p. 32). In other words, the entrepreneurs should purchase shares of reputable companies only.

MAIN FOCUS OF THE CHAPTER

1. E-Banking

Internet banking allows access to financial information through accessing internet over a computer or by use of mobile phone that has Internet connection. Mobile banking is the latest revolution in virtual banking, it involves conducting financial transactions via a mobile device; for example, a mobile phone or tablet. The introduction of mobile banking led to new methods of payments by using a mobile phone to pay for commodities or services remotely. The first form of mobile banking was referred to as SMS banking. However, the invention of smart phones has overtaken SMS banking and now users of the internet-enabled mobile phones can use various applications based on the operating system to carry out financial transactions. There has been a remarkable growth in the number of households using virtual banking services. Population born between 1970 and 1990 also referred to as the generation Y embrace technology very fast once it comes to the market. Generation Y account for the highest number of users of online billing services to settle their account on student loans, credit cards and expenditures aimed at improving their lifestyle for example shopping online. Noteworthy, e-banking is highly entangled in every individual way of life without discriminating against age or those with disabilities (see Friedman (2000)).

Internet banking offers various services depending on the bank of choice for each customer:

Account Opening and Access Information

Banks that provide e-banking services allow their clients to open new accounts by accessing the bank's website. In order to complete this service, an individual logs in into the bank's website, fill an application online and submit the application. Afterwards, an account holder with online banking services enjoys the opportunity of accessing financial information wherever they are with an Internet connection. Such information may include closing or opening accounts, checking updates as well as make inquiries captured in the account or even making payments.

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Electronic Check Conversion and Transfer of Funds

Electronic check conversion allows customers to convert their paper check to a new electronic payment. Essentially, the benefit of electronic payment is that the account holder with a bank can withdraw money from their account and wait until the other party receives the check. This service is faster as the normal check takes longer duration to process. Customers can also transfer funds across personal accounts and to different users as a way of covering the shortage in some accounts or make payments.

Download Online Bank Statement

Clients can go through this document because it allows one to check even the previous year transactions so as to make sure accounts are in order (Lassar et al., 2005, p. 24). In the event of complaint, users can save their bank statement either as word or as PDF on their computer, tablets or smartphone for future evidence.

Buy Financial Products

E-banking allows clients of the bank to buy financial products online. Examples of such products may include deposits, stocks, mutual funds and mortgages. The bank products vary across different financial institutions.

Buy Good Online

Users of online banking benefit from the ability to login into their accounts and to buy goods online or make payment to their credit card. Nowadays, it is easy to buy goods online safely and quickly or simply make enquiries; therefore, saving on travel costs and time.

Order for a Check Book

This is a booklet of blank checks that facilitates bank account holders to draw money from their account or deposit funds for the purpose of settling other company accounts or payment of bills (Lassar et al., 2005, p. 30). These checkbooks can be ordered online by e-banking service users, they receive the booklet through their mail.

Make IRD Payments

IRD refers to the income that an individual is not entitled to receive during his or her lifetime. Such payments include IRA or other retirement schemes that an account holder cannot receive before death. The amount of IRD payments is not part of the final income tax return. This service is now available through internet banking, and it is easy to process all information an individual may need pertaining to IRD payments electronically.

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Tax Information and Documents

Financial institutions assist their customers to complete several tasks such as offering tax documents online. Additionally, the banks help their clients to fill and submit the forms online. Overall, a financial firm helps in resolving tax related issues and usually this service is available to the customers free of charge.

Alerts

An account holder with the access of internet banking can subscribe to receive alerts of every processed transaction by the financial institution. Consequently, the service will inform the customer about the existing bank account balance, and introduction of new products and transactions completed.

The Importance of E-Banking

The main important characteristic of internet banking is significant time management, elimination of queues due to the automation of most financial services and availability of easy maintenance tools for managing one's money. E-banking offers cheaper costs of attaining banking services and increased comfort. With regard to the latter, customers are able to make financial transactions any time of the day, and without physical interactions with the bank.

Another characteristic of e-banking is rapid and uninterrupted access to information. For example, business firms can enjoy easier access to information by checking on multiple accounts at the tick of a button. In addition, internet banking allows for better management of cash by speeding up cash cycles and increasing efficiency of business transactions since numerous cash management tools are available on the World Wide Web. For instance, it is possible to manage a firm's short-term cash through internet banks in money market funds, in commercial papers, in over-night deposits, or in bonds and equities (Appei, 2009, p.7).

Furthermore, e-banking allows a customer to enjoy the convenience of carrying out financial transactions from the comfort of his or her office or home. The fact that e-banking allows a rapid response enables customers to wait until the end of a financial transaction without any fuss about it. Finally, internet banking allows for effective management of funds. Customers are allowed to download their account history and fund analyses on their computers or mobile phones before carrying out any actual transaction.

2. Benefits and Challenges of E-Banking

E-banking has transformed the provision of financial services around the world (Liao, Yuan, & Chen, 1999, p. 66). Financial institutions as well as customers obtain certain benefits from using e-banking as compared to the conventional method of banking.

Online banking allows account users to make payments across accounts to just about anyone. For example, client of the bank can choose anybody or any company whom he or she wants to make payments to and the bill pay service will facilitate this transaction.

Internet banking gives the account holder the liberty to control almost every aspect of his or her account. Besides this control over personal or business bank accounts, the customer can access other services within the financial industry (Liao et al., 1999). For example, buy or sell interest-earning assets,

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keep an update on stock market and money market. It is imperative to mention that accessing internet banking services on the bank's website is free, the only requirement is being an account holder with the entity and have access to the internet.

Customers enjoy the benefit of comparing best deals across banks and get access to the best special offers. Often individuals operate more than one bank account; therefore, it is easy using e-banking services to compare products offered by different banks. E-banking service allows bank account holders to access the financial institution on a 24 hours basis (Krantz, 2013, p. 19). Automated teller machines, and access to their bank account through the internet is convenient to the clients. Virtual banking is beneficial to customers because this system helps bank account holders to avoid queues common in banking facilities. Many of the customers who use online banking feel that this system saves time unlike when they spend time queuing in banks.

Internet banking contributes to a reduction of operational costs in the financial Institutions. In the long run commercial banks save on resources that would be paid to the tellers to manage the growing customer base in the bank. Therefore, it is relatively cheap to conduct financial services over the internet for the banks. Virtual banking has allowed banks to acquire a greater customer base through reaching new target markets (Liao et al., 1999). Precisely, the use of internet surmounts any geographical boundaries that would be difficult and expensive to break when using traditional banking systems. Interestingly, the banks use internet to reach the well-off households as internet penetrates highly in households that have a sustainable income. E- Banking reduces the costs affiliated to marketing especially with the introduction of internet marketing, helping to create a similar playing field for small and big banks. Therefore, the upcoming financial institutions can fight for survival through competing for customer base in the same market with the successful banks (Liao et al., 1999). Otherwise, it would be impossible for the small financial firms to compete with the leading companies through the traditional systems of marketing because of capital and market power challenges enjoyed by the big banks.

There has been a significant change in the level of efficiency in commercial banks after the introduction of e-banking. Use of internet in banking facilities allows the firms to operate in a paperless environment. For example, it is easy to keep records within a single file for a huge number of clients. The level of customer service and satisfaction continues to improve remarkably with e-banking systems. Principally, this improvement is attributed by the levels of efficiency in banks. In addition, internet banking offers the customers services that would be difficult to access through bank's branches (Liao et al., 1999). Online banking contributes to a reduction of the number of people visiting the facilities daily; therefore, improving on customer service both online and offline. Using e-banking services helps a financial entity to improve its public image by giving a good impression to existing and prospective customers. Noteworthy, an account holder may not be willing to use e-banking system, but by providing such services a bank helps in promoting a good reputation to the prospective and current customers.

Internet banking is beneficial to the stakeholders in the financial industry. Banks and customers enjoy extensive benefits by using this modern way of accessing financial information and products (Sarlak, & Astiani, 2011, p. 29). However, there are certain concerns or challenges that arise in the use of internet banking. Firstly, with the introduction of this new technology by the commercial banks there is a need to create a customer service support system that will provide support to the clients. Commercial banks face the challenge of maintaining a fast and reliable customer support system in a bid to protect their reputation as well as image in the market. Establishing such systems is costly but it is important towards getting the customers to trust internet banking as a way of undertaking financial transactions. Secondly, laws governing different countries present an interesting challenge to e-banking. Internet banking cannot

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be limited within a geographical location or borders (Lassar et al., 2005, p. 45). However, each country or state has different laws that are distinct and are not applicable in territories beyond where the laws are enacted. Therefore, there is a need to harmonize some laws pertaining to electronic banking worldwide so as to ensure access to financial information and products is not restricted. Thirdly, the issue of security over the internet is another challenge that continues to affect online banking. In fact, this is one of the challenges for banks as customers inquire know the level of security or protection that virtual technology offers to them before they proceed to open online banking accounts. Internet technology attracts online cyber-crimes, and often bank customers become victims of fraud or theft especially with the use of ATM's (Lassar et al., 2005, p. 45). Hacking and phishing of financial information is an emerging trend and a challenge that banks deal with every financial year. Fourthly, internet banking creates regulatory challenges because of globalization of the financial industry. Internet allows provision of services from any location in the world posing a danger in regulation of financial intermediaries by the central bank. Inherently, commercial banks will find ways to avoid any supervision or regulation by the relevant authorities. For example, it is mandatory for every business to acquire a license from the government; similarly, financial institutions have to establish a licensed branch before they are granted permission to venture into virtual banking (Marina, 2009, p. 4). Fifthly, internet banking has led to increased activities of money laundering. Anonymity is one of the features evident with electronic banking. A client opens an account in a bank, but it is difficult for the financial entity to identify the type of business the nominal account holder is undertaking or even the location of the transactions. Presently, many governments have put up guidelines to combat money laundering. For example, it is mandatory for every individual opening a bank account to verify their identity and notify the bank of their residential address (Marina, 2009, p. 6). Finally, online banking poses serious macroeconomic challenges to the country's economy. For instance, the technological revolution in the finance industry particularly the advancement of banking practices makes it difficult for central bank to implement monetary policy. Consequently, it is always a challenge for the central bank trying to control economic activities and inflation especially with the globalization of financial services. In essence, expansion of electronic banking leads to a significant decline in financial transaction costs. Consequently, this leads to cheap credit in the economy hence eroding the effectiveness of monetary policy. Tobin tax is an example of a tool used by many governments towards controlling availability of credit in the economy especially it helps to increase costs of accessing financial products from the banks by the borrowers.

3. Investing Online

Some of the concepts discussed in Modern Investment Theory and computational investing are useful to stock brokers, especially when opening an online account. A stock broker is an individual or company that trades in shares on behalf of a client. If the interaction between the client and the broker is through a website, the broker is referred to as an online broker. The online service allows the investor to allocate some funds to the brokerage firm for the purchase and sell of stock. Normally, the transactions occur on order basis, that is, the client must request the broker to buy or sell profitable shares. Apart from trading in shares, a significant number of online brokers also provide other support services such as tax reporting, creation of financial statements, and so on. Optionally, an investor may decide to do the online trading independently. That means the entrepreneur will need to open an online stock brokerage account. To succeed in such a venture, the entrepreneur must consider several factors.

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Firstly, the investor needs to acquire a portfolio tracking tool, which is a set of online tools that provide information on the trading of stock. Hence, the tool allows investors to keep a close eye on the performance of their stock while shopping for additional profitable investments. The portfolio tracking tool can be treated as an additional expense to the cost of opening an online brokerage. However, an effective method would be to treat portfolio tracking as a support service provided by an online broker (Hart, 2005, p. 36).

Secondly, transaction costs are incurred in operating the online brokerage account. Normally, the online broker that hosts the independent stockbrokerage account charges a specific amount for each transaction executed. In other words, an online broker may provide the portfolio tracking tool at a low cost, but charge the investor highly per transaction (Hart, 2005, p. 42).

Apart from that, some hosts charge for stop-sell order requests. Therefore, investors should take time to compare the charges of different hosts to ensure that they get value for their money.

Thirdly, the type of account matters. Often, investors have the option of opening either an individual retirement account (IRA) or retail account. Before opening an IRA, the entrepreneur should consult a tax advisor because some of the transactions done through the account are taxable. For instance, if a transfer of funds is done from the investor's IRA to an online broker's IRA, there are no tax penalties or consequences. However, taxes apply if the investor withdraws money from an online brokerage IRA. Conversely, transferring funds to a retail account has no tax implications. Similarly, the purchase of stock through the use of funds in the retail account has no tax implications. However, the income from the stocks sold through the account is taxable (Hart, 2005, p. 50).

Additionally, investors expect returns in form of dividends from companies in which they own shares. The dividends may be scrip dividends or dividend re-investment plans (DRIP). For the investors that subscribe to the scrip-dividend policy, the expected cash returns are automatically converted to new shares. Conversely, for those in DRIP, the cash dividends are first sent to a scheme administrator who then may use the funds to acquire the company's shares through the stock market or send the money to the stakeholders. Therefore, before opening an online account, the investor should consider the reinvestment service offered by the host (Hobson, 2012, p. 15).

Also, the investors need to determine the means through which they will fund their online brokerage accounts. Firstly, capital may be sourced from savings. In this case, keeping money in bank accounts yields low annual interest. Depositing the money into an online brokerage account will result in better cash benefits. Secondly, the IRA is also a source of funding. In this case, the funds can be transferred from an existing IRA to the online brokerage IRA mentioned earlier. Thirdly, the investors can opt to make direct deposits. In this regard, the cash-in-hand that they possess should be greater than or equal to the bare minimum required to open the online brokerage account. Given that the option will force the entrepreneurs to develop a working plan on how to make regular deposits into the account, discipline is required (Hart, 2005, p. 55). The investors can obtain additional hard cash from gifts, financial assets converted to money, extra income, refunds, and so on.

Therefore, before opening an online brokerage an account, one must consider several things. These include the type of account to be opened, transaction costs involved, and customer service. The investor should also take into account how the online brokerage shall be funded, the cost of the portfolio tracking tool, and the dividend re-investment policy provided. Once these queries have been addressed, the next step is to open an online brokerage account (Hart, 2005, p. 57). In reference to that, it is worth noting that managing a profitable stock investment portfolio requires thorough knowledge of ways of investing.

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4. Trading Stocks and Options Online

Online stock trading is another important subtopic of investing and stocks. This type of trade is to some extent similar to regular transactions that involve one walking into a shop, picking the required items, paying for them, and leaving. That is, the online traders select the shares they prefer and electronically transfer the sum required for the purchase. Once the money is received, the sale is reflected. However, online trading has some complications because the prices of stocks are set in real time (Krantz, 2013, p. 129). Thus, the online investors have to use the following options in trading through the internet.

Firstly, customers can trade their stocks online through market orders. In this case, they have to instruct their stock brokers to sell their stock. Normally, the brokers are requested to sell the shares at the highest price that a willing customer is ready to pay. As a result, such orders are quickly executed (Krantz, 2013, p. 129). Given that it is easy to find such willing buyers, the online investors pay a small commission for the brokers' services.

Secondly, stocks can be traded online through limit orders. In this case, the online investors are allowed to set the prices at which they are willing to purchase or accept the sale of stock (Schwartz, 2010, p. 156). For instance, consider an entrepreneur who owns 40 shares, each valued at $100. Suppose the price of the stocks is declining and hence the investor estimates that soon the value of a share will plunge to $70. In this case, the online investor can sell the shares in two ways. The first option is through the market order, which was discussed above. However, that may not give the best returns since the buyers may momentarily offer lower prices than the projected minimum. Optionally, the online investor could set the lowest selling price at $85 to minimize losses. Thus, so long as the decline proceeds as expected, the limit order is the preferable alternative. When the shares' price falls to $85 per unit, the broker will sell all stocks if possible. Limit orders are not based on price alone. Some investors give a deadline within which to sell the stocks (Krantz, 2013, p. 129).

Sometimes, one may not obtain the returns expected after the sale of shares through the limit orders. This is because the shares' price may decline so rapidly that the seller is unable to place the stocks on sale at the agreed price. In this case, the broker may only sell a restricted number of stocks. The rest of the shares are kept in the investor's portfolio. Thus, the limit orders provide a false sense of security.

Online investors can also use stop market orders to trade online. This type of order is similar to a limit order in that a minimum buying or selling price is set. However, for the stop market orders, when shares' price reaches the designated value, the orders are converted into market orders (Krantz, 2013, p. 130). For instance, using the previous example, the broker may be instructed to execute a stop market order when the stocks' price reaches $85. In this case, if the value of shares suddenly plunges to $80 per unit, the online broker would still have to sell the shares at that price.

Fourthly, the shares can be traded through a stop limit order. This option is similar to a stop market order. However, once the defined price is exceeded, the stop limit order is converted into a limit order (Krantz, 2013, p. 130). Thus, the stop limit order prevents the sale of shares if the value of the stocks falls beneath the limit price. To elaborate further, still using the same example, suppose the activation price for selling stocks is $85 and the limit value is $75. When the shares' value falls below $85 per unit, the order becomes a limit order. Hence, when the price reaches $75, the broker is supposed to sell every available stock at that price (Krantz, 2013, p. 130). However, a further decline in price would result in no sale at all. That is, the remainder of stock is kept in the online investor's portfolio.

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Lastly, the online stocks can be traded through a trailing stop. This type of order basically follows the market. For a favorable market, rising stock prices, the online investor instructs the broker to retain the shares until the value of the securities reaches a predetermined value. This order is referred to as a trailing sell stop. For a bearish market, the broker is expected to sell the shares as the stocks' price approaches a set minimum value (Pardo, 2008, p. 85). This order is known as an exit trailing stop. Thus, the online investors continuously search for positive yields during the stocks' transaction life.

Apart from stocks, options can also be traded online. An option is a financial instrument that gives one the right to sell or purchase a precise quantity of underlying stock at a prearranged price within a defined time period. The option seller is not legally obliged to carry out all the tasks stipulated in the contract when the financial instrument is handed over to a buyer. The online trading of options is done through screen-based or electronic methods. In the United States of America, there are several institutions – exchange companies – that specialize on options trading. They include the International Securities Exchange (ISE), Boston Options Exchange (BOX), and NASDAQ. The online trading of options has advantages as well as prerequisites that are worth discussing in details (Fontanills & Cawood, 2009, p.43). The online trading of options yields more benefits to the online investor than full-service or traditional brokerage. For example, for this type of trade, commission expenses are lower. That is, the traditional broker may charge $100 for a round turn, whereas an online brokerage charges only several dollars (Fontanills & Cawood, 2009, p. 45). In this case, a round turn refers to each deal or sale. Normally, a commission cost is charged on all orders. The charge applied varies depending on the service being offered. Also, the commission expenses decrease as the services offered to the investors increase. Another advantage of the online trading of options is that the online investors receive considerable support in terms of information as opposed to what happens in traditional brokerage.

5. Online Crowdfunding

A new startup needs some amount of funds in order to get the business started. In order to transform the entrepreneurial project into a reality, then it is necessary to have adequate cash to execute all such plans. Moreover, the fundraising will help the entrepreneur to develop the business model for the growth of the project and a successful business marketing plan (Damos, 2014, p. 32).

The technological advancement and the use of the Internet have raised a new platform for fundraising known as crowdfunding. Crowdfunding involves three parties: the project initiator or owner who needs funding, the contributor who is willing to give their money and the moderating organization that facilitates the engagement between the contributor and the initiator (Young, 2013, p. 33). Moderation can also be done through technology by the project initiator himself, using Web 2.0 and outside of platforms. The platform involves entrepreneurs or potential business owners asking for funding for their projects from the "crowd" or users from all over the world who may be interested in supporting their cause or business. Crowdfunding allow individuals the possibility to develop into their business ideas, even if it is only with a small amount of money. Governments encourage crowdfunding due to its positive impact on the economy as a whole, as it creates new jobs and fosters the economic growth of countries.

This chapter seeks to explain the main types of project initiators-contributor business relations in online crowdfunding.

The term crowdfunding is a relatively new concept to the market, however its origin comes from the construction of the Statue of Liberty's Pedestal. John Pulitzer, who was a popular publisher at the time, employed his newspaper to collect money for the construction of the pedestal. The initiative raised

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100.000 dollars in only six months. Pullitzer promised to print the name of each donor, regardless of the amount of money donated. In August 1885, Pulitzer announced that he had collected the amount to $100.000 for the statue's pedestal. The Statue of Liberty, that had arrived from France packed in crates, was erected the next year. (See Young, (2013)). Nowadays, Crowdfunding is becoming is already very popular around the world and the Internet platforms are leading the rasing of funds.

In 2013, Crowdfunding raised over 5.1 billion dollars to help people in various projects all over the world and the figure is projected to increase in the future with the new platforms becoming more popular (See Crowdfunding Industry Report from Research firm Massolution). The new law of the Jumpstart Our Business Startups (JOBS) by President Obama in 2012 introduced a regulatory framework. Most of it still has to be translated into active regulatory elements to this date, protecting donors to crowdfunding projects and enabling businesses to use crowdfunding as a real source of funding. The Act enhanced the credibility of the platforms for crowdfunding while at the same time ensuring that the project owners or entrepreneurs had a viable and a good source of funding for their projects. Kickstarter and Indiegogo are some of the most popular platforms boasting of members in millions of all parts of the world, these websites have enough people to pool huge amounts of resources for the funding of their businesses.

There are different types of relations between project initiators and contributor in online crowdfunding:

Reward-Based Crowdfunding

The reward-based form of crowdfunding is the most popular type with most contributors and initiators preferring this method due to the security of their funds under this method (See Crowdfunding Industry Report from Research firm Massolution, 2014). In reward-based crowdfunding, the target amount has to be established first for the completion of the project (Steinberg, 2012, p. 97). Then, the person or organization sets up donation amounts with an attached incentive that is proportional to the amount donated for the project. This method is hugely popular for artists, movie directors and other projects that have an aesthetic or prestigious value to the donor. For instance, if an artist was looking for a donation to help with a tour of Europe, he may offer signing autographs to people that will contribute $500 and backstage preparation with the cost to people contributing $1.000. These incentives ensure that the enthusiasts and the music lovers are motivated to donate to the cause (Young, 2013, p. 79). One of the unique characteristics with this method is that if the set platform allows for the project owner to get the amount only after the targeted amount is reached, he/she cannot be awarded the amount collected in case the donors do not raise all amounts. The donors can therefore get their money back and they have the confidence of recovery of the raised amount as a result (Agrawal, Catalini, & Goldfard (2015)).

One of the major benefits of reward-based crowdfunding is that it has low risks for the promoter or the company that is behind the campaign to raise funds or donated amounts. Once a company has raised the required amount for the project and they may have had the donations only with a special clause for the specific project they are able to avoid dealing with debts, credit implications or interest that is attached to the loans or government grants (Bruntje, & Gajda, 2016, p. 45). The reward-based crowdfunding method offers the chance to completely avoid all these problems and start their business or project without any possibility of future shortcomings due to any changes in the plans or the success of the project. The reward-based method also runs on low cost with the project owners being offered a chance to showcase their projects for only a small fee of their total collection and there are no high costs of managing the platform. As opposed to raising money through other conventional methods, where a person could end-up incurring a lot of costs for setting up the funds, crowdfunding sets this up at only a

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small fee and the project is viewed and supported by millions from all over the world (Roebuck, 2011, p. 104). The reward-based method also offers the donors a chance to gain a personal connection with the project they have donated towards and the people they have funded.

Equity-Based Crowdfunding

Equity-based crowdfunding is a form of crowdfunding where the contributors become part-owners of the company raising funds. Equity-based is not a popular form of crowdfunding since the majority of the projects are not huge companies that donors and people funding the projects can get a stake and own part of (Douw, 2012, p. 60). Most of the projects are by entrepreneurs who do not have shares that the investors can invest in. However, since the enactment of the Act in 2012 this form of crowdfunding has gained popularity with most people seeing it as an investment opportunity for the interested investors in lucrative projects that the investors deem to pick up and be beneficial in a near future. This is offered at very low rates as compared to the market rate since the project owners will need to make their proposal and project attractive to the potential investors through their competitive prices and growth potential in the future (Douw, 2012, p. 60).

Equity-based form of crowdfunding is slowly catching up with the other methods of crowdfunding. It is, however, a safe and viable method to raise money for the company and beneficial for the donor if the company makes profits in the future and they gain from the dividends or distribution. Equity-based crowdfunding can also be used to create a venture finance market. Equity crowdfunding does not only involve the shares as the only forms of securities, but also debt notes, convertible notes, and hybrid forms of equity and debt (see Freedman & Nutting, 2015, p. 5). In addition, there are some forms of partnerships that qualify as securities in equity-based crowdfunding. One of the main attributes of equity-based crowdfunding in creating venture-based market is its ability to connect startup business and the medium businesses to the larger investor community. Equity-based crowdfunding offers a platform to reach out to the companies through a single advertisement on the web. It ensures that the information reaches out to interested potential buyers and sells the business to the investors (Mollick, 2014). The venture space is therefore in ensuring that the investors and the business people meet. In addition, the venture space ensures that people with similar businesses and ideas can interact and advise each other on the best practices and the best ways to improve the businesses. The venture space is not only useful in raising the funds, but also ideas and plans on the best ways to improve the business given that there are other members of the crowd with the same ideas. It can also lead to mergers and amalgamation of two or more different venture businesses since the equity-based crowdfunding targets the business people who are interested in increasing their venture capital either through shares or other securities. The equity-based finance structure has a pool of professional small and large businesses that need a regular appraisal either through funding or through further investments (Steinberg, 2012, p. 113). Economic growth is also a factor that is hugely influenced by the success of the equity-based crowdfunding, since the growth of business companies contribute to the economic growth of the country. Most governments all over the world are taking up the new platforms and legislations have already been passed to ensure that crowdfunding for businesses and individual projects help the larger financial community that is the whole country. The venture finance marketplace has therefore transformed the equity-based crowdfunding concept to rally the support of the government and security legislations since it has been viewed as a milestone and a new trend in the financial sector.

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Reward-Based Crowdfunding

Credit-based crowdfunding is a method where the donors to a specific project loan out money to the person in the hope of future repayment of the amount owed. This is the safest method of crowdfunding for the donors since in case the project owner defaults in payment of the advanced loans the platform is liable for the payment of the loan to the donor (Tomczak & Brem, 2013, p. 341). Under this method the borrowers submit an amount that they wish to be loaned and the donors interested in the specific project advance the borrower the amount with a promise of repayment at a future date. The platform acts as the intermediary and or surety for the borrower and the donor to ensure that the donor gets the amount back and facilitate the pooling of funds for the borrower. The borrowers find crowdfunding attractive since it has very low or no interest rates for the borrowers and they only have to incur a fee to process the funds by the platform and agree on a flexible payment plan to refund the amount forwarded. In the event that there is any interest to be charged on the amount of money borrowed the borrower sets the interest to be charged that they are comfortable and can guarantee a refund within the stipulated time period (Mollick, 2014). This makes the method attractive for the borrowers since they are not required to pay a minimum or set interest rate that is predetermined and as a result they can guarantee payment. The lenders on the other hand have to evaluate the project for its risks or benefits and potential and establish if they are willing to lend money at the interest rate set by the borrower. The arrangement is similar to that of a bank loans with the main difference being the predetermined interest rates. Whereas in credit-based crowdfunding the borrower sets the interest rates, inviting donors to fund the project in a bank loan the borrower must agree to the terms set by the bank or the authorities involved (Althoff & Leskovec (2015)).

One of the main advantages is that the borrower does not have to give any form of collateral to the lender and they transact only in terms of good faith from the borrower and the donor of the project. The donor funds the borrower in the hope that they will repay the money not because they have a history of repaying or they have presented evidence to suggest that they are capable of repaying the money but only on faith they have on their project. This ensures that the platform eradicates many processes of loan funding and borrowing that would slow the timeline of acquiring a loan. Background checks run by the banks and also the examination of the presented information are a large part of the processing process making it tedious and time consuming. The process also rules out borrowing from poor and new business people that are looking for money to kick start their business and have no collateral or no history to guarantee payment of the amount that they have borrowed. Crowdfunding offers such people a chance to borrow even huge amounts of money without any form of guarantees and guarantors. Credit-based crowdfunding has been immense in eliminating the factors that hinder borrowing and lending since there are none in crowdfunding. The project and presentation of the ideas are the most important aspects of a project if one aims to be funded for a project accordingly. It is therefore advisable for one to lend both their time and resources in the presentation of the project to as many people as possible.

Donation-Based Crowdfunding

Donation-based crowdfunding is the last method available for funding new initiatives. In this method, funds are raised for an initiative of public interest, although there is no economic benefit to the community financing the initiative. One of the greatest challenges of social entrepreneurs today is accessing startup

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capital, that´s why donation-based crowdfunding makes this method an interesting financing solution. One example of donation-based crowdfunding is the 2008 election campaign of President Obama, the campaign team collected more than $137 million by this method.

One of the risks in a crowdfunding initiative is targeting and unrealistic financing initiative, as crowdfunding platforms charge a larger percentage fee if the target is not met, failing to deliver on the project's promise will negatively affect the project's reputation. Thus, it is very important to engage the potential community into the project and design the project according to their interests. That´s why advertising the campaign is an important part of the crowdfunding process, always keeping costs in mind, it is important to advertise the campaign through several channels and reaching the largest possible potential supporters. Most donations-based crowdfunding initiatives reward donors with something in exchange for their contribution. Typically this is some kind of perk, this is usually the most expensive part of the crowdfunding campaign. The most challenging part of the crowdfunding process is moving from the zero donation phase, as potential donors usually imitate what other supporters did, then a potential donor might be not willing to give funding to a project when no money has been raised yet. Encouraging close friends and contacts to contribute in the initial stages of the campaign will be helpful. The Regional Studies Association (RSA) explains that the most critical zone is when the 10%-50% of the initiative has been funded, as most unsuccessful campaigns fail somewhere in this range. Thus, in order to take the initiative to reality it is essential to push the campaign after the launch with advertising and showing previous donations. In initiatives involving social entrepreneurship like the ones involving this type of crowdfunding it is more important to have the certainty that it is a feasible project, as a poor crowdfunding campaign could harm the reputation of the company and affect future initiatives to get funding. Another important issue to consider is that the amount raised can be affected by declined funds later on coming from credit cards, wrong donations, or fraud.

6. Security in E-Banking and Finance

Some factors affect the safety of internet banking and online financial services. These include regulatory body supervisions, customer awareness, and internet infrastructure. On the other hand, according to Chavan (2013), increased use of the internet and mobile services as a new channel for distribution of banking services requires more thought towards security against sham activities. However, this responsibility should not be left to banks alone; Lee (2012) explains that customers and regulatory bodies also have a role in e-banking security. Furthermore, banks do not have any influence regarding the electronic devices and channels used by their customers to perform transactions.

The bank should create a procedure to increase security. Firstly, it is supposed to formulate a secure online banking infrastructure. Then it should ensure the implementation of an appropriate information security policy. Thirdly, the bank should provide a robust monitoring system for fraudulent activities and notify its account holders of any high-risk transactions through SMS. Fourthly, the bank is supposed to offer a two-factor authentication (TFA) protocol for its account holders. The first factor is something like a PIN number, which the customer knows, whereas the second factor is something that the customer will own such as a smart card with a chip authentication (Lee, 2012, p. 8). On the other hand, the customers' responsibility is to ensure that they have enough knowledge regarding the safety tips required in e-banking. For instance, a customer should always stay alert in safeguarding his or her identity as well as limiting public access to personal computers. According to Lee (2012), there are numerous tips for

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safely logging on and off to a computer (Lee, 2012, p. 10). For example, a customer should never use a public computer to access his or her internet banking website. Customers should also close any open tabs and windows in a browser before logging on into e-banking. Moreover, after using the online service, the customer should always remember to log off. In safeguarding their identity, customers should use unique passwords that are difficult to guess. According to Lee (2012), a strong password should have at least six characters with a combination of numbers and letters. Furthermore, it is good for customers to often change their passwords and disable the 'Autocomplete' function in their browsers so that it does not remember previously input data.

Lee (2012) also advises that customers should never leave their TFA devices unattended (Lee, 2012, p.14). Other tips include disconnecting internet connections when not in use, backing up critical data on removable hard drives or Compact Discs, and installing internet security software for real-time detection of intrusions on a customer's computer. The roles of regulatory bodies in e-banking security are also several. According to Lee, regulatory bodies should develop adequate policies that promote customer protection and international cooperation among partners (Lee, 2012, p. 19).

CONCLUSION

The e-banking revolution has quickly changed the global business of banking. As a result, banks all over the world have reoriented their business strategies in order to encompass the new opportunities offered by online banking. In other words, the banking sector has led global electronic trade in recent years. Internet banking has enabled banks to change strategic behavior, scale borders, and create new possibilities as a result. Furthermore, internet banking has changed banking services towards the neoclassical economic theories of market functioning. Due to this, the market has become transparent and clients can easily compare banking services from different banks. For example, while using the internet, the customer is only one-click away from competitors. Thus, if a client is not satisfied with the products or services offered by one bank, he or she is able to change to a preferred banking partner faster and more easily.

Online investing has tremendously reduced the physical costs of operations. As Williamson (2006) stated, technological advancements in information technology have reduced the costs of processing financial information, whereas use of the internet facilitates transmission of financial information. In fact, this is why online financial services have gained popularity in recent years. In the future, this will ensure that banking rates are friendly as well as encouraging to more innovations regarding the current products and services being offered by banking institutions. In addition, electronic delivery of financial services has enabled banks to meet their clients' expectations and create close customer relationships (Williamson, 2006). Hence, as discussed by Chavan (2013), online banking will eventually triumph over traditional banking in the coming years as more developing nations are now building their economies with specific focus on e-learning, e-commerce, and e-banking.

Online crowdfunding has funded many new companies and initiatives in their initial stages and is substituting the funding of organizations with more online platforms being created. The examination of the risk from both sides, the borrower and the donor, is essential before making an investment or borrowing to make sure that the business is finally successful. The legislation of the Act has enabled the platforms to conduct business better and have a larger crowd since the donors have the backing of the government and the law while engaging in the business.

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Online Crowdfunding has introduced new funding new funding mechanism and rules for news businesses. Most of crowdfunding funds are collected through reward-based platforms, however equity crowdfunding is becoming more popular. It is expected that online crowdfunding will grow in popularity as many new crowdfunding opportunities become available. A new business that seeks funds through the online crowdfunding process comes out stronger as for the questions that has to answer and the scrutiny that it is put under, compared to convince a single angel investor. It is worth mentioning that because a startup does not obtain online crowdfunding does not necessarily mean that the business is not viable. It might be that investors may not be on that platform or perhaps is not the right time. One of the biggest challenges ahead will be communicating efficiently and engaging with investors after successful funding. Investors will possibly be interested in the big numbers and updates instead of the news from daily operations. Investors will be more likely to reinvest if they are kept engaged and the company is looking after them. Creating a mutual interest might foster that investors act as ongoing mentors in the business.

The importance of e-banking and online financial services can be summarized as significant time management, elimination of queues, cheaper costs. Customers are able to make financial transactions any time of the day, and without physical interactions with the bank. Another characteristic of e-banking is rapid and uninterrupted access to information. Furthermore, e-banking allows a customer to enjoy the convenience of carrying out financial transactions from the comfort of his or her office or home.

Security is an important issue in e-banking and finance. Banks have to create the organizational procedure for security. A secure online banking infrastructure is necessary, as well as the implementation of an appropriate information security policy, the bank should provide a robust monitoring system for fraudulent activities. Finally, the bank is supposed to offer a two-factor authentication (TFA) protocol for its account holders.

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KEY TERMS AND DEFINITIONS

Angel Investor: An investor who provides funding for small startups or entrepreneurs.

Crowdfunding Platform: Internet platforms which enable companies to advertise over the internet and obtain investments from registered users in return.

E-Banking: The performance of banking business through the internet. It is also known as "Internet banking" or "Online banking".

Electronic Commerce: A business model that enables to conduct business over the internet.

Financial Institutions: An institution that provides financial services to potential clients.

Information Technology: It is the use of any computers, storage, networking and other processes to create, store and exchange electronic data.

Online Security: Computer security related to the internet involving browsing and network security. It is designed to establish measures to use against attacks through internet.

Online Trading: Individual investors buy and sell stocks over an electronic network through a brokerage company.

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Chapter 38
Running Successful Crowdfunding Campaigns for Non-Profits

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ABSTRACT

Crowdfunding is a method to raise revenue and funding from a large number of people. First used by entrepreneurs as a way to attract small-sized investments to for-profit ventures, the crowdfunding platform has grown substantially over the last five years. Today, a valuable mechanism for fundraising for not for profit organisations, the crowdfunding platform is projected to realise nearly a US$100 billion by 2025. Non-profit leaders, employees and volunteers can benefit by successful crowdfunding campaigns as a means to raise revenue.

INTRODUCTION

Crowdfunding is an innovative mechanism to raise funds from a large number of people (a crowd). The funds obtained from the individual is usually small-to-medium (Ordanini, 2009). According to Mulvey, (2013), the non-profit sector can couple crowdfunding with social media to produce effective and efficient changes in the way non-profits organisations seek, obtain and sustain funds. Crowdfunding has changed the dynamics of funding and has become an instrumental pathway for not for profit fundraising for non-profits to do so social good (Hobey, 2014). One of the reasons for this growth could be because crowdfunding platforms directly connect donors with requestors.

Crowdfunding is a very effective and cost efficient mechanism for not for profit organisations to raise revenue and funding. However, some conventional nonprofits and charities consider it as a threat (Maldonado, 2012). Despite a small group considering online crowdfunding as a threat, existing stakeholders in non-profit sector would benefit from seriously considering crowdfunding for its revenue raising potential and evaluate then make informed decision about their organizational long and short term objectives and

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business models. It should be acknowledged though that the dynamic growth in the online crowdfunding platform has been compared as analogous to what digital file sharing once was for the major players in the music industry (Southin, 2013). Southin (2013) suggests that the fundraising environment is changing and that the growth of online funding is just at the beginning stages of development.

This chapter explores how a non-profit can launch a successful crowdfunding campaign. Following the introduction, a brief overview of the crowdfunding landscape provides insights into crowdfunding and the changing economic landscape of fundraising in the non-profit space. The characteristics of a successful not for profit organization crowdfunding campaign are then discussed followed by specific recommendations for not for profit organizations to embark on a crowdfunding business model and crowdfunding strategies are provided for successful crowdfunding campaigning is outlined. This chapter contributes to the financial knowledge in the not for profit space and concludes with three additional future research project recommendations.

CROWDFUNDING LANDSCAPE

Businesses and nonprofits have raised funds by using small number of donors are able to donate large amounts of money. However the landscape of fundraising is changing. Crowdfunding is one method of fundraising that relies upon getting small amounts of money from a large number of donors. Crowdfunding is normally done online (Bray, 2015).

The recession of 2008 has produced significant negative impact on the trend of philanthropic giving. In this scenario, crowdfunding represents a unique opportunity to obtain funds from individuals who may provide a smaller amount of donation and feel that they can make the difference in the success of the mission of nonprofits (Becher, Entsch, Frey, 2011). Crowdfunding as an innovative approach of fundraising has quickly grabbed the attention of nonprofit sector. Around the globe thousands of individuals and nonprofits are using crowdfunding to impact the lives of needy people. Crowdfunding has provided opportunities of philanthropic giving out of a small group of wealthy donors (Andrew, 2013; Belleflamme, Lambert, & Schwienbacher, 2010).

Crowdfunding is not a new concept. This concept has been around for hundreds of years. This concept of collective fundraising was used as early as in 17th century to fund publications (Carvajal & García, 2012). Today, the modern notion of crowdfunding is deeply rooted in the very old business model that nonprofits have used in which the funds were generated by collecting micro-donations from individuals to achieve the cause of nonprofits (Belleflamme, Lambert, & Schwienbacher, 2010). The term crowdfunding was first coined by Michael Sullivan. He launched a fundraising campaign to create an incubator for projects involving creation of video blogs. The basic principles behind crowdfunding approach were reciprocity, transparency shared interest and getting funding from the crowd. However the concept of crowdfunding was fully operationalized when Kickstarter.com, one of the largest crowdfunding platforms, adopted it (Prive, 2012).

By 2011, many more crowdfunding platforms emerged. These platforms were able to raise US dollar 5 billion in 2013. 30% of this amount was devoted for social causes (Morgan & DiGiammarino, 2014). While the figures speaks themselves the novelty and success of today's crowdfunding is due to the modern Internet technologies and the new philanthropic mindset of the people that have provided crowdfunding practices of big push. Crowdfunding projects can be used by both nonprofits and commercial firms.

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The crowdfunding projects initiated by nonprofits are community-based and offer no financial gain for donors (Estellés-Arolas & González-Ladrón-de-Guevara, 2012). While crowdfunding can provide many alternatives nonprofits are mostly interested in the donation crowdfunding. The basic philosophy behind this option is that people are invited to invest in the project initiated by nonprofits because these people have a passion for the mission of nonprofit. The investors expect intangible return of the investment that can be personal satisfaction coming from doing good for the community.

While crowdfunding is helpful for nonprofits it should be noted that nonprofits cannot use it as an approach to generate funds on an ongoing basis. Crowdfunding should be used to supplement the other techniques of fundraising such as personal solicitations, fundraising lunch, and direct mail campaigns. Crowdfunding should be used as a short-term technique to raise funds that should be integrated into a balanced mixed of fundraising techniques. As such crowdfunding should not be considered a replacement of other traditional fundraising techniques. For example crowdfunding can be a great way to raise funds for a specific cause such as launch of a new service.

Before launching a crowdfunding campaign nonprofits need to ensure that they set the campaign timeline and funding goal. They should then make efforts to generate genuine excitement around the cause for which the campaign is being run. Doing so the nonprofits can easily engage the support of existing and new followers. They can also encourage their followers to engage their friends and family in the cause. If nonprofits properly leveraged the power of social media and personal interaction there crowdfunding campaign can grow exponentially (Hemer, 2011).

Many times donors are motivated when they have a connection to the cause and are inspired not only by the work of the nonprofit but also by the mission of nonprofit and the people being helped. Crowdfunding is a great technique for nonprofits to supplement existing fundraising techniques. However successful crowdfunding campaign required developing a strategy plan. The nonprofits should start crowdfunding campaigns by first creating a description of the crowdfunding project. This description should outline how this project will benefit both the nonprofit and the community it serves. This project description should be considered as the pitch that nonprofit will be using to support and promote the crowdfunding campaign. The next step is the identification of the people that are likely to support the crowdfunding campaign. The nonprofit should pay attention to determine the needs expectations and values of the people being targeted for fundraising (Lambert & Schwienbacher, 2010).

The identification of incentives for the donors is the next step. The incentives are very important for crowdfunding campaigns launched by nonprofits. This is because there is no financial benefit or return associated with the investment that donors make into the crowdfunding campaign. Cost of the reward is not important and many studies show that donors of crowdfunding campaigns sponsored by nonprofits are not interested in any gift or return for their donation. The important thing for them is the personal satisfaction they derive by helping the people in the community they feel connected to (Pitschner & Pitschner-Finn, 2014). However, public recognition is one significant motivation behind donation. Nonprofits should ask their donors if they would like to be acknowledged for their donation. This acknowledgement can be made, for example, by prominently listing the name of the donors on the nonprofit's website. Besides providing a letter of thanks to the donors, the nonprofit can also provide donors the letter of appreciation from people or organizations that were helped by their money (Garecht, 2016). These letters can provide great emotional impact.

Nonprofits can also hand over small items, such as stationery or bags with nonprofit's name and logo printed on them, to the donors. They can also provide some distinctive experience for donors by arranging meetings of leaders of nonprofits with the donors or arrange the donors' visit to the facilities

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of nonprofits. Creativity is a key to success for every crowdfunding campaign. Nonprofits should think out-of-the-box and consider every option that can help build the support of the crowd they are targeting for fund raising. Nonprofits can leverage the power of visual elements in their campaigns. Short but powerful videos can be created to highlight the cause and strengthen the connection between the nonprofit and its supporters. The marketing plan should include an outreach plan that clearly outline how the crowd would be approaches e.g. through personal meetings or email (StartSomeGood, 2016).

CHARACTERISTICS OF A SUCCESSFUL CROWDFUNDING CAMPAIGN

Success of crowdfunding lies in generating interest with group of targeted people who are eager and willing to give for a cause. By increasing the number of people touched by the message of the crowdfunding campaign, nonprofits can increase the chances of success of the campaign by getting higher levels of funds. Nonprofits should develop a consistent, well-developed pitch for their crowdfunding campaign that can ignite support among the crowd and encourage them to use their individual influence and bring their friends and family to support the cause (Lamson, 2013).

Marketing efforts should continue throughout the campaign. These efforts should continue to make sure that campaign is sustaining and new energy is generating. It is a fact that donors are more comfortable supporting successful campaigns. Therefore, setting examples of early success is very important. Nonprofits should encourage their supporters to make early donations. Irrespective of the amount of individual donation, promoting the fact that a large number of donors are donating can encourage others to donate as well. This can help build the required momentum for the campaign. On most platforms, project creators can post updates about the project. Xu et al., (2014) found that success rate of crowdfunding projects that provided regular updates was fifty-nine percent of as compared with a success rate of thirty-nine percent among crowdfunding projects that provided no updates..

There are no limits in a crowdfunding campaigns and nonprofits can use both traditional and non-traditional methods to raise funds. However, nonprofits must have a funding goal. Non-profits should also make every possible effort to explain in a concise and clear manner to the donors how the donated money will be used. The promotional materials should provide a clear and easy-to-follow call to action that could drive the donation by the donors. Registering with tax authorities and using an established payment mechanism can help build reputation and trust among donors. A fast and trusted online payment mechanism can also make the process of giving fast, safe and with less complications (Read, 2013).

Crowdfunding can help nonprofits in their development plans by providing the needed cash and by generating awareness of the mission of the nonprofit. This awareness can then be used by the nonprofit to gain new supporters and potential donors. Crowdfunding campaigns are short in duration, but these campaigns provide a high level engaging and personal relationship building with the people. These relationships can help nonprofit strengthen its brand and reputation, expand its presence, and attract new fans. With increasing use of crowdfunding by the nonprofits and for-profits, there is also a need to develop standards and expectations. Without standards it will be difficult to use crowdfunding to reproduce the success (Carvajal, Garcia-Aviles, & Gonzalez, 2012).

Crowdfunding global platforms are varied and diverse. A brief overview highlights a few crowdfunding projects in the global community crowdfunding space. To start, Kickstart, one of the largest and most successful crowdfunding projects, deserves some mention followed by a brief overview of other global crowdfunding platforms and projects

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Kickstarter is a very large global community developed to support creative projects. Around the globe, more than 10 million donors have supported Kickstarter project. In July 2016, Kickstarter was running 108,651 successful projects. The successful project is the one that achieved its funding goal. Cummulatively Kickstarter raised approximately $US2.53 billion worth of donations between 2012 and 2016 (Kickstarter, 2016). The basic model of Kickstarter is based on a reward for donation. Kickstarter solely operates in US. Fundly is another large online crowdfunding platform that operates exclusively for nonprofits and charities.

Fundly only services U.S-based crowdsourcing campaigners and donors. Despite this limitation, by 2013, Fundly was running more than 3000 campaigns. These campaign raised more than US$ 300 million in donations (Fundly, 2013). Fundly charges a platform fee (4.9%) and credit card processing fee (2.9% + $.30) transaction to set up a fundraising page (Fundly, 2016).

Indiegogo is one of the world's largest crowdfunding platforms. With social media integration, direct email, and announcement features users can easily spread the word, raise awareness, and increase funding. For 501 (c) (3) nonprofits and charities in the US IndieGoGo offers a 25% fee reduction (indiegogo.com, 2016). In general, this exemption is applied to not-for-profit organizations (scientific, charitable, educational, religious, etc.) that must be registered and verified by the US Government through the IRS. 501(c) (3) tax exemptions and deductions are only available in the United States.

Besides these very large crowdfunding platforms, many other small-to-medium sized crowdfunding platforms for nonprofits. For example, *Causes* is a crowdfunding platform for GuideStar-verified 501(c) (3) nonprofits. Users can create a cause to support a nonprofit and integrate the campaign page with social media to mobilize their network to make donation. *CauseVox* is an online crowdfunding platform that nonprofits can use to create customized fundraising websites for campaigns. *Crowdrise* is an online crowdfunding platform that followers of nonprofits can use to create personal fundraising pages where their friends and family can donate. *Giveffect* is exclusively for charitable crowdfunding where donations go directly to partner nonprofits (Chung, 2013) (Chung, 2013). *Donate Now/Network for Good* provides free and economical fundraising tools that nonprofits can use to obtain donations on their own websites and on social networks. *DonorsChoose* is a platform that individuals can use to obtain donations for needy students.

FirstGiving can be used by individuals to obtain online donations. *Fundraise.com* can be used by both individuals and organizations to manage their online fundraising activities. *FundRazr* is a social fundraising tool for both individuals and nonprofits. *Givezooks!* Can be used by nonprofits to create custom online crowdfunding campaigns and integrate their campaign sites with social media to increase donor base. *GoFundMe* is a do-it-yourself online fundraising service for nonprofits. *Help Attack!* Uses social media to collect donations. JustGive (www.justgive.org) is crowdfunding platform where donors can give to nonprofit organizations through e.g. fundraising registries. *Pay It Square* is a crowdfunding platform to create customized fundraising pages and collect donations online. *Razoo* is a platform that individuals and organizations can use to create fundraising pages and accept donations. *StayClassy* is used by small- and medium-size nonprofits for online crowdfunding.

Each crowdfunding platform has features and expectations. Each nonprofit must carefully consider these features and expectations. All the platforms invite any nonprofit to set up an online fundraising campaign. Each fundraising page includes narrative, videos and pictures. These fundraising pages can link to social media sites or to the nonprofits' website. Nonprofits can either use their own payment mechanism to accept donations on these fundraising pages or use the payment mechanism provided by the platform. In former case, the burden of record keeping/processing and pushing the traffic to the fundraising page lies with the nonprofit.

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Success Stories

Globally, crowdfunding success stories are emerging of which only a few will be briefly mentioned here. Kids Company is a UK-based well-established charity that supports vulnerable children with food, clothing etc. Kids Company used crowdfunding to raise more than £100,000 online and became the leading UK innovator in fundraising by crowdfunding (Ratty, 2015).

AH20 is another UK-based newly founded charity dedicated to provide clean water for children and families in Nicaragua. Other such programs have also been set up. But AH20, has built an extensive reputation for its crowdfunding success.

The Canadian Hero Fund was started to provide scholarships to children of fallen Canadian soldiers. Since its inception in 2010, the Canadian Hero Fund has raised over $175,000 in scholarships revenue. Fifteen children of fallen Canadian soldiers (CanadaHelpsa, 2014) have benefitted from the scholarships.

The Canada-based The LEMON LOVE RIDE initiated the crowdfunding campaign to raise funds, enhance the profile of and acknowledge the role of hospice care in Canada. The LEMON LOVE RIDE aimed to help hospitals to fund operations and expansion plans. Since its inception, The LEMON LOVE RIDE set an initial funding goal of $10, 000 (Canadian) but within three weeks had reached its objective and the continued support of donors (CanadaHelpsb, 2014).

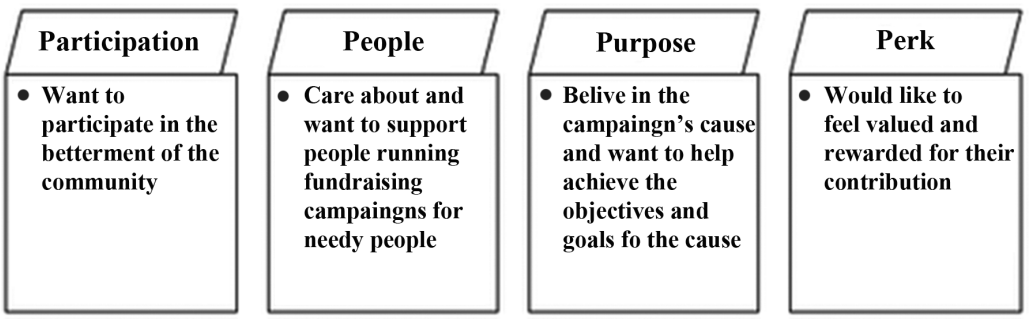
CROWDFUNDING BUSINESS MODEL

Ratty (2015), suggests that there are 4 Ps of giving. From Ratty's point of view, people give because they wish to participate, support, contribute and feel rewarded as an included member of society who have contributed to valuable cause. Figure 1 summarizes why people contribute finances to social and community projects.

Including the 4 Ps into their organizational business model and designing a crowdfunding strategic plan could provide not for profit organizations with the following benefits which include:

1. Building meaningful relationships with communities
2. Connect and reconnect with new and existing supporters
3. Communicate the impact of their mission

Figure 1. 4 Ps of giving
Source Ratty (2015) 1



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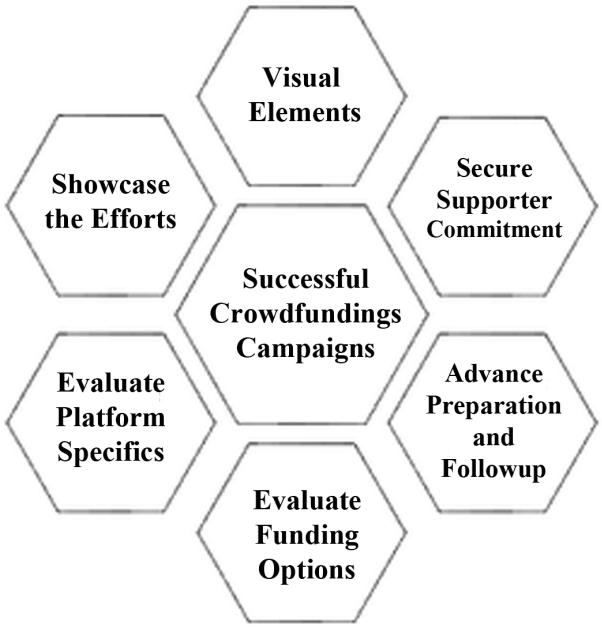
4. Building a recognizable brand
5. Access to and open up new networks
6. Generate funds
7. Generate organizational awareness
8. Generate organizational and program profiles

Crowdfunding presents a cost-effective way to gain support of community and to raise funds. There are few recommendations that nonprofits can use to build and sustain successful crowdfunding campaigns. Not for profit organizations should strategically consider Ratty's 4 Ps in the design of their crowdfunding campaigns. For example, to obtain funding, nonprofits must identify and offer incentives to the prospective donors. Realistic expectations, regarding the scope and reach of the organization, can help nonprofit avoid undesirable results. Nonprofits should set an achievable funding goal keeping in view the amount of expected support they can get (Wu, 2014). Figure 2 shows some important characteristics of crowdfunding campaign that are described below.

Visual Elements

Visual elements are a vital element of any crowdfunding campaign. It can not only help introduce the cause but also make it easier for supporters of nonprofit to share it with their friends and family. With cost-effective video editing tools, these videos can be economically produced and provide great return. MPW Media conducted a study that found medium was crucial when it comes from taking campaigns from idea to reality. The study analyzed 7,196 projects on Kickstarter and discovered that crowdfunding campaign pages with video were 85% more likely to achieve their funding goals (Emma, 2016).

Figure 2. Crowdfunding campaigns characteristics
Source Wu (2012), Zorn (2015) Emma (2016) 1



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Early Commitment by Supporters

Establishing early success stories is vital for crowdfunding campaigns. These success stories give donors confidence in the campaign and increase probability of their giving. Nonprofits should make every possible effort to ensure all the stakeholders, including supporters, are aware of their crowdfunding campaign before the campaign is launched (Wu, 2014). According to Zorn (2015), all successful crowdfunding campaigns are initially funded between 20-35% through the project creators pre-campaign awareness efforts within the first two weeks of launch.

Showcase the Effort

Showcasing efforts made in crowdfunding campaign can help nonprofit increase campaign success rate. For example, nonprofits can create an infographic providing highlights of the use of donated funds. Such highlights may include number of kids sent to school, number of people fed etc. This sharing of accomplishment can not only provide emotional impact but also help build momentum in the campaign.

Advance Preparation

Due to their limited duration, crowdfunding campaigns are highly dependent on how they are planned. An outreach plan should be developed and the supporters should be contacted well in advance of the launch of the campaign. It is important that committed donors be given advance notice of crowdfunding campaigns so that they have ample time to alert their social network about it (Bechter, Jentzsch, & Frey, 2011).

Follow Up

It is important to let supporters and donors know how the campaign is doing. This is because the crowd supporting a campaign feels the ownership and responsibility of the campaign. Updates and news of campaign on regular basis can keep this crowd informed and actively engaged in the campaign throughout. This follow up can also include appreciating the early supporters and offering them incentives to continue their philanthropic giving in future (Wu, 2014).

Evaluate Funding Options

Crowdfunding platforms can offer a fixed-funded model or flexible funding model. Under fixed-funding model crowdfunding campaign is given a pre-established timeline and financial goal (Cumming, Leboeuf, & Schwienbacher, 2015). If that goal is not achieved within the designated time frame, the organizers do not collect any funds. It is an "all or nothing" situation. Under the flexible funding model, organization can set the length of the campaign (e.g. 45-60 days) and the financial goal. If the organization fail to achieve the goal, they would still receive the funds but a large proportion would go to the platform provider. Kickstarter.com offers a fixed-funding model while Indiegogo.com offers an option of choosing between fixed or flexible funding model. If an organization feels that, they are short of time and unsure of the possible support they could get, flexible funding model is a better choice.

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Evaluate Platform-Specific Features

While choosing a crowdfunding platform, the nonprofit should carefully evaluate the following options. According to Hogue (2015), if a crowdfunding campaign is able to raise at least twenty percent of its goal, it is very probable that the campaign will be able to reach its target. Around seventy-nine percent of the campaigns on Kickstarter that raised more than twenty percent of their target ended up being successfully funded. However, crowdfunding campaign is not easy to setup, manage and sustain. The look and feel of the campaign is important for successful outcomes. Marketing and social media is increasingly playing an important role, selecting the appropriate fee paying and payment processing portal and the ease of using the online crowdfunding platform are all elements that contribute to the success or failure of a crowdfunding campaign. The up-front effort and full buy-in options from the organizational leaders are prerequisite for measureable success.

CROWDFUNDING CAMPAIGN STRATEGY

Look and Feel

The platform should include visual elements that appeal to your audience and donors.

Ease of Use

Evaluate your abilities to design and run a crowdfunding page. It is preferable that the nonprofit should be able to design and manage the fundraising page with minimum requirements of specific skills (like HTML) to operate the site.

Payment Processing

The chosen platform should offer the preferred choices of payment mechanisms that nonprofit can use to accept donations online. It is preferable that platform should provide a variety of payment options. It is especially important if the nonprofit would like to handle the payment processing using its preferred payment processor.

Fees

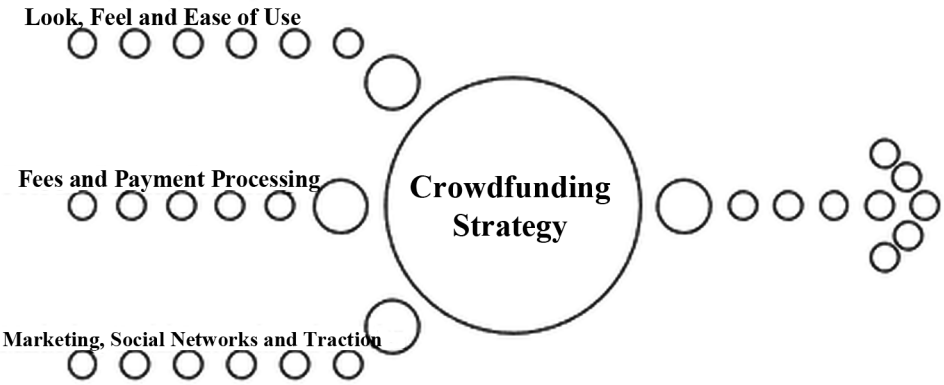
Nonprofit should carefully evaluate the available platforms any set-up, maintenance, or credit card processing fees. They should perform a comparison of costs with the amount of money they are willing to invest in building and managing the fundraising page.

Marketing and Social Networking Capabilities

Marketing on social media is essential to build rapport, gain new supporter, and reconnect with existing loyal followers. The chosen platform should provide integration of fundraising site with various social media platforms.

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Figure 3. Crowdfunding strategy
Source: Wu (2012), Zorn (2015) Emma (2016 2



Traction

The chosen platform should provide nonprofits ability to monitor the donors' visits on the fundraising site. Nonprofits should monitor the visits and the amount of donations collected to see if they are meeting their funding goal.

The organizational business plan and the organizational crowdfunding strategy are both important to achieving crowdfunding objectives (Hogue, 2015). The investment is such a strategy is not easy. Various organizational elements require careful consideration. However it is anticipated that the initial initiative could produce exceptional outcomes. Careful consideration is required and the crowdfunding business plan and crowdfunding business strategy as depicted here are merely sketches. Figure 3 depicts how crowdfunding strategy relates to the crowdfunding outcomes.

CONCLUSION

Crowdfunding is rapidly and dynamically gaining popularity. Due to the cost efficiency, scope of and reach of diverse online communities, the opportunities provided for not for profit organizations who seek to raise revenue, are extensive. However, crowdfunding campaign is not easy to setup, run, and sustain. A good amount of up-front effort and full buy-in from the organization's leaders are prerequisite for measureable success.

Taking the four Ps of crowdfunding into careful strategic consideration, can help nonprofits build meaningful relationships with community, connect with new supporters and reconnect with existing supporters, communicate the impact of their mission, build a recognizable brand, open up new networks and generate funds, as well as awareness.

The crowdfunding campaign environment is a new phenomenon in the not for profit environment. Further research would generate knowledge on future directions in this space. Future research in the not for profit and crowdfunding space could include:

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1. Comparative analysis of crowdfunding platforms that are used around the globe. This would enhance the understanding of crowdfunding being undertaken and the types of platforms that other not for profit organizations are operationalizing elsewhere.
2. Knowledge on similar crowdfunding platforms is lacking but understanding the differences between crowdfunding platforms would generate new knowledge and provide new insights on the mechanisms of different types of not for profit organizations, the use of similar crowdfunding platforms and the donor response rate. Such knowledge would greatly extend the knowledge and understanding of the success rate of crowdfunding and not for profit organizations
3. The impact of organizational brand, how it influences donor decision to contribute to the campaign, would provide insights to the success and failure of crowdfunding campaigns.

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KEY TERMS AND DEFINITIONS

Branding: Refers to aligning what an individual or firm want people to think about itself with what people actually do think about the individual or firm.

Business Plan: A business plan defines business goals, explain why they are attainable, and plans for reaching them.

Community: Refers to a group of people who share some common interest.

Crowdfunding Platform: Refers to a website used to develop and run a fundraising campaign.

Crowdfunding: Refers to raise funds for a venture using a large group of people.

Donor: Refers to a person who donates something, especially money to charity.

Non-Profit: Refers to an organization that uses its surplus revenues to further achieve its purpose or mission.

Recognition: Refers to public acknowledgement of person's status or merits.

Social Networking: Refers to the use of dedicated websites and applications for people interaction.

Sponsor: Refers to a person who pays for a specific item to be released.

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Chapter 39
SMEs in Nigeria:
Exploring Coopetition

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ABSTRACT

Research in the area of small and medium sized enterprises (SMEs) and coopetition has been ongoing for a considerable length of time. However, such studies have focused on SMEs in developed countries while there is very limited research in the same area with a focus on SMEs in Africa and developing countries. This research therefore aims to explore possible benefits and barriers that SMEs in Nigeria would experience in the adoption of coopetition. Considering the fact that it is a relatively new area of research, existing theories examining similar fields of study will be analysed with the aim of generating a theoretical framework through which factors affecting the phenomenon in the country may emerge.

INTRODUCTION

Small and medium-sized enterprises (SMEs) contribute enormously to the economy of developed and developing countries alike. According to the International trade Centre (ITC, 2015), globally, SMEs make up over 95% of all firms, account for approximately 50% of GDP and 60% - 70% of total employment, when both formal and informal SMEs are taken into account. This amounts to between 420 million and 510 million SMEs, 310 million of which are in emerging markets. In Europe, according to the European Commission (2015), they are the backbone of the economy. SMEs represent 99% of all businesses in the EU and they have created around 85% of new jobs in the past five years. They have also provided two-thirds of the total private sector in the EU and are considered key to ensuring economic growth, innovation, job creation, and social integration in the EU (European Commission, 2012). Whilst there is no doubt about the contribution of SMEs to the economy of different countries, they are very likely to lack support in terms of finances, government policy and infrastructure particularly where SMEs in developing countries are concerned.

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In spite of the many benefits that they provide to the economy, there are many challenges facing SMES in developing countries. In Nigeria, such challenges include the lack of government funding, inadequate infrastructure and unstable power supply. Financial constraints, management problems, lack of capital and the lack of support from financial institutions and government development agencies are issues that have also been cited as major hindrances to small business development in Nigeria (Okpara, 2011). Various studies have described Information and Communications technology (ICT) as an enabler that can aid growth and development (Hanna, 2003; Marker, McNamara &Wallace, 2002; Maier & Nair-Reichert, 2007). However, SMEs in the country are yet to take full advantage of these possibilities for various reasons. For example, a lack of power as well as the lack of skills have been identified as the two major barriers deterring the adoption of ICT amongst non-adopters in the region (Apulu, Latham & Moreton, 2011).

Additionally, SMEs in such countries unfortunately sometimes have the challenge of not being supported by government policy. For example, Okpara (2011) states that there is an inhibitive policy framework in Nigeria that discourages entrepreneurs from seeking funds to start up new or expand existing business. As a result, they have to find other means to ensure that they stay afloat. One of the ways they can achieve this is by engaging in coopetition. Coopetition, according to Levy, Loebbecke and Powell (2003) involves sharing knowledge that may be a key source of competitive advantage even though the knowledge gained by cooperation may also be used for competition. Small firms may be in a position to compete with larger firms in the area of coopetition, pooling resources to ensure that they sustain competitiveness and survive.

Recent research suggests that coopetition adds immense value to SMEs by reducing costs, improving access to research and development, and improving the innovativeness of SMEs. This research therefore aims to explore possible benefits and barriers that SMEs in Nigeria would experience in the adoption of coopetition. Considering the fact that it is a relatively recent area of research, existing theories covering similar fields of study will be examined with the aim of generating a theoretical framework through which factors affecting the phenomenon in the country may emerge.

This chapter begins by examining coopetition and considers what may make it a favourable alternative to current business practices of SMEs in Nigeria. The next section examines current literature and the context for this study. The following session analyses the issues, controversies and problems that may be experienced with coopetition. A framework that may help to resolve the issues is identified in the next session. The future research directions are then discussed in the next and finally, the conclusion of the study is presented.

LITERATURE REVIEW

SMEs and Coopetition

SME Definition

There are varying descriptions of what an SME is. The description of the term usually differs depending upon a combination of factors such as country, geographic region, level of development and business culture. Another reason why a general definition might be difficult is because SME definitions are sometimes linked to national support programmes and other regulations (ITC, 2015). In Europe, according

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to the European commission (2005), small and medium size enterprises (SMEs) are enterprises with fewer than 250 employees. Micro enterprises are enterprises with fewer than 10 employees while small enterprises have between 10 and 49 employees with an annual turnover and /or annual balance-sheet total not exceeding 10 million Euros. Medium enterprises have fewer than 250 employees with an annual turnover not exceeding 50 million Euros or an annual balance-sheet total not exceeding 43 million Euros.

However, in Nigeria, they are described as consisting of micro, small and medium scale industries. A Micro/Cottage Industry is an industry with a labour size of not more than 10 workers, or total cost of not more than N1.50 million, including working capital but excluding cost of land. A Small-Scale Industry is an industry with a labour size of 11-100 workers or a total cost of not more thanN50 million, including working capital but excluding cost of land. Finally, a Medium Scale Industry is defined as an industry with a labour size of between 101-300 workers or a total cost of over N50 million but not more than N200 million, including working capital but excluding cost of land (Central Bank of Nigeria, 2005). SMEs are essential to the Nigerian economy as well. They produce about 10% of total manufacturing output and 70% of industrial employment (Carpenter, 2005).

Challenges Facing SMEs in Developing Countries

Despite the fact that SMEs contribute immensely to the economic development of developing countries, they are fraught with several challenges that may prevent them from surviving. For example, according to St-Pierre, Foleu, Abdulnour, Nomo and Fouda (2015), the business environment and the lack of resources in the African ecosystem are primarily to be blamed for poor competitive capacity and business failure of SMEs. This implies that businesses are unlikely to thrive if the environment is not favourable. The authors further identify other factors that may impede the growth of SMEs in Cameroon including, corruption, financial constraints and the country's economic situation (St-Pierre et al, 2015). Similarly in South Africa, the lack of an enabling environment as well as limited access to market, finance, credit, skills and networks; poor customer relations, lack of appropriate technology, low production capacity, and the lack of a quality product (Ramukumba, 2014) are identified as factors that may have an adverse effect on the growth of SMEs. In Nigeria, there are several primary challenges identified as limiting SMEs growth, according to Mambula (2002). These include lack of funding, lack of contact with research institutes, poor infrastructure, difficulty in obtaining equipment, spare parts and raw materials, business opportunities and new product development methods. More recently, Obokoh (2008) similarly identified the following as factors impeding the growth of SMEs in Nigeria. Such factors include access to funding and inconsistency in the application of government SME development policies. Another growth inhibiting factor for SMEs is the lack of widespread ICT adoption. According to Akpulu, Latham and Moreton (2013), SMEs in Nigeria appear to have ignored the relevance of ICT in doing business and are as such, not in a position to reap the benefits.

SMEs in other countries within the region and beyond continue to face similar challenges such as rising research and development costs, high risk and uncertainty in technological development. SMEs may be unable to resolve these and those previously discussed challenges using their own limited resources and capabilities (Gnyawali & Park, 2009). In order to ensure that SMEs survive and even become more competitive, an alternative could be to establish partnerships with direct competitors who have complementary strengths and face similar challenges (Kossiva, Sarri & Georgopoulous, 2014). This phenomenon, which has been applied successfully by large firms, is known as coopetition.

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Coopetition

Developed by Brandenburger and Nalebuff (1996), coopetition is described as part competition and part cooperation. This phenomenon is based on the fact that most companies can achieve more success together, than they would if they were working alone in the business environment. The authors went on to explain that coopetition allows for the real world business situation, where there can be multiple winners in the marketplace with an objective to maximize the return on investment regardless of how well or how poorly other companies perform. Challenges within the business and other environmental factors could encourage businesses to participate in coopetition. For instance, according to Walley (2007), changes in the business environment have led from a position where many firms simply competed against each other, to a situation where they had to cooperate, and now to a point where they have to both cooperate and compete to survive. In order for businesses to survive, they must be creating some sort of value. The foundation for coopetition is the assumption that there are two essential elements that make up companies' activities which include creating value and capturing value (Gnyawali & Park, 2009). Thus implying that the strategy would be beneficial not only for creating and adding value but for long term survival, it may be worth adopting a different approach.

Apart from helping to create value, there are other reasons why coopetition might be worth considering for businesses, such as ensuring customer satisfaction. Walley (2007) argued that having a combination of cooperation and competition can be an advantage to consumers because research and development activities can be pooled to provide new products that they would have been unable to on their own. Thereby serving both the needs of the business and customer adequately as a result of coopetition. This combination may also be used to generate more profits and possibly to change the nature of the business environment to favour a particular business. Being able to change the business environment within which a particular business operates ensures that one is able to shape the industry's future, which helps to create opportunities for future success (Brandenburger and Nalebuff, 1996). The authors went on to postulate that a strategic framework in necessary to actively change the game of business and that coopetition theory provides such a framework. There is also a possibility of gaining competitive advantage from coopetition. According to Kossyva, Galanis, Sarri and Georgopoulos (2014), it is a process through which organizations can seek complementary partners to promote their own resources whilst also creating and transferring knowledge and investigating further opportunities without necessarily overlooking their own interests.

Whilst it is doubtless that there are several advantages to be gained by firms choosing to participate in coopetition, the bulk of existing research covers large firms as opposed to SMEs (Morris, Koçak & Özer, 2007). There is the question of how valuable this sort of arrangement could possibly be for small businesses who already as previously discussed, have a lot of concerns that they have to deal with on a regular basis in the struggle to survive. However, Gnyawali & Park (2009) explain three critical issues that suggest the pertinence of SMEs cooperating with their competitors as opposed to making other types of alliances. Firstly, because competitors are more likely to already be in possession of resources and capabilities that are relevant since they operate within similar markets. Secondly, since large competitors present a strong threat to SMEs and they are constrained where resources are concerned, they would benefit from collaborating to combine resources putting them in a better position to compete. Lastly, SMEs who compete with each other but have similar products and technologies can work together to create a uniform voice in the marketplace (Gnyawali & Park, 2009). These and other reasons make coopetition an important strategy to consider for SMEs in developing countries. It is therefore expedient to examine precisely what sort of value SMEs stand to gain, if any, from coopetition.

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SMEs and Coopetition

Although existing research covers more examples of larger firms adopting the coopetition strategy, there is some evidence that SMEs may benefit from it as well. Morris, Koçak and Özer (2007), argue that small firms should find cooperation with competitors relatively easy. They provide the following reasons to support this position. SMEs' fixed commitments are often limited and their operations are not as controlled by structure and formal policies, their image and market positioning are not well established in and their external networks may not be as well defined. This view is shared by Gnyawali and Park (2009), who postulate that SMEs are more likely to find coopetition strategy easier to pursue even though it is a complex strategy. They also argue that unlike large firms, SMEs are more able to experiment with new business models because they are less constrained by existing structure and formal procedures and policies.

SMEs are generally known as knowledge generators, but poor at knowledge exploitation (Levy, Loebbecke & Powell, 2003). They tend to exist as separate entities and information islands. By nature, SMEs in the same sector would view each other as competitors, thus implying that they would not readily share information. However, recent research suggests that there are several advantages that SMEs would benefit from, if they learned to view each other as coopetitors as well as competitors. For example, Gnyawali and Park (2009) argue that coopetition helps SMEs to develop their ability to effectively pursue technological innovations. They go on to explain that most SMEs have constraints on financial and technological resources and cannot address certain challenges using their own limited resources and would therefore have to reach out to their competitors who have the resources and are willing to collaborate to address such challenges. In addition to providing access to resources that would be otherwise unavailable, coopetition has also provided international opportunities for SMEs where such may have been unattainable. There is also the possibility of increasing competitive advantage by creating opportunities for export where coopetition is engaged by SMEs (Kock, Nisuls & Söderqvist, 2010).

Existing research covering SMEs application of coopetition explores several areas including the question of the size of the SMEs. However, according to Jankowska (2011), the size of the SMEs involved in the author's study indicates that size had no impact on the consequences of coopetiting. However, they found that companies employing less than 50 people expressed the most optimistic view of the results of coopetition for their international competitive position and internationalization, which could be explained by the fact that it is easier to develop a direct and even personal relationship based on trust when you have smaller business entities (Jankowska, 2011). Previous research has also explored various ways in which Coopetition has been applied by SMEs. It has been used as a strategy to gain market power, as a strategy in innovation processes, as a strategy in supply chain relations and as a strategy for global competition (Bouncken, Gast, Kraus & Bogers, 2013).

Whilst the benefits of coopetition among SMEs have been widely published, there could be some disadvantages as well. For instance, in a study of the effects of coopetition in knowledge-intensive SMEs engaging in clusters, Bouncken and Kraus (2013) found that coopetition negatively affects revolutionary innovation while influencing radical innovation positively. However, the majority of the SMEs interviewed pointed out the importance of competition for both revolutionary and radical innovation.

Finally, it is worth noting critical success factors that would ensure that SMEs make the most of coopetition strategy. Chin, Chan and Lam (2008), identified critical success factors which fall under three success factor categories: management commitment, relationship development, and communication management. With results indicating that management leadership and development of trust are the most important success factors.

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Features and Benefits of Coopetition for SMEs

Coopetition research among SMEs has gained traction in recent years and covers a wide range of industries such as Tourism (Pease and Rowe, 2005); Information Technology (Bouncken & Kraus, 2013); Agriculture (Walley and Custance, 2010); Football (Robert, Marques & Le Roy, 2009); Aviation (Klimas, 2014)and Wine making (Dana, Granata, Lasch, & Carnaby, 2013) with each experiencing varying, though mostly positive results. Various aspects have been focused on such as the size of the firms, the nature of the firms, knowledge needs of the firms and their innovativeness as well. A key question is how can an SME be sure that is participating in coopetition? What are the key features of coopetition? Czakon, Mucha-Kus and Rogalski (2014) have identified simultaneous cooperation and competition and mutual benefits stemming from coopetition, as the key characteristics of the phenomenon of coopetition. Other features which they recognised from their analysis of previous research include complexity, dynamics, managerial challenges and industry reshaping as a trait of competition. Dagnino and Padula (2002) considered that there are four different types of coopetition that differ according to the number of firms involved and the number of activities of the values chain. These include simple dyadic coopetition, complex dyadic coopetition, coopetition in a simple network and coopetition in a complex network.

Also, according to Chin, Chan and Lam (2008) researchers have recognized in more than half of published work that coopetition strategy is a multidimensional and multifaceted concept that assumes a number of different forms requiring multiple levels of analysis. Examples of the possible forms coopetition can take include clusters, business networks, strategic alliances and short-term agreements (Jankowska, 2011). Extant coopetition literature analyses coopetition between firms. However, Walley (2007) argues that this view is limited and adopts the stance that in underpinning commercial activity, coopetition extends far beyond the interaction between firms. The author specifically considers coopetition between various strategic units within a single firm, employees of a firm, and even between a firm and its customers. Regardless of what form or structure coopetition takes, there are several benefits for SMEs as reported in current literature.

SMEs through coopetition, can look for complementary partners, as a way of promoting their own resources; transferring and creating knowledge; exploring entrepreneurial opportunities, without losing sight of their own interests (Kossyva, Galanis, Sarri, Georgopoulos, 2014). SMEs may also gain competitive advantage through knowledge sharing (Loebbecke, van Fenema & Levy, 1999). Kossyva, Sarri and Georgopoulos (2014) analysed various types of coopetition strategy as well as the implications of economic crisis on Small and Medium-sized Enterprises (SMEs) and suggested that coopetition might be an appropriate business strategy for overcoming the effect of the economic crisis. E-business success among SMEs has been identified as a feature that may increase a country's long term competitiveness and coopetition has been found to have a positive impact on e-business success, thus implying that coopetition would be beneficial on the long run for SMEs and for economic development (Eikebrokk & Olsen, 2005). Coopetition helps to increase technological diversity and combine complementary resources of rival firms in developing new technologies and products (Quintana-García and Benavides-Velasco, 2004). SMEs can achieve multiple benefits from a coopetition network. Strengthening technological capability and capturing more business opportunities are two key benefits (Ruijun & Zhiman, 2011).

Adamik (2013) found that SMEs which cooperate with competitors more often have the resource base necessary for extension of their boundaries, they attain goals. SMEs attain by partnering with coopetitors real manifestations of extension of their business base, better satisfaction, increase business understanding, improve quality of and has a positive influence on the firm's innovativeness. According

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to Kossyva, Sarri and Georgopoulos (2014), the decision to adopt a coopetition strategy means that SMEs may be able to gain access to financial resources and valuable knowledge which will provide the opportunity for them to improve their core competencies, pursue large-scale innovation projects, create new products and services (in less time than it would take if they went on their own), joint innovation efforts and increase their product range. Coopetition can increase and change the competitive potential of a firm (Jankowska, 2011) and may help to manage risks effectively when SMEs use the strategy wisely (Gnyawali & Park, 2009). The table below provides a summary of these and more benefits that have been discussed in existing literature in the field of coopetition.

The benefits as listed in the table and paragraphs above are without a doubt attractive to SMEs who not only want to survive but thrive as well. However, there are several challenges to adopting this phenomenon, which cannot be ignored and are presented in the following sub-section.

Risks of Coopetition

Beneficial as coopetition may be to SMEs in both developed and developing countries alike, there are some possible downsides which have arisen over the years. For example, rivalry and conflict between firms can hamper each company's performance when they choose to collaborate (Morris, Koçak & Özer, 2007). Sharing knowledge may not be as straightforward as the SMEs think. Some may desire to share knowledge but most will not do so unless the risk of benefiting outweighs the risk of loss (Row and Pease, 2005). Considering the fact that knowledge sharing may likely occur where such a coopetitive relationship or strategy exists, SMEs could therefore be at a risk of being victims of opportunists who want to steal the firm's secrets, particularly where innovation is involved (Bouncken, Gast, Kraus & Bogers, 2013).

Again, in a knowledge sharing context, some SMEs may be more involved in cooperation and therefore tend to share knowledge more openly while other SMEs emphasize the competitive aspect of the relationship and therefore may be more inclined to protect critical knowledge and also be more interested

Table 1. Summary of the benefits of coopetition to SMEs

Benefits	Source
Competitive advantage	Loebbecke, van Fenema & Levy (1999)
Improved international competitiveness	Jankowska (2011)
Innovation	Quintana-García and Benavides-Velasco (2004)
E-Business success	Eikebrokk and Olsen (2005)
Increased understanding of the business area	Adamik (2013)
Access to financial resources	Kossyva, Sarri and Georgopoulos (2014)
Risk Management	Gnyawali and Park (2009).
New products and services	Kossyva, Sarri and Georgopoulos (2014)
Access to unique and essential resources	Spence, Coles and Harris (2001)
Access to intrinsic assets that can help to create value	Ahuja (2008)
Strengthening technological capability	(Ruijun & Zhiman, 2011).
Capturing more business opportunities	(Ruijun & Zhiman, 2011).

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in obtaining competitive knowledge from and about the partners (Ilvonen & Vuori, 2013). Knowledge sharing would be particularly critical for SMEs who are involved in innovation. They could therefore be at risk if adopting a coopetition strategy. For example, the innovation performance of SMEs may be at risk as a result of intensified tension when there are strong contradictions and dualities inherent in such relationships (Gnyawali, Madhavan, He, & Bengtsson, 2012). Similarly, Bouncken and Kraus (2013) found that coopetition negatively affects revolutionary innovation while it positively influences radical innovation.

A blend of both competition and collaboration would imply that SMEs are likely to depend on each other. However, if some SMEs become more dependent on others, then there is the chance that their vulnerability may increase (Zineldin, 2004). They also stand to lose autonomy over decisions or circumstances where they had complete control if they choose to adopt coopetition as a strategy as this may cause firms to experience a loss of control over activities or resources. This would be the case particularly when partners become less committed to the cooperative side of the relationship or focus only on their own benefits (Morris, Koçak, & Özer, 2007). Finally, a lack of experience in working with new partners can make considerable demands on management's time, efforts and energy, which may in turn lead to an abandonment of the firm's core business objectives (Zineldine, 2004).

Combining both competition and cooperation to form a new strategy creates quite a complex type of inter-organisational relationship which sometimes have resulted in participants calling for an end to the relationship. There are many reasons why coopetitive relationships have ended among organizations. Some of which may include one party not getting enough of a return, leakage of confidential information, different objectives and intentions, general distrust, and the tendency for the competitive aspect of the relationship to become prioritized over the cooperative aspect (Walley, 2007).

Both large firms and SMEs have clearly benefited from coopetition but there remains a need to understand how to effectively manage this sort of relationship such that participating SMEs benefit from its advantages.

COOPETITION AMONG SMEs IN NIGERIA

This research handbook's theme suggests that SMEs need to consistently renew themselves in order to sustain competitiveness by revisiting their strategies and exploring innovative ideas. Coopetition among SMEs in developing countries, is one way in which they can both revisit strategy and explore innovative ideas.

Challenges and difficulties that Nigerian SMEs are faced with include lack of access to funding, lack of government funding, inadequate infrastructure, unstable power supply, financial constraints, management problems, lack of capital and the lack of support from government development agencies. These challenges also include a lack of contact with research institutes, difficulty in obtaining equipment, spare parts and raw materials, limited business opportunities and new product development methods, inconsistency in the application of government SME development policies and limited ICT adoption. Further challenges include policy incentives being tilted in favour of large scale industries, poor access to information and to markets for SME products and services, poor access to modern technology, overdependence on imported raw materials and industrial inputs, lack of patronage of SMEs' products by government departments and agencies. Additionally, low literacy levels, training and technological knowledge on the part of SME operators, poor or non-existence of preservation and storage facilities,

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poor implementation or non-existence of either strategic plans or business plans, lack of strategic focus including no succession plans, poor quality of products, lack of integrity, poor coordination of government policies as well as frequent changes in the policies; are also problems that Nigerian SMEs have to deal with (Mambula, 2002; Onugu, 2005; Obokoh, 2008; Okpara, 2011; Akpulu, Latham & Moreton, 2013).

To address some of these challenges and ensure that they thrive, SMEs may have to develop coopetition as a strategy, such that each SME participating in such a relationship is able to benefit mutually in a way that they are able to surmount the aforementioned difficulties. Walley (2007) argued that in many instances it is coopetition rather than competition that represents the most efficient form of inter-firm relationship. Engaging in coopetition with competitors may provide access to funding, infrastructure, equipment, new business opportunities, better access to raw materials, technology, innovative products and innovative production methods. The strategy seems to be a resolution to a lot of the challenges faced by SMEs as previously discussed. Coopetition has its strong points but there are also risks that may be involved in such a relationship. Beneficial as it may be, the question remains, what types of SMEs can benefit from this sort of arrangement and how do they draw value from such a relationship? Existing research covers SMEs in the following industries Tourism, Information Technology, Agriculture, Football and Wine making. The size of the SMEs and its effect on coopetitive relationships have also been analysed. However, current literature within the domain has focussed on SMEs in Europe with little focus on SMEs in developing areas in general and Africa in particular. Considering the fact that their challenges and opportunities may be different to those in more developed regions, this section analyses the issues, controversies and problems that may arise from exploring this phenomenon.

Influencing Factors

According to Cygler and Dębkowska (2015) coopetition belongs to the most complex types of inter- organisational relations because there are seemingly contradictory streams of relations and the attributes required from the parties involved may also be complex. They argue that not all candidates for coopetition are well suited to that kind of relationship. Similarly, Park, Srivastava and Gnyawali (2014) argued that since the basis of coopetition is the intensity of competition and the intensity of cooperation, it is expedient to examine the effects of each of them before delving into the effects of the simultaneous pursuit of both. Where inter-firm relationships between SMEs are coopetitive as opposed to being competitive, strategy for resources, capabilities and competencies will be different with the tendency to base strategy on resources, capabilities and competencies which are controlled as opposed to owned (Walley, 2007). Therefore, before delving into these kinds of relationships, SMEs must be able to address several questions. What is to be shared? Are they sharing costs, resources or knowledge?

Knowledge sharing among SMEs could carry a high risk and therefore any participating SME must understand what the value of knowledge is to the business (Ilvonen & Vuori, 2013). Risks of opportunism increase when SMEs share knowledge (Bouncken, Gast, Kraus & Bogers, 2013). As a result, any participating SME would have to develop a strategy that can help to address their knowledge sharing activities. This can be done both by recognizing better the knowledge that brings more benefits when it is shared, and by recognizing the knowledge that brings most benefits when it is kept inside the company (Ilvonen & Vuori, 2013). Whilst many SMEs wish to share knowledge this will occur only where the benefits from entering this sort of partnership exceed the potential losses. This is not the case where synergy and leverage are low (Row & Pease, 2005). Synergy refers to the additional value that cooperation

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and the exchange of information and knowledge generates; and leverage refers to the additional value the knowledge receiver experiences as a result from the information and knowledge exchange brought about by coopetition (Levy, Loebbecke & Powell, 2003).

Levy, Loebbecke and Powell (2003) identified three important factors that facilitate the sharing of knowledge fundamental to coopetition. These include:

- **Synergy:** The additional value that cooperation and the exchange of information and knowledge generates;
- **Leverage:** The additional value the knowledge receiver experiences as a result from the information and knowledge exchange brought about by coopetition; and
- **Negative Reverse Impact (NRI):** The deleterious effect the receiver's use of knowledge exchanged has on the sender, since the 'partners' are also competitors.

According to Loebbecke, van Fenema and Levy (1999), SMEs are poor at reaping synergies. They are poor at leverage, have limited resources and their main focus is survival. Among others, tension is another factor that may have an influence on the phenomenon among SMEs in Nigeria especially if innovation is a core part of their operations. Again, as far as innovation and coopetition is concerned, on the one hand, Bouncken and Kraus (2013) argue that empirical studies stress the positive relationship between coopetition and innovativeness but on the other hand, Tomlinson and Fai (2013) argue that coopetition has no significant impact on innovation Tensions resulting from simultaneous knowledge sharing and knowledge separation are special issues which have to be dealt with in terms of coopetitive innovation (Bouncken, Gast, Kraus & Bogers, 2015). The authors found that there are three levels of coopetitive tensions: inter-organizational level, intra-organizational level, and inter-individual level.

Kossyva, Sarri and Georgopoulos, (2014) suggested that SMEs have to build a coopetitive portfolio" consisting of different kinds of coopetitive partners; other SMEs, large enterprises as well as taking part in business networks. Developing a "coopetitive portfolio", will allow them to manage each collaborative agreement separately and try to obtain the advantages of each partnership. According to Fernandez, Le Roy and Gnyawali (2013), effective management of coopetition is not about having to choose between the principles of separation and integration. However, it is about being able to effectively combine the two principles. The strategic challenge therefore is not about making choices between integration and separation but is about how to go about doing both at the same time. As previously mentioned, coopetitive relationships are not always successful, therefore it is expedient to ensure that critical success factors are identified to ensure that participating SMEs benefit maximally with minimal risks.

This section has discussed the factors, issues and challenges that may be involved in the adoption of a coopetition strategy by SMEs in Nigeria. In the next session, this study draws from previously examined literature to develop a framework to further understand factors that are likely to be of import to SMEs who may benefit from coopetition in Nigeria and other developing countries.

A Framework for Coopetition Between Nigerian SMEs

Existing literature in the field of coopetition covers several industries which could either be large or small/medium businesses. Considering the inherent particularities that make SMEs different to large companies, it is worth considering a framework specific to SMEs to study the phenomenon. Also, there seems to be a gap in literature examining the phenomenon among SMEs in developing countries. Some

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level of cooperation does exist in this region, however, there is scant literature covering the research area. Nevertheless, SMEs in developed areas share several features with those in developing areas. It would therefore not be out of place to apply some of the factors identified from existing literature covering SMEs in more developed areas. Therefore, in addition to these factors, particular features of SMEs in a developing region are included in the proposed framework to provide a comprehensive view of what might be experienced in the field.

As previously discussed, researchers have recognized in more than half of published work that "coopetition strategy is a multidimensional and multifaceted concept that assumes a number of different forms and requires multiple levels of analysis" (Chin, Chan and Lam, 2008). In recognition of this fact, it is important to explain the context of the proposed framework. The framework considers the sort of relationships that SMEs currently participate in, their characteristics and how they may choose to coopete with other SMEs.

Current literature discusses some key features of coopetition which will also help to shape the proposed framework. According to Kossyva, Sarri and Georgopoulous (2014), coopetitive relationships consist of two dimensions; value creation and value appropriation. This will help to understand what sort of value the SMEs would derive and how it could help to improve their businesses. There is also the possibility of gaining competitive advantage. However, the mere adoption of a coopetition strategy is unlikely to provide competitive advantage. Instead, competitive advantage comes from an efficient management of the paradox and tensions that may be involved. (Gnyawali, He & Madhavan, 2008), pursuing integration and separation whilst comprehending the balance between the two is the key to realizing gains from competition (Bouncken, Gast, Kraus & Bogers, 2015).

According to Morris, Koçak and Özer (2007), coopetition has three key dimensions: mutual benefit, trust, and commitment. Similarly, Ruijun and Zhiman (2011) argued that a trusted relationship is the most important factor, compared with management commitment and communication management. Furthermore, holding high quality products is an important criterion for maintaining stability in the coopetition relationship. However, Zineldine (2004) argued that there are seven preconditions to developing a mutually beneficial business relationship. They are listed below:

- Organizations are willing to be engaged in an interactive exchange relationship.
- Each party possesses resources that the other party wants.
- Each party is willing to give up its some resource to receive in return the resource belonging to the other party.
- Each party is free to accept or reject terms and conditions of exchange that will leave them better off (or at least not worse off) than before the exchange.
- The parties are able to communicate and interact with each other.
- The parties recognize the ethical values and norms, interdependences, commitment and sustainable long-term relationship.
- The parties can strike a positive balance between the pros and cons of the relationship.

The Value Net, as developed by Brandenburger and Nalebuff (1996) constitutes a network of coopetitive relationships within which organizations take on multiple roles and seek complementary partners with the aim of creating value. The framework includes five players in a "business game". This players include the company in question, suppliers, customers, substitutors or competitors and complementors of that company.

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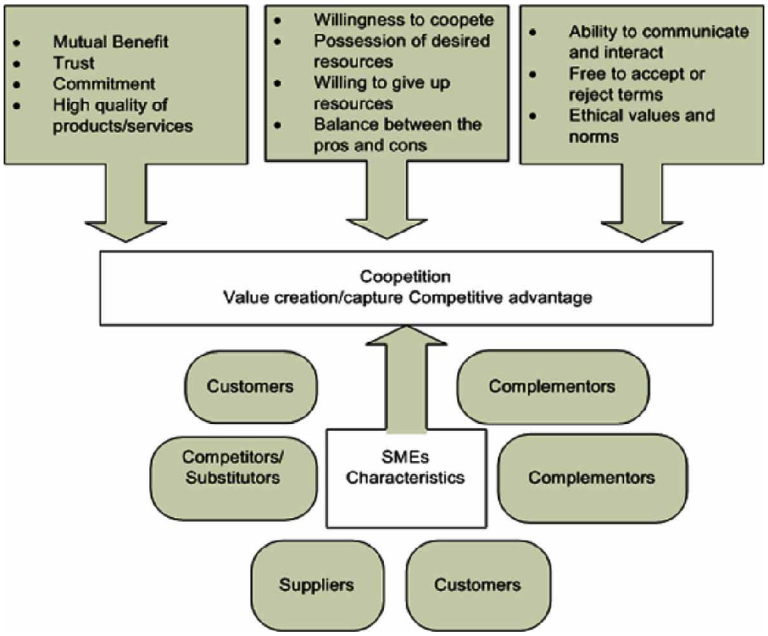
The framework proposed in this study incorporates the value net as developed by Brandenburger and Nalebuff (1996). It then extends it by replacing firms with SMEs since, as discussed earlier, they are quite different to larger companies. This research argues that the characteristics which describe the particularities of SMEs depending upon the region within which they operate matter and is therefore included in the framework. The framework also includes the key dimensions and factors that have been found to be important for creating and sustaining coopetitive relationships.

SOLUTIONS AND RECOMMENDATIONS

As previously discussed, Nigerian SMEs are faced with several challenges and difficulties, some of which include; lack of access to funding, inadequate infrastructure, unstable power supply, financial constraints, management problems, lack of capital and the lack of support from government development agencies, lack of contact with research institutes and so on. To mitigate some of these challenges, coopetition has been suggested as a possible strategy.

The challenges that may be involved in the adoption of coopetition as a strategy for competitiveness of SMEs have also been discussed in the preceding sections. However, the opportunities for embarking on such a strategy are also numerous and make it a worthwhile pursuit, particularly when certain conditions are met. A major question that one would have to ask is, how is value created and captured within the coopetitive inter-firm relationship? If this question is difficult to answer, then coopetition may not be a clear path for that SME. While coopetition may combine the best of both worlds of cooperation and competition, there is still an inherent paradox, given the possible tension between value creation and capture (Bouncken, Gast, Kraus & Bogers, 2015).

Figure 1. A framework for examining coopetition among SMEs in Nigeria



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Some of the problems already identified from existing literature, which may stand in the way of gaining maximum benefit from coopetition include a lack of mutual trust among SMEs' business partners and a lack of integrity, which erodes confidence and trust (Onugu, 2005). If these concerns are managed, then it would be possible for SMEs to take the bold step of participating in a coopetitive relationship. They would also need to know how value is to be captured and what steps would be necessary to gain competitive advantage from coopetition. The framework that has been presented in the previous section provides a way to have a better understanding of how this process could be attempted and also lead to SMEs gaining competitive advantage and also helping to overcome the issues that prevent their growth.

This would be a relatively new territory for SMEs in Nigeria, for whom there is no clear roadmap for exploring a coopetitive strategy. Nevertheless, the proposed framework that has been developed in this research aims to fill this gap by providing a guide for SMEs willing to participate in what could be a game changer.

FUTURE RESEARCH DIRECTIONS

This chapter sought to examine the phenomenon of coopetition among SMEs in Nigeria with the aim of improving their processes and allowing them to be in a position to possibly compete against larger firms. Based on factors that were identified in existing literature, a model has been developed which could help to analyse these issues in depth. The next phase of the research would be to apply this model to SMEs in Nigeria with an ethnographic research methodology to evaluate the effectiveness of the model and the business strategy. The business strategy will be critically analysed with a view to determine if it is not only beneficial to SMEs but will provide greater chances of survival. It will also help to inform on the possibility of coopetition strategy allowing small firms to compete with large organisations.

Considering the culture and limitations that SMEs in Nigeria face, it is expected that the strategy would be met with some level of distrust to begin with. However, if some field/case studies are undertaken, this might generate more confidence and lead further SMEs to try the phenomenon and verify its appropriateness for them and whether it aligns with their business objectives.

To this end, future research directions for this study aims to carry out qualitative studies. Considering the fact that coopetition is a new phenomenon in the region considered in this study, this may also be used to follow the coopetition process. In line with Bengtsson, Eriksson and Wincent (2010), an ethnographic study will be particularly useful in this situation and it could help to unearth deeper meaning as not only do research participants tell the researcher about their experience, the researcher gets to see what the SMEs actually do and what their experiences are when they choose to participate in a coopetitive relationship.

CONCLUSION

Small and medium-sized enterprises (SMEs) contribute enormously to the economies of developed and developing countries alike and are the backbone of the economy. In spite of these, they lack support in a lot of areas which tends to result in SMEs failing to grow and sometimes failing to survive.

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Research in the area of SMEs and coopetition has been ongoing for a considerable length of time and has covered both large companies and SMEs alike. It has also examined coopetition by SMEs in various industries. However, such studies have focused on SMEs in developed countries while there is very limited research in the same area with a focus on SMEs in Nigeria and other developing regions. This research therefore set out to explore possible benefits and barriers that SMEs in the country would experience, should they choose to adopt coopetition as a business strategy.

Challenges faced by SMEs in developing areas were also discussed and coopetition was suggested as a possible solution to the challenges that prevent SMEs from surviving and thriving. A framework was proposed to provide both a lens and a guide to ensure that the phenomenon may be studied in-depth and guide for any SMEs willing to participate in the process.

This study set out to examine the factors involved in coopetition and to examine benefits and risks which may make it a worthwhile venture for SMEs. It is hoped that the results from this research will inform both policy and practice. SMEs contribute a vast amount and it is time for governments in developing areas to take notice and begin to generate and effectively apply policies that will stimulate SMEs' growth and in turn stimulate their respective economies.

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KEY TERMS AND DEFINITIONS

Competition: The activity or condition of striving to gain or win something by defeating or establishing superiority over others.

Cooperation: The action or process of working together to the same end.

Coopetition: Collaboration between business competitors, in the hope of mutually beneficial results.

Developing Country: A country with little industrial and economic activity and where people generally have low incomes.

SME: Small and medium-sized enterprises (SMEs) are non-subsidiary, independent firms which employ fewer than a given number of employees. This number varies across countries. The most frequent upper limit designating an SME is 250 employees, as in the European Union.

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Chapter 40
Effective Approaches in Higher Education Development:
A Survey in Fundraising Best Practices

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ABSTRACT

Effective approaches in higher education development will look at a variety of topics ranging from corporate and foundation relations, to alumni participation, the importance of online giving, campaigns, top advancement trends in higher education, and the ever-critical cultivation of major and mega gifts. The education of a constituency about the importance of private gifts to both public and private institutions cannot be overstated as well given that tuition costs soar yet prospective students, parents, and boards continue to fight for the value proposition. After reading, reviewing, and studying this chapter, faculty, students, and professionals alike will have surveyed knowledge of effective approach in higher education development and will have a greater appreciation for the work that development staff encounter every day. The objective of this book "to explore contemporary and future philanthropy approaches and development theory in international higher education," will certainly be enhanced exponentially by the thorough and useful information presented.

Every year new advancement strategies and tactics are presented in books, papers, online, and at conferences around the world. Fundraise this way, engage alumni that way, marketing your mission with this twist. The reality? Advancement, and more specifically, development/fundraising at its core has not changed in hundreds of years.

This chapter will look at a variety of topics ranging from corporate and foundation relations, to alumni participation, the importance of online giving, campaigns, top advancement trends in higher education, and the ever-critical cultivation of major and mega gifts. The education of a constituency about the importance of private gifts to both public and private institutions cannot be overstated given that tuition costs soar yet prospective students, parents, and boards continue to fight for the value proposition. After

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reviewing, faculty, students, and professionals alike will have surveyed knowledge of effective approaches in higher education development and will have a greater appreciation for the work that development staff encounter every day.

CAPITAL VS. COMPREHENSIVE CAMPAIGNS IN MODERN FUNDRAISING

"Capital Campaign" vs. "Comprehensive Campaign". In the early days of fundraising campaigns, during the middle of the 20th century, most campaigns just focused on capital needs specific to facilities. Of course, other campaigns focused on endowment needs, scholarship, programs, or other special priorities. During the past 15 to 20 years, the approach to campaigning has expanded, and now most campaigns are comprehensive campaigns that include facilities, endowment, scholarship (in the case of higher education), programmatic, and operating support. Mega-campaigns in health care and higher education are frequently setting goals of a billion dollars or more. These mega-campaigns are almost always comprehensive campaigns that include all gifts to all areas of the organization given during the campaign period.

Comprehensive campaigns frequently raise question about how to "count" gifts but the reality is that comprehensive campaign production and results include any and every dollar raised in the organization. This can include but is not limited to cash, securities, gifts-in-kind, and estate gifts (planned giving). Major gifts, annual gifts, monthly gifts, lifetime gifts; regardless of the frequency, duration, or size of a gift it is a common misconception that one "counts" more in a comprehensive campaign than another.

The Council for the Advancement and Support of Education (CASE) publishes counting standards and below are their recommendations. These should always be referenced through CASE prior to and during any campaign as they do change periodically ('Preliminary Report of the Campaign Standards Working Group', n.d.).

CASE Recommendations

The working group makes the following recommendations specific to campaign counting and reporting (see attachment for proposed language recommendations and a comparison with current language in the third edition of the CASE Management and Reporting Standards):

- Revocable gifts may be included in campaign totals at face value if they are pledged during the campaign, documented, and as long as they are reported separately from outright gifts and irrevocable deferred gifts.
- Irrevocable deferred gifts may be included in campaign totals at face value, but both face and discounted present values should be reported.
- Conditional pledges may be included in campaign totals if there is a reasonable expectation that the conditions under which the pledge is made will be met during the campaign period and if there is appropriate documentation.
- Campaigns should be tied to the strategic goals of the institution, and for this reason the length of a campaign may vary. However, in order to maximize the commitment of volunteers, donors, staff and others, CASE recommends that a comprehensive campaign period generally not exceed eight years.

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- Government funds are very important to helping institutions achieve their strategic goals, they are often secured competitively and help leverage private funds, and fundraising staffs often are integral to securing government support. However, CASE reaffirms its position that comprehensive campaigns are fundamentally philanthropic ventures designed to raise resources from the private sector. Therefore securing government funds does not fall under the definition of philanthropy as a private act. For this reason, government funds should not be included in campaign totals, but institutions should work to raise visibility and recognition for the value of government funding in accomplishing institutional goals.
- CASE should include a disclaimer to the revised campaign guidelines recognizing that within increasingly complex gift agreements, there will be situations not expressly covered in these guidelines and standards.

Although annual gifts are likely smaller in size than what many donors would consider a "lifetime gift," their frequency can at times before even more valuable than more zeroes at the end. When an annual giving solicitation is made for an organization that is currently operating within the parameters of a comprehensive campaign, the materials should be branded and consistent in look and feel with your campaign branding. The tendency here is to create something completely unique to signify that "this is our annual giving direct mail campaign – send us everything that is in your pockets, couch cushions, and car crevasses." The new challenge is to shift the thinking to be more about developing the "pipeline."

A comprehensive campaign is truly meant to be a catalyst for fundraising within any organization. Very likely, if a church group needs a new sanctuary, they will fundraise for a sanctuary and only for a sanctuary. The sanctuary will be built, the church services will continue, but needs within the organization will still be lacking. This is the value of a comprehensive campaign. Not only should the church fundraise for that new sanctuary, but it should also fundraise for ongoing needs.

The annual giving "pipeline" is critical to long term success. Without it, your major gift prospect portfolio will be weak at best; nonexistent at worse. Annual giving mailing, therefore, must speak to the necessary task of thinking about direct mail campaigns, phone-a-thons, and annual fundraising events through a whole new light. There should be a seamless transition between a prospective donor visit in Fargo on Tuesday, and a fundraising gala in Nashville on Saturday. Messaging, graphics, and branding should all be part of your story. By focusing on a more purpose driven annual gift campaign, you can start to see a significant difference in the way that your donor consider support for the organization.

Alumni participation rates are an ongoing barometer for an institution's ability to reach out to its largest and broadest affinity group, its alumni. Although it is a small factor in most ratings and rankings, that rate does tell a story. In other words, alumni participation rates are important, they are a number, but they should not be the driving factor for any campaign.

There is no single way to run a campaign. Every campaign is different and truly depends on the needs or organization. It is not uncommon to even see two campaigns in the same organization vary greatly and both be successful. The best campaigns are those that are based on a sophisticated and thoroughly developed strategic plan that outlines the funding priorities most critical at that time. We call this plan the *Comprehensive Advancement Strategic Plan* or the CASP. The CASP is any institution's ticket to fundraising freedom. The document is a working document, not one that you begrudgingly create and then shelve the next week. No, the CASP should be printed, copied, published (internally), and shared broadly within the organization. For your key volunteers you could also share the document with them to the extent that they understand the confidential nature of its content.

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Complete Advancement Strategic Plan, Sample Table of Contents

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8. Where we are. Where we need to be. How we get there.
9. Appendix A - Donor Commitment Continuum
10. Appendix B - Plan for Development with Deans & Academic Leaders
11. Appendix C - Daily Gift Processing Procedures
12. Appendix D - Advancement Strategic Plan in Previous Year
13. Appendix E - Projections for Fundraising in Current Year

The Design School at Stanford University ("d school," 2014) focuses on the concept of "design innovation." This way of working, thinking, and progressing in any industry or initiative is becoming commonplace. Design innovation simply correlates with creativity and a progressive attitude that encourages anyone to think beyond institutional history or tradition. Comprehensive campaigns are no different. Any comprehensive campaign, performed at the highest levels, should allow for design innovation to be at its forefront. This concept can relate to the internal planning phases but more importantly should be seen in the conversations with donors that every development office hopes results in mega-gifts. Any development officer or academic leader must be creative when working with constituents who are each successful in their own right and who certainly fully express their own passions as the focus of their philanthropy.

TOP ADVANCEMENT TRENDS IN 2015

In 2015, there are several trends to look for within your own organization but also within those organizations that you may serve in volunteer leadership roles, on boards, committees, or as an advisor. A few trends that will likely continue and commence include a greater emphasis on crowdfunding initiatives, enhanced corporate reorganization for philanthropy, tighter foundation restrictions and regulations, and further prioritization of pipeline development and retention through alumni participation in higher education.

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CORPORATE REORGANIZATION FOR PHILANTHROPY

As corporations continue to recalibrate after the great recession, they also work to determine how best to support the world's philanthropic landscape. Most corporations want to support all types of 501(c)3 organizations for the inherent goodness that is given. However, many corporations are also interested in the tax benefits of philanthropic support as well as the recognition that frequently follows a significant gift. The more that organizations can ensure that a corporation's investment is publicly recognized (only if the corporation actually wants the public "thanks," of course), the better off the organization will be long term. This is where the cycle of donor development comes alive. Stewardship for corporations is truly a blurred line between a simple thank you and cultivation of that next gift. The upcoming decade will likely see continued reorganization in corporate philanthropy during the first half of the period followed by "settling in" that will lead to more clear-cut specifications for gift proposals.

There are many different ways which corporations may support higher education. Frequently, these organizations give through a foundation structure. These types of foundations could be endowed foundations, corporate foundations, a partnership foundation, or even a scientific foundation (Cagney and Ross, 2013).

Endowed foundations may be created by an individual or a company. Corporate foundations enjoy a flow of funding from the company to which it is linked. The lifespan of a corporate foundation is often linked to the parent company. A partnership foundation may be created by any public body and could possibly be a mix of private company funding, university funding, and even other public funding.

Corporate reorganization for philanthropic support is critical and does exhibit a huge for potential funding opportunities in organizations of all types. The internal structure of an organization's philanthropy, however, is still a corporation's leadership decision.

DONOR PIPELINE DEVELOPMENT AND RETENTION

Securing new donations and gifts is hard enough; keeping those donors engaged and giving again is even more difficult. Another trend seems to be a stronger focus on donor pipeline development and retention. Think about this, if on any given year, your organization has 500 regular donors who you can rely on making a gift, without a doubt. In addition to those 500, you have 500 new donors, but you then have attrition of 50%. At the start of the next year, you would not have gained any donors! Roger M. Craver in his new book, *Retention Fundraising; The New Arts and Science of Keeping Your Donors for Life,* has a great chapter titled "Losing Donors Through the Leaky Bucket" (Craver, 2015). Craver argues that there are three things that can happen while a donor is in your bucket, and two things that need to happen to keep the leaks to a minimum. The three things that may happen while a donor is active with your organization are that they will stay and become loyal supporters, they will leave because of a lifestyle change (move, illness, retirement, etc.), or they will switch their giving to another comparable organization (Craver, 2015). Quality and purpose driven marketing as well as the quality of experiences the donor receives immediately after the gift is made will drive what is next for that donor's relationship to your organization (Craver, 2015).

Developing a strategic retention plan for your institution and your development shop should be top of mind and an area of focus. Retention and stewardship certainly go hand in hand and as the four areas of the donor lifecycle (Engagement, Cultivation, Solicitation, Stewardship) take shape in a personalized way for you, retention will likely see a natural fit in your regular day to day business plan.

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EMPHASIS ON CROWDFUNDING INITIATIVES

In 2013 alone, over $5.1B was raised through nonprofit crowdfunding programs. It is no wonder that this significant number has grown in 2014 thanks to the ongoing barometer for giving that is the internet and social media. Of the $335.17B given philanthropically in 2013, $5.1B only accounts for 1.5% of that giving yet online giving in that same period rose 13.5%. The numbers are according to both the *Blackbaud Index* and *Giving USA* data. For those that are not infatuated with facts and figures, the simple fact of the matter is that crowdfunding can be done by anyone, inexpensively, and with generally great success if marketed correctly. Go ahead, give it a shot in 2015; here are some suggestions on how you can make it happen.

Dating back to the 1700s, the roots of crowdfunding can be found among cultures and countries from across the globe. The thought of having a critical mass of people pool funds together for one common cause is quite simply logical and results in a much more expeditious turnaround for projects than other types of financing. It was not until 1997 that modern day crowdfunding really became a reality. A British rock band sought online gifts from their fans to support their reunion tour and soon-thereafter, *ArtistShare* became the first known crowdfunding platform available online ('The History of Crowdfunding', n.d.).

Joseph Hogue in his 2015 book, *Step-By-Step Crowdfunding*, suggests that there are "Six Habits of Highly Successful Crowdfunding." These six habits are broad based but applicable to any organization of any scope and size. The six habits are Personal, Comprehensive, Team Builder, Aggressive, Creative, Strategic (Hogue, 2015).

A few key steps to launch crowdfunding at your own institution are outlined below. While not difficult to understand, the steps can at times be difficult to implement. For a first time launch at any institution, of any size, encouragement to work by committee and with all arms of advancement, cannot be understated. These arms generally include advancement services, alumni relations, development, and marketing/communications.

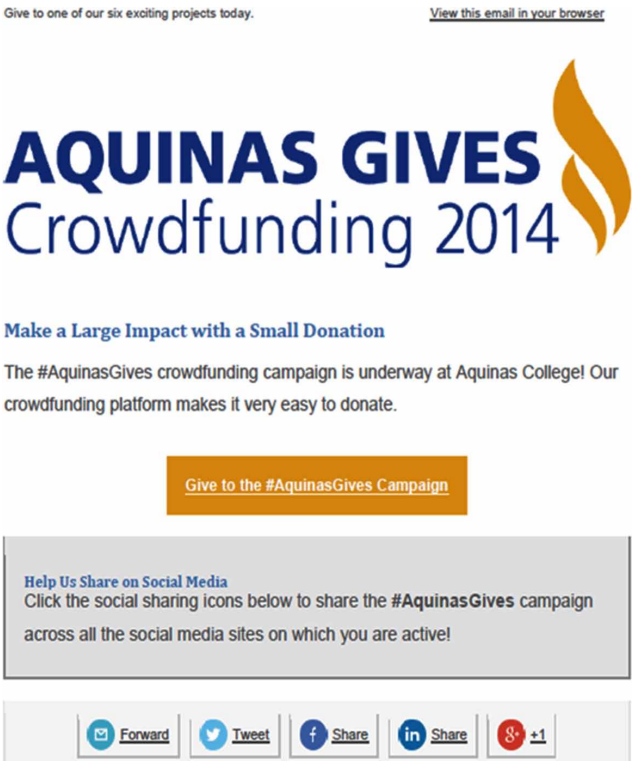
After your committee or working group is established, the selected of a platform for your crowdfunding initiative is a good next step. For many, a regular CRM system may have the capability of fulfilling your needs for a user friendly online platform. The good news here is that by 2015, hundreds of platforms are available for use by institutions both large and small. As of this writing, there are approximately 18 platforms that most frequently are used for crowdfunding campaigns. For larger universities, it is even possible that your own IT unit may have the capacity to actually build a simple system unique to your institution, saving you from the at-times-expensive nature of processing fees for service. One thing to look for is a progress bar feature, letting your constituents know how close the particular project is getting to being fully funded.

As with any fundraising campaign or initiative, it is critical to share the impact of your priorities with prospect investors. Hogue, in his latest text, wrote that he believes the most overlooked stage in crowdfunding is the most important, the pre-launch phase (Hogue, 2015). In this planning phase, you can truly conduct a mini-feasibility study as a proof of concept before your crowdfunding even launches, potentially saving you and your institution extensive time and money in the long run.

Illustrations and examples of e-mail that were used in a recent crowdfunding campaign can be found in Figures 1 through 12 (** Emails used with permission of Aquinas College, Nashville, Tennessee).

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Figure 1.



WHERE WE ARE TODAY

In today's world of constant connectivity and mobile tethering, online giving among philanthropic organizations and online investing for for-profit organizations cannot be forgotten. Having mobile friendly devices that allow donors and investors to give on the spot and in the moment is critical.

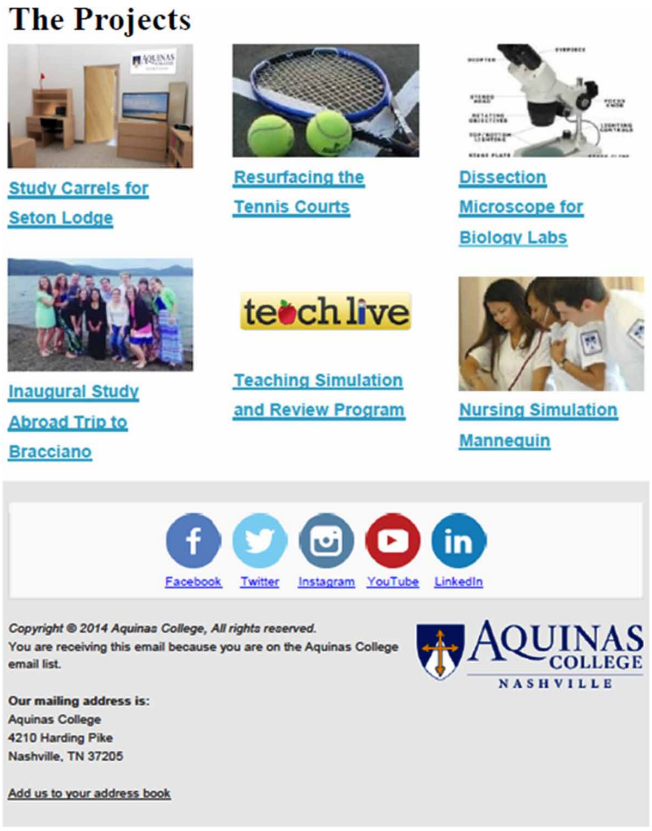
It is also important to remember that while online giving and specifically crowdfunding initiatives do increase an organizations pipeline for major gifts, only about 2% of the more than $335 billion given in 2013 was collected through the internet. Comparatively, that 2% figure illustrates a 14% growth as compared to the previous year, this is all according to the *Chronicle of Philanthropy* and the *Blackbaud Index (MacLaughlin, 2015).*

IMPACT ON HIGHER EDUCATION

In his recently published book, *Crowdfunding for Social Good,* Devin D. Thorpe mentions three common themes as impact is highly saught after in crowdfunding campaigns. Those three are utilizing matching grants, being creative, and spreading the word (Thorpe, 2014). Matching grants are what can incentivize someone to make a rather fast giving decision. Unlike major gift cultivation, especially in higher education, crowdfunding cultivation is fast. It may be as simple as the opening of an e-mail and click of a mouse. Knowing that if you "act now" your gift may be matched 1:1, 2:1, or even better is possibly

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Figure 2.



all a donor needs to actually make the gift. Being creative, as previously discussed, is quite possible the single biggest driver for crowdfunding success. Crowdfunding is all about busting the status quo and driving dollars to new and innovative opportunities! Creativity is king here, repeating what the institution down the street or across the state did is unlikely to work for you too. Thinking about a project from a different perspective or from a brand new angle is what prospective donors are craving when making a crowdfunding decision. Finally, spreading the word is the marketing power necessary to obtaining that critical mass of large donor relationships. Social media and other digital marketing strategies and tactics, along with the occasion compliementary print advertisement, must extend far behold your typically audiences. Spreading the word to those that you may not have touched in years or taking the chance in even reaching out to new audiences with your message of growth and quick impact initiatives can also be a great way to further send your message far and wide.

Muhammed Chaudhry, President and CEO of the Silicon Valley Education Foundation, learned about crowdfunding and wanted their organization to engage in this quick, typically small gifts, large impact, opportunity (Thorpe, 2013). Setting a goal of $30,000, the organization only raised $27,000 but over 220 donors contributed that sum. Chaundhry commented that through those 223 donors, they have plans in place to potentially raise over $150,000 in other major gifts through follow up and further solicitations (Thorpe, 2013). This is the truly crowdfunding impact at work. Taking the chance to use this fast fundraising approach to drive other major gift solicitation cannot be underestimated and should never be forgotten.

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Figure 3.

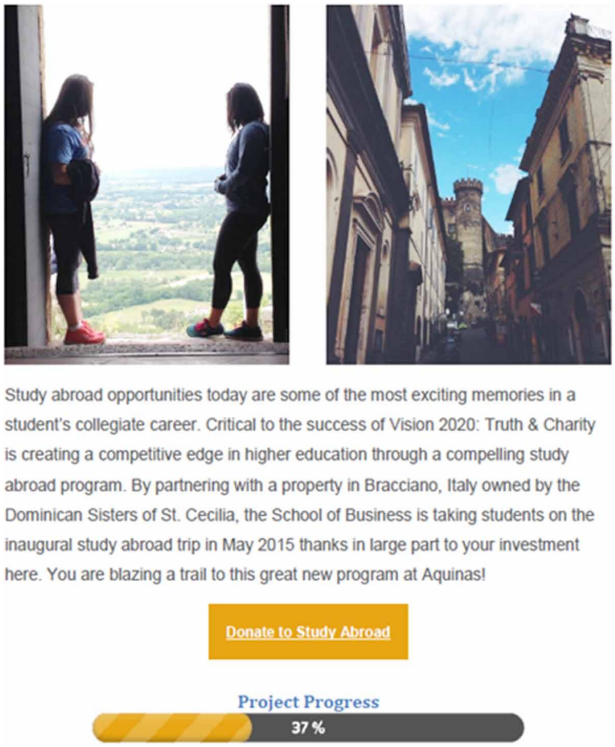


Many non-profit organizations are beginning to engage in fundraising activities each year. Some even limit these activities to one critical day of giving. This "one day" concept is particularly popular among institutions of higher education. Purdue University, for instance, raised over $7.5M in one day during their first *Purdue Day of Giving* in early 2014.

The more common approach, particularly in higher-ed is a set period for crowdfunding, built on a popular platform available online (dozens of options are out there for low cost based on giving percentage), and designed to be mobile and user friendly. At my current institution, we engaged in a 15 day program to really drive participation among new and existing donors. The *#aquinasgives - Crowdfunding 2014* project also shows progress in a strategic plan that has struggled to bring several larger projects to fruition due to poor institutional history. By creating confidence with the six aforementioned projects that were successfully funded (overall campaign ended on scheduled and at 101% of goal achieved), the institution certainly hopes that many of these larger priorities will see greater interest.

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Figure 4.



KEY TAKEAWAYS

In the case presented herein, the in-depth look at crowdfunding and one institution's successful implementation of this new fundraising strategy should serve as a reminder that although best practices are important to consider always, effective approaches constantly shift. In 2012, the Jumpstart our Business Startups (JOBS) Act was passed in the United States Congress ("Jumpstart our Business Startups," 2012). This act, while applicable to private business, also shows that it is a best practice among any business, for profit or not, to participate in the exercise of meeting goals through many small gifts that contribute to one large goal.

Crowdfunding does take time to really do it well and correctly. Selecting a platform to use (or building one customized for your organization if you have the IT support internally), selecting projects that are likely to garner interest, and marketing the entire initiative are the three most critical pieces to these projects. If done well, organizations should see donations from many new donors who, hopefully, can become major gift prospects thanks to the process. The marketing outcomes and annual giving pipeline that results cannot be underestimated. And finally, any organization that is successful in these efforts must show the fruits from these labors very quickly. Stewardship after the crowdfunding campaign can make or break success in the future. In the end, however, modern day crowdfunding has a place in the strategic plan of any advancement operation no matter if you raised a few thousand dollars annually or a few billion. Please, share your successes and failures in crowdfunding with us; things that you learned and things that you wished you had done differently.

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Figure 5.



Building the pipeline of major gift prospects through a robust toolkit of direct mail, digital marketing, and leadership annual giving while renewing the institution's commitment to stewardship, and focusing on the long term growth and funding priorities; these should be the areas of focus for any institution who have a desire to practice effective approaches in higher education development.

CASE STUDY EXECUTIVE SUMMARY: *AQUINASGIVES* CROWDFUNDING CAMPAIGN

The Challenge

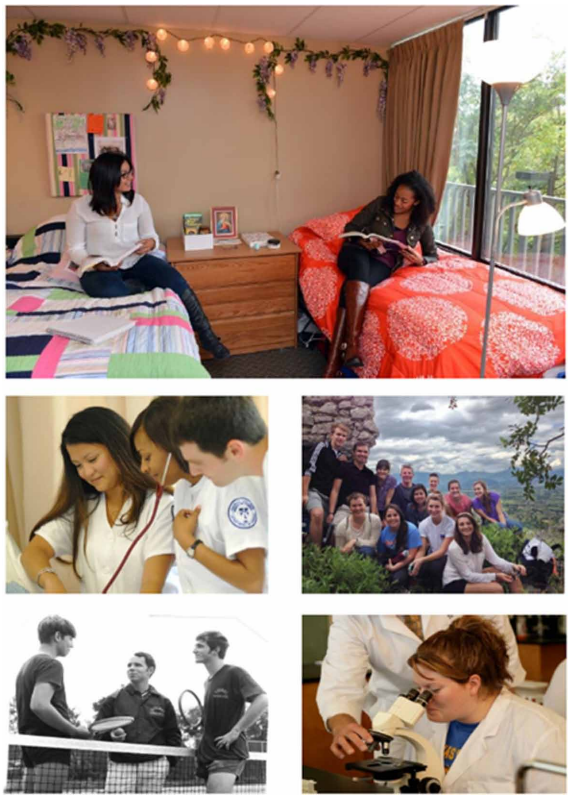
Creating and sustaining a reliable pipeline for major gift prospects is a concern for most nonprofits worldwide. Bold vision and big funding priorities mean that the large support is key but the smaller more frequent gifts provide sustainability. Simply put, the challenge revolves around the absolute best way to raise multiple small gifts for one small to medium sized project with a reasonably quick turnaround so that supporters can witness and be a part of the benefit of their investment. In this case, there was also a

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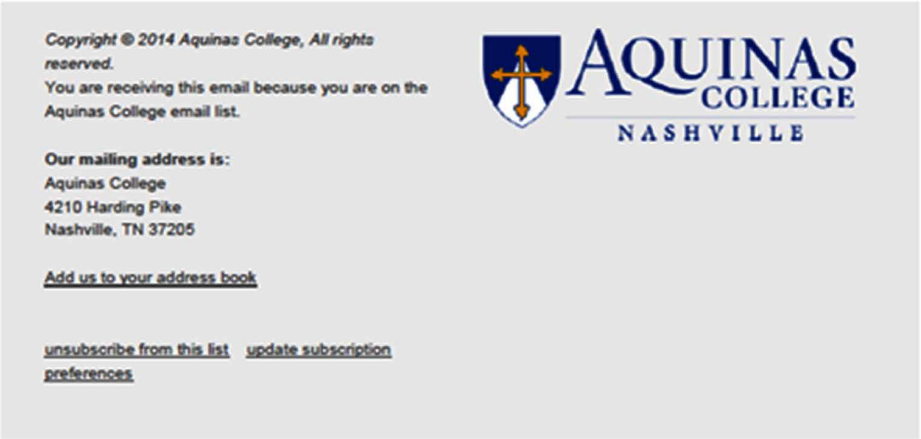


Figure 7.



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Figure 8.



previously existing issue with the college not following through on programs and changes as it received funding. Crowdfunding campaigns were thought to offer a wonderful opportunity for short turnaround or production times in execution of the projects.

The Solution

Crowdfunding provides an excellent way to fund multiple small to medium size projects through many smaller gifts rather than a few larger major or principal gifts. We looked at Aquinas College and their efforts to engage in the first crowdfunding campaign for their institution. Six projects were put together from areas of the college across its campus.

The college quickly had to turn these projects around so that stewardship could then take place. In any campaign, but especially in crowdfunding campaigns, stewardship proved to be one of the most critical areas of focus. Without proper recognition, it appeared to be very unlikely that the majority of supporters to the *AquinasGives* campaign would consider a second or even third gift. Investing in crowdfunding appears to only work if the institution is prepared. This includes both the development office and also, in the case of academia, the academic leadership or provost's office.

Finally, this case also made a good case for support that only once a year, twice at most, can most organizations support such a crowdfunding initiative. It is definitively different than many other annual fund type programs due to the intense nature of marketing that goes into the program. The marketing and communications aspect of a campaign of this kind is the foundation for success. A strong communication plan, which was present for the *AquinasGives* example, is the only way to ensure that thorough planning takes place for promoting the mini-campaign.

The Result

Each of the six projects created for this crowdfunding campaign were listed at or below $5,000 in total dollars needed for implementation. Of the six, four ended up being full funded but even still the other two projects had enough financial support to be executed on and the overall campaign reached 103% of its stated goal.

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Figure 9.



Another stated goal of this initiative was for the organization to increase the total number of gifts and donors to the college. Real time statistics and results are available for crowdfunding since the majority of investments made will be completed online. The completion of a critical mass of new projects (six, in this case) also showed Aquinas' constituency that the college can execute on a plan and with the proper funding can create new opportunities for its faculty and students.

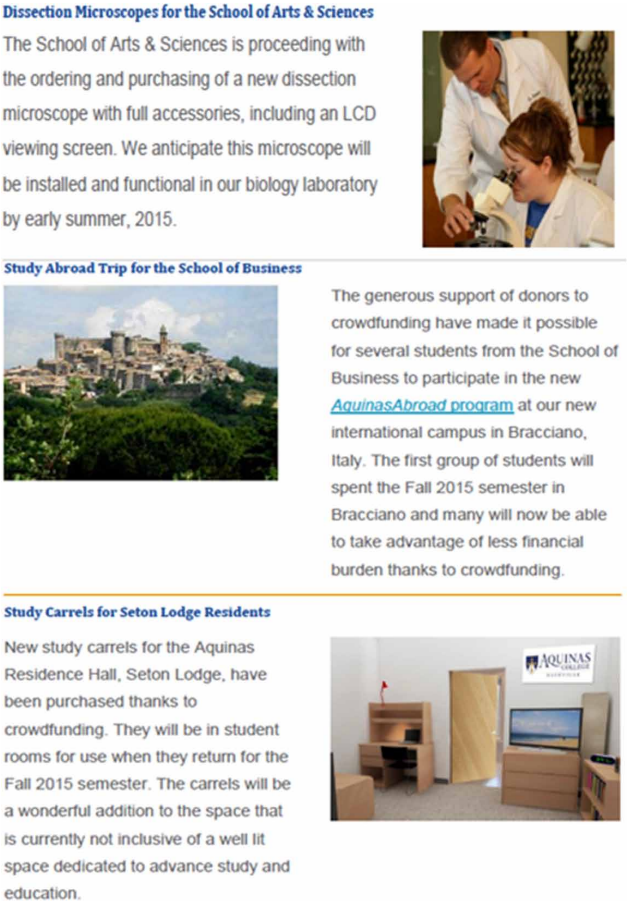
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CASE STUDY TEACHING NOTES: *AQUINASGIVES* CROWDFUNDING CAMPAIGN

1. Given Aquinas' issues related to follow up and follow through with the execution of projects once fundraising is completed, do you agree with the approach to begin building rapport with consituents through smaller projects generally associated with programs such as crowdfunding? Why or why not?
    a. Student responses will vary. Being an opinion type question, this should help spur debate and lively discussion. Some may not even agree with the issue of follow through or may feel that there is not enough information to properly answer the question. This is where creative license and some assupmptions may need to be made on the part of students engaged in this study.
2. List and discuss the CASE counting standards for development and discuss their relevance to a crowdfunding campaign.
    a. Counting standard are always relevant to any campaign, regardless of the type, size, or scope. Crowdfunding is no different and therefore the same standards should always be applied. It would unusual for any one campaign to not follow the relevant standards in the industry.
        i. **CASE Recommendations:** The working group makes the following recommendations specific to campaign counting and reporting (see attachment for proposed language recommendations and a comparison with current language in the third edition of the CASE Management and Reporting Standards):
        ii. Revocable gifts may be included in campaign totals at face value if they are pledged during the campaign, documented, and as long as they are reported separately from outright gifts and irrevocable deferred gifts.
        iii. Irrevocable deferred gifts may be included in campaign totals at face value, but both face and discounted present values should be reported.
        iv. Conditional pledges may be included in campaign totals if there is a reasonable expectation that the conditions under which the pledge is made will be met during the campaign period and if there is appropriate documentation.
        v. Campaigns should be tied to the strategic goals of the institution, and for this reason the length of a campaign may vary. However, in order to maximize the commitment of volunteers, donors, staff and others, CASE recommends that a comprehensive campaign period generally not exceed eight years.
        vi. Government funds are very important to helping institutions achieve their strategic goals, they are often secured competitively and help leverage private funds, and fundraising staffs often are integral to securing government support. However, CASE reaffirms its position that comprehensive campaigns are fundamentally philanthropic ventures designed to raise resources from the private sector. Therefore securing government funds does not fall under the definition of philanthropy as a private act. For this reason, government funds should not be included in campaign totals, but institutions should work to raise visibility and recognition for the value of government funding in accomplishing institutional goals.

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Figure 10.



Dissection Microscopes for the School of Arts & Sciences

The School of Arts & Sciences is proceeding with the ordering and purchasing of a new dissection microscope with full accessories, including an LCD viewing screen. We anticipate this microscope will be installed and functional in our biology laboratory by early summer, 2015.

Study Abroad Trip for the School of Business

The generous support of donors to crowdfunding have made it possible for several students from the School of Business to participate in the new AquinasAbroad program at our new international campus in Bracciano, Italy. The first group of students will spent the Fall 2015 semester in Bracciano and many will now be able to take advantage of less financial burden thanks to crowdfunding.

Study Carrels for Seton Lodge Residents

New study carrels for the Aquinas Residence Hall, Seton Lodge, have been purchased thanks to crowdfunding. They will be in student rooms for use when they return for the Fall 2015 semester. The carrels will be a wonderful addition to the space that is currently not inclusive of a well lit space dedicated to advance study and education.

vii. CASE should include a disclaimer to the revised campaign guidelines recognizing that within increasingly complex gift agreements, there will be situations not expressly covered in these guidelines and standards.

3. Using the outline for the Comprehensive Advancement Strategic Plan (CASP), explain how and where an intiative such as crowdfunding would fit in to the CASP.
   a. There are a few different ways in which students couple approach this question. The most likely scenario is that crowdfunding campaigns should fall under section IV of the CASP in "fundraising." Some student may argue that crowdfunding should be its own subsection with IV and some may argue that it should fall under IV – A. Annual Giving. It would also be more than appropriate for students to discuss the intense need for excellent marketing and communications plans for crowdfunding. Because of this requirement, students may also mention that crowdfunding should fall under section VII of the CASP in "Communications."

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Figure 11.

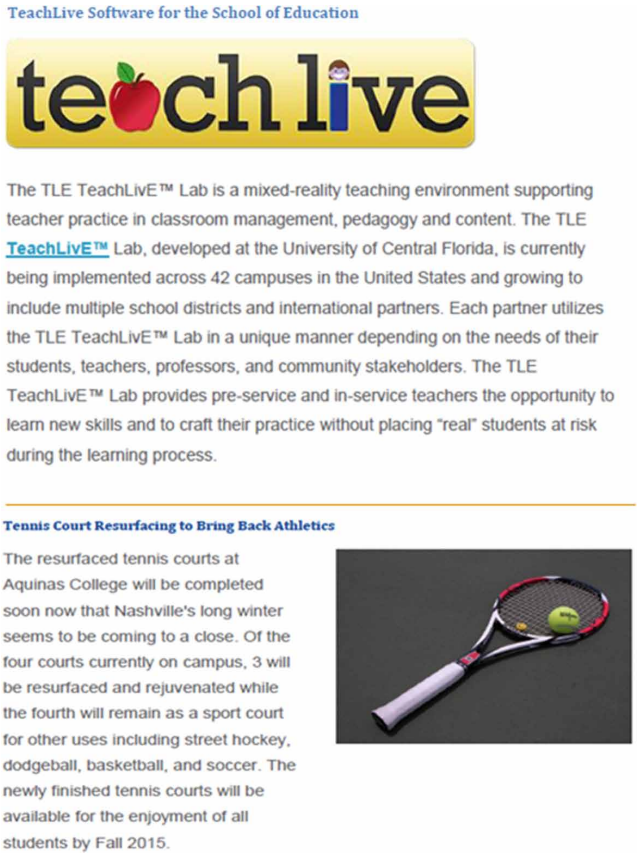
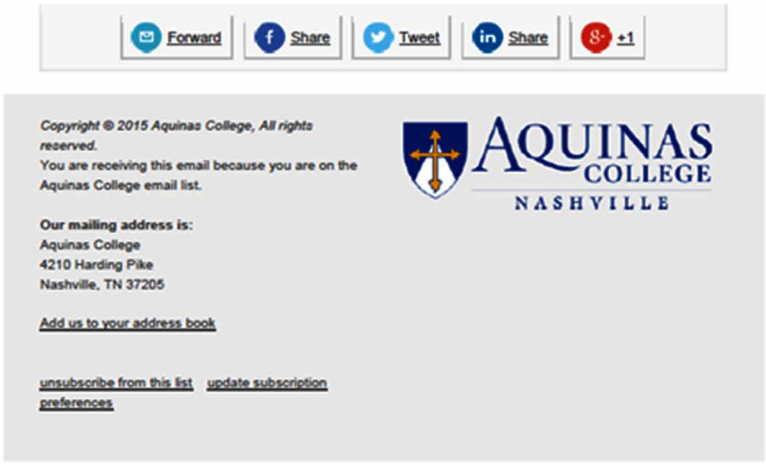


Figure 12.



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Chapter 41
Relevance of Entrepreneurship in TVET

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Ebonyi State University, Nigeria

ABSTRACT

The dynamic and complex nature of societies all over the world, with the evident failure of various levels of government and the private sector to completely solve the nagging problems of man, especially the down trodden, and less privileged, has made greater, the need for specially created and committed men and women to dedicate and sacrifice their resources to cover the gaps created by such failure. On the side of governments, perhaps, the failure result from insufficient fund caused by inadequate or poor resource management, corruption, or share insensitivity of the political leaders. This presented opportunity for citizens to create their own wealth and attempt solving their problems. This chapter therefore presented the importance of entrepreneurship programme in TVET as a means of equipping our youths to be self-reliant, capable of solving their problems and contribute to economic growth and development of their countries.

INTRODUCTION

Each time the word, "Entrepreneurship" is mentioned, it provokes different meanings to different persons. For this reason, the various definitions of Entrepreneurship, its various dimensions, perspectives and who the entrepreneur is, are succinctly explored. Most times, the "entrepreneur" who carries on the process of entrepreneurship is viewed as a manufacturer, inventor, business owner and the list is endless. However, the entrepreneur or being in entrepreneurship is not about owning a business, manufacturing or providing services, but ability to identify and evaluate business opportunities within where one resides and being able to take advantage of such business opportunities are among the distinguishing characteristics of the entrepreneur which this chapter discusses. It is also pointed out that the process

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does not start and end at identification of business opportunities in an environment. As stated in the main body, without gathering the resources needed to take advantage of such opportunities that open to the entrepreneur, the business of entrepreneurship has not taken place. The International Training Centre of the ILO, (2005) states that "two views of entrepreneurship exist: one view sees entrepreneurship as involving the identification of existing gaps of what needs to be done, and taking action to fill the gap…. Thus, the numerous advantages of entrepreneurship as listed in this work would have been lost when these perspectives are not taken into consideration by the entrepreneur. Also, the concepts of TVET are clearly explored in this chapter.

After reading this chapter, the reader will be able to:

- Assess the variety of definitions and origin of Entrepreneurship in use, and categorize these according to the different dimensions.
- Discus the concept of TVET in Entrepreneurship.
- Explain relevant theories of entrepreneurship.
- Understand entrepreneurship as a discipline.
- Provide practical guide on the entrepreneurship process.
- Review and understand the different perspectives of entrepreneurship.
- Determine what it takes to be an entrepreneur.
- Reconcile the different perspectives of Entrepreneurship/ TVET.
- Explain the relevant theories of entrepreneurship;
- Gain relevant insight into the concept of Entrepreneurship in TVET.

Concept of Entrepreneurship

The word entrepreneurship was first used during the French military history in the Seventeenth Century Love (2013:21). It was originally coined from a French word "*entreprende",* meaning a person who voluntarily heads a military expedition. However, as pertaining to scholarly discuses, the word was first defined by the Irish – French economist called Richard Cantillion. One of the most outstanding English definitions of that era was, and still is that Entrepreneurship is a term applied to the process of willingly helping to launch a new venture or enterprise and accepting full responsibility for the outcome. In the course of the theoretical evolution of entrepreneurship, especially both as a process and a discipline, various scholars and researchers from different disciplines such as Management, Economics, Sociology, Psychology etc, grappled with diverse sets of interpretations and definitions to conceptualize this abstract idea. In addition to the diverse sets of interpretation, further literature reviews show that researchers have been inconsistent in their definition of entrepreneurship. This can be seen from the fact that there are a minimum of a hundred definitions to explain the concept of entrepreneurship. Buttressing this fact in a detailed study by William Gartner (2009), (an American Entrepreneurship researcher) 44 different definitions were obtained, from where 90 different attributes of entrepreneurship were identified.

In the last century, many writers have identified entrepreneurship with the function of uncertainty and risk bearing and others with the coordination of productive resources, the introduction of innovation and the provision of technical know- how. During the sixteenth century, people who organized and managed military and exploration expeditions in France were called "entreprendre". The word entrepreneur originates from the French verb, "*enterprendre*" and the German "*unternehmen"* both of which mean "to undertake". An entrepreneur is defined as one who organizes, manages and assumes the risks of business enterprise.

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As earlier stated, the early 18th century French economist, Richard Cantillon (1680-1734), who introduced the term entrepreneurship in his writings, formally defined the entrepreneur as the agent who buys means of production at certain prices in order to combine them into a new product. He further defines entrepreneurship as self-employment of any sort where the entrepreneur is the bearer of uncertainty and risk. Bill Bolton & John Thompson (2004) confirms that it was Richard Cantillon who brought entrepreneurship to the fore and also broadened the word 'entrepreneur" to mean those who carried the risk of the economy. Shortly thereafter, another French Economist Jean – Baptiste Say (1980) who is believed to have coined the word "entrepreneur" as an English word in the 19th century, defined an entrepreneur as "one who undertakes an enterprise as a contractor, acting as intermediary between capital and labour". It is rather a discovery to find from literature that after the pioneering work of Richard Cantillion, the postulations of Adam Smith caused the entrepreneur to almost disappear from economic thought. Bill and Thompson states "but with Adam Smith (1723 – 1790), the entrepreneur all but disappeared from economic thought". In their account, "a generation later, the entrepreneur was reintroduced by Jean Baptise Say (1767 – 1832) and brought back to centre stage. Substantiating this claim, Rothband (1995) puts it this way:-

if Adam Smith purged economic thought of the very existence of the Entrepreneur, J.B. Say, to his everlasting credit, brought him back. For Say, the entrepreneur, the linchpin of the economy, takes on himself the responsibility, the conduct and the risk of running his firm. Heal most always owns some of the firm's capital.....In Say's view, the entrepreneur must have judgement, perseverance, and knowledge of the world as well as of business, as he applies knowledge to the process of creating consumer goods.

It was Jean Baptise Say who also defined the entrepreneur as someone who shifts economic resources out of an area of lower to an area of higher productivity and greater yield. He equally added to Cantillon's definition by including the idea that an entrepreneur is one who brings other people together in order to build a single productive organization. However, Jean - Battiste Say's definition did not tell us who the entrepreneur is. As previously stated, Adam Smith and David Ricardo had defined the concept of entrepreneurship under the broad English term of business management. Although Smith and Ricardo suggested that they undervalued the importance of entrepreneurship, another British economist John Stuart Mill actually stressed its significance for economic development and growth. He it was who claimed that entrepreneurship required ''no ordinary skills'' and lamented that there was no good English language equivalent to fully portray the specific meaning of the French term "entrepreneur". Bill and Thompson (2004) state that a century later, Schumpeter (1934) supported the stand of Jean Baptise Say and John Stuart Mill in stressing the significance of entrepreneurship but more strongly. Schumpeter saw the entrepreneur not only as being centre stage, but shaking the stage. He it was who formerly used the phrase "creative destruction" to describe what entrepreneurs do. They conclude that the modern use of the word "entrepreneur" in the French language is something of a letdown. It simply means a building contractor and that entrepreneur can be found in the French equivalent of the yellow pages. In conclusion, they defined an entrepreneur as a person who habitually creates and innovates to build something of recognized value around perceived opportunities.

Therefore, for one to be able to conceptualize definitional issues around this very aversive subject, one should first of all take some brief foundational discus under the following titles:

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1. The Entrepreneurial factor,
2. The Entrepreneurial function,
3. The Entrepreneurial initiative, and
4. The Entrepreneurial spirit or behaviour.

Entrepreneurial Factor

Some writers had seen the entrepreneurial factor as a new factor in production, just as you had men, machines, money etc. It is therefore seen as identifying an opportunity related to satisfaction of needs and converting it to something of value (either as a product or service). That, in our view, is the bases of classic theories of Schumpeter's innovative entrepreneur (1934- 1942).

Entrepreneurial Function

When considered as a function, it refers to the discovery and exploitation of opportunities or to the creation of enterprise. Under this, the risk-taking entrepreneur that occupies a position of uncertainty was proposed by Knight (1921).

Entrepreneurial Initiative

The entrepreneur is seen here as one with initiative and imagination who creates his own opportunities. Reference to entrepreneurial initiative underlies the reasons for correctly anticipating market imperfections or the capacity to innovate in order to create a ''new combination''. Entrepreneurial initiative covers the concepts of creation, risk-taking, renewal or innovation inside or outside an existing organization.

Entrepreneurial Spirit or Behaviour

According to Miller (1983), Entrepreneurial behaviour is seen as behaviour that managers exhibit to combine innovation, risk-taking and pro-activeness. The entrepreneurial spirit emphasizes exploration, search and innovation, as opposed to the exploitation of business opportunities (pertaining to managers).

These different approaches are the reasons why entrepreneurship is described in different ways. As the author had earlier on emphasized, entrepreneurship had variously been defined from various angles by many authors, including contemporary ones. There is also the business process approach which includes the identification and assessment of opportunities, the decision to exploit or sell them, efforts to obtain resources and the development of the strategy and organization of the new business project as propounded by Eckhardt and Shane, (2003)

Having laid these important foundations in our quest at its conceptualization, we state some of the classical definitions of entrepreneurship so as to gain more insights. Entrepreneurship is ''a process by which individuals – either within or outside organizations –pursue opportunities''(Stevenson and Jarillo, 1990: 23) . This definition also captures the essence of intrapreneurship, as well as the emphasis that if the managers and businessmen of many of our firms were to adopt entrepreneurial behaviour in developing their strategies, firms would be facing a much brighter future than current perceptions suggest (Lee and Peterson, 2000). Thus, Entrepreneurship is the process of creating value by bringing together unique resource combinations to exploit opportunities. It also means that at the heart of any

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entrepreneurial venture is an entrepreneur and his/her team. As a team, they become individuals with vision, tenacity and perseverance, and the passion to successfully implement a novel idea that had been conceived by the visioner. Morris, et al (2010) aver that Entrepreneurs are agents of change, they are the ''dreamers and doers'' who see a better way and do whatever it takes to make that better way happen. Much of what can be learned from them involves not so much their idea, but how they made it happen, how they overcome the obstacles and the negatives, how they found resources when there were none, how they brought along the team, how they dealt with personal and ethical conflicts, and more regarding implementation and growth. Another view of entrepreneurship is that expressed by Stevenson and Gumpet, who defined it as ''the process of creating value and transforming them to profitable activities not minding the risks involved. Moreover, it is pulling together a unique package of resources to exploit an opportunity [Stevenson and Gumpert 1985]. Therefore, we see that Entrepreneurship is a process that entails conceptual approach to doing new things, within a new philosophy of value, purpose, utility, quality and use which brings about the satisfaction of needs. Hence, it is therefore very relevant in Technical and vocational Education Training (TVET).

The Entrepreneurial Process in TVET

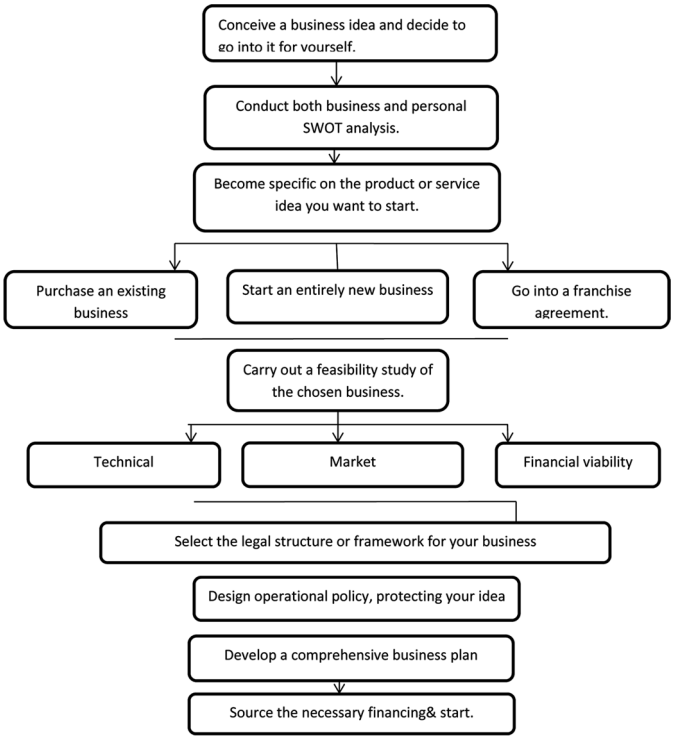
According to Fred Fry (1999) in Love (2008:135) the different steps that are involved in the success of an entrepreneurial outfit are starting a business; creativity and innovation; managing growth; seeking finance; and assuming risk. It is a known fact that starting an enterprise begins with the entrepreneur and business idea that had been conceived. The result of it is usually something of recognized value. In this process, the TVET entrepreneur engages in building the enterprise, creates and employs the different innovations that are at their disposal. This is mostly what initiates the process, because a good entrepreneur takes that creative idea that was conceived, and makes something great out of it. Without being an entrepreneur, even the best ideas will not even be put to use, it will fail and lead to nothing. Again, Bolton and Thompson (2004) state that entrepreneurs are individuals with very different ways of doing things but what they do is remarkably similar e.g., they all identify an opportunity, put together the necessary resources and build something of recognized value. So we see that the process has to do with the entrepreneur bringing inputs in the form of ideas and people, enters the process by building and growing it, and produces output by the birth of a new enterprise,

KEY FEATURES OF ENTREPRENEURSHIP

Contemporary studies by many scholars reveal important features of entrepreneurship that are worthy of mention in this chapter. From the submission of Stevenso and Gumpet (1985), we see that a major aspect of entrepreneurship is the identification of market opportunity and generation of a business idea that can be used to maximize the opportunity. When a new approach has been conceived by the entrepreneur, it often leads to generation of a business idea, either as product or service. The entrepreneur then searches further to identify the market opportunity by which those values, purpose, utility and use will be realized. Secondly, because entrepreneurial initiative covers the concepts of creation, risk-taking, renewal or innovation, there must be the gathering and commitment of resources even in the face of risks in order to pursue the opportunity. The entrepreneur must have the drive, the ability to conceptualise creatively. There must also be that aptitude for human relations so as to be able to harness the potentials of team

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Figure 1. The entrepreneurship process developed as practical teaching guide (Funai, 2014)
Source: Author's concept



members. Most essentially, and as earlier expressed by Stevenson and Jarillo (1990: 230), entrepreneurship is ''a process by which individuals – either within or outside organizations –pursue opportunities''. Therefore, for entrepreneurship to really subsist and fully become effective there has to be the creation of an operating business organization to implement the opportunity – motivated business idea through which the benefits of the enterprise will accrue to the entrepreneur.

Perspectives of Definitions of Entrepreneurship

In this section, we seek to describe the various assumptions of the realist; the constructionist; the evolutionary realist that includes some elements of realist perspectives and some elements of constructionist perspectives with a view to understanding the definitions of entrepreneurship and the formation of entrepreneurial opportunities.

The Realist Perspective

Blanchard (1855) and ErnestMach's (Kockelmans, 1968) state that the realist perspective has its roots in classic positivism and dates back to August Comte. In that view, any theory that is not based on observable facts is meaningless. In their account, Comte claimed, that "the goal of science is perdition based only on observable terms" and stressed further that unobservable objects, processes, and events in current realist view are ascribed the same properties as the observable. In his views, there is a real

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world existing independent of our attempts to know it; that we humans can have knowledge of that world; and the validity of our knowledge- claims is, at least in part, determined by the way the world is (Azevedo,1997). Theory in his view, either correctly or incorrectly describes the unobservable and it can be tested as either true or false. This also means that realists know the truth about genuinely existing unobservable entities. However, they (the realists) argue that the objects of scientific knowledge are phenomena and take the form of general laws that must be testable by experience and show logical links between specific phenomena and these laws.

This way of thinking of the realists manifests in entrepreneurship literature, in a set of ideals that has come to be known as discovery opportunities or the individual/opportunity nexus approach. The root of this approach is the work of the "Austrian economists" who differed from the more traditional neoclassical economists by assuming markets with imperfect information ([Kirzner, 1989; Von Mises, 1949). The central assumption of their discovery approach suggests that unobservable opportunities exist objectively and independent of individual perception and by implication that these opportunities can only be seen, and thus "discovered," by special alert individuals (Kirzner, 1973: 10). Therefore, the realist perspective of opportunity formation in this view attempts to answer the question - Who is an entrepreneur? This realist assumption asserts that individuals who are entrepreneurs differ from those that are non-entrepreneurs in many ways. This may also help in resolving the age-long discourse on the reason why one person sees opportunities in an area where others are complaining of lack of amenities, decaying infrastructure etc, etc. This position further assumes that without these differences, anyone in an economy could become aware of and then exploit an opportunity. However, if entrepreneurs and non-entrepreneurs differ, then not everyone in an economy will know about particular opportunities, and if they do, not everyone will be predisposed to exploit them.

Kirzner (1973), Shane, (2003) had examined several possible differences between entrepreneurs and non-entrepreneurs. According to them, most of those differences led to the development of information asymmetries between entrepreneurs and non-entrepreneurs. Shane,(2000), Kirzner (1973: 67) summarizes the differences between entrepreneurs and non-entrepreneurs by simply asserting that entrepreneurs are more "alert" to the existence of opportunities than non-entrepreneurs. The basic position of the realist discovery view of opportunities is that these opportunities exist independent of individual's knowledge of them, and that this knowledge can be acquired. However, the limitation of this view is that it holds the nature of the world and specifically the opportunity in this case, subject to empirical investigation. In conclusion, entrepreneurship provides grounds for opportunity to be tested for validity.

The Constructionist Perspective

The constructionist perspective is rooted in the work of Berger and Luckmann (1966). They aver that social action, institutions and conditions that are presented as objective phenomena in a realist perspective are instead constructed through the interactions and interpretations of people. According to Azevedo (2002), the primary difference between realists and constructionists is that realists explain observable and non-observable phenomena as if observable, and constructionists explain non observable subject matter through interpretive understanding of particular actions. This constructionist viewpoint have also manifested in the field of entrepreneurship by trying to understand how opportunities are formed and exploited. Sarasvathy (2001) states that a constructionist approaches to opportunity formation can be seen in effectuation logic. The central assumption in this view about opportunity formation would suggest that individuals interpret a phenomenon, and give it a meaning that is different from other's interpretation.

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It also emphasizes individual differences, such that in a constructionist approach of opportunity formation, individuals create realities and then mould their actions to these realities (Katz & Gartner, 1988).

This constructionist approach as it relates to entrepreneurship, states that the individual decides what opportunity to create and then uses available resources to accomplish the task. Resources in this view might not be used in the traditional ways but may be put to use in novel service (Penrose, 1959). It further states that it is in this way that entrepreneurs "designs the future" based on the environment and the resources available to them (Baker & Nelson, 2005). In a constructionist view, any resources, be it information or new knowledge are subject to interpretation. Baker & Nelson (2005) concludes this by stating that in this view, Entrepreneurs start where they are and with what they have and interpret their idiosyncratic relationship with their resources (Baker & Nelson, 2005; Mahoney & Michael, 2005)

Just as the realist perspective of opportunity formation informs the nature of who an entrepreneur is, the constructionist perspective informs the nature of an entrepreneur. Entrepreneurs in this view perceive an opportunity that was not perceived by others, implying that entrepreneurs must be different from none entrepreneurs since they perceive and assign meaning to conditions and phenomena differently than non-entrepreneurs (Ford, 1999). In this view the formation of an opportunity and the entrepreneur cannot be separated since it is the differences in the perceptual, cognitive beliefs and interpretation of entrepreneurs that construct these opportunities. Moreover, the notion of self – fulfilling prophecy is a strong assumption suggesting that over – confidence and bias plays significant roles (Busenitz & Barney, 1997). In this view entrepreneurs' biases are reinforced and may be strengthened as their convictions become accurate. While the constructionist approach to opportunity formation knowledge is relative and the existence of opportunities in the perceptions of individuals may be appealing, the constructionist approach also has limitations. Knowledge and opportunities in this view are relative; the problem is that when everything is relative, logical coherence is renounced (Azevedo, 2002).

The Dimensional Approach to the Different Definitions of the Entrepreneur

There are three dimensions of the different definitions of the entrepreneur as it concerns this chapter presentation. In agreement to that, Stokes et. Al (2006) gave a diagrammatic representation of the three dimensions of entrepreneurship, from which we can deduce that all of the numerous aforementioned and other unstated definitions of Entrepreneurship focus attention on the following;

1. Behaviours of or required of the entrepreneur;
2. Processes undertaken by the entrepreneur;
3. Outcomes of entrepreneurship.

From the behavioural approach, we see the entrepreneurs as individuals with specific set of behaviours that mark them out as entrepreneurs. Wennekers and Thurik (1999), states that it is the manifest ability and willingness of individuals, on their own, in teams, within or outside existing organizations, to: perceive and create new economic opportunities (new products, new production methods, new organisational schemes and new product-market combinations) and to introduce their ideas in the market, in the face of uncertainty and other obstacles, by making decisions on location, form and the use of resources and institutions. Further to this, entrepreneurship is a way of thinking, reasoning and acting that is opportunity based, holistic in approach and leadership balance (Timmons & Spinelli 2004), while Casson (1982) states that entrepreneurs are specialists who use judgements to deal with novel and complex problems.

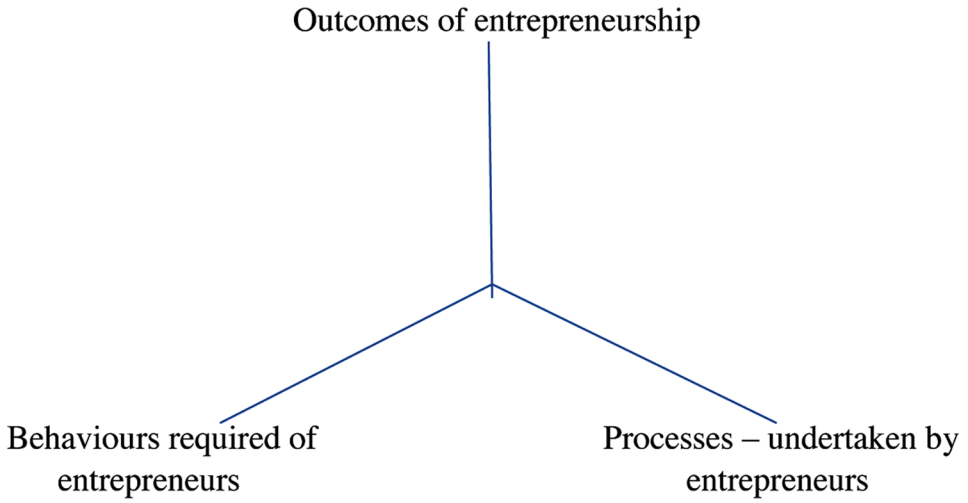
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However, the process dimension, as had earlier been discussed, highlights the development of a new business and innovation which makes the entrepreneur not only to write a business plan, bur goes ahead to mobilize the resources to start the business. In that wise, Hisrich and Peters (2002) states that entrepreneurship is the process of creating something new of value by devoting the necessary time and effort, assuming the accompanying financial, psychic and social risks, and receiving the resultant rewards of monetary and personal satisfaction and independence. We also conclude this behavioural discourse with the position of Steven and Jarillo (1990) that it is the process by which individuals – either on their own or inside organisations, pursue opportunities without regard to the resources they control. Lastly here, the outcomes of entrepreneurship are seen in the form of new products, new services, innovations, new ventures and creation of new values that benefit the society. This is corroborated by Simon and Saravathy (1999), who see entrepreneurship as the introduction of new economic activity that leads to change in the market place. Really, entrepreneurship here, is the creation of new organization (Gartner 1988).

Technical and Vocational Education Training (TVET)

TVET in the context of this chapter are twin terms, which may be considered to have the same meaning. Technical and vocational education training (TVET), according to Okoro (1994), is that aspect of total education process that focuses on individual occupation. He further stated that the function of technical and vocational education is to provide knowledge, develop skills and inculcate those attitudes that are necessary for entry into and progress in occupations. The central purpose of technical and vocational education is to get people into occupations requiring specialized training. The skills and knowledge acquired while training for one occupation may be of little or no relevance in other occupations. Oranu, (1992), views Technical and Vocational Education as that training that enables one to carry on successfully a socially useful occupation. He further stated that this definition refers to technical or technology education as training for useful employments in trade, industry, Agriculture, Business and Home making. According to Okoro (1993), technical and vocational education is any form of education whose primary

Figure 2. The three Dimension of entrepreneurship
Source: Wilson & Stokes (2006)



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purpose is to prepare persons for employment in recognized occupations. Olaitan (1996), views technical and vocational education as that form of education, which emphasizes the development of occupational skills needed as preparation for work. It is a form of education, which promotes the dignity of labour by entrenching work as the goal of education. This explanation is necessary, because the difference in emphasis of work as the aim of education is the major distinction between technical education and general education.

Technical and vocational education therefore, is that part of total educational system, which offers training courses leading to the acquisition of specific skills to enable one to perform certain job. According to Okonkwo (2006), technical and vocational education like any other form of education, is a most potent instrument for poverty alleviation. He further stated that since TVET emphasizes preparation for the world of work, its contributions to positive change of development are also related and sometimes derived from work, this is why entrepreneurship awareness in TVET is very paramount. When the graduates are made to have entrepreneurial knowledge and skills through TVET, it becomes very easy to implement the objectives of TVET, which are to ensure that the graduates are able to be innovative and creative, establish their own small and medium scale businesses (Entrepreneurship), earn livelihood and employ others.

Effective entrepreneurship training programme in TVET will present many TVET graduates lots of ideas, knowledge and opportunities of starting small scale businesses instead of waiting to be employed in the governments' unavailable white-collar jobs. The entrepreneurship training in TVET must be focused on training students to gain skills even in areas outside their curriculum for graduation in their department/unit. Baldwin (2002) argued that entrepreneurial skills students can acquire during training can enable them to be self-reliant include marketing skills, financial resources skills, self-motivation skills, time management skills, administrative skills, innovative skills, professional skills, practical skills etc.

Neglect of TVET and its Implication on Technological Development

The neglect of technical and vocational education and training (TVET) over the years may have contributed to the high unemployment and rising poverty among the youth in developing nations, because many of them lack the basic job skills. For instance, Nigeria is today categorized under the list of poor nations. It is no longer news that the nation's youth unemployment rate has been shooting up the sky. The federal government recently acknowledged that about 80 per cent of Nigeria's youths are unemployed and 10 per cent underemployed (FGN, 2004). And the poor quality of graduates is worrisome. In spite of its abundant natural and human resources, Nigeria still faces an enormous challenge in its effort to reduce poverty. Thus, one way of reducing poverty according to Adebayo (2005) is to ensure sustainable job creation through TVET. Many, both in the developed and developing worlds, are increasing the emphasis they place on improving the capacity of technical and vocational education and training (TVET) systems, in recognition of the important role TVET plays in equipping individuals with relevant skills and knowledge for the job market. TVET can also better enable individuals to participate in social, economic and technological processes. From the foregoing, it can be concluded that Technical Vocational Education and Training (TVET) is such an aspect that its neglect poses a great threat to the economic and technological well being of a nation. Therefore, this paper is focused on the challenges facing TVET as a toll per excellence for economic and technological development of the Nigeria nation and possible solutions to the identified problems were suggested.

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TVET face challenges of meeting the changing demands of today's industries and the new challenges posed by the global economic environment. Some of these challenges include:

- **Non Integration of Education and Workplace:** TVET is being offered as formal education, but little reference is being made to the needs of the workplace. Changes in the workplace have not been met with changes in education and training. TVET should cater adequately to the varied needs of members of the society to enter and re-enter the world of work. It should also provide opportunities for achieving both personal and social development, which is grossly lacking in our TVET programmes in Nigeria.
- **Uncertainty and Anxiety:** Today, more people than ever before experience frequent career changes and periods of unemployment as a result of the changing demands of the workplace. It is difficult to predict with certainty the employment needs of the informal sector which absorbs a major part of the labour force. It is also becoming increasingly difficult for young people to choose courses of study and career they would like to pursue in their adulthood. Adults who may have been laid off or retrenched require guidance and support in looking for new jobs and some time new career. One of the most dangerous consequences of fundamental changes now prevailing in politics and of course, in education is uncertainty. In Nigeria, people are retiring or their appointments are being terminated without knowing what to do next to cater for their needs. Therefore, it is one of the most important tasks of technical and vocational education and training to enable people cope successfully with their uncertainties. This is not being achieved by our TVET programmes.
- **Trends of Globalization of Trade and Labour Markets: T**he trends of globalization of trade and labour markets, rapidly changing technologies, and mass unemployment are expected to continue in this century. The effect on these changes in the labour market are that some jobs are declining in significance, others growing in importance and others require completely new and different skills. The size of the workforce employed in the service and technology industries, where a high-level education and skills are required, will increase, while the demand for low-skilled workers will shrink. Many employees are likely to change jobs, and possibly even careers, several times in their working lives. The changing nature of labour market trends has significant implications for education, implying inter alia the need to provide lifelong learning, continuing and recurrent technical and vocational education, continued upgrading of knowledge and skills (Adegbile, 2002).
- **Non Preparation of the Young People for Life:** Here is a widely shared consensus about the goals of education. It is to prepare young people for life by developing their intellect, their aptitudes and their talents; and to create opportunities for them to earn their living and to take part in the democratic and economic process of the country. All educational systems have to serve these purposes. Vocational education, that is the education and training of skilled workers and employees has to be broader and more diversified. Take for instance, a car mechanic must have diagnostic skills and knowledge (computer literacy), be customer oriented (direct personal contact), have all the skills of the trade (high tech.), must take into account ecological effects of his or her work, be able to calculate the cost of a repair and, more generally, be conscious of adding value. This obviously is lacking in our TVET programmes.
- **Non Flexible Access to TVET Throughout Life:** Due to the high cost of TVET, the majority of those who could benefit from it do not have access. Available TVET programmes are often delinked to a large extent are delivered using traditional theoretical methods. TVET should address the needs of informal sector where most production activities go on.

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- **Challenges of Information and Communication Technology:** Information technology (IT) is at the root of a process of transformation in the course of which industrialized societies are changing into knowledge societies and the management of production into the management of knowledge. There will be less and less manual work while computers become the main tools catering for the information needs of all professions. As a result, letters and figures, into which all procedures have to be translated, become more and more important for all human activities at work and in private life. The end of the division of the world has opened the borders to the free flow of capital, goods and information and to unhindered travel of people at large, but not yet in all parts of the world. Going global is the challenge to entrepreneurs and of course to their employees.
- **Lack of Fund for Implementing TVET Programmes:** Matters related to cost, efficiency and effectiveness of vocational education schemes; pose a big challenge in Nigeria. The relevant issues here include, on the planning or macro level, system choice or the school versus the enterprise issue, the broad versus the narrow base approach to the area of specialization, and the duration of the TVET programme. On the operational or micro level, such issues include trainer-instructor ratios, utilization factors of training facilities, choice of equipment and technologies, and size and nature of productive activities. In Nigeria, all aspects related to the economics of vocational education are sources of concern, and even frustration, especially when taking into consideration the relatively high cost of TVET programmes, compared with other educational programmes;
- **Poor Social Status of TVET:** The social status of TVET in any society is, to a great extent, a reflection of the status of work values in the society. A rational and balanced approach can be realized if work activities are assessed both by their material and economic returns on the individual and society, on one hand, and their social and humanizing influences on the other hand. The social status of TVET can, on one hand, be enhanced in practice through appropriate career guidance and counselling services, as well as employment and placement services. Unfortunately, the two types of services are weak in most developing countries, accentuating more the status issues of TVET. In practice, the social status of TVET is also influenced, to a great extent, by the type of relation and nature of channels that link it with higher education that leads to the preparation of professionals. Successful TVET schemes are usually designed with inherent and built-in links with higher education and occupational levels, through the formal and non-formal systems of education, within the general concept of continuing and life-long education. In some education systems, especially those of developing countries, the realization of this concept would necessitate the restructuring and reform of higher education, in order to eliminate bottlenecks, and establish lateral and vertical channels among various fields and level of educational and training offerings, to promote occupational and educational mobility and, consequently social mobility. In general, therefore, higher education should be linked with abilities and performance standards of the learner, in respective of the type or stream of pre-university education or training the or she experienced. Other aspects of the status issue of vocational education include such factors as the status of the vocational teacher, the gender issue, and the vocationalization of general education. It is not unusual in many education and training systems to find that vocational teachers are not of equal status, socially and economically, to their general education counterparts. It is also not unusual to find that the relevant vocational education facilities and services are structured basically around the needs of male learners, with the result that the role of female learners, instructors, planners and providers of services, lags considerably behind the roles of males. Finally, a great service

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can be offered to the status issue, if a strong element of vocational education, or more specifically prevocational education, is incorporated as part of general education in the form of diversified practical activities and life experiences, derived from the various socio-economic sectors.

- **Non Internationalization of TVET Programmes:** The approach to issues related to human resources development in general, and vocational education in particular, is more purely national concern. The challenge therefore, is that Nigerians trained under our TVET programmes can not fit into global TVET global practice. This is because; in Nigeria less emphasis is given to practical and more on theory. This is against the international practice of equal theory and practice. The consequence is that Nigerian TVET graduates are not employable in most countries adopting best practices in TVET.

Possible solutions to the identified challenges of TVET for effective entrepreneurial skills acquisition:

- The approach to issues related to human resources development in general, and vocational education in particular should become a concern with international dimensions that should take into consideration emerging conditions of increasingly globalized economies of the world, manifested by the changing structure and framework of world trade, labour mobility, common markets, commodity standards, multinationals, and the geographical characteristics of industrialization. It is thus becoming increasingly essential to think regionally and even globally when planning, defining policies and designing programmes at the national level, for the quantitative and qualitative aspects of TVET as a component of human resources development, especially in such matters as job classification, skill standards, educational levels, information systems and the identification of training needs.
- Promotion and marketing of TVET as a viable alternative to the more traditional mode of advancement and education. This could be done through the integration of competency-based training with academia both at the secondary and tertiary level.
- Establishment of a National Qualification Framework for education and training that include all levels from pre-primary to post-graduate.
- Establishment of National Worker Certification/Licensing Programme.
- Development of Industry-led Standard setting bodies in all sectors.
- Establishment of an independent labour market observatory.
- Provision of labour market reports on a continuing basis - both on the demand and the supply side.
- Development of a Dictionary of Occupations aligned to international models.
- Creation of mechanisms for defining, classifying, training and certifying people in the informal sector.
- Provision of training opportunities for entrepreneurship and innovation.
- Increasing the Employability and Participation of Vulnerable Groups - young workers, differently-abled, older displaced workers and the incarcerated population.
- Establishment of a National Training Fund with contributions from the Government and private sector. This is geared to making adequate funds available for planning and organizing of TVET programmes.
- Passage of legislation for the funding, accreditation, standard setting and quality assurance within the national training system.
- Development of a Modern Apprenticeship and Traineeship Programmes

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- Encouragement of lifelong education through a seamless system i.e. school to work and work to school models.
- Provision of information on careers & proper career guidance of TVET recipients.
- Integrate ICT in all TVET programmes to enable recipients adopt and follow the ever increasing growth in ICT.

Through effective entrepreneurship and TVET training programmes in developing nations, the following will be achieved;

Personal Development

Entrepreneurship in TVET develop in individuals, capacities for decision making and qualities necessary for active and intelligent participation, teamwork and leadership at work and in community as a whole. Technical and vocational education training contributes to individual's personal development, increases one's productivity and income at work and facilitates everybody's participation in economic development and growth process. TVET is suitable for contributing to national socio-economic development and meeting needs of every citizen in developed and developing economy. Apart from the fact that TVET can empower individuals to be economically sound, it has the capacity to increase international competitiveness. The technological changes are taking places faster than one can imagine and the gap in technology and knowledge, between developed and developing economy has always been large. The developing countries stand the chances of bridging technological gap by transfer of technical knowledge through the adoption of technical and vocational education training. The truth is simple; without embracing the concept of TVET, the development gap will continue to widen even more and reduce the capacity of developing countries to be competitive in the global economy. TVET is used as a comprehensive word referring to that educational process involving in addition to general education, the study of technologies and related sciences and acquisition of awareness, knowledge, skills and attitudes relating to careers in various sectors of economy and social life. It is an aspect of education that provides knowledge, practical training for skill development to its recipients leading to straight access into specific profession.

Self-Reliance

Technical and vocational education training focuses on self-reliance, by equipping the graduates at the end of the programmes with scientific and technical skills, which will enable them, create jobs or employment for themselves and employ others. This of course, will assist to decrease the rate of crimes and youth restlessness thereby promoting national economic growth and development. The role of technical and vocational education training is not only to equip the students intellectually but it will also lay emphasis on various skills depending on interest and capability of students. There is a high need to assist people gain competency through mastery of scientific and technical skills; this implies guiding individuals towards their chosen occupations based on their acquired technical skills. Each profession requires specific skills to perform effectively without much supervision. TVET leads to provision of gainful employment; this is possible through graduates that have acquired right skills in establishing their own jobs. The type of skills in this direction are managerial, maintenance, designing and manipulative skills. In setting up gainful employment, there will be reduction in rate of unemployment, which courses poverty in developing nations and had drastically affected the social well being of the populace. The

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role of technical and vocational education training on the standard of living of people cannot be over emphasized. Perhaps, that is why the General Assembly of the United Nations has proclaimed the 10-year period beginning from January 2005 as "the United Nations Decade of Education for Sustainable Development". In line with this, the United Nations Educational Scientific and Cultural Organization (UNESCO) now advocate four pillars of education; namely

1. Learning to know (Knowledge),
2. Learning to do (Skill),
3. Learning to live together (Peace), and
4. Learning to be (Personal self-fulfillment).

Technical and vocational education trainings, according to Adebayo (2005), has been established as the most effective means for society to develop its members' potentials to respond to the changes and demands of the future.

Career Orientation

Technical and vocational education training is education in career oriented with specific career courses offered in institutions such as technical colleges, polytechnics, colleges of education (Technical) and universities, which are meant to equip students with knowledge, understanding and skills of different occupational areas in industries. The implication is that TVET is tailored towards career orientation, which in turn leads to self-sustenance. It is also an education, which fits one into intricate experience of the real world of work through acquisition of relevant knowledge and skills. It is seen as job oriented training designed to develop appropriate knowledge, skills, attitude and understanding in world of work. TVET according to Uwaifo (2008), is the training of technically oriented personnel who are to be the initiators, facilitators and implementers of technological development of a nation by adequately training its citizenry on the need to be technologically literate, leading to self-reliance and sustainability. Technical and Vocational Education Training more than any other profession, has more direct impact on national welfare. Its contributions are widespread and visible ranging from metalwork technology, mechanical/automobile technology, electrical and electronic technology, building and woodwork technology etc. Consequently, Technical and Vocational Education Training can serve as change agents not only for technical systems but also for many other societal changes. The practical nature of Technical and Vocational Education Training makes it unique in content and approach, thereby requiring special care and attention. Technical and Vocational Education Training is the answer to empower teaming youths that roam about without doing any meaningful work in the society today. From the explanations, one can deduce that technical and vocational education training is:

- Education geared towards career orientation for self- sustenance/ self-reliance and poverty alleviation.
- Training geared toward a gainful employment.
- Education tailored towards the development of appropriate skills, attitudes and understanding required to fit one into any chosen occupation for a living.
- Education for training or retraining for the development of competencies in specific jobs.
- An integral part of general education.

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- An aspect of lifelong learning and a preparation for responsible citizenship.
- A sustainable instrument for promoting environmentally sound development.

Youth Empowerment

Technical and Vocational Education Training is an academic programme that aims at the development of human abilities in terms of knowledge, skill and understanding so that the individual may serve happily and effectively in carrying on the activities in the vocational pursuits of his choice. According to Fajimi (2005), technical and vocational education is education deigned to develop skills, abilities, understanding attitudes, work habits, and appreciations encompassing knowledge and information needed by workers to enter and make progress in employment on a useful and productive basics. It contributes towards the development of good citizens by developing their physical, social, civic, cultural and economic competence.

Skills Acquisition in TVET

The developing economies are challenged with the problems of unemployment and youths involvement in criminal acts. The graduates roam the streets in search for the white collar jobs, which are not readily available either in the public or the private sectors. Majority of these graduates do not have any form of technical and vocational skills that can help them out of these situations. A worthwhile skill acquisition will enable the individual to perform meaningfully in the industrial world. People that have acquired useful skills can help themselves and as well live by it; they can at the same time help others by training them to acquire the same skill they have for money, thereby generating more income again. This then mean that skill acquisition is a means of providing oneself with requisite materials for a satisfactory living. Every country in the world is faced with challenges of improving capacity of their workforce to respond to their national development needs and to demands of rapidly changing, more globally competitive world. Therefore, the future achievement of every nation, individual, enterprise and community is highly dependent on existence and possession of transferable skills and ideas. The recognition that the indispensable role that technical and vocational education training plays in equipping individuals with relevant skills and knowledge hence enabling people to effectively participate in socio-economic and technological innovation process cannot be over emphasized. Through skills development, people can better their chances of securing productive and gainful employments thereby sustainably augment their income levels and access to a excellence life.

There are assorted forms of skills students/graduates are expected to acquire through Technical and Vocational Education Training (TVET);

- **Innovative Skills:** The graduates of TVET are expected to have acquired innovative/ creative skills to enable them introduce something new that may be capable of sustaining them and others in the society. This sort of skills allows the individual to delve deeper, think of products, goods and services that are of importance to the society, which are not yet introduced into the society. The vocational education trainers/teachers should endeavour to train their students on how to be creative so that they'll be able to inculcate the attitude of creativity in the students. Innovative skills involve integration of new ideas and/ or accumulation of new knowledge, casting a broader net for the discovery of potential opportunities. When the TVET students are trained to develop such

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skills, they'll contribute positively to their nation's economic growth and development through jobs creation. The main aim of development in a nation is to improve the living standards of the people through effective utilization of human and material resources; hence developing nations must be fully involved in the development of technical and vocational education training for self-reliance. This according to (Olaitan, 1992). will contribute positively to reduce poverty and hunger thereby boasting the economical and social status of any nation.

- **Practical Skills:** When a graduate of TVET is able to handle tools, equipment and at same time know how to join one or two objects to produce another, she/he is able to transform materials into products and services. Practical skills are acquired only when the vocational teachers are practically sound to teach the students through practical methods. But surprisingly, many vocational education teachers uses lecture methods to teach the students and most times, the courses of study are theory based. Practical skills provide the TVET students with occupational/career abilities to ensure self-reliance.
- **Self-Motivation Skills:** Having acquired the innovative and practical skills, the study will be able to develop self motivation skills. Self-motivation skills deal with the ability to be moved such that the practical and innovative skills acquired can be put to production of goods and services. Self-motivation is the ability to be self confident with extra drive and commitment to make sure necessary steps are taken to make dreams of successful business a reality. Without the self-motivation skills, the vocational education graduates would not be able to establish themselves or be self-employed. In the world of struggle like ours, one must be motivated to be able to succeed. This is the role of the TVET teacher. She/he must inculcate the attitude of self-motivation in the students such that they can stand in the midst of others professionals.
- **Financial Resources Skills:** This is the skill that will enable the student to be able to handle money judiciously. This sort of skill includes knowing how to stretch the limit start up that you have, spending only when needed, identifying the best pricing structure for your business in order to get the best return for your products and services (Fajimi, 2005). For one to establish an enterprise, spending frivolously must be avoided. Therefore the vocational teacher through teaching/training should be able to make the students develop this sort of skills. Also, TVET graduates who may wish to be self-employed are deeply skeptical to establish on their own businesses for lack of capital or financial resource skills. This situation inhibits the survival of the few existing enterprises around.
- **Marketing Skill:** This sort of skill involves thinking about how to reach the targeted audience for product and services. This entails understanding what people want, listen to the people's needs and interacting well with other people. Any TVET graduates who acquire this sort of skill crossed the bar of unemployment because, with marketing skill, she/he can market him/herself to other established industries. For every goods and services/business, it must be well marketed. Therefore, when the students acquire this sort of skills, it is easy for them to stand alone and be independent of the governments' white collar jobs. To achieve this, the curriculum planners must make sure that opportunities are made available for the vocational teachers to impart such skills in the students (Umunadi, 2010).
- **Time Management Skill:** This involves the ability to plan and manage time with a clear idea of the things to be done in a day. The graduates of TVET must be able to multi-task and prioritize the day's tasks to be successful in any form of business or trade.

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- **Administrative Skill:** The TVET trainers are expected to teach their students to acquire skills on how to fill, bill, print, make invoices, collect payments, manage receipts, keep proper accounts of goods and services, tools, materials and equipment. Studies has shown that why many vocational enterprises are not flourishing is because, majority of the owners of such enterprises lack administrative skills. Many of them do not have records of how much money realized from the enterprise, how much cash to reinvest and how much gain made from an existing enterprise. This is why many small scale businesses do not survive. The curriculum planners and the school administrators should adjust technical and vocational education training programme to accommodate administrative training such that students or graduates will be able to acquire such skill to be self-reliant.
- **Professional Skill**: Fasehun (2013) asserts that this sort of skill is very necessary for success in an enterprise. It is obtained in a cooperate arrangement between the school and the industries. It also involves the code of conduct, customer care technique and opportunity recognition. Ihekwoaba (2007) listed some skills that the TVET graduates must acquire to be self-reliant, enter the production business world to establish successful and thriving small scale enterprises in a developing economy.

Contributions of entrepreneurship in TVET to national growth:

- **Development of New Products and Services:** TVET entrepreneurs are the backbone of the economy in the sense that they have the enthusiasm, the vision and the driving force to set up enterprises. Through these new ventures, various new products and services needed in the society are produced.
- **Introduction of New Technologies:** As innovators and risk-takers, TVET entrepreneurs take advantage of business opportunities, social problems and difficulties to create something of value. In their bid to respond to the challenges of society, they creatively encounter and invent new ways of doing things that transform into unimaginable profits. Eg, Bill Gates has transformed the world of industrial enterprise with new (computer) technologies.
- **Mobilization of Capital Resources for the Society:** All the major factors of production such as Innovation, land, labour, and capital are mobilized and coordinated by entrepreneurs in that particular society. They use creativity to combine these resources in a mix that build up the wealth of the nations.
- **Introduction of New Infrastructural Facilities and Building of New Industries:** Every year, through the untiring effort of TVET entrepreneurs, new infrastructural facilities in the form of buildings and building materials of various sizes and makes, vehicles, etc, etc, flood the markets through the efforts of entrepreneurs. Chinese entrepreneurs and their innovations are almost ruling the world today.
- **Job Creation and Employment Generation:** As a result of the undertakings of TVET entrepreneurs in establishing factories and other service ventures, millions of jobs are provided in factories, many service industries, agricultural and allied services etc, etc.

The list of the contributions of entrepreneurship to national or even international development is inexhaustible. It is very heart-warming to note that the National University Commission of Nigeria has made the study of entrepreneurship compulsory in our tertiary institutions, irrespective of the course being offered by our students. According to Ikeme (2012: x), entrepreneurship education is critical to

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successful enterprise setting due primarily to the fact that enterprise setting devoid of entrepreneurship education has greater chances of failure due to poor preparation for challenges associated with start-ups. Among other benefits of entrepreneurship education are listed as follows:

- Understand steps essential in business start-up.
- Enhance awareness of career and entrepreneurial option.
- Use strategies for idea generation and assessment of feasibility of ideas.
- Understanding basic financial concepts.
- Increased awareness of social responsibility and entrepreneurs' contributions to society.
- Enhanced personal and career goals and attitudes.
- Improved self – management skills because of focus on personal responsibility.
- Enhanced ability to pursue additional training or access to other resources and services.
- Improved problem- identification and solving skills for business operation issues.
- Enhanced self-worth through understanding of personal capabilities.
- Enhanced reliance on team work as focus to solve realistic and complicated problems.

Also listed as possible positive outcomes of entrepreneurial education to TVET students at all levels of academic endeavour are:

- Increased sense of "locus of control".
- Greater awareness of personal talents and skills.
- Improved school attendance.
- Higher academic achievements.
- Application of enhanced creativity skills in business situations.
- Enhanced business opportunity recognition skills.
- Ability to handle business situations ethically.
- Use problem – solving skills effectively.

Possible and specific positive outcomes of entrepreneurship education for graduates of the University or higher education who has undergone entrepreneurship education are equally listed as:

- Ability to pursue entrepreneurship as a means of earning a living.
- Improved business start-up planning and management.
- Ability to follow a business plan to achieve business goals.
- Demonstrate effective financial management and application of basic accounting principles
- Rethinking of business closings as an exit strategy versus failure.

CONCLUSION

By way of drawing a conclusion to this discuss, we repeat here that in the course of the theoretical evolution of entrepreneurship, especially both as a process and a discipline, various scholars and researchers from different disciplines such as Management, Economics, Sociology, Psychology etc, etc, grappled with diverse sets of interpretations, diverse perspectives and dimensions and different definitions to

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conceptualize this abstract idea. The words "Entrepreneurship" and "Entrepreneur" are often used interchangeably and are equally mutual concepts. However, they are conceived with fundamentally different aspects of phenomenon. As stated in the main body of this chapter, Yes!, entrepreneurship in TVET involves individuals, groups of individuals, organizations, industries and even societies as a whole, but as a social process, it cannot be reduced to human behaviour, cognitive process or decision making alone. Given the spiraling nature of youth unemployment, developing nations should adequately address the problem with the aim of putting in place the requisite policy measures. There is no doubt that piece meal programmes will not do the job. The TVET Sectors in developing nations generally will only survive and grow if Industry and commerce are strong enough to attract graduates from the TVET system. A vibrant, industrial and commercial environment will promote the opportunities, avenues and resources to facilitate the provision of a well trained, competent and productive workforce which in turn will strengthen industry and commerce for increased productivity. In this regard, it is very important that every effort must be made by Governments to encourage the expansion and strengthening of industry at all levels (including small scale industries) in order to improve their TVET systems for socio-economic and technological development. To reduce the burden of unemployment and poverty on the youths the government should improve funding in this critical sector and increase access to technical and vocational education for the ever-growing Youths. It is my humble believe that when these recommendations are put in place the much desire technological development of developing nations will be achieved.

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Chapter 42
Crowdfunding, Entrepreneurship, and Design Education:
Case Study of a Campaign by Design Students from China

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ABSTRACT

The purpose of this paper is to develop further insights into micro-entrepreneurship programs participated in by Chinese industrial designers. A model of creative thinking is employed to explain the campaign creation process. A case study research in sample design entrepreneurs was designed and conducted, and it was composed of three steps: preparing for data collection, collecting the evidences, and analyzing the evidences. It was found that five main defects in creative thinking work as obstacles to crowdfunding success. In order to overcome these drawbacks, it is suggested that designers involved in micro-entrepreneurship programs should acquire the abilities of building prototypes, following the design procedure, finding and solving problems, defining ideation and applying the evaluation methods. Current findings and future study can contribute to the curriculum development for China's industrial design education.

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INTRODUCTION

The Chinese government is making heavy investments to convert grass-roots innovation into business. In Shanghai, Communist Youth League supported the 2012 Shanghai Maker Carnival. The construction of more than 100 government-supported innovation houses is proposed by local officials. Some hackers' fabrication laboratories in China earn official supports which take the form of latest facilities or considerable allowances usually used as the rents (Parker, 2014). Around the globe, online crowdfunding currently becomes a significantly effective approach to realize a wide range of designers' micro-entrepreneurship dreams. A number of campaigns have been successfully launched on Kickstarter that one of the most popular international crowdfunding platforms. On the community of Kickstarter, a product design campaign for a smart watch named Pebble attracted more than $10.3 million from 68,928 backers as of May 2012 (Newman, 2012).

In the field of design education, what can domestic educators in China learn from these changing external conditions? Few researchers in China have so far studied this emerging question. Focusing on university-level design education and industrial business, two scholars Rodber and Wormald (2007) in the UK pointed out that the process of creating wealth through new-product development has changed since the early 21st century. Similar to Chinese government, British government strongly supports science and innovation to create innovative goods and services for economic success. Design thinking, marketing-oriented new product development as well as the integration of design system and service are highlighted as the important drivers. Thus two researchers suggested orienting industrial design education (IDE) to the latest trends so as to alleviate the mismatch between IDE curricula and newly required skills and knowledge in industries. While this suggestion can serve as a reference for this paper, it is of limited helps for China's IDE and crowdfunding campaign creation.

Despite the rapid growth of online crowdfunding, there is comparatively little research on fund-raising campaigns. Focusing on the participants' psychology and behaviour, a study proposed enhancing the motivations of both the creators and the supporters via crowdfunding support tools (Hui, Greenberg & Gerber, 2013). Gerber and Hui (2013) suggested applying the principles of connecting participants by, for example, creating a reward system and inspiring social feedbacks (Sakamoto et al., 2013). Kuppuswamy and Bayus (2014) indicated that project creators should pay more attention to the first and last periods of fundraising campaigns, in which platform backers tend to contribute more than in middle weeks. However, these prior researches regarding campaign management may rarely benefit entrepreneurs in their campaign creation.

In order to research online crowdfunding, a case study was conducted here targeting a group of industrial design students (hereafter referred to as the Students) at Nanjing University of the Arts, China. The Students created a smart ring for which the fundraising campaign was unsuccessful on Indiegogo, a large global crowdfunding and fundraising online site. Through figuring out how the Students carried out product design campaigns and why their creative thinking-based campaign creation failed to reach the funding goal, this research aims to develop further insights into the design micro-entrepreneurship based on China's IDE.

After presenting the key concepts and theoretical basis, this paper gives a systematic description of the research process, which is divided into three main sections. The first section details the process of preparing for data collection, including case selection and the formulation of the evidence-collecting procedure. The second section describes the collected evidences. Through analyzing the evidences, Section three concludes that the Students' crowdfunding failure was the result of their creative thinking

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shortcomings, including deficient knowledge about prototype construction, poorly designed procedure, poorly defined target problem and solution, ambiguous function definition, and disorderly evaluation process. The research findings herein can potentially benefit not only micro-entrepreneurs engaged in crowdfunding design but also local design educators in China, who significantly need to rethink about IDE and develop related curricula to satisfy the changing industry's needs.

KEY CONCEPTS AND THEORETICAL BASIS

Crowdfunding and AON Model

Crowdfunding, defined as the integrated practice of raising funds from a large number of people particularly over the Internet (Drake, 2014), has gained rapid development since the beginning of this century. Following ArtistShare, the first online crowdfunding platform set up in 2003, related sites have mushroomed around the globe since 2005. More than one million individual campaigns were carried out globally in 2012, and the industry size would expectedly grow to US$5.1 billion in 2013 (Barnett, 2013).

Indiegogo, the research setting of this study, is one of the largest crowdfunding platforms worldwide. Its funding model is referred to as All-or-Nothing (AON), the most widespread and effective crowdfunding type (Weisul 2014). Based on it, project founders follow three main steps to realize their entrepreneurship projects. The initial stage is to start a complete campaign for a designed product. Then the product is released on Indiegogo platform. Meanwhile, crowdfunding work, including campaign material preparation, project marketing and project goal following (Hui et al., 2013), is implemented to raise funds. Following the above two steps, if the total funds meet the expected minimum before the expiration date, the project founders will definitely gain all the funds and rewards for future project implementation; otherwise, the project has to be sadly terminated by Indiegogo, and all the invested capital will be directly returned to investors. This AON model is typical and even imitated by numbers of crowdfunding platforms in China, like Demohour and Zhongchou. Therefore, case of the Students on Indiegogo has general significance in Chinese micro-entrepreneurship and industrial design context.

Creative Thinking

This research was carried out in the context of new product development, a complete process of bringing a new product to market. Authors tended to evaluate the effective transformation of market opportunities into products available (Krishnan & Ulrich, 2001) for sale as 'creative'. And the science behind the phenomenon is the designed products satisfy customer needs and wants. Runco and Chand (1995) defined creative thinking as a mental process of activity leading to original and adaptive ideas, solutions, or insights. Product design, as a kind of creative behaviour, is typically defined in terms of originality and adaptiveness that together follow the integrated processes generating the above results. In addition, two scholars presented a two-tier model of creative thinking in detail.

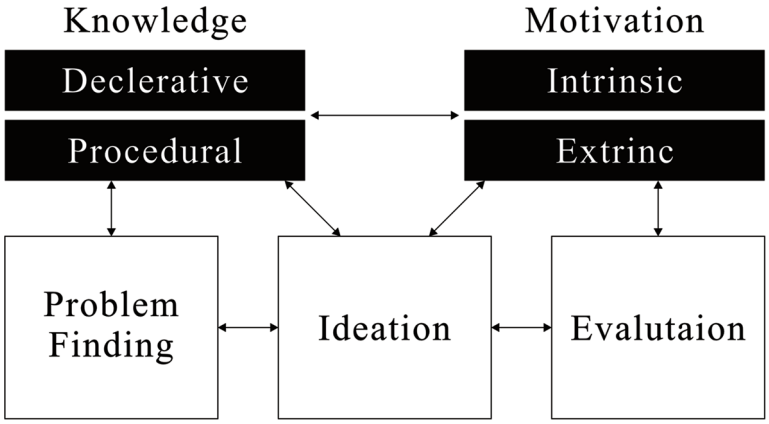
As shown in Figure 1, knowledge and motivation are two basic elements of the first tier. In general, knowledge is declarative or procedural. Declarative knowledge represents fact-based information, while procedural knowledge indicates specialized knowledge which usually requires explicit instructions and strategies. Motivations are classified into two types including intrinsic motivation and extrinsic motivation. Furthermore, the second tier of creative thinking consists of problem discovery, ideation and evalu-

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ation, wherein problem discovery implies identification and definition of problems; ideation refers to the ideational process which is described as divergent thinking or associative thinking, while ideational flexibility, namely the variety of ideas, is one of the most important factors for divergent thinking; evaluation indicates various evaluative processes which could influence creative thinking. The model below was employed as a theoretical basis in this paper because it could bring a systematic framework for the following evidence collection. This framework demonstrates an understanding of creativity theories and concepts related to the topic of designers' micro-entrepreneurship and the broader areas of knowledge considered. Selection of the two-tier model of creative thinking depends on its appropriateness, explanatory power, and convenience in application.

In general, the theoretical basis of creative thinking strengthens current researches in four crucial ways (Anonymous, 2016). Firstly, an explicit statement of theoretical assumptions of creative thinking enables readers to critically evaluate the evidence collection of selected case. Secondly, this theoretical basis associates researchers of this study with existing knowledge, especially with regard to practical creation. Guided by the two-tier model of creative thinking, authors are provided with basic selection of research methods. Thirdly, articulation of the theoretical assumptions of current researches requires researchers to solve the problems about how product design campaigns are carried out by designers and why their crowd funding campaigns end up with success or failure. It enables researchers to complete intellectual transition from general description of an observed phenomenon to generalization of various aspects of the phenomenon. Last but not least, application of theories helps authors of this study identify the limitation to the generalization. A theoretical framework specifies essential reasons which influence a phenomenon and highlights demand for examining diversification of those reasons and conditions for the diversification. Therefore, by its application, the two-tier model of creative thinking is valuable because it fulfills the primary purpose of current researches, so that authors of this research may apply that knowledge and understanding to perform more effectively.

Figure 1. The model of creative thinking includes two components on the first tier while three ones on the second
Source: Runco and Chand, 1995



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RESEARCH DESIGN

A research design is the document of the study, which is created to seek answers for the researched questions. The design of this study effectively defined the aim, objective, scope, method, and data collection approach of the research. Based on critical evaluation of China's IDE in the current context of micro-entrepreneurship, the research aims to develop further insights into the design micro-entrepreneurship based on China's IDE. The research aims to work out two questions, namely, how the product design campaigns are carried out by designers and why their crowd funding campaigns end up with success or failure. Scope of the research is narrowed to designers' campaign creation on a crowd funding platform in view that crowd funding has become a new opportunity for designers' entrepreneurships in China and even the whole world.

As a type of micro-entrepreneurships of emerging designers, the number of crowd funding campaigns launched by Chinese designers is still highly insufficient. Therefore, an inductive approach based on qualitative case research was adopted (Eisenhardt, 1989; Yin, 2013). Bell (1999) also pointed out that "a case study approach is particularly applicable to individual researchers because it realizes certain research of one aspect of a problem within a limited time scale". In order to explore the solutions for research questions which possibly benefit design entrepreneurs and educators in China, the evidences shall be collected through interviews and observations, rather than experiments. As a result, case study became the most suitable method for this kind of researches (Yin, 2013).

Furthermore, the single-case holistic design is deemed as one of the most effective types of case study design, as this research aims to realize objective understanding of the environments and conditions, wherein crowd funding campaigns are created. The conclusion of current researches towards a typical object should be helpful for deepening the comprehension of similar cases. The technological issues of the holistic single-case study mainly focus on design of an effective investigation and interview for data collection, so it is divided into three parts: preparation for data collection, evidence collection, and evidence analysis. The first part consists of case selection and formulation of the evidence collection procedure; based on the model of creative thinking, an investigation framework is formulated and applied in this part. In the second part, the collected evidences are presented systematically. In the third part, the answers to the research questions will be proposed based on the evidence analysis.

PREPARING FOR DATA COLLECTION

Case Selection

When selecting a subject for a case study, researchers used information-oriented sampling here, which is opposed to random sampling. A representative and typical sample meets selection standards of a holistic single-case study, wherein qualitative evidence indicates the knowledge of a current research question. Therefore, a case of Chinese designers' micro-entrepreneurship became an ideal research object.

Authors of this research selected a product campaign on Indiegogo crowdfunding platform, which was launched by Chinese designers from domestic IDE system. The story of an entrepreneurial team, which was a group of industrial design students in China led by Youlin Chen, Zhengpeng Wu and Shuwen Xiao, was selected as the study case. This selection was made based on the following facts. First and foremost, the three group-mates were senior students at the School of Industrial Design, Nanjing

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University of the Arts (NUA) in China. NUA also is known as the Nanjing Arts Institute, is a university offering undergraduate and graduate degrees in fine arts, design, and related subjects. The institutional history begins in 1912, with the foundation of the Shanghai Chinese Art College. The name was changed to the Shanghai Academy of Fine Arts of in 1930. The amalgamation of several universities in 1952 produced East China Arts College, situated in Wuxi. In 1958, the East China Arts College relocated to Nanjing, and in 1959 it acquired its present name (Anonymous, 2014). So far, the Ministry of Education and China Industrial Design Association still have a crucial influence on whole China's IDE system, in which most schools share the similar curricula and standards in design education. Therefore, the Students at NUA were rather typical representatives. Second, the entrepreneurial team had converted creative thinking into entrepreneurial practice by launching a crowdfunding campaign on Indiegogo, thus it was positively feasible to closely observe their campaign creation for collecting targeted evidences. Their campaign project, Rilove Smart Ring, is a gesture-based wearable device being able to control music, camera, phone calls and even home appliances. Supported by 68 investors investing a total of US$1,935 as of the expiration date, this campaign finally failed to reach its US$20,000 goal and was therefore terminated. Last but not least, the authors of this research taught at NUA, the Students' university, and had obtained the Students' consents to the investigation and interview.

Formulation of the Evidence-Collecting Procedure

In order to collect systematic evidences, this task was performed in six steps based on the model of creative thinking: declarative knowledge, procedural knowledge, motivation, problem finding, ideation and evaluation. As shown in Table 1, a framework, in which the aim of investigation and the interview questions for each step are defined, is developed:

- **Step for Declarative Knowledge:** At the first step, declarative knowledge including valued and neglected knowledge gained or missed by Students in current China's IDE system was surveyed. The valued knowledge stands for elements of fact-based information such as 3D modelling software, product engineering, and material applications, which could effectively promote the campaign creation. The neglected knowledge presents a series of elements in design process, wherein the Students intended to apply them but failed; or they had to consult others for these elements.
- **Step for Procedural Knowledge:** At the second step, procedural knowledge of the Students was investigated mainly based on their specialized experience. Procedural knowledge instructs them to organize campaign creation and apply creativity strategies during design.
- **Step for Motivation:** In order to interview the Students' possible intrinsic motivation and extrinsic motivation, the third step was organized in this framework.
- **Step for Problem Finding:** At the fourth step, the possible problem-finding process of the Students was surveyed. Does problem discovery only exist when a problem works as a starting point of campaign creation? To some extent, the quality of problem discovery depends on how a creator identifies and defines a problem.
- **Step for Ideation:** The fifth step aims to describe the Students' ideational process of campaign creation, which may be divergent or associative. In a possible divergent ideational process, the quantity of generated ideas is taken as one of the most important influential factors.
- **Step for Evaluation:** Step six aims to investigate a possible evaluation process of the Students, wherein the modification might be set up to improve the campaign creation.

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Table 1. The case interview framework

	Aim of Investigation	Interview Questions
Declarative Knowledge	Describe valued and neglected knowledge in China's IDE system.	• Did you learn any kind of design knowledge at the university which contributed to the campaign creation? If yes, please describe it/them. •Did you learn any kind of design knowledge outside the university which contributed to the campaign creation? If yes, please describe it/them. • Was there any kind of design knowledge which you intended to apply but failed to, or about which you had to consult others? If yes, please describe it/them.
Procedural Knowledge	Describe the Students' procedural knowledge.	• Was there an explicit instruction that guided your campaign creation process? If yes, please describe it/them. • Please describe your campaign creation process. In other words, how did you create your campaign? • Was there any strategy applied in your campaign creation process? If yes, please describe it/them.
Motivation	Describe the intrinsic motivation and/or extrinsic motivation of the Students.	Please describe your motivation for the campaign creation.
Problem Finding	Describe the Students' problem-finding process.	• What was the starting point of your campaign creation? • How did you identify and define a problem?
Ideation	Describe the Students' divergent ideational process and/or associative ideation process.	• Please describe the ideational process of your campaign creation. • How many ideas were generated in your divergent ideation process—if you experienced such a process?
Evaluation	Describe the Students' evaluation process.	• Was there any evaluation process for your campaign creation? If yes, please describe it/them and answer the following question. • Was there any modification after the evaluation? If yes, please describe it/them.

COLLECTING THE EVIDENCES

Through summarizing the results of the interview with the Students, the detailed case evidences are listed in Table 2:

- **Evidences of Declarative Knowledge:** In terms of declarative knowledge supporting campaign creation, the Students declared that they learned digital modelling skill, products styles definitions, and ergonomics principle at school, and referring to online examples for product style and building visual communication outside school. However, current China's IDE provides deficient information with regard to engineering structures, prototypes building, interactive hardware or software.
- **Evidences of Procedural Knowledge:** According to the Students' description, explicit instruction was not included in their procedural knowledge. In order to create a product campaign, the Students scheduled and practised a flexible creation process: designing multiple elements of product, evaluating product design according to investigation, modifying final outcome, building full function prototype. Also, the Students applied strategy in the process, including brain storming and template-based online investigation.
- **Evidences of Motivation:** Basically, interview information showed that the Students worked with clear intrinsic motivation, such as satisfying personal interests, pursuing a sense of accomplishment, and exploring future career opportunity. Because of investment from partner and possible economic benefits, the Students' campaign creation also was driven by extrinsic motivation.

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- **Evidences of Problem Finding:** The Students started the campaign creation from defining a ring combining technology and fashion, but not a problem that needs to be solved. Namely, in the process of creativity, the Students ignored problem finding that an essential component of creative thinking system.
- **Evidences of Ideation:** In order to create a high quality campaign, the Students carried out an ideational process in which product form was generated and its function was altered until confirmation. This ideational process producing eight diverse ideas for product style is typically divergent.
- **Evidences of Evaluation:** The Students applied a series of evaluation process, first of all, self-evaluation. In addition, conducting tests on a small number of users, the Students evaluated product form and function. According to self-evaluation and testing, the Students furthermore modified product form and function.

Table 2. Case interview evidences

	Detailed Items	Evidences
Declarative Knowledge	Design knowledge learned at school	• CAD skills, especially in digital modelling. • Definitions of product styles. • Ergonomics.
	Design knowledge learned outside school	• Designing a stylish product through referring to online examples. • Visualizing a campaign for communication through referring to online examples.
	Design knowledge that is deficient	• Designing product engineering structures. • Building product models or prototypes. • Developing hardware or software related to interactive design.
Procedural Knowledge	Explicit instruction	N/A
	Campaign creation process	• Designing product function, form and business model. • Evaluating design through investigation. • Modifying design. • Building prototype.
	Applied strategy in the process	• Brain storming. • Online investigation template.
Motivation	Intrinsic motivation	• Satisfying personal interests. • Pursuing a sense of accomplishment. • Exploring future career opportunity.
	Extrinsic motivation	• Investment from partner. • Possible economic benefits.
Problem Finding	Starting point of campaign creation	• Defining a ring combining technology and fashion.
	Definition of problems	N/A.
Ideation	Ideational process	• Generating product form. • Altering product function until confirmation.
	Divergent ideation process	Generating eight divergent ideations for product style.
Evaluation	Evaluation process	• Self-evaluation. • evaluating product form and function by conducting tests on a small number of users.
	Modification process	Modifying product form and function through self-evaluation and testing.

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ANALYZING THE EVIDENCES

In order to evaluate the Students' creative thinking, the above evidences were analyzed in the following six sections:

1. **Declarative Knowledge Analysis:** The Students' declarative knowledge was concentrated in the field of design aesthetics. And online resources also provided access to its development. However, a lack of practical knowledge resulted in the Students' failure to build a truly applicable prototype.
2. **Procedural Knowledge Analysis:** Basically, the Students received no explicit instructions. Despite the application of some strategies, a poorly designed procedure still complicated their campaign creation.
3. **Motivation Analysis:** The Students owned clear intrinsic and extrinsic motivations.
4. **Problem Finding Analysis:** The Students didn't build the campaign based on problem finding. Consequently, this campaign lacked adequate attraction to the target participants, because specific problems were not solved.
5. **Ideation Analysis:** The Students struggled to generate a complete ideation because of ambiguous function definition. Divergent thinking rather than associative thinking was applied in their ideational process.
6. **Evaluation Analysis:** The Students consciously evaluated the campaign, but disorderly evaluation process might obscure the guideline for modification.

In summary, the above analysis illustrates how the Students carried out product design campaigns. Another research question, why the Students failed to carry out a successful campaign, also is effectively explained. There are five main defects in the Students' current creative thinking: deficient knowledge about prototype construction, poorly designed procedure, poorly defined target problem and solution, ambiguous ideational definition and disorderly evaluation process, all of which acted as the obstacles to their crowdfunding success. Associative thinking was additionally evaluated to assist with the ideational process. Overcoming these drawbacks requires reasonably developing creative thinking.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

The first limitation lies in the research scope: this research only targets crowdfunding, and other types of designers' micro-entrepreneurships in China are not involved. The second limitation is that the research design in this paper is made for single sample. Yin (2013) defined this type of design as single-case holistic design and also presented the other three more complex types of case study design: single-case embedded design, multi-case holistic design and multi-case embedded design.

In terms of future research, crowdfunding will still be the focus of our research, considering that this type of micro-entrepreneurship is highly accessible to Chinese designers. In addition, an integrated research will be designed to gain a deeper comprehension of the relationship between crowdfunding success and creative thinking elements. Multiple cases, particularly successful product-design campaigns, will be included in future research. Last but not least, both current and future findings will be employed to develop university-level curricula for China's IDE. Experimental courses, which aim to enhance the creative thinking of designers, will expectedly be carried out and evaluated at NUA.

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CONCLUSION

In the context of China's advocate of designers' micro-entrepreneurship, especially AON crowdfunding, domestic IDE and prior research can hardly produce ideal solutions to the emerging problems. How to effectively carry out a product design campaign? Which factors determine the success or failure of a fund-raising campaign? In order to answer these questions, a case study on a Chinese students' design team, which launched a crowdfunding campaign, was designed and conducted herein. In this study, evidences of the campaign creation process were collected based on the model of creative thinking. Analysis of the evidences revealed that the failure in the Students' fund-raising campaign could be attributed to creative thinking obstacles: deficient knowledge about prototype construction, poorly designed procedure, poorly defined target problem and solution, ambiguous ideational definition and disorderly evaluation process. This result objectively reflects the main defects of current China's IDE. Therefore it is required that related curricula and courses, which aim at improving the design entrepreneurs' creative thinking, should be positively developed. To be more specific, designers involved in micro-entrepreneurship should possess the strong abilities of building prototypes, following the design procedure, finding and solving problems, defining ideation and applying the evaluation methods. In future research, further insights into the relationship between the crowdfunding result and the elements of creative thinking will be developed, and possible research findings might be transformed into university-level curricula for China's IDE.

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KEY TERMS AND DEFINITIONS

AON Crowdfunding Model: A type of crowdfunding model in which project founders can gain all money if total funds meet expected minimum on expiration date, otherwise their campaigns must be terminated and all invested capital will be returned to investors. It is believed that AON fundraising campaigns involve substantially larger capital goals, and are much more likely to be successful at achieving their goals, because AON projects typically provide more detailed information on the campaign.

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Campaign Creation: A process of creating a project for raising funds. A campaign is any series of actions or events that are meant to achieve a particular result, like an advertising campaign of television commercials and Internet ads that tries to convince kids to buy bubble gum-flavored toothpaste.

Commercial Wealth: Abundance of valuable resources or valuable material possessions in commerce.

Creative Thinking: A mental process of activity leading to original and adaptive ideas, solutions, or insights. Creativity is a phenomenon whereby something new and somehow valuable is formed. The created item may be intangible or a physical object. Creative thinking is a way of looking at problems or situations from a fresh perspective that suggests unorthodox solutions. Creative thinking can be stimulated both by an unstructured process such as brainstorming, and by a structured process such as lateral thinking.

Crowdfunding: A form of alternative finance, which has emerged outside of the traditional financial system. The practice of funding a project or venture by raising monetary contributions from a large number of people, today often performed via internet-mediated registries, but the concept can also be executed through mail-order subscriptions, benefit events, and other methods.

Industrial Design Education: A process of design applied to products being manufactured through multiple techniques. Industrial design is a process of design applied to products that are to be manufactured through techniques of mass production.

Micro-Enterprise: A small business generally employing 10 people or less, and have a capital asset of less than PhP 3,000,000. Internationally, most microenterprises are family businesses employing one or two persons.

Micro-Entrepreneurship: A process of starting a small scale business or other organization. The basis of micro-enterprise in the U.S. is micro-entrepreneurship, recognizing a fundamental right of people to apply their individual talents, creativity and hard work to better their lives.

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Chapter 43
Factors Comprising Effective Risk Communication, Decision-Making, and Measurement of IT and IA Risk

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ABSTRACT

This article focuses on factors that comprise effective risk communication, decision-making, and measurement of information technology (IT)/ information assurance (IA) risk. A review of the extant literature provided the basis for the formulation of research questions. The sample population consisted of senior IT/IA practitioners from Florida chapters of information security professional organizations. Results of this study found that decision making, and measurement are all factors in effective risk communication of IT/IA risk to non-IT personnel. This research has implications for both IT/IA practitioners and recipients of risk communication through the identification of factors which influence IT/IA professionals in how and why IT/IA risk communication take place, and consequently, how to simplify and improve its effectiveness.

INTRODUCTION

For years the information technology (IT) department, and by extension, the information assurance (IA) department, has been perceived by board members and senior management as "someone who is managing back-office technology" (Wysopal, 2015). This is in part due to the inability of the departments to communicate using a common language. The IT/IA department speaks geek and managers speak business. According to Wysopal (2015), Chief Information Security Officers (CISOs) need to communicate the

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level of risk in terms that board members can understand, namely using numbers not acronyms. This study examined the challenges of how to effectively communicate IT/IA risk information to an extra-departmental audience. The effectiveness of that communication is judged by both the quality of the information relayed in the message and the decisions they affect.

Background

Information Security can be thought of as an economics problem. According to Sowell (2014) economics is the study of the allocation of scarce resources to satisfy an infinite demand. Organizational governance entails the allocation of resources (human resources, financial capital), across the organization's various departments. No organization has sufficient resources to satisfy every request by every department. Therefore, those entrusted with organizational governance (typically senior management or a board of directors) must make difficult decisions on how best to allocate scarce resource to most effectively achieve organizational goals.

IT/IA departments are required to communicate to extra-departmental stakeholders about the risks to the organization from the use of information technology. According to Gigerenzer (2015), the best way to ensure risk-savvy decision-making, is through the introduction of knowledge about risk. If the objective is to perform effective risk communication, then IT/IA practitioners or anyone interested in effective communication of risk information must consider what makes effective versus ineffective risk communication. The most obvious factor might be decision quality, but that assertion necessitates further exploration regarding what constitutes a good decision versus a bad one. It may be tempting to say the quality of the outcome, but we are talking about decisions regarding risk, and thus, necessarily have a component of uncertainty.

Much of the literature in the decision sciences relies on gambling decisions to illustrate concepts and one is leveraged here. When a decision-maker bets with lower odds of success, and thus a higher payoff, regardless of the outcome of the wager, poor decision-making is likely because the statistical probability of winning is so low. The measure of a good decision regarding risk then is not solely about the outcome, but also the thought processes and logic used by the decision-maker, which brings us back to the information that was communicated, in what format was it presented, and how it was collected. The quality of those aspects should also be considered, such as the risk message content, its accuracy, complexity, clarity, and ability to overcome counterproductive natural human tendencies to make poor risk judgment (Cho, Torsten, & McComas, 2015). Evaluating the risk message in this last aspect is particularly challenging as no two people react the same way to identical risk information. Factors such as cultural background, education, professional training, age, gender, and racial identity can influence how risk is judged and highlights the importance of knowing one's audience (Cho et al., 2015).

The recipient of a given risk message can present an unknown quantity in most situations; unless the message is intended for only one recipient and that individual's identity and message profile is known in advance of message construction. If the intended audience is a heterogeneous group, the challenges are not only the influences of individuals making up the group such as gender, racial identity, age, et cetera, but also each individual's preconceived notions. Research demonstrates that media exposure informs many of our perceptions about risk and thus can influence decision-making (Bodemer, Müller, Okan, Garcia-Retamero & Neumeyer-Gromen, 2012). Information about risk from the media can distort risk beliefs as media outlets have different goals from the IT/IA practitioner and their stakeholders. Media has the objective of selling something, and sensationalism is the tool of choice, statistical accuracy is a decidedly low priority.

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Risk messages can contain elements that invoke bias in the recipient; there are also unseen factors that can influence decisions—factors that even the decision-makers themselves are not aware of consciously. These influences can be difficult to detect, let alone invoke intentionally, but knowledge of their existence is critical to understanding the formation of a judgment. An extension of judgment formation is recognition of an individual's propensity to use heuristics to aid in decision-making, particularly in the realm of risk and uncertainty.

Risk message content quality is indicative, not as a factor of the action or judgment that it may invoke, but of the information's source and the methodology used to gather it. According to Hubbard and Seirson (2016), cybersecurity risk information is frequently sourced from subjective expert opinion rather than more rigorous quantitative methods available. This is risk communication that straddles both risk message domain, as well as the rampant use of risk matrices, and the preferred risk visualization that research has demonstrated is problematic (MacKenzie, 2014).

Problem Statement

One of the challenges that has long existed in the IT/IA space is the communication of risk information from the IA practitioner to business leaders in a form that facilitates effective decision-making (Hubbard & Seiersen, 2016). To make well-informed decisions, management must properly understand the risks to the organization created by the use of Information Technology. Today, IT/IA risk communication is delivered in the form of a count of technical vulnerabilities, their impact, and magnitude; this form is a foreign language to extra-departmental stakeholders.

Enterprise risk management is about aligning risk with organizational goals to help management to identify weaknesses as well as opportunities for improvement (Bromiley, McShane, Nair, & Rustambekov, 2015). According to Palm and Ward (2015) when communicating risk information, the target audience is an important consideration, particularly when communicating with management and the board of directors. Management uses specialized measures and metrics such as return on investment (ROI), total cost of ownership (TCO), and value at risk (VaR) to make decisions about every other aspect of the business. Therefore, it makes sense to understand the key factors that lead to effective risk communication, decision-making, and measurement of IT/IA risk.

The problem this study sought to investigate was the identification of the factors that comprise effective risk communication, decision-making, and measurement of IT/IA risk. The literature indicated a business trend toward holistic risk management decisions brought about through enterprise risk management (ERM), which highlights the importance of selection of good metrics to describe risk. As Gigerenzer (2015) points out, people are over-optimistic about risk, as the use of effective risk communication can combat our risk-illiterate society. So, IT/IA can no longer afford to consider the aspects of the organizational risk apart from the larger whole. If many different aspects of the business under an ERM describe their business risk and subsequently report that risk to a central decision-making authority, then it may be beneficial to select a metric that all aspects of the business can leverage in order to facilitate an 'apples-to- apples' comparison of risk for decision makers. According to Hayden (2010), the measure of a good metric should be judged by its ability to tell the audience what it needs to know about risk.

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Study Rationale

As Hopkin (2010) succinctly stated, a successful risk management initiative should contain several elements, among them "alignment with other business activities" (p. 46). Communication is fundamental to alignment among groups; this study focused on the effective communication of IT/IA risk to an extra-departmental stakeholder audience. This study's findings were significant to IA leadership in that an improved facility and success communicating of IT/IA risk enhances the professionalism for all IA practitioners among peers and colleagues. The results of this research could aid IA practitioners in making a case for careful consideration of the target audience of, content contained in, and the desired outcome of risk messages. All these factors properly considered and managed have the potential to provide an exponential increase in the IA fields' ability to carry out the primary objective of safeguarding information, which cannot be done without the well-informed cooperation of stakeholders.

ENTERPRISE RISK MANAGEMENT

Jaquith's (2007) seminal book on security metrics (the first book of its kind in IT/IA at the time) provided excellent insight on the industry deficiencies in regard to risk management. Jaquith attributed the misdirection of the IT/IA field to the dominant force applied through security vendors both hardware and software, in prioritizing the industry. The objective of these vendors is to instill fear to create and increase demand for their products. This perspective prompted the question: How can IT/IA contribute to an organization's value proposition instead of just consuming overhead? Jaquith's assertion that "risk management has outlived its usefulness" led to the question: Why is risk management and enterprise risk management so important?

Also known as total risk management, enterprise-wide risk management, corporate risk management, and integrated risk management, ERM is used to describe methodologies that utilize organizational level measurement and aggregation techniques for the market, credit, and operational risks (Johri, 2013). Enterprise risk management represents a megatrend in the field of risk management toward a holistic picture of organization risk and has shown demonstrable; proven performance results from its implementation (Eckles, Hoyt, & Miller, 2014; Poorman, 2008). Enterprise risk management seeks to establish the organization's risk appetite to determine which risks should be accepted and which should be mitigated or avoided (Hoyt & Liebenberg, 2011). According to Rittenberg and Martens (2012), decision-makers need to know the organization's risk appetite and risk tolerance to best determine their organization, as whole and individual departments that can achieve the firm's objectives.

Enterprise risk management is a significant trend in risk management, and one of the reasons senior managers would need to ascertain the level of risk of IT to the organization. The literature revealed a lack of relevant information regarding the management of ERM, despite the existence of several robust ERM frameworks such as the committee of sponsoring organizations (COSO) and the ISO 31000 family of standards (Bromiley et al., 2015). These and other frameworks provide structure but do not prescribe specifics such as how to measure organizational risk, risk appetite, or risk tolerance.

When executed properly, ERM helps organizations create and protect value, better identify opportunities and threats, functions as an integral part of decision making, helps minimize losses, reduces uncertainty, and enhances trust and efficiently applies resources to risk treatments (ISO 31010:2009). The literature presented and often demonstrated a litany of benefits to the use of ERM such as increased profits and

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shareholder value. However, this study was chiefly concerned with three benefits, which were improved decision making, optimal allocation of organization resources, and the frequent communication to both internal and external stakeholders (Bromiley et al., 2015).

Risk Communication

How risk information is conveyed is critical to its effective use by the recipients of the risk messaging, and according to Keller, Siegrist, and Gutscher (2006), the way that risk is perceived depends greatly on how it is presented. The objective of risk communication is of particular importance when communicating IT risk information to a non-IT/IA audience (such as extra-departmental stakeholders) and comes with several unique challenges. To understand the challenges to risk communication and thereby the appropriate resolution, the originator of the communication must first understand the motives and objectives of the communication. According to Wardman (2008), there are three distinct risk communication imperatives, which are normative, instrumental, and substantive.

The normative imperative aligns closely with the objectives of public service as its goals are to inform, provide transparency, inspire constituent trust, educate a non-expert audience, engage in meaningful debate, and reduce uncertainty (Fischhoff, 2005; Hood & Heald, 2006; Jaeger, Webler, Rosa, & Renn, 2013; Wardman, 2008). In this environment, risk messages are subjected to a market test whereby well-produced, accessible messages will find their market niche if the receiver can process them with little disruption or distraction, while poorly-produced risk messages will eventually fail (Jaeger et al., 2013). However, in so far as risk communication fulfills goals such as being transparent and informative the primary objective of transferring risk messages is the reduction of uncertainty. In this sense, mutual understanding is not something that is thought can be achieved purely through the exchange of knowledge about the world but is fashioned anew out of the divergent social realities which participants bring together (Jovchelovitch, 2007).

The instrumental imperative interprets risk communication as a resource or means that may be employed by an individual, group, or organization to further the achievement of a particular objective. The value of risk communication is judged according to how it supports the particular aims of an organization usually faced with an imminent public-relations crisis in which different aspects compete to achieve their interests and ambitions. A classic example of instrumental communication might be a commercial entity to public communication such as an oil company in the midst of an oil spill, where the communication objectives are therefore to win the hearts-and-minds of government entities, citizens, or employees (Gouldson, Lidskog, & Wester-Herber, 2007).

The substantive imperative promotes risk communication that is used to foster improvements in mutual understanding and the abundance of knowledge available to facilitate risk-related decisions. Advocates of this imperative purported that it may be possible to generate better decisions through information from various sources of diverse viewpoints that may not have normally been accounted for using an exclusively technocratic or individualistic approach. The substantive argument can at times align with the instrumental imperative, but in contrast to uniquely instrumental concerns, the substantive imperative for risk communication is conventionally portrayed as guided by the desire to achieve results that favor the general interest rather than self-serving ends (Stirling 2008).

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Risk Perception

Many different factors influence the communication of risk information, the goal is to create the intended perception in the audience, in order to achieve this, the author of the risk message must be familiar with the many aspects affecting risk perception. Risk is perceived differently by individuals as opposed to groups, and as we will see differences between laypeople and experts. The following section will review the various types of risk perceptions and challenges each adds to risk communication.

ROLE OF AFFECT

Emotions play a role in how individuals and laypeople perceive risk; in fact, it is the emotional response or reaction that is experienced first before cognitive forces can process the situation. An example of this is when a person is asked to compare two different risk scenarios, the one invoking the stronger emotional response is likely to be perceived as riskier. Risk influences emotions in two ways; first, those immediate feelings upon initial consumption of the risk information, and second, those emotions the risk is expected to create in the future. There are two schools of thought regarding the effect of feelings on risk perception, which are the risk-as-feelings hypothesis (Loewenstein, Weber, Hsee, & Welch, 2001) and affect heuristic (Finucane, Alhakami, Slovic, & Johnson, 2000; Pachur, Hertwig, & Steinmann, 2012).

Availability Heuristic

In their seminal paper, Tversky and Kahneman (1975) explored the heuristics of decision-making in situations of uncertainty. They pointed out that the frequency and ease of information relative to an event affect how a person perceives risk. The accuracy of a heuristic relative to how risk is perceived is dependent on the availability of information related to the case in question, and how much of that information is accessible to the individual. Given these concepts many aspects can bias risk perception such as media coverage, imagery, messaging. In another seminal piece of literature by Lichtenstein, Slovic, Fischhoff, Layman and Combs (1978), the authors tested the study participants' frequency of judgment using two different methods. In the first method, a participant was given two causes of death and asked to determine which caused more deaths. The other method, the participant was asked to rate the frequency of a cause of death, but before that, they were given either a high or low anchor such as an unrelated cause of death statistic like an annual death rate by drowning or poisoning. When the participant was given a large anchor before being asked to estimate a rate of a different cause of death their estimate was two to five times higher than situations where the participant was given a low anchor.

Their study revealed two biases, the first known as primary bias is the tendency to overestimate high occurrences and conversely underestimate low occurrences. The second form of bias known as secondary bias refers to the subjects' tendency to associate the wrong ratio to the occurrence of a risk. The availability heuristic was developed as a way to explain how laypeople gauge risk and ultimately perceive risk, which, to a great extent, is based on the

individual's recollection of incident information. If the information that the person recalls happens to correlate accurately with the actual rate of occurrence, then the layperson's risk estimate is accurate—if their recalled data is inaccurate, so too is their estimation.

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Optimism Bias

To better understand how laypeople perceive risk early, researchers consistently discovered that one or more biases explain the reasons behind how and why non-experts interpret risk the way they do. Another common risk perception bias is known as optimism bias, where the individual tends to believe that a particular risk does not apply to them in an equal fashion as any other person. This optimism bias is experienced for both positive effects and adverse effects equally, hence it is often referred to as comparative optimism or the above average effect. In his study Weinstein (1987) presented participants with 32 life hazards, then asked what they believed their likelihood of manifesting the negative consequences of each of those life risks, they rated their chances lower on 25 out of the 32 life hazards.

Weinstein's work first brought optimism bias to light other studies have promulgated various explanations for this bias. Shepperd, Carroll, Grace, and Terry (2002) outlined four categories in their study as possible explanations for this bias. Other studies focused on whether or not this bias was, in fact, incorrect such as those studies that examined people's belief about how safely they drive versus the statistical average. Those studies show that the majority of individuals are not representative of the statistical average (Gigerenzer, Fielder, & Olsen, 2012; Johansson & Rumar, 1968; Svenson 1981). Meaning, most people believe themselves to be safe drivers and various studies demonstrated that bias to be true.

Media and Risk Perception

The literature demonstrated that media effects how risk is perceived through the frequency of and the bias in messaging. Media tends to provide a disproportionate volume of messaging about risk relative to its actual likelihood of occurrence, which can have the unintentional effect of misrepresenting risk in the minds of individuals. This media consequence was demonstrated in an early study by Slovic and Combs (1979) where the volume of newspaper reports about a particular risk scenario was compared against the layperson's perception of that risk, which tended to follow the amount of media on the subject rather than the actual level of risk. While media coverage affects risk perception, its effects have been demonstrated to be short-term (Sjöberg, Jansson, Brenot, Frewer, Prades, & Tönnesen, 2000). In addition to the effects caused by the volume of media on the layperson's risk perception, there is also the content of those media messages that contain bias. That bias takes the form of a lack of transparency and incomplete data. In a study by Bodemer et al. (2012), Internet and newspaper coverage of the human papillomavirus (HPV) vaccine was deficient in providing crucial information about the risks and benefits.

The Role of Numeracy in Risk Perception

This area of risk perception is of particular importance, as so much of how risk information is messaged and is encapsulated in numbers. Therefore, it is important to understand how numbers and statistics affect how risk is perceived. Persons differ in their ability to digest information in numerical form effectively, this is known as a person's numeracy, which can influence how they perceive risk information delivered in numerical or statistical format. Individuals low in numeracy tend to demonstrate a higher risk perception than those people with higher numeracy. Additionally, individuals low in numeracy are more sensitive to how numerical information is presented, frequency versus percentage, as a gain or loss. The exact cause of this behavior, whether it be difficulty interpreting the information or understanding scaling, remains unanswered (Reyna, Nelson, Han, & Dieckmann, 2009).

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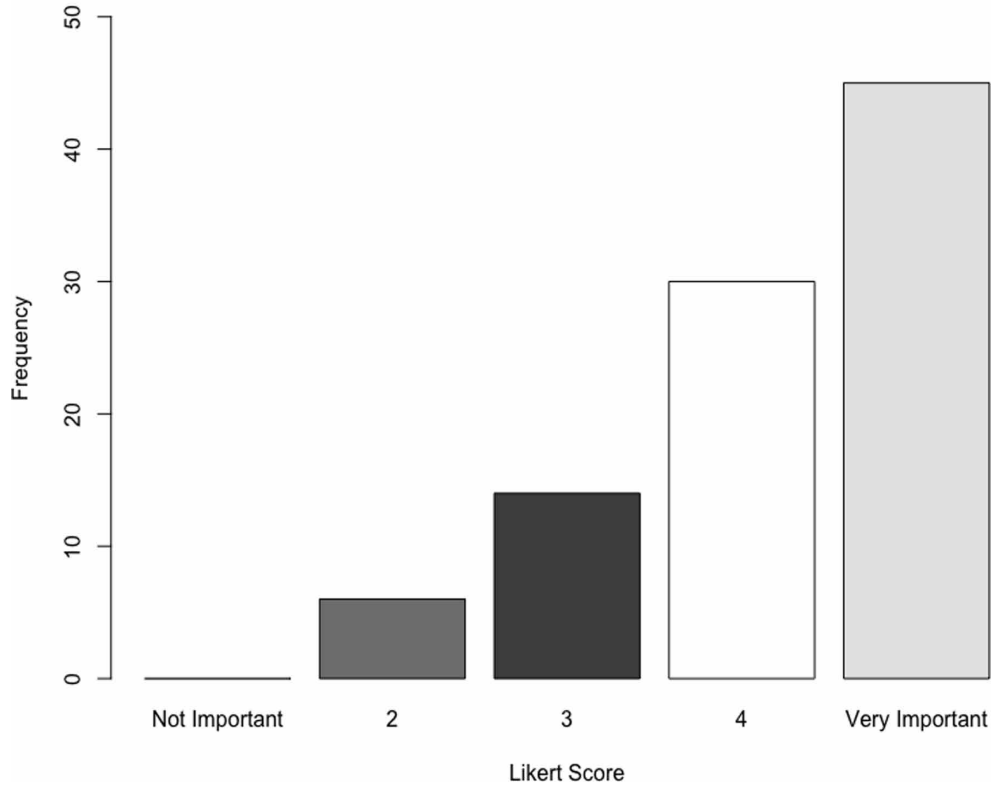
Risk Communication Findings

The goal or intention of a risk communication message should be considered, and its effectiveness assessed in that context. This study surveyed senior information assurance practitioners from the south-eastern region of the United States about their opinions and perceptions on the subjects of risk communication, decision-making and the measurement of IT risk. The findings in this study confirm several important ideas such as risk communication is a critical factor in how security effectiveness is perceived by organizational stakeholders (see Figure 1). The sample population also ranked the importance of the risk communication of IT risk information as 'very important' to effective decision-making by extra-departmental stakeholders (see Figure 2).

DECISION-MAKING

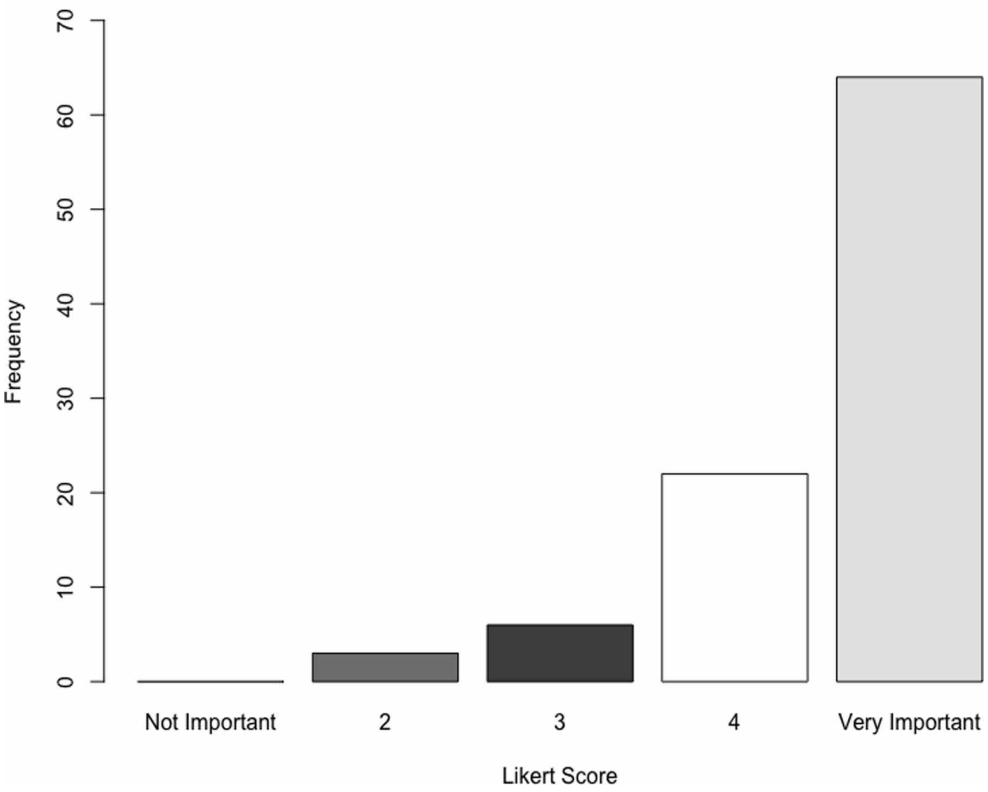
As Hubbard and Evans (2010) explained, when it comes to assessing risks, people display predictable bias, which leads to irrational decision-making. This is especially true in subjective assessments, particularly those made by experts. Research in the decision sciences showed that there are several weaknesses typically made assessing risk of any kind such as cognitive bias and the use of ordinal scales to describe

Figure 1. RC1: Importance of risk communication on security effectiveness



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Figure 2. RC2: Importance of risk communication on decision making



risk. The two most relevant phenomenon affecting IT risk management, in particular, are overconfidence bias (Kahneman & Tversky, 1972) and inconsistency of judgment (Karelaia & Hogarth, 2008). Hubbard and Evans (2010) recommended the use of risk assessment methods that explicitly describe probabilities and magnitudes of loss quantitatively, rather than using some form of ordinal scale. Obstacles to good decision making are cognitive bias about risk, decisional familiarity and complexity, and the collection of evidence or data. Good decision-making requires a process to determine how decisions will be made, and that process must then be communicated to stakeholders (Roberto, 2013). The decision-making process requires examination and comparison of alternatives (Roberto, 2013).

Heuristics as Adaptive Decision Strategies

The prevalent position with respect to decision making is that a rational approach that makes extensive use of logic and gathers all available information for consideration is superior. In the world of IT/IA and risk management, decisions often have a component of uncertainty, particularly about the consequence or probability of a threat occurrence. According to Artinger, Petersen, Gigerenzer, and Weibler (2015), one of the defining aspects of managerial decision-making is uncertainty. The domains of the managerial sciences such as operations research and management economics typically define risk as a variable which represents the aspects of the decision where there is a component of uncertainty.

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The last decade has seen a surge in research about how best to bolster decision making in areas rife with uncertainty. This research showed an increase in the use of heuristics among managers (Bingham & Eisenhardt, 2011). Heuristics have colloquially been known as mental shortcuts and are generally described as inferior according to Kahneman (2014). Research in the managerial decision-making space is bifurcated into individual decision making and organizational decision making, while managerial heuristics is thought to bridge the divide between the individual and the organizational (Artinger, Petersen, Gigerenzer & Weibler, 2015).

According to Todd and Gigerenzer (2012), the concept of ecological rationality explains why managerial heuristics is able to bridge the gap between individual and organizational decision-making processes. Ecological rationality refers to the heuristic concept of how people are able to glean contextual information about a particular decision under conditions of uncertainty without complete data and still make an effective decision. Ecological rationality has been shown to foster more effective decisions as in the DeMiguel, Garlappi, Nogales, and Uppal (2009) investment study comparing the heuristic 1/N rule against the mean-variance asset allocation method. One of the key ingredients in the determination of the potential effectiveness of heuristics is the degree of uncertainty.

The point is not to say that heuristics always yield better decisions, rather it is heavily weighted by the environment of the decision. Heuristics can perform well, sometimes well enough to outperform more computationally intensive approaches to decision making. According to Gigerenzer and Brighton (2009), research has begun to show a relationship with respect to decision making an effort and accuracy. In short, insufficient effort to gather information relative to the decision can yield a suboptimal decision. Conversely too much effort can also produce a sub-par result.

Collection of data, familiarity, complexity, determining decision-making criteria, communicating said criteria, and keeping bias in check can seem an expensive prospect. It is here that a relatively new discovery in the decision sciences—heuristic decision making— becomes a factor. According to Gigerenzer and Gaissmaier (2011), heuristic decision making is about reducing the cognitive workload required to make decisions without losing decision quality. The term heuristics has been so overused that its true meaning can be difficult to ascertain. Heuristic is a word coming from the ancient Greek meaning to "find or discover for oneself." Shah and Oppenheimer (2008) proposed that heuristics reduce cognitive workload by minimizing the effort spent on the five tasks of decision making that encompass gathering, analyzing, and considering alternatives.

Decision-Making Findings

If the purpose of a risk communication is to inform better decision-making, then that must be the objective and measure of its effectiveness. This study findings demonstrated that decision-making is a critical factor in the selection of the method used to communicate risk to organizational stakeholders. Senior security professionals ranked the importance of the use of Risk Communication of IT risk information for decision-making as 'important'(see Figure 3). They also ranked the significance of decision-making on the form of Risk Communication of IT risk information took as 'very important' to making effective decisions by extra-departmental stakeholders (see Figure 4). Which links together two important independent variables (risk communication and decision-making) on the effective risk communication of IT risk information.

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Figure 3. DM1: How important is IT risk information to decision making

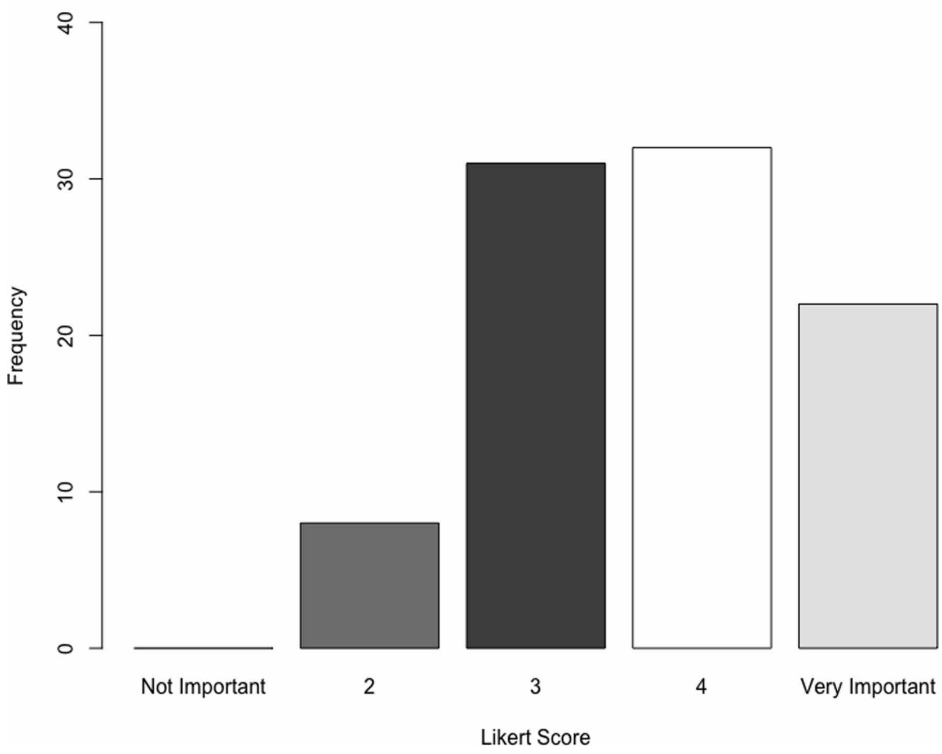
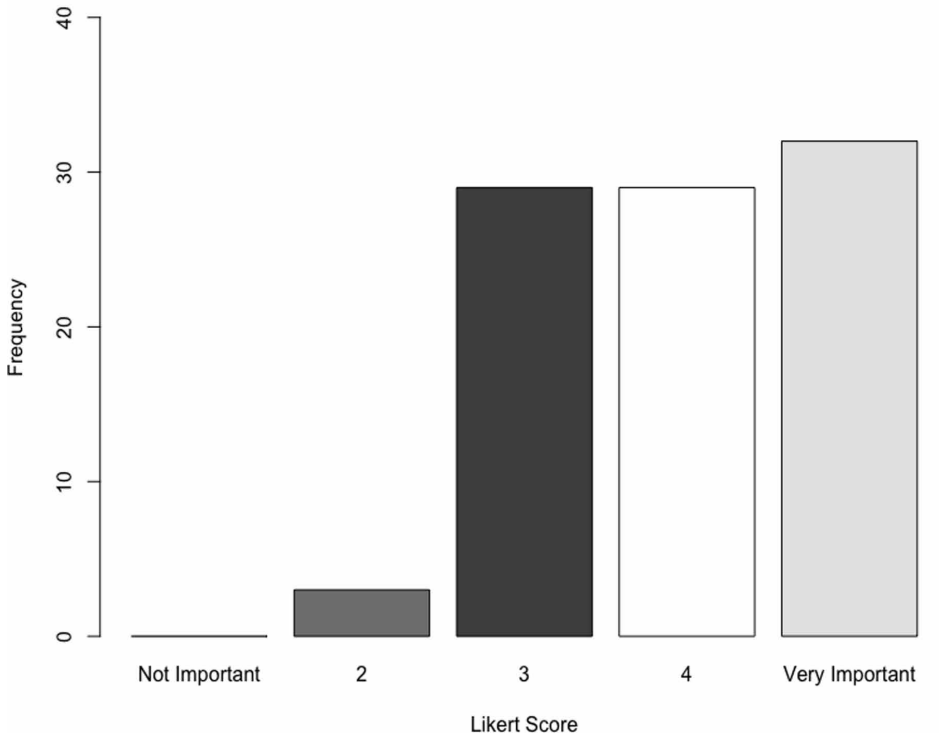


Figure 4. DM2: Rank the Significance of decision making on communication form



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MEASUREMENT

So far, we have addressed risk communication and the myriad of challenges that exist with attempting to communicate risk information. This section will elaborate on the decision-making aspects of making the most efficient decision with the information provided. This section assumes that the entity communicating the risk information would like to provide the best information possible based on what is communicated, and the method used to encapsulate that risk information. Examining more closely how to collect, measure, and present the actual state of the environment as it pertains to risk.

What is the value and purpose of measurement? According to Hubbard (2014) information has three primary sources of value in a business context. First, information can reduce uncertainty and aid in decision making where there is an economic consequence. Second, information can affect the behavior of others, which can also have an economic impact. Finally, information may at times have a market value. Measurement is, at its core, information, and shares all three traits of value as information. The aspect most relevant to IT risk communication and thus the focus of this section is the first source of value, the reduction of uncertainty and facilitation of decision-making.

In the field of Information Assurance and the measurement of risk are analogous to social measurement such as that used to understand society. Social measurement is foundational in government, public policy, economics, business, academic research in the social sciences, and many more. Social measurements are frequently aggregate measures, whose function is to condense and encapsulate meaning as seen in the popular IT/IA measures such Return on Investment (ROI), Total Cost of Ownership (TCO), Mean Time Between Failures (MTBF), and Value at Risk (VaR). These social measurements are critical to governing how businesses are run to provide a means of comparison to inform decision-making.

Accuracy in measurement is vital, particularly in social measure as mentioned previously, it often represents an aggregation of many measurements. There are two concepts to accuracy in a measure, precision and bias, also known as reliability and validity. The precision component to measurement speaks to the variation between measures. Bias in measurement refers to any systematic deviation from the true value as seen during repeated measurement. As Hand (2016) pointed out, measurement is indispensable to understand, explore, predict, and ultimately control aspects of our world.

The Measurement of Cybersecurity

The management of risk, indeed IT/IA risk, can be thought of as a classic economics problem, one where there are virtually unlimited demands on a constrained supply of resources. The resources that must be most efficaciously distributed are those of capital, human, time, and knowledge to maximize the organization's objectives. No organization, no matter how large, has an inexhaustible supply of resources to minimize risk, hence the economics problem. As there are not enough resources for all, the problem becomes how best to distribute to some risk mitigation activities, and which ones to choose and which to ignore.

There are many reasons to measure IT/IA risk, but chief among them is the desire to understand better what is happening (Hayden, 2010). It is necessary to start with some clarifications; first is the difference between a metric and a measurement, which is often confused. As Hayden (2010) succinctly stated metrics are a result, measurement is an activity. Another point of clarification is what is the indicator of a good measurement, that should be judged by the measurement's ability to reduce uncertainty (Hayden, 2010; Hubbard & Seiersen, 2016). So, the goal of a good metrics program should be to obtain the answers to good questions that enhance our understanding of how things work and reduce uncertainty.

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In the quest to determine what we are trying to measure and where we need to reduce uncertainty, one method for designing a good metric based on the aforementioned criteria is the use of the goal, question, metric (GQM) paradigm first devised by Victor Basili (1992) for the measurement of software development. The GQM was later applied by Lance Hayden (2010) to the creation of IT security metrics in his book by the same name. The measurement of IT security is about asking the right questions, reducing uncertainty, and improving operational abilities (Hayden, 2010; Hubbard & Seiersen, 2016).

When Algorithms Beat Experts

In the risk communication section, the comparison was made between how experts interpret risk information versus how a layperson interprets the same information. A similar question is considered here, namely is it better to have an expert determine risk or a statistical model. Fortunately, there was an abundance of research comparing experts' ability to predict forward-looking uncertain outcomes versus those predicted by statistical models. The research consistently showed the models outperformed the experts (Hubbard, 2014; Meehl, 1954). This is not to say that humans should be replaced, but rather should consider select situations where a statistical model can produce a more accurate result. Hubbard and Seierson (2016) recommended leveraging a sound mathematical model that can be populated with objective empirical or historical data.

Risk Matrices

A repeated theme in the literature discusses the cybersecurity professional's proclivity for ordinal scales and the use of Risk Matrices (RM) to communicate risk information. An important point to add to the discussion on RMs is that the use of ordinal scales is not in and of themselves incorrect; rather they are prone to error, misinterpretation, and oversimplification of the issue. Budescu, Broomell, and Por (2009) found that use of ambiguous labels can lead decision-makers to make errors in judgment.

Measurement Findings

The purpose of measurement in information assurance (IA) is to reduce uncertainty and facilitate decision-making. Measurement constitutes the content within a risk communication message. This study showed that risk message content is linked to perceptions about source data, that is, the measurement used as the content within a risk message. The other areas of this study namely risk communication and decision-making follow the literature. The findings around measurement in IA demonstrates a disturbing departure from the recommendation found in the extant literature on the subject of IA measurement.

When subjects were asked for their preference of method to gather risk information between qualitative, quantitative or no preference the population was fairly evenly divided (see Figure 5). Further, when asked their perception as to which the most accurate data source for is gathering IT risk information among 'expert-opinion', 'statistical model', 'vulnerability assessment' or 'interviews' the largest group 38.5% selected expert opinion (see Figure 6). Finally, when asked how risk communication recipients prefer information presented among 'business-centric' and 'technical', 100% of the respondents said business-centric (see Figure 7).

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Figure 5. DM3: How frequently does non-IT comment on utility of risk communication

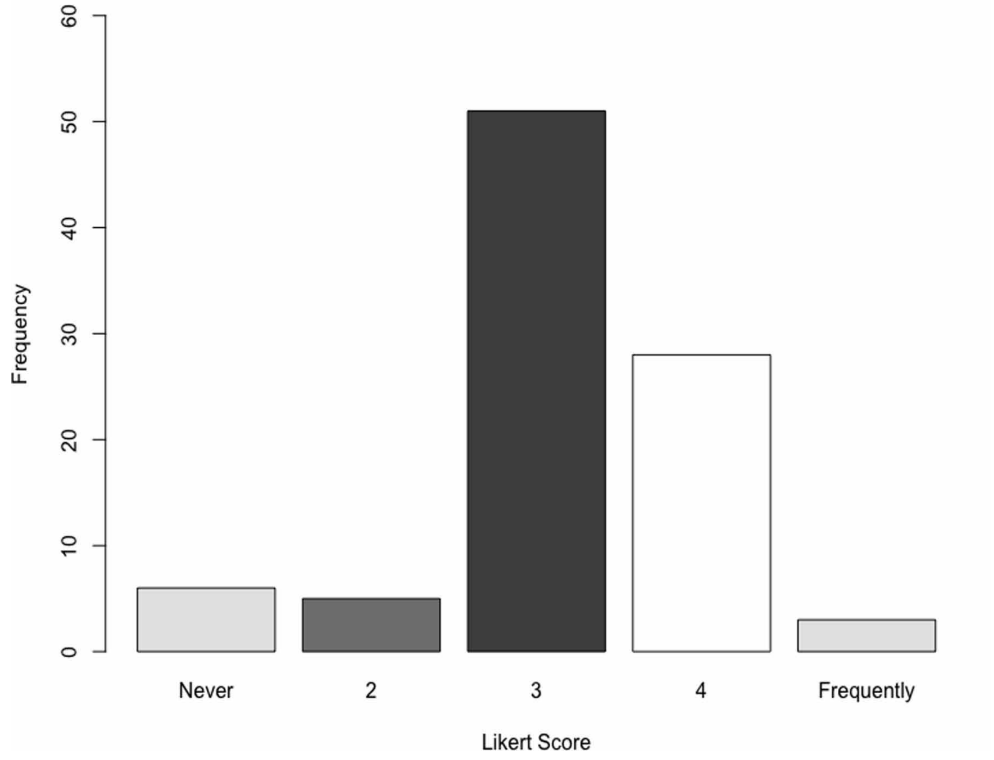
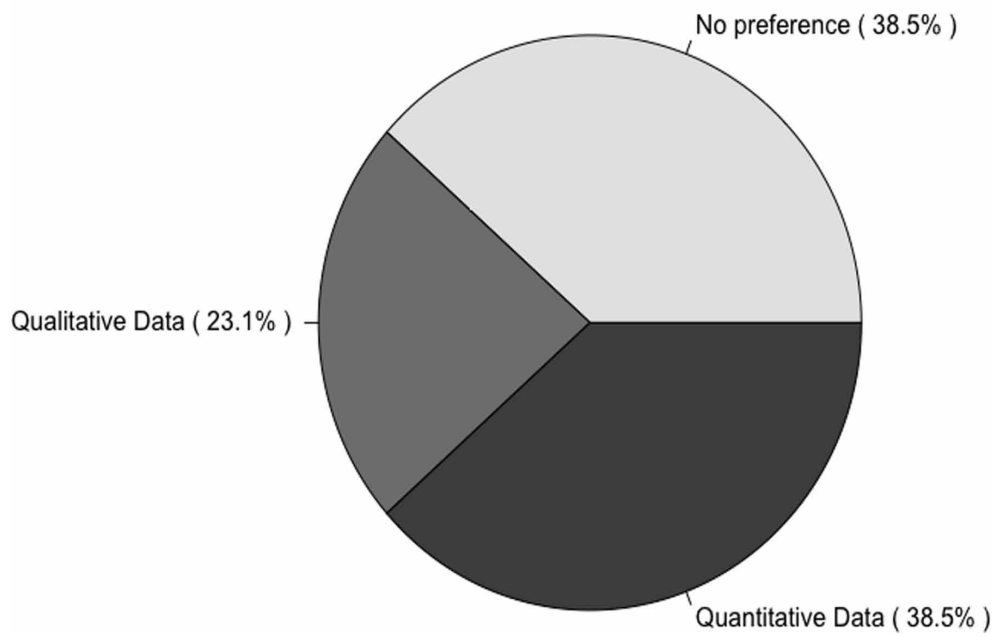


Figure 6. DS1: Respondents data source preference



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Figure 7. DS2: Respondents data source reliability preference

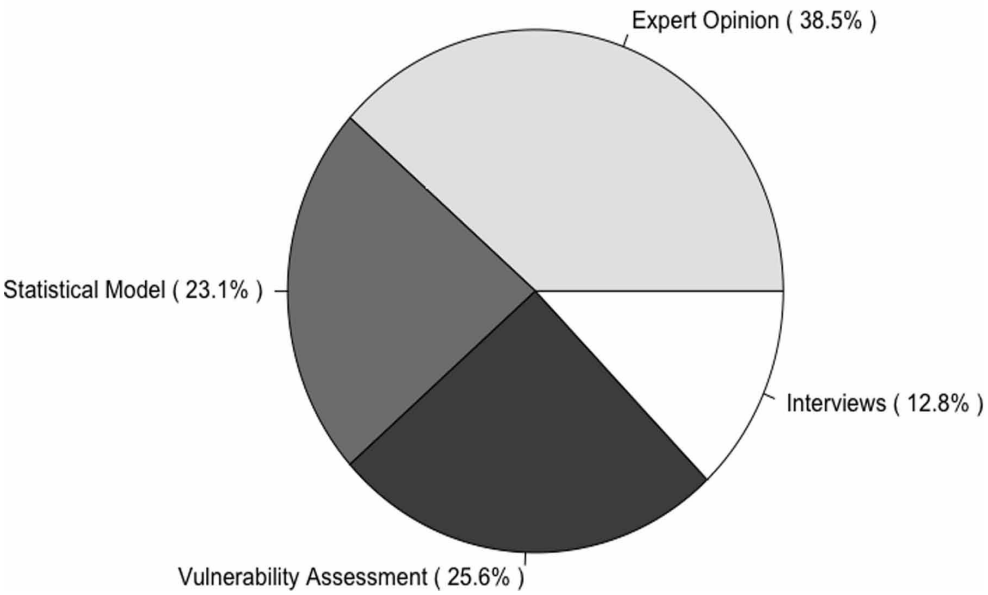
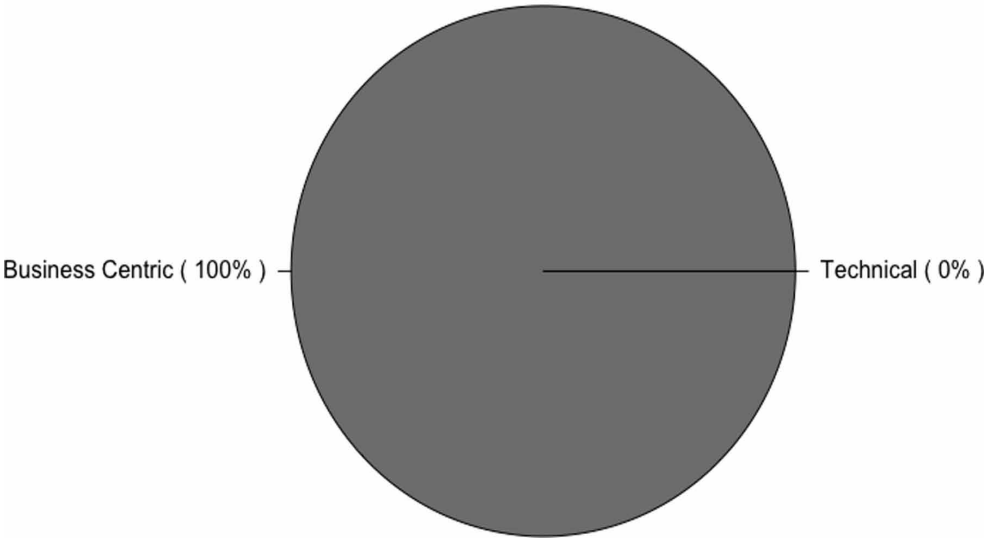


Figure 8. DS3: Respondents data source format preference



RECOMMENDATIONS

How best to digest this wealth of information about risk communication of IT/IA risk to extra-departmental stakeholders? It is important to consider that risk perception is in the eye of the beholder or in this case the perceiver. No two people perceive risk the same way thanks to their background, emotional state, human tendency to over or underestimate risk, suffering from optimism about risk, the constant ingestion of bias inducing media, and perceiver's having different levels of numeric literacy (numeracy). In

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addition to those challenges the act of making decisions regarding IT/IA risk introduces cognitive bias and excessive use of ordinal scales. The IA industry most prevalent standard for communicating IT/IA risk information the risk matrix or 'heat-map', which is an ordinal scale and is burdened with frequent misinterpretation.

Fortunately, measurement can help as its goal is to reduce uncertainty, condense and aggregate information, and encapsulate meaning. Much of IT/IA risk information is presented numerically, which we know can be difficult for those with low numeracy – metrics can aid in reduction of the complexity of risk information and facilitate heuristics in the comparison of decision alternatives. The goal of effective risk communication is to enable better decision-making. Taking the best possible measurement of risk and presenting that information as a heuristically friendly metric is the approach that best addresses the manifold challenges outlined in this study.

CONCLUSION

Risk communication represents the 'what' we are trying to perform, to facilitate better decision-making is the 'why' and the use of metrics is the 'how' we overcome the many challenges covered in this study. While not a direct focus of this article a recurring theme in the literature is bias – bias in risk communication, decision-making and measurement. Bias is what effective risk communication must overcome to enable good decision making through the judicious use of the measurement of risk, presented as metrics.

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Chapter 44
Determinants of Self-Employment Entry: Evidence from Portugal

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ABSTRACT

Self-employment is increasingly an attractive labor market option worldwide. In a European context, Portugal is well-known for displaying one of the highest rates of self-employment. This study explores the main determinants of the probability to enter into self-employment in Portugal. We present results from a binary logit model using individual data drawn from national-level statistics. Our findings suggest that individuals older than 35, males, married, low educated, individuals with previous experience, and heads of household are expected to enter self-employment. The empirical study also reveals important differences regarding households' compositions and dimensions, current and former unemployment levels, and at a regional level in Portuguese NUTS II.

INTRODUCTION

Self-employment has received a great deal of attention from academics and policy makers alike. National economic policies have encouraged self-employment as a way of fostering economic growth and reducing unemployment and poverty. Moreover, the economic literature on self-employment has studied this topic extensively, thereby giving support to more appropriated policy measures for promoting self-employment.

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Even though an economist would not expect a large share of workers as self-employed, self-employment rates are quite impressive for certain countries. Taking into account OECD countries in general, for example, the last available data show that self-employment rates are 16.6% for EU27 and 16.1% for OECD (OECD, 2013). Turkey (38.3%), Greece, and Mexico top the OECD ranking of self-employment rates. At the bottom of the table comes Luxembourg (5.7%). Considering European regions in specific, self-employment rates are higher in Southern European countries (e.g. Greece: 36.3%; Italy: 25%; Portugal: 21.3%) than, for instance, in Central European (e.g. Austria: 13.8%; Germany: 11.6%) and Scandinavian countries (e.g. Denmark: 8.7%; Norway: 7.0%).

Portugal is among the European countries with the highest rates of self-employment and thus an interesting case study on the subject. Indeed, several authors have acknowledged the relevance of self-employment for Mediterranean or Southern European countries in general and the Portuguese case in a European context (García-Mainar & Montuenga-Gómez, 2005; Baptista & Thurik, 2007; Portugal & Addison, 2008; Teixeira & Davey, 2010). As might be expected, in Portugal, interestingly, self-employment rates are persistently among the highest when compared to other countries (Blanchflower, 2000; Cabral, 2007). Moreover, the same goes for latent entrepreneurship (Blanchflower, Oswald, & Stutzer, 2001; Grilo & Irigoyen, 2006; Gohmann, 2012). Using the last available data from the Entrepreneurship Flash Eurobarometer Surveys (European Commission, 2012), the declared preference for self-employment over wage employment in Portugal is above the EU average (49% compared with 37% at the EU level). The relatively high interest and awareness about self-employment in Portugal may provide a broader perspective for policymakers.

On the determinants of self-employment Portugal has had high international momentum on entry regulations. A recent regulatory reform awarded Portugal as the top reformer in business entry in 2005-06 and its position in the World Bank's Doing Business Index improved markedly (Branstetter, Lima, Taylor, & Venâncio, 2014). Among other findings, key estimates from Branstetter et al. (2014) indicate a positive effect of that entry deregulation on firm formation and employment. Other studies addressing the question of the factors that exert an impact on self-employment have focused on the Portuguese case, but they are, surprisingly, few in number. Moreover, to our knowledge, the available empirical research center either on a specific sector (Teixeira & Davey, 2010; Filipe, Ferreira, & Coelho, 2013) or on a certain Portuguese region (Silva, Trigo, & Antunes, 2011; Duarte & Diniz, 2012). The present chapter attempts to fill the gap by providing empirical evidence from Portugal on the factors that motivate self-employment in general. Thus, with an eye on the under-explored Portuguese case and taking into account the wide array of determinant factors from the existing empirical literature on self-employment, we estimate an econometric model using individual level data from the Portuguese Labor Force Survey.

BACKGROUND

According to Boskin (1974) and Taylor (1999), among others, the self-employment decision implies a comparison of the costs and benefits between paid employment and self-employment. A large number of factors influence that balance of costs and benefits, which might be either financial or non-financial in nature (Verheul, Wennekers, Audretsch, & Thurik, 2002). Much of the empirical literature has looked at the influences of these factors on an individual's entry into self-employment. Following Simoes, Moreira, & Crespo (2015), there are twelve critical individual determinant factors of the entry into self-employment grouped in seven categories: (i) basic individual characteristics (gender, age, and marital

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status and children); (ii) family background (parents and spouse); (iii) personality characteristics (risk attitude and other psychological traits); (iv) human capital (education and experience); (v) health condition; (vi) nationality and ethnicity; and (vii) access to financial resources.

An overall analysis of the dominant evidence emerging from the empirical studies reveals that solid conclusions can be found in the majority of the factors considered. Based on that evidence, Simoes et al.'s (2015) comprehensive survey synthesize the expected impact of each individual factor on the propensity to enter self-employment as follows: (i) the probability of transition to self-employment is higher for men than for women; (ii) increases with age, though decreases after a given threshold; (iii) is higher for married individuals; (iv) is higher for individuals with children; (v) is higher for individuals with at least one of the parents with self-employment experience; (vi) is higher for individuals with a self-employed spouse; (vii) both decreases with risk aversion and increases with psychological traits such as over-confidence, need for achievement and autonomy, self-efficacy, and internal locus of control; (viii) increases not only with experience, but also the diversity of experience; (xix) is higher for immigrants than for natives; and (x) is higher for individuals with lower financial constraints. Nevertheless, arguments were also found pointing to an opposite direction in what regards to gender, children, having (or not) a self-employed spouse, previous experiences, and to nationality and ethnicity, though with no corresponding empirical confirmation from the predominant empirical literature. More importantly, concerning the impact of education and health condition on the decision of transition to self-employment, Simoes et al. (2015) suggest further research given the less clear results that remain on both individual determinants. Table 1 summarizes the findings and the main references used to support them.

In addition to individual factors influencing an individual's choice with regard to self-employment, other factors, like business cycle conditions and various forms of government intervention, contribute to explain self-employment. Even though the puzzling question of which macroeconomic factors influence transition into self-employment, an extensive literature now exists on the business cycle or the employment status. The two competing effects that may occur in that regard have been found on the empirical literature. Thus, unemployment is a critical factor that may either push or pull individuals into self-employment or, in business cycle terms, self-employment may amplify in recessions or, alternatively, in boom periods. Parker (2009) provides an excellent review of the empirical literature on that subject, concluding that more recent studies have favored to a growing consensus about a zero or positive relationship between self-employment and unemployment. Cichocki (2012) and Fritsch, Kritikos, & Pijnenburg (2013) are examples of newer studies finding support to the "recession-push" hypothesis, as opposed to Biehl, Gurley-Calvez, & Hill (2014), for instance, showing that old women are less likely to become self-employed in recessions.

The influence of government intervention on self-employment decision is also important and includes a wide range of reforms. Founded on the concept of institutions as "rules of the game", both formal and informal (North, 2005), these rules affect the incentive individuals face and therefore their self-employment choice. Among key institutional factors that researchers have investigated with respect to their influence on self-employment are labor market institutions such as employment protection legislation (EPL), minimum wage, and unemployment benefits, taxation, and other regulative activities like firm entry restrictions. Concerning the former, the strictness of EPL, the presence and level of minimum wage, and the generosity of unemployment benefits are expected to deter self-employment decision. Baumann and Brandle (2012), and Carrasco and Ejrnaes (2012) are examples of recent empirical evidence on the subject showing that the outcome is not as straightforward as stated. As to taxation, mixed evidence is found on the impact of taxes on self-employment and the same goes for tax progressivity, in

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Table 1. Individual determinants of entry into self-employment: A synopsis of the literature

Variable		Expected Sign	Evidence	Main References
Gender – male		+	√	Bates (1995); Clark (1997); Blanchflower (2000); Johansson (2000); Charles and Bradley (2002); Georgellis, Sessions, & Tsitsianis (2005a); Rosti and Chelli (2005); Budig (2006); Carter and Shaw (2006); Wellington (2006); Nykvist (2008); Croson and Gneezy (2009); Gurley-Calvez, Biehl, & Harper (2009); Parker (2009); Leoni and Falk (2010); Dohmen et al. (2011); Vejsiu (2011); Sena et al. (2012); Stefanović and Stošić (2012); Verheul et al. (2012); Williams (2012); Sorgner and Fritsch (2013); Biehl et al. (2014).
		-		
Age	Age	+	√	Fairlie (1999); Dunn and Holtz-Eakin (2000); Blanchflower (2004); Georgellis et al. (2005a); Hintermaier and Steinberger (2005); Lévesque and Minniti (2006); Parker (2009); Andersson and Hammarstedt (2010a); Jones and McIntosh (2010); Kerr and Armstrong-Stassen (2011); Cahill et al. (2013); Caliendo et al. (2014); Van Solinge (2014).
	Age^2	-	√	
Marital status – married		+	√	Borjas (1986); Becker (1991); Taylor (1996); Cowling (2000); Johansson (2000); Bosma et al. (2004); Budig, (2006); Nykvist (2008); Parker (2009); Ahn (2010); Brown et al. (2011); Özcan (2011); Eliasson and Westlund (2013); Sorgner and Fritsch (2013).
Children		+	√	Lin et al. (2000); Georgellis and Wall (2005); Wellington (2006); Fairchild (2009); Brown et al. (2011); Sena, Scott, & Roper (2012); Dawson, Henley, & Latreille (2014).
		-		
Self-employed parents		+	√	Bandura (1986); Sanders and Nee (1996); Fairlie (1999); Le (1999); Dunn and Holtz-Eakin (2000); Taylor (2001); Hundley (2006); Kim, Aldrich, & Keister (2006); Carr and Sequeira (2007); White, Thornhill, & Hampson (2007); Colombier and Masclet (2008); Andersson and Hammarstedt (2010a); Andersson and Hammarstedt (2011); Barnir and Mclaughlin (2011); Chlosta, Patzelt, Klein, & Dormann (2012); Dohmen, Falk, Huffman, & Sunde (2012); Eren and Sula (2012).
Self-employed spouse		+	√	Caputo and Dolinsky (1998); Bruce (1999); Lin, Picot, & Compton (2000); Brown, Farrell, & Sessions (2006); Parker (2008); Andersson and Hammarstedt (2010b); Dohmen et al. (2012).
		-		
Personality characteristics	Risk aversion	-	√	Kihlstrom and Laffont (1979); Ekelund, Johannson, Järvelin, & Lichtermann (2005); Caliendo, Fossen, & Kritikos (2009); Macko and Tyszka (2009); Ahn (2010); Brown, Dietrich, Ortiz-Nuñez, & Taylor (2011).
	Other *	+	√	McClelland (1961); Rotter (1966); Costa and McCrae (1992); Brandstätter (1997); Chen, Greene, & Crick (1998); Camerer and Lovallo (1999); Schmitt-Rodermund (2004); Zhao and Seibert (2006); Koellinger, Minniti, & Schade (2007); Rauch and Frese (2007); Caliendo and Kritikos (2008); Macko and Tyszka (2009); Obschonka, Silbereisen, & Schmitt-Rodermund (2010); Åstebro and Thompson (2011); Brandstätter (2011); Croson and Minniti (2012); Eren and Sula (2012); Koellinger, Minniti, & Schade (2013); Mathieu and St-Jean (2013); Caliendo, Fossen, & Kritikos (2014); Van Solinge (2014).
Education level		+	?	Lucas (1978); Borjas and Bronars (1989); Kidd (1993); Bates (1995); Bruce (1999); Blanchflower (2000); Clark and Drinkwater (2000); Blanchflower (2004); Kim et al. (2006); Van der Sluis, Van Praag, & Vijverberg (2008); Falk and Leoni (2009); Von Greiff (2009); Zissimopoulos, Karoly, & Gu (2009); Block and Wagner (2010); Åstebro, Chen, & Thompson (2011); Block, Hoogerheide, & Thurik (2013); Joona and Wadensjö (2013); Poschke (2013).
		-	?	

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Table 1. Continued

Variable		Expected Sign	Evidence	Main References
Experience	Degree	+	√	Jovanovic (1982), Evans and Leighton (1989); Lin et al. (2000); Taylor (2001); Shane (2003); Georgellis et al. (2005a); Georgellis, Sessions, & Tsitsianis (2005b); Lazear (2005); Kim et al. (2006); Wagner (2006); Silva (2007); Åstebro and Thompson (2011); Eliasson and Westlund (2013); Poschke (2013); Stuetzer, Obschonka, & Schmitt-Rodermund (2013a); Stuetzer, Obschonka, Davidsson, & Schmitt-Rodermund (2013b); Lechmann and Schnabel (2014).
		-		
	Diversity	+	√	
Poor health		+	?	Quinn (1980); Borjas (1986); Taylor (2001); Parker and Rougier (2007); Zissimopoulos and Karoly (2007); Pagán (2009); Ahn (2010); Gorgievski, Bakker, & Schaufeli (2010); Jones and Latreille (2011); Cahill, Giandrea, & Quinn (2013).
		-	?	
Nationality		-	√	Light (1972); Bonacich (1973); Wilson and Portes (1980); Moore (1983); Borjas (1986); Borjas and Bronars (1989); Evans (1989); Boyd (1991); Portes and Sensebrenner (1993); Sowell (1995); Fairlie and Meyer (1996); Sanders and Nee (1996); Clark and Drinkwater (2000); Friedberg (2000); Raijman and Tienda (2000); Blanchflower, Levine, & Zimmerman (2003); Zhou (2004); Blackburn and Ram (2006); Constant and Zimmermann (2006); Waldinger, Aldrich, & Ward (2006); Ram, Edwards, & Jones (2007); Blanchard, Zhao, & Yinger (2008); Fairchild (2009); Hammarstedt and Shukur (2009); Kanas, Van Tubergen, & Van der Lippe (2009); Andersson and Hammarstedt (2011); Fritsch, Kritikos, & Rusakova (2012); Nestorowicz (2012); Oyelere and Belton (2012); Andersson, Hammarstedt, Hussain, & Shukur (2013); Lofstrom and Bates (2013).
		+		
Financial resources		+	√	Evans and Jovanovic (1989); Evans and Leighton (1989); Holtz-Eakin, Joulfaian, & Rosen (1994); Lindh and Ohlsson (1996); Blanchflower and Oswald (1998); Johansson (2000); Taylor (2001); Hurst and Lusardi (2004); Nykvist (2008); Disney and Gathergood (2009); Zissimopoulos et al. (2009); Fairlie and Krashinsky (2012).

Note: * - other psychological traits such as over-confidence, need for achievement and autonomy, self-efficacy, and internal locus of control; √ - predominantly confirmed; ? - insufficient, non-conclusive, or mixed evidence.

Source: Authors' construction based on Simoes et al (2015).

the sense of rising marginal income tax rate. Ferede (2013) reviews previous empirical literature on the subject, arguing that tax progressivity can either spur or reduce self-employment depending on the relative effects of taxing successful self-employed individuals and the tax evasion opportunities available to them. Finally, Prantl and Spitz-Oener (2009) and Branstetter et al. (2014) are among recent research on government regulation of firm entry that provide both new and previous evidence supporting the view that regulations related to business set-up constrain self-employment levels.

Finally, apart from self-employment determinants at the individual and national levels, regional studies need also to be taken into account highlighting the influence of regional space on self-employment choice. Despite the comparatively few empirical studies, a general outcome from the research conducted so far is that regional differences in self-employment rates do exist and persist overtime (Stuetzer, Obschonka, Brixy, Stemberg, & Cantner, 2014). Some studies employ regional dummy variables to capture spatial variations, while others, mainly using regional level data, focus on regional factors that are supposed to influence regional start-up rates (Eliasson & Westlund, 2013). Parker (2009) produces an interesting account of the different regional determinants at stake, reinforcing that research on the topic continues to develop.

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MAIN FOCUS OF THE CHAPTER

Empirical Study

In the empirical analysis developed in this study, we use quarterly data from the Portuguese Labor Force Survey, carried out by the National Statistics Office, covering the period between 1998:01 and 2010:02 (50 quarters). The database contains information about the socio-demographic characteristics of the individuals, their levels of human capital, and their current and past labor market situation.

Our sample includes 865,990 working individuals, aged 15-64, living in Portugal. In this sample, the proportion of females is 45.5%, most individuals are aged between 25-54 years (70.5%), lived in Norte (30.4%), Centro (15.8%) or Lisboa (15.8%), and only 24% had concluded higher secondary.

The main goal of our study is to identify the determinants of being self-employed in comparison to being a salaried worker. To this end, we estimate a logit model (for more information on this model, see Greene, 2011). The dependent variable is a binary variable with the value of 1 if the individual is self-employed and 0 if he/she is an employee.

We consider four groups of explanatory variables: (i) socio-demographic characteristics – gender, age, nationality, marital status, labor market state (LMS) of the spouse, children, household size, head of the household; (ii) human capital – education, experience, previous LMS; (iii) business cycle – unemployment rate; (iv) regional variables. In addition, we include controls for time effects. Table 2 defines the explanatory variables in detail.

Regarding gender, empirical studies share a general finding: the probability of being self-employed is higher among men than women (Blanchflower, 2000; Baumann & Brandle, 2012; Koellinger et al., 2013). Unlike women, men have more pre-requisites to self-employment in place like lower levels of risk aversion and a greater tendency to seek external finance. Previous paid employment jobs may also capture gender differences in self-employment choice, because men are more likely to have more powerful work-related contracts than women and report lower levels of job satisfaction.

Age is a variable usually considered to explain self-employment. Higher age groups are more likely to become self-employed mainly because they have larger financial assets and a more accumulated knowledge and experience. Additionally, older people close to retirement may prefer self-employment to remain active or as partial retirement. Nevertheless, the probability of being self-employed rises up to a certain age and then the opposite is expected. A non-linear relationship between age and self-employment is thus the empirical result (Blanchflower, 2004; Andersson & Hammarstedt, 2010a; Baumann & Brandle, 2012).

Natives compared to immigrants seem to be in a disadvantage position regarding self-employment. Different hypotheses have been advanced for the superior preference of immigrants for self-employment such as living in enclaves to explore ethnic businesses, home-country with self-employment tradition, socio-cultural background favoring a self-employment career path, as well as lower employment opportunities in the wage-sector. Empirical studies have documented the country of origin has a determinant factor of self-employment entry (Constant & Zimmermann, 2006; Carrasco & Ejrnaes, 2012; Eliasson & Westlund, 2013).

Individuals with children and family commitments, as indicated by the presence of dependent children or marital status, are more likely to transit to more flexible employment conditions as self-employment. A married/cohabiting situation, in particular, also raises the possibility of the spouse to join in the business. The empirical evidence seems to support these arguments and the inclusion of both explanatory variables is currently a common feature (Baumann & Brandle, 2012; Eliasson & Westlund, 2013; Daw-

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Table 2. List of explanatory variables

Variable Title	Description
GENDER	Dummy variable with value 1 if the individual is a female, 0 otherwise
AGE	Dummy variable with value 1 if the individual is aged between 35 and 54, 0 otherwise (reference group)
AGE 1	Dummy variable with value 1 if the individual is aged between 15 and 24, 0 otherwise
AGE 2	Dummy variable with value 1 if the individual is aged between 25 and 34, 0 otherwise
AGE 4	Dummy variable with value 1 if the individual is aged between 55 and 64, 0 otherwise
NATIONALITY	Dummy variable with value 1 if the individual is a Portuguese native, 0 otherwise
MARITAL STATUS	Dummy variable with value 1 if the individual is married, 0 otherwise
SPOUSE LMS	Dummy variable with value 1 if the spouse of the individual is non-employed, 0 otherwise
CHILDREN	Dummy variable with value 1 if the household includes children aged 6 or younger, 0 otherwise
HOUSEHOLD SIZE	Household size
HEAD OF HOUSEHOLD	Dummy with value of 1 if the individual is the household's head, 0 otherwise
EDUCATION	Dummy variable with value 1 if the highest educational level of the individual is lower secondary education, 0 otherwise (reference group)
EDUCATION 1	Dummy with value of 1 if the individual has no education, 0 otherwise
EDUCATION 3	Dummy variable with value 1 if the highest educational level of the individual is primary education, 0 otherwise
EDUCATION 4	Dummy variable with value 1 if the highest educational level of the individual is upper secondary education, 0 otherwise
EDUCATION 5	Dummy variable with value 1 if the highest educational level of the individual is university, 0 otherwise
EDUCATION 6	Dummy variable with value 1 if the highest educational level of the individual is post-graduation, 0 otherwise
EXPERIENCE	Dummy with value of 1 if the individual has previous experience (not first job), 0 otherwise
PREVIOUS LMS	Dummy with value of 1 if the individual was working in the previous year, 0 otherwise (reference group)
PREVIOUS LMS 2	Dummy with value of 1 if the individual was unemployed in the previous year, 0 otherwise
PREVIOUS LMS 3	Dummy with value of 1 if the individual was inactive in the previous year, 0 otherwise
UNEMPLOYMENT RATE	Annual regional unemployment rate
UNEMPLOYMENT RATE ALT	Quarterly regional unemployment rates by gender
REGION	Dummy with value of 1 if the individual lives in *Norte*, 0 otherwise (reference group)
REGION 2	Dummy with value of 1 if the individual lives in *Centro*, 0 otherwise
REGION 3	Dummy with value of 1 if the individual lives in *Lisboa*, 0 otherwise
REGION 4	Dummy with value of 1 if the individual lives in *Alentejo*, 0 otherwise
REGION 5	Dummy with value of 1 if the individual lives in *Algarve*, 0 otherwise
REGION 6	Dummy with value of 1 if the individual lives in *Açores*, 0 otherwise
REGION 7	Dummy with value of 1 if the individual lives in *Madeira*, 0 otherwise

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son et al., 2014). Alternatively, Blanchflower (2000), for instance, captures the importance of family composition through the inclusion of both household size and the number of dependent children under the age of 15 years. In contrast, Bernhardt (1994) analyzes the relationship between marital status and the propensity to be self-employed through the explanatory variable "spouse works". The labor market state of the spouse may be seen as an additional conditioning factor to self-employment transition due to more or less inherent family responsibilities.

Following Co, Gang, & Co (2005), the head of the household is included as a proxy for the importance of the lack of financial constraints vis-à-vis risk aversion on the likelihood of self-employment. Both are primary aspects influencing an individual's self-employment choice and that seems to be a consensual outcome from the empirical literature (Holtz-Eakin & Rosen, 2005; Colombier, Boemont, Loheac, & Masclet 2008; Brown et al., 2011). Financial resources are usually needed to start a business and thus personal wealth enables that own capital or the collateral to get external funding. Likewise, the additional risk that self-employment normally entails compared to wage-earning jobs explains why individuals with a more risk-tolerant attitude are more likely to succeed in self-employment. According to Co et al. (2005), the relationship between the head of the household and self-employment entry is an empirical question i.e. depending on the sign of that relationship, either the lack of financial constraints seems to be predominant amongst heads of households, or, if negative, risk aversion.

The influence of education on self-employment is a complex issue. A number of studies find a positive association between the two variables (e.g. Holtz-Eakin & Rosen, 2005; Koellinger et al., 2013; Dawson et al., 2014) on the grounds that educational attainment develops business skills and competencies, as well as the capacity to identify business opportunities. However, neither the finding is non-ambiguous nor the explanatory arguments are exclusive. Empirically, for instance, there is evidence pointing to an insignificant relationship for women and, depending on the level of education attained, to either a positive or an insignificant one for men (Özcan, 2011), or, in the case of Blanchflower (2004), to a negative impact of education in Europe as opposed to the US. According to Simoes et al. (2015), a non-linear relationship between education and self-employment might be at work – as suggested by the results of Blanchflower (2000), for example, or advanced, more recently, by Poschke (2013) – and therefore further research is needed to explore the link.

Turning to experience, Eliasson and Westlund (2013) and Poschke (2013) are examples of more recent studies that corroborate the well-established finding – self-employment increases with previous labor market experiences – based on the approach emphasized by Jovanovic (1982) that individuals develop their competencies through experience.[1] Among previous experiences relevant for a self-employment decision is self-employment experience. Additionally, the previous labor market state can also account for the likelihood of being self-employed and thus be a proxy for opportunities in the labor market. Following a practice similar to Özcan (2011), Carrasco and Ejrnaes (2012) or Eliasson and Westlund (2013), we have introduced explanatory variables that indicate whether an individual was previously employed, unemployed or out of the labor force. Concentrating on transitions from unemployment situations into self-employment, we can then pick up the argument that unemployment is a push/pull factor into self-employment.

Regarding the business cycle, results in the literature on the nexus between unemployment and self-employment are mixed and, according to Parker (2009), currently pointing to either a positive relationship (Von Greiff, 2009; Cichocki, 2012) or an insignificant one (Baumann & Brandle, 2012; Ferede, 2013). This reflects to a certain extent the theoretical ambiguity given by the possibility of both recession-push and prosperity-pull effects.[2] On the one hand, self-employment is countercyclical, rising when the

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economy is weakening, because the unemployment problem that comes along with periods of economic recession means that individuals can react to the lack of opportunities in the wage sector by seeking them out in self-employment. On the other hand, self-employment is procyclical, rising when the economy is strengthening, because both demand and opportunities usually increase during an economic expansion. Moreover, a recession-related soften demand may make self-employment less attractive. As noted by Moore and Mueller (2002), local, regional and national unemployment rates have been used with various degrees of demographic specificity. In the present study two measures are employed alternatively: (i) annual regional unemployment rates; (ii) gender-specific quarterly regional unemployment rates.

At last, regional dummy variables were included among the explanatory variables of the empirical study to control for regional differences and thus the possibility that some regions are more self-employers than others. Recent studies have often used this method finding statistically significant region-specific effects whose magnitude differ across regions (Andersson & Hammarstedt, 2010a; Eliasson & Westlund, 2013; Dawson et al., 2014).

Econometric Results: Evidence for Portugal

The main purpose of the study is to identify what factors might determine the probability of entry into self-employment in Portugal. The estimated results of the binominal logit model are displayed in Table 3.

Table 3 presents two models and the single difference between them concerns the unemployment variable. When the model incorporates the gender-specific quarterly regional unemployment rates, as an alternative to the annual regional unemployment rates, the estimated coefficients change slightly in terms of magnitude, but remain all statistically significant except for the region of Açores. Moreover, an overall analysis on the expect impact of the independent variables on the probability of being self-employed reveals that the following factors are important in explaining this phenomenon: (i) individual characteristics – gender, age, nationality; (ii) household characteristics – marital status, labor market state of the spouse, children, household size, head of the household; (iii) educational level; (iv) professional characteristics – experience, previous labor market state; (v) business cycle; (vi) regional space.

Results for gender and nationality are in accordance with the evidence from the predominant empirical literature on self-employment. Women and natives are less likely to be self-employed compared to men and immigrants, respectively. Regarding age, results show that it is one of the most important determinants of self-employment entry. Moreover, the influence of age follows a clear pattern, with the age group between 55 and 64 years of age reaching the highest propensity to enter self-employment when compared to the reference age group (35-54 years of age). In the same vein, younger individuals (age groups 15-24 and 25-34) have a lower probability of being self-employed in comparison to individuals aged 35 to 54.

Turning to spouse related variables, being married conciliates with a self-employment choice as expected. However, the spouse being either unemployed or inactive seems to be a factor deterring entry into self-employment. The influence of the labor market state of the spouse on the individual decision regarding self-employment has not been given much attention in the literature.[3] The reasoning for this finding can be matched with the increased family responsibilities that may follow from that labor market state of the spouse (non-employed). Indeed, that is usually the argument associated with a negative impact of children on the likelihood of self-employment. Though not a frequent outcome from empirical studies, our results also suggest that having dependent children decreases the probability of being self-employed.[4] By contrast, as observed in Table 3, that probability increases with household size, in accordance with

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Table 3. Determinants of self-employment entry in Portugal: Binominal logit model

	Model I		Model II	
Variable Title	**Coef.**	**z-statistic**	**Coef.**	**z-statistic**
GENDER	-0.282***	(-48.56)	-0.308***	(-42.13)
AGE 1	-1.386***	(-78.58)	-1.387***	(-78.64)
AGE 2	-0.487***	(-62.14)	-0.488***	(-62.21)
AGE 4	0.817***	(108.75)	0.816***	(108.74)
NATIONALITY	-0.060***	(-4.33)	-0.060***	(-4.32)
MARITAL STATUS	0.260***	(26.60)	0.260***	(26.56)
SPOUSE LMS	-0.188***	(-25.29)	-0.186***	(-25.09)
CHILDREN	-0.015*	(-1.68)	-0.015*	(-1.67)
HOUSEHOLD SIZE	0.027***	(11.49)	0.027***	(11.48)
HEAD OF HOUSEHOLD	0.202***	(17.75)	0.202***	(17.73)
EDUCATION 1	0.314***	(29.23)	0.315***	(29.31)
EDUCATION 3	-0.360***	(-41.41)	-0.361***	(-41.45)
EDUCATION 4	-0.504***	(-49.24)	-0.504***	(-49.26)
EDUCATION 5	-0.762***	(-65.03)	-0.762***	(-65.04)
EDUCATION 6	-1.256***	(-26.34)	-1.257***	(-26.36)
EXPERIENCE	0.125***	(17.41)	0.126***	(17.42)
PREVIOUS LMS 2	-0.977***	(-38.00)	-0.976***	(-37.94)
PREVIOUS LMS 3	-0.233***	(-8.62)	-0.234***	(-8.65)
UNEMPLOYMENT RATE	0.045***	(11.61)		
UNEMPLOYMENT RATE ALT			0.013***	(5.84)
REGION 2	0.352***	(25.84)	0.261***	(25.55)
REGION 3	-0.502***	(-52.08)	-0.487***	(-51.12)
REGION 4	-0.374***	(-33.57)	-0.337***	(-32.04)
REGION 5	0.078***	(7.57)	0.031***	(3.14)
REGION 6	0.116***	(7.18)	0.013	(1.01)
REGION 7	-0.249***	(-15.75)	-0.340***	(-26.28)
Constant	-1.537***	(-42.19)	-1.296***	(-47.27)
Time effects	Yes		Yes	
Number of observations	865990		865990	

Notes: The reference group includes individuals from the female gender, aged between 35 and 54, immigrant, unmarried, with the spouse employed, with no children under 6 years of age, who are not the household's head, with lower secondary education, with no previous experience, employed in the previous year, living in the north. *, **, *** Significant at 10%, 5%, and 1%, respectively.

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studies like Blanchflower (2000) and, more recently, Brown et al. (2011). Taken together, these findings indicate that, in spite of the potential greater family responsibilities, living in a large household may provide the additional support needed for this more demanding type of employment situation.

Concerning household's head, the evidence documented in Table 3 makes it clear that it increases the probability of self-employment. So, similar to Co et al. (2005), this may point out that the positive effect of the lack of financial constraints is greater than the negative effect of risk aversion on the choice to become self-employed. Additionally, the estimated impact of this explanatory variable may reinforce some of the previous findings, given that heads of households tend to be males, married and with an advanced age.

Education, like age, emerges as a crucial variable in explaining the decisions to enter into self-employment. All educational levels, with the exception of having no education, are negatively associated with self-employment, whereas having no education is directly associated with self-employment relative to having lower secondary education. Furthermore, the influence is monotonic and with a huge impact in the highest educational level, thus showing that additional levels of education and, in particular, a Master's degree or PhD most probably widen the range of better paid-employment opportunities (Andersson & Hammarstedt, 2010a; Brown et al., 2011).

The positive association between experience and self-employment is confirmed in our model. In addition, the labor market state of the individual in the previous year also revealed decisive. We find that both unemployed individuals and individuals in an inactivity situation are less likely to enter self-employment than employed individuals, with a more remarkable quantitative influence in the first case. Interestingly, the evidence obtained by Özcan (2011) and Carrasco and Ejrnaes (2012) supports the opposite conclusion when comparing non-employed with wage-workers, whereas Eliasson and Westlund (2013) finds that both unemployed and employed individuals are more prone to become self-employed than are those out of the labor force. Taking the two opposing possibilities for unemployed individuals as reference, our result is consistent with the view that the probability of having an own successful business is low, while the other reported results suggest that self-employment might be a last resource option and thus a more attractive solution.

Business cycle and regional space are the last two determinants at focus. As Table 3 indicates, the unemployment rate positively affects the probability of entry into self-employment, suggesting a countercyclical pattern for the Portuguese economy. This result is in line with the "recession-push" hypothesis, as evidenced by Moore and Mueller (2002), Von Greiff (2009), or Cichocki (2012). Concerning the region of residence, results presented in Table 3 imply that regional differences in terms of self-employment seem to be an important characteristic of the Portuguese economy. More specifically, living in Lisboa, Alentejo, and Madeira reduces the probability of being self-employed, while the opposite occurs for the other Portuguese regions. Lisboa and Norte are the two most dynamic regions enclosing the metropolitan areas of the country (Lisbon Metropolitan Area and Porto Metropolitan Area, respectively). Thus, similar to the findings of Eliasson and Westlund (2013), these metropolitan regions present distinct outcomes on their start-up propensity.

FUTURE RESEARCH DIRECTIONS

Further research should develop an improved and more complete empirical model of self-employment choice. On the one hand, more appropriate variables are needed, for use at an individual level, to capture important factors as access to financial resources, as well as risk aversion and other personality charac-

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teristics of the potential self-employed individuals. On the other hand, well-known determinants omitted in the present study like the family background in terms of self-employed parents and a self-employed spouse need to be taken into account in the analysis. Also an in depth investigation on some of the puzzles and unclear results that are still present on the topic and whose evidence presented in this study has exacerbated, as was the case for education and unemployment. Finally, with a more deep understanding of the factors that may determine people in Portugal to more likely choose self-employment, the further question of why this is the case necessarily arises. Additional research on this subject would definitely be a decisive contribution, given the country's interesting self-employment records.

CONCLUSION

Who is more likely to choose self-employment? Based on evidence for the Portuguese case, that likelihood increases for individuals: (i) older than 35 years of age (ii) males; (iii) of immigrant origin; (iv) heads of households; (v) married; (vi) with a working spouse; (vii) with no dependent children; (viii) living in a large household; (xix) low educated; (x) with professional experience; (xi) previously employed; (xii) living in periods with high unemployment rates; (xiii) living in Norte, Centro, Algarve or in the region of Açores. This profile for self-employment entry in Portugal is not as straightforward as it might first appear for two main reasons.

First, age and education should be highlighted among the factors that motivate self-employment for policy reasons, given the evidence provided in the present study in both qualitative and quantitative terms. Self-employment was found to increase with age and decrease with educational attainment. In particular, the youngest individuals as well as those with the highest educational level exhibited the lowest propensity to follow a self-employment career-path. These findings (among others) should help construct appropriate policies to promote self-employment in targeted groups like the ones identified.

Second, the role of both family and the employment status in the decision to become self-employed should be taken notice, as the documented evidence in the present study would recommend. Being married – as long as the spouse is neither unemployed nor inactive – was found to exert a positive impact on that decision and the same follows for the dimension of the household – regarded that there are no dependent children in its composition. As to unemployment, we found evidence of two opposing effects on self-employment, with the magnitude of the parameters suggesting that the pull effect outweighs the push effect. On balance, we can thus confirm the existence of an inverse relationship between them and such net effect should be of policy interest.

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KEY TERMS AND DEFINITIONS

Determinant Factors: Explanatory variables of a given phenomenon.

Dummy Variable (or Binary Variable): Only takes two values, usually 1 and 0.

Latent Entrepreneurship: Potential entrepreneurship as opposed to actual entrepreneurship.

Logit Model: An econometric model that estimates the relationship between a given categorical dependent variable and a set of independent/explanatory variables.

NUTS II: The seven sub-regions of Portugal in statistical terms: Norte; Centro; Lisboa; Alentejo; Algarve, Açores, Madeira.

Portugal: A Southern European country member of the European Union and the Eurozone.

Self-Employment: Sometimes known as entrepreneurship; "self-employed persons include employers, own-account workers, members of producers' co-operatives, and unpaid family workers" (OECD, 2014, p. 136).

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ENDNOTES

1 More recently, Lazear (2005) developed a model showing that self-employment also increases with the diversity of previous labor market experiences, as opposed to paid employment, rewarding specialization instead. According to Simoes et al (2015), the evidence produced until now makes this a robust result.

2 Causality is also a potential problem, since unemployment may stimulate self-employment (recession-push) which, in turn, can reduce unemployment in subsequent periods (Baptista and Turik, 2007).

3 As referred in the preceding subsection, empirically, Bernhardt (1994) uses the variable "spouse works" has a refinement to the marital status variable, showing that if the spouse is working, the probability of the individual being self-employed increases. Biehl et al. (2014), for instance, also take into account the employment status of the spouse on the individual's propensity to be self-employed, though the relationship is insignificant.

4 See Sena et al. (2012) for a similar finding.

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Chapter 45
Building Entrepreneurial Networking Quality to Improve the Success of Innovation and Batik SMEs Performance

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ABSTRACT

This study is to analyze the improving of the success of innovation and Batik SMEs performance by entrepreneurial networking quality, the quality of entrepreneurial trusting, co-creation, and entrepreneurial orientation. The respondents in this study were 63 owners or the managers of Batik SMEs in Solo, Indonesia. SEM-PLS was used as analysis equipment and WARLPPls version 5 was used to analyzing the data. The result of the study showed that, first, the improvement of success on innovating was only significantly by the quality of entrepreneurial networking and the quality of entrepreneurial trust, while entrepreneurial orientation and co-creation were not able to improve the innovation successful. Secondly, the performance of Batik SMEs could improve significantly when it was influenced by the quality of entrepreneurial networking, co-creation, and the success of innovation, while the entrepreneurial orientation and the quality of entrepreneurial trust could not improve the performance of Batik SMEs significantly.

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INTRODUCTION

Since 2009, Batik was acknowledged by UNESCO as World Culture Heritage from Indonesia (Budiono & Aryanto, 2010) and Batik belongs to 14 categories of creative industry. The art of Batik becomes the identity and the local symbol in Indonesia (Ismail, 2015). At the beginning, Batik was known as an ancient method of textile decoration practiced all around Asia since prehistory and the name of Batik is adopted from Indonesian (Haake, 1989). In advance, its designs and motives are developing. Every region has its own unique motives and designs. The regions which produce Batik such as Pekalongan, Solo, Yogyakarta, Ciamis, Banyumas, Indramayu, Lasem, Tasik dan Sragen.

The entrepreneurs of Batik try to innovate in order to follow the advanced era and consumers demand. The customers have changeable and unpredictable desire and needs, and they demand something new. Therefore, innovation is the main dynamic ability to face the fast changing of environment (Camps & Marques, 2014) and as the most vital thing for the life of SMEs in Indonesia.

In some literatures, innovation is very important for company. Innovating happens in many forms, such as in design, product, marketing technique, prize, service, organization or method used by the management (Drucker, 1954). The innovation of the product is an important factor to measure the success of a new product (Bao et al., 2012). The successful SMEs in building innovation will create unique positioning (Im & Workman, 2004) and improve the performance (Ardyan, 2016). This innovating ability will make the performance of the company improve (Low et al., 2007; Mu et al., 2007).

Business networking is very important in a company. The concept of business networking is very important, despite the less development of it (Ford & Mouzas, 2013). Business networking refers to conscious effort of the actor in changing or developing the interaction process or relation structure he involves in. Networking is the nucleus of management in business landscape (Ford & Mouzas, 2010; Henneberg et al., 2010). Networking is important in improving the interaction among related actors (Ford & Mouzas, 2013). The actors may include government, industry, university, and others. Building a strong business networking will give impacts toward the promoting of business development (Sato, 2000). The networking which relates university, industry, and government (triple Helix) can influence innovation strategy (Erosa, 2012) and the performance of business (Purwaningrum et al., 2012).

In SMEs, performance formed from some ways. There are 3 importance variabel that influence SMEs performance, i.e.: (1) how to build the quality of entrepreneurial networking and the quality of entrepreneurial trusting. The importance of networking in SMEs has been written by some writers, considering the need of SMEs to acquire access into other organization's resources (Partanen et al., 2008; Tikkanen, 1998) and the ability to improve the performance (Ahuja, 2000; Nurhayati, 2009; Stam & Elfring, 2008). (2) is able to conduct co-creation. Co-creation is an action to create a value collectively between company and the other stakeholders. This ability of creating collectively can improve the work (Chuang & Lin, 2015; Grissemann & Stokeburger-Sauer, 2012; Nysveen & Pedersen, 2014; Wang & Wu, 2013). (3) has entrepreneurship orientation. In some studies, the entrepreneurship orientation will influence the performance, especially SMEs (Arif et al., 2013; Soininen et al., 2012). However, there is contradiction of the result of those studies. There is also a study which explains that entrepreneurship orientation does not have impact on the performance (Baker & Sinkula, 2009; Sciascia et al., 2014).

The aims of this study are as follows:

1. To examine the impact of the quality of entrepreneurial networking on the innovation successful.
2. To examine the impact of the quality of entrepreneurial trusting on the innovation successful.

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3. To examine the impact of the quality of entrepreneurial networking on the SMEs performance.
4. To examine the impact of the quality of entrepreneurial trusting on the SMEs performance.
5. To examine the co-creation on the innovation successful.
6. To examine the co-creation on the SMEs performance.
7. To examine the entrepreneurial orientation on the innovation successful.
8. To examine the entrepreneurial orientation on the SMEs performance.
9. To examine the innovation successful on the SMEs performance.

LITERATURE REVIEW

The Quality of Entrepreneurial Networking

At the beginning, the theory of social networking was used on social psychology (Schoenherr et al., 2015). The theory of social networking discusses the connectivity and relation in social structure. The theory of social networking considers social relation in term of node and relation (Wasserman & Faust, 1994). Node is actors including individual, group, organization, and society in a network (Katz et al., 2004), while relation is related to the relation among the nodes. The relation among the actors can be categorized into communication ties, formal ties, affective ties, proximity ties, cognitive ties (Katz et al., 2004). Gronavetter (1973) explained that network ties consist including strong ties and weak ties. Strong ties is defined as a strong tightness in a relation between individual, relatives, and closed friend (Granovetter, 1983). Furthermore, Granovetter (1983) mentioned that the strong tightness shows some key characteristics between the related sides including the frequent interaction, the long history, intimacy and sharing, feedback of exchanging which enables sharing secrets one another and interaction based on trust. The weak relation refers to new friends and ordinary friends compared to closed friends (Granovetter, 1983). Its relation is not closed.

Gould and Penley (1984) defined network as the practice of system development or contact network both from the inside and the outside of the organization, which gives relevant career information and individual support. Michael and Yukl (1993) focused on the attitude in building the network, while networking behavior is defined as an attitude in building the informal relation among the individuals inside or outside the company. Orpen (1996) explained that network is used to build relation. Michael and Yukl (1993) explained that network is functioned for information exchanging, influence exchanging, and partnership. Other various studies explain that network is functioned for career success (Gould & Penley, 1984; Langford, 2000; Shortland, 2011). Kase and Liu (1996) considered network based on the idea that a relation is an effectiveness in communicating complex information, signal sensing, and knowledge transfer.

In this study, we focused on the concept of entrepreneurial networking quality. The quality of entrepreneurial network is used to see the grade of the network in the context of SMEs. The quality of the entrepreneurial network is association from some individuals or organization communicating one another to produce mutual benefits (Nurhayati, 2009). The indicator of the quality of the entrepreneurial network are work networking with loyal suppliers, work networking which gives additional values, qualified work networking, and work networking with profession organization (Gulati et al. (2000); Kasa (2007); Nurhayati (2009)).

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The Quality of Entrepreneurial Trust

Nahapiet and Ghoshal (1998) divided social capital into three dimensions including relational, structural, and cognitive. Relasional dimension is a degree of interaction and the quality of social relation (Jones, 2005). Structural dimension can be categorized as networking, configuration, the stability among the actors and the rule of networking. Cognitive dimension is in form of norms, value evaluation, attitude and relation of the members of the network, trust, or perception of organization support, two sides relation between the members, sharing information and trust from one to another. In this study, the dimension of social capital is the quality of the entrepreneurial network and the quality of entrepreneurial trust. The social capital as network and trust has important role in improving the performance (Ahuja, 2000; Stam & Elfring, 2008).

The second dimension of social capital discussed in this study is the quality of the entrepreneurial trust. Trust is a dynamic aspect in the relation among peoples (Flores & Solomon, 1998). This study sees the quality of trust in the context of entrepreneurhip. The quality of the entrepreneurial trust is defined as the trust of the partner will conduct action that brings the company into certain benefit (Nurhayati, 2009). The indicator of the quality of the entrepreneurial trust are trusted by supplier, trusted by investors and financial organization, and trusted by (Kasa (2007); Nurhayati (2009)).

The previous studies explained that the higher social capital is the higher innovation grade (Coleman, 1988; Knack & Keefer, 1997; Putman, 1993). Tsai and Ghoshal (1998) investigated the impact of social capital towards the internal function of company, focusing on how far social capital facilitates the ability of the company to create value by innovation. Bhat (2005) thought that social capital influences the process of innovating. Martinez-Canas et al. (2012) examined the role of knowledge aquitition between social capital and inovation. This study examined 214 companies in Spain located Science and Technology Park (STPs). The result showed that when it is seen directly without considering the moderation variable, social capital influences positively and significantly on innovation. The result of Tsai et al. study (2013) shows that social capital dimension (trust and sharing) can improve the will to do innovating. Some experts explain that the role of social capital on innovation is caused by the higher of social capital so it can reduce the cost of transaction among the actors, to reduce the cost of searching and information, bargaining the cost, and the decision of the cost (Landry et al., 2002; Maskell, 2000).

Sanchez-Famoso et al. (2014) examined 172 family companies in Spain. From those companies, it was divided into two types of respondents. They are non-family members and family members. The result of this study showed that social capital from family members gave positive impacts significantly on innovation, while social capital from non-family members has positive impacts but it is not significant on innovation. Luo et al. (2004) conducted research on 262 companies operating on some metropolitan cities in China. This research examined the influence of relational resources on the work. One of the relational resources is social capital. In this study, social capital is divided into two dimensions. They are business partnering and governing-agency. This research showed that both of the dimensions of social capital will improve the work of the company (especially on the growth of the sale).

Entrepreneurial Orientation

Some previous researches explained that entrepreneurial orientation will increase the success in conducting innovation (Avlonitis & Salavou, 2007; Covin & Slevin, 1991). In the research conducted on the SMEs in Greece, Salavou and Lioukas (2003) found that the technology posture and entrepreneurial

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orientation will increase the product innovation radically compared to incremental innovation. The organization orienting on entrepreneurship in innovative form, is dare to take the risks and always tries to produce new products through proactive attitude in order to catch the chance of the market (Covin & Slevin, 1989; Wiklund & Shepherd, 2005). Miller et al. (1982) thought that innovation of the product needs the company's taking risks and being proactive. In the study conducted by Miller and Friesen (1982), they thought that the innovation happens when taking risks is considered in the strategy of the company's products. Some literatures analyzed the positive results between entrepreneurial orientation and the work, both in the work of business and company (Li et al., 2009; Matsuno et al., 2002). For more specific, some experiments explained that entrepreneurial orientation can improve the performance of SMEs (Arif et al., 2013; Soininen et al., 2012).

Co-Creation

Co-creation is collective participation between the consumers and the producers to create the value in the market (Swass, 2010). Including the consumers into the collective creating is an important strategy to satisfy the demand of product personalization and to create the excellent of product (Zhang & Chen, 2008). The creating value focuses on how the company motivates the consumers to design the product and services collectively and conducting innovation (Lehrer et al., 2012). Co-creation is related to collective creating and the value evolution with some individuals through interaction (Prahalad & Ramaswamy, 2004b)

The changing of the technology, competing and the demand of the customers fundamentally changes the way of the business to operate. Traditionally, the way for business centralized in the company (Prahalad & Ramaswamy, 2004b). The strategy of creating the traditional value loses the utility in the developing economy (Lehrer et al., 2012). The company allocates the focus from the improvement of internal efficiency into the utilization of external resources, especially the customers, in order to get the new competitive excellention in new economy (Prahalad & Ramaswamy, 2004b; Zhang & Chen, 2008).

Innovation Successful

Innovation becomes the foundation of the success of the SMEs. Innovation becomes the source of excellence when competing with a business (Schumpeter, 1934). At the beginning, innovation is only possessed by big companies because the research and development cost is great in amount and only the big company can finance for it (McDermott & Prajogo, 2012). Oke et al. (2007) explained that innovation in SMEs is incremental innovation compared to radical innovation. Innovation focuses on the development of the new products (Mu et al., 2007). The company is considered as being able to innovate if the company is successful in implementing creative idea into the products or services (Amabile et al., 1996). Khin et al. (2010) thought that a product is called innovative if the consumers get some new benefits from the design, function, and the new features. Janssen et al. (2015) explained innovation into two words, *novelty* dan *newness*. Innovation means that her is something new applied on process, products, and idea (West, 1990). In this study, the success of innovating can be defined as the success of the SMEs in implementing creative idea in order to create new process and final products.

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The SMEs Performance

The high performance is one of success which is desired by many organizations. There are many academic interests in measuring the performance of SMEs and trying to identify the important factors of their success.

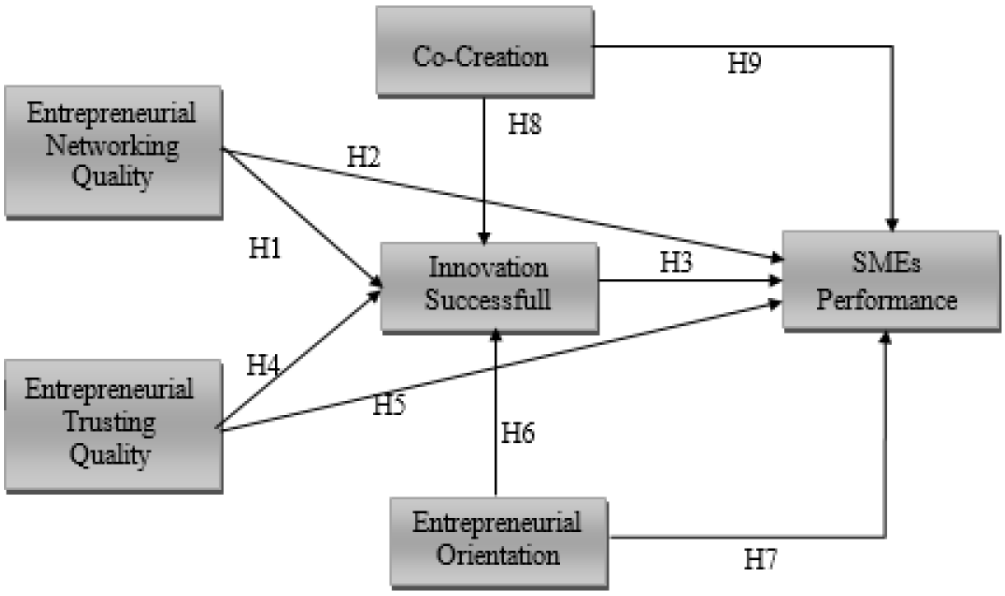
There are some studies measuring the performance of SMEs and the performance of the SMEs is adopted from the business performance. The measurements of the performance of the SMEs including profitability, growth (revenue growth, growth potential, enterprise growth), market development, net sales revenue increased sales, increased market shares, satisfaction, return on investment (ROI), reaching financial goal, relative finance and relative non-finance, top management's satisfaction with overall performance last year, market share overall performance relative to major competitors last year, and overall performance of the last year (Bakar et al., 2014; Minchna, 2009; Naude et al., 2014; Nedzinskas et al., 2013; Omerzel & Antoncic, 2008; Sok et al., 2013; Zheng et al., 2009). There are also those consider finance ratio as the measurement of SMEs performance (Voulgaris et al., 2000)

In this study, the measurement of the SMEs performance focuses on the growth. The growth can be seen from many ways. Robson and Bennett (2000) measured the growth into three measurements including the percentage of change in the work, the change of percentage of profitability of the employees. Another experts see the growth through the growth of sale, market segment (Zheng et al., 2009), the growth of the company (Bakar et al., 2014), and others. In this study, the indicator of SMEs performance is the growth of sales and profitability.

HYPOTHESIS

Relationships are illustrated in Figure 1.

Figure 1. Empirical research model



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The Relation between Entrepreneurial Networking Quality, Innovation Successful, and The Performance of SMEs

Networking and Innovation cannot be separated. Kase and Liu (1996) explained that innovation needs the complexity of the network of relation between personal and group. Networking can bring various information exchange, influence exchange, and friendship (Michael & Yukl, 1993) which can bring creative ideas to build the success of innovating. Seufert et al. (1999) explained that there is integration between networking and knowledge management. Knowledge will be created and transferred into a network which will bring fresh ideas and concepts to create innovation. Network will bring new technology functioned to change the product, process, or service into something new. Network also can allocate the scarce resources (Cornelli & Aldreich, 2001) which can create different product compared to the competitors. Chiu (2009) explained that entrepreneur which is able to build network will increase the work of innovation. Network has important roles if someone has interest in the entrepreneurial activity (Martinez & Aldrich, 2011) which can produce idea, process or new product.

Various researches explained that network can improve the performance (Lamprinopoulou & Tregear, 2011). The entrepreneurs which can build qualified network, will create a long-term relation with business relation. This long term relation will improve the work. Luo et al. (2004) conducted researches on 262 companies in some metropolitan cities in China. This research examined the impact of relational resources on the performance

Schumpeter (1934) thought that innovation is urging factor for the work. McDermott and Prajogo (2012) considered that Schumpeter's concept (1934) has not been clear yet because the concept is only for big companies. To see if the innovation as urging factor, especially SMEs performance, so the idea of Oke et al. (2007) is needed, that the researchers must see the type of innovation. The company will grow and develop if it can introduce new products. Various researches explained that the success in conducting innovation will influence the work (Ardyan, 2016; Avlonitis & Salavou, 2007; Bhat, 2005; Eris et al., 2012; Han et al., 1998; Matear et al., 2002).

From the above explanation, there are some hypothesis proposed as follows:

H1: The quality of entrepreneurial networking gives positive and significant impacts on the innovation successful
H2: The quality of entrepreneurial networking gives positive and significant impacts on SMEs performance
H3: The innovation successful gives positive and significant impacts on SMEs performance

The Relation between the Quality of Entrepreneurial Trusting, Innovation Successful, and Performance of SMEs

The result of Tsai et al. study (2013) showed that the dimension of social capital (trust) can improve the will to do innovation. Some experts explained that the role of trust on innovation is caused by the higher of trust so it can reduce the cost of transaction among the actors, reducing the cost of searching and information, prize bargaining, and cost decision (Landry et al., 2002; Maskell, 2000). The trust towards the suppliers, partner at work, clients, government, and another business units will give contribution (Tsai

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& Ghoshal, 1998). The higher trust will be the lower cost of monitoring toward the cheating partner. The lower monitoring is enabled to make further cooperation projects to innovate.

Trust is a conviction possessed by the company which shows that partner will do some actions enabling the company achieving certain benefit (Anderson and Narus, 1990). The improvement of trust will improve the SMEs performance (Nurhayati, 2009).

From the above explanation, there are some proposed hypothesis:

H4: The quality of entrepreneurial trusting gives positive and significant impacts on the innovation successful.
H5: The quality of entrepreneurial trusting gives positive and significant impacts on the performance of SMEs

The Relation between Entrepreneurial Orientation, Innovation Successful, and The Performance of SMEs

Basically, the company orienting on entrepreneurship will be able to improve the innovation of the products (Avlonitis & Salavou, 2007). Miller and Friesen (1982) thought that the company orienting on entrepreneurship, different from the conservative company, innovates bravely and regularly when taking big risks for their market strategy of market. The company must be proactive to supply the needs of the consumers, so the company will make some innovation of products for the consumers. The entrepreneurial orientation will make the company to make penetration in (Zhou et al., 2005). Lower product innovation comes from the lower entrepreneurial orientation, while higher product orientation comes from higher entrepreneurial orientation (Avlonitis & Salavou, 2007)

Some researchers explained that there is relation between entrepreneurial orientation and the work. At the beginning, the concept of model which explains the relation between entrepreneurial orientasion and work was made by Covin and Slevin (1991). Wiklund and Shepherd (2003) found a strong correlation between entrepreneurial orientation and the performance. Keh et al. (2007) found that entrepreneurial orientation can improve the performance of the company, especially SMEs. The relation between entrepreneurship and the performance will increase time by time (Wiklund, 1999). Covin et al. (2006) thought that the effectiveness of right EO is measured using the criteria reflecting the success of the company to realize the entrepreneurial chance into the growth of the company. The company with aggressive competitive orientation will have an ability to revise the competition rules, define the limitation of the competition, achieving the market position. This action enables the company to get the market segment and surpassing the competitors (Lumpkin & Dess, 2001; Zahra & Garvin, 2000)

From the above explanation, there some proposed hypothesis:

H6: The entrepreneurial orientation gives positive and significant impact on the innovation successful
H7: The entrepreneurial orientation gives positive and significant impact on the performance of SMEs

The Relation between Co-Creation, Innovation Successful, and Performance of SMEs

In this era, the consumers begin move to the company and efficiency focus towards the consumers' experience, for example, by doing collective creation to create value (Prahalad & Ramaswamy, 2002). This

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is caused by the collective creating in innovating (Chen et al., 2011). Wang and Wu (2013) examined the impacts of dimension of collective creating (sharing knowledge) on the work. The customers agree to share information and technology with the supplier, the supplier can more understand the needs and the problems of the customers, which becomes the basic to improve the customers satisfaction (Narver & Slater, 1990). Through intensive interaction and knowledge exchanging, the supplier can integrate the comment and the suggestions of the customers into the process of production and make needed modification. As the result, sharing the knowledge of the customers can reduce the respondents' time to respond, lower transaction cost, and causing more cutting of cost (Carr dan Pearson 1999). The result of Wang and Wu research (2013) explained that sharing knowledge has positive and significant impacts on the work, seen from collective creating between the producer and the supplier or the producers and the consumers. Other experts have explained that the role of collective creating on the dimension of performance (Chuang & Lin, 2015; Grissemann & Stokburger-Sauer, 2012; Nysveen & Pedersen, 2014)

From the above explanation, there are some proposed hypothesis:

H8: Co-creation gives positive and significant impacts on the innovation successful
H9: Co-creation gives positive and significant impacts on the SMEs performance

RESEARCH METHODOLOGY

Collecting the Data and Sample Profile

This study chose Batik SMEs because Batik is one of culture heritage acknowledged by the world so we must protected. The sample of SMEs in this study is Solo (Kampung Laweyan and surrounding). Kampung Laweyan is one of the clusters of Batik producers known by surrounding area in Indonesia. This study made survey to the owners or the management of Batik SMEs.

There were 150 questionnaires and only 63 questionnaires which returned and could be analyzed furthermore (responds rate 42%). The average length of Batik SMEs is around 10.4 years. From the 63 respondents, there were 24 male respondents and 39 female respondents. Most of the respondents have bachelor degree (34 respondents). This is Table 1 of respondents characteristics.

Measurement

There were 6 construct used in this study: The quality of entrepreneurial networking, the quality of entrepreneurial trust, collective creating, entrepreneurial orientation, innovation successful, and SMEs performance. All the constructs were measured by seven-point Likert scales (1= strongly disagree; 7=strongly agree).

The quality of entrepreneurial networking is associations from some individuals or organization communicating one another to produce mutual benefits (Nurhayati, 2009). The indicator of the quality of the entrepreneurial network are work networking with loyal suppliers, work networking which gives additional values, qualified work networking, and work networking with profession organization (Gulati et al. (2000); Kasa (2007); Nurhayati (2009)).

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The quality of the entrepreneurial trust is defined as the trust of the partner will conduct action that brings the company into certain benefit (Nurhayati, 2009). The indicator of the quality of the entrepreneurial trust are trusted by supplier, trusted by investors and financial organization, and trusted by (Kasa (2007); Nurhayati (2009)).

Co-creation is collective participation between the consumers and the producers to create the value in the market (Swass, 2010). The indicators of collective creating is intensive interaction, involving consumers, synchronizing decision, and transparence (Chuang and Lin (2015); Liao and Kuo (2014); Prahalad and Ramaswamy (2004a); Yi and Gong (2013); Zhang and Chen (2008)).

Entrepreneurial orientation from a company is identified as a company involved in technology innovation, conducting a risked efforts, and pursuing the proactive chance (Miller & Friesen, 1982). The dimension of entrepreneurial orientation is risk taking, innovativeness, and proactive (Covin & Slevin, 1989).

Innovation successful is the success of SMEs in doing innovation in the process or the final product. The success indicator of innovating is the success in applying new idea, creative in using the method in production process, the success in creating something new, and being able to offer new product as the first (Calantone et al., 2002).

Performance of the SMEs is the measurement of success achieved by SMEs in form of financial and non-financial. The indicators of SMEs performance are sales growth and overall profitability growth (Lindblom et al. (2008); Omerzel and Antoncic (2008))

The Data Analysis

To analyze the data in this study, we used SEM-PLS with WarlpPLS version 5.0 used as supporting equipment in analyzing the data. The reason of using SEM-PLS is because the sample is relatively small in number like 63 owners or managers of Batik SMEs.

Reliability and Validity

The test of reliability was by composite reliability and Cronbach alpha while the test of validity used convergen (AVE and loading factor). The instrument is said reliable if the score of composite reliability

Table 1. Respondents profile

Characteristic	Number	Percentage
GENDER		
Male Female	24 39	38.10% 61.90%
EDUCATION		
High School Bachelor	29 34	46.03% 53.97%
THE LENGTH		
1 – 5 years 6 – 10 years More than 10 years	9 24 30	14.29% 38.10% 47.62%

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Table 2. The result of relizability and validity test

Variable	Indicator	Loading Factor	Composite Reliability	Cronbach Alpha	AVE
The quality of entrepreneurial networking	KJW1	0.800	0.838	0.741	0.564
	KJW2	0.729			
	KJW3	0.769			
	KJW4	0.703			
The quality of entrepreneurial trusting	KKW1	0.772	0.864	0.790	0.615
	KKW2	0.742			
	KKW3	0.862			
	KKW4	0.757			
Innovation Successful	KI1	0.783	0.864	0.789	0.613
	KI2	0.823			
	KI3	0.758			
	KI4	0.767			
Entrepreneurial orientation	OK1	0.925	0.957	0.933	0.882
	OK2	0.946			
	OK3	0.946			
Co-Creation	PB1	0.871	0.891	0.837	0.627
	PB2	0.767			
	PB3	0.826			
	PB4	0.813			
SMEs Performance	KU1	0.991	0.991	0.982	0.982
	KU2	0.991			

and Cronbach alfa more than 0.60. The instrument is said valid if the value of the factor loading more than 7 and the score of AVE is more than 0.5. Table 2 shows that all the qualifications of validity and reliability have been fulfilled, therefore we can conclude that the instruments are reliable and valid.

Goodness of Fit

Model fit shows if the model of the research has been fit with the data of the research. There are 5 measurements showing that the model has been fit with the data. They are Average Path Coefficient (APC), Average R-Square (ARS), Average Adjusted R-Square (AARS), Average Block VIF, and Average Full Collinearity VIF (AFVIF). Table 3 describes that the model has good goodness of fit because the score of each indicator of goodness of fit shows is above the qualification.

The Results and Discussion

See Table 4. The quality of entrepreneurial networking can improve the innovation successful significantly ($B= 0.294$; $p<0.05$). H1 is accepted. The result of this study is similar with the previous study which

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Table 3. Goodness of fit

Indicators of Model Fit	Value	Cut Off	Result
Average Path Coefficient (APC)	APC=0.218; p=0.017	p< 0.05	Good
Average R-Square (ARS)	ARS=0.288; p=0.004	p< 0.05	Good
Average Adjusted R-Square (AARS)	p=0.013	P<0.05	Good
Average Block VIF	AVIF=3.587	AVIF≤5	Good
Average Full Collinearity VIF (AFVIF)	AFVIF=2.240	AFVIF≤3.3	Good

Table 4. The result of hypothesis test

HIPOTESIS	KOEFISIEN	HASIL
H1: The quality of entrepreneurial networking → innovation successful	0.294 (p<0.05)	Accepted
H2: The quality of entrepreneurial networking → SMEs performance	0.248 (p<0.05)	Accepted
H3: Innovation successful → SMEs performance	0.201 (p<0.05)	Accepted
H4: The quality of entrepreneurial trusting→ innovation successful	0.218 (p<0.05)	Accepted
H5: The quality of entrepreneurial trusting → SMEs performance	-0.167 (p=0.083)	Rejected
H6: Entrepreneurial Orientation → successful innovation	0,134 (p=0.135)	Rejected
H7: Entrepreneurial Orientation → SMEs performance	-0.321 (p=0.003)	Rejected
H8: Co-Creation → innovation successful	0.095 (p=0.219)	Rejected
H9: Co-Creation → SMEs performance	0.289 (p<0.05)	Accepted

said that the quality of entrepreneurial networking can improve the success of innovation (Ahuja, 2000; Landry et al., 2002; Vandekerkhove & Dentchev, 2005). The quality of entrepreneurial networking is shown by the strong relation among the sides of a networking. This strong relation causes knowledge transferring is easily between those involving in the networking. If it is synergized, it can create ideas, skills, and supporting financing. The uniting of ideas, skill and financing can produce radical penetrations (Subramaniam, 2005). Zacca et al. (2015) explained that the capability of networking will create knowledge which gives impacts on innovation.

The quality of entrepreneurial gives positive and significant impacts on SMEs performance (B= 0.248; p<0.05). So, H2 is accepted. The SMEs which can build qualified networking, can create long term relation with business partners (Lamprinopoulou & Tregear, 2011). This long-term relation can improve the work. Basically, the good networking will give benefit in form of information and resources which give ability in making business decision and motivating the work (Spreitzer, 1996). The resources will improve the excellention of competition and the work of a business (Khayesi & George, 2011). So, it can be concluded that the quality of entrepreneurial networking will improve the SMEs performance significantly.

Innovation successful has positive and significant impacts on the work of SMEs (B= 0.201; p<0.05), so H3 is accepted. The result of this study is similar with the previous study (Ardyan, 2016; Avlonitis & Salavou, 2007; Bhat, 2005; Eris et al., 2012; Han et al., 1998; Matear et al., 2002). The ability of the SMEs in applying new idea, creative in using the method of production process, successful in producing

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something new, and can offer new product at first turn (Calantone et al., 2002) must be suitable with the desire and the needs of market. It can influence the growth and the profitability (Ardyan, 2016).

The quality of entrepreneurial trust can improve the innovation successful significantly (B= 0.218; p<0.05), so H4 is accepted. The result of this study is similar with the previous study (Landry et al., 2002; Tsai & Ghoshal, 1998). The trust of entrepreneur towards the supplier, customers, government, or other organizations will influence the innovation in Batik entrepreneurship. The research conducted by Tsai and Ghoshal (1998) explained that social interaction can improve the number of innovation in the organization through exchange and combination of resources.

The result if this study showed that the entrepreneurial trusting quality gives negative impact on the performance of Batik SMEs (B= -0.167; p=0.083), so H5 is rejected. There are some points which can be the causes. The main cause is the type of trust in Batik industry in Solo may be based on the charismatic figure and born in Solo (especially Laweyan). In this study, the dimension of trust quality is trusted by the buyers, investors, and government. Those cannot improve the perfoermance of Batik SMEs.

The entrepreneurial orientation has positive impacts but it is not significant on the innovation successful (B= 0.134; p=0.135), so H6 is rejected. The result of this study is contrastive with the previous studies (Avlonitis & Salavou, 2007; Covin & Slevin, 1991). Other results also showed that entrepreneurial orientation has negative impacts on the work, so H7 is refused (B= -0.321; p=0.003). The result is different from the previous studies, that there is positive and significant impacts between entrepreneurial orientation and the inovation (Arif et al., 2013; Soininen et al., 2012).

Co-Creation has positive impacts but it is not significant on the innovation successful (B= 0.095; p=0.219), so H8 is rejected. Basically, co-creation will make product innovation (Blazevic & Lievens, 2008; Chen et al., 2011). There is a reason why co-cration cannot create the success of innovation. That is that the producer of Batik does not understand the motivation of the consumers in conducting co-creation co-cration. The quality of consumers' contribution on innovation activity is based on the perception of gaining benefit from the activity (Namibisan, 2002). Holbrook (2006) explained that consumer motivation to collaborate are social value and economics value. Roberts et al. (2014) also found that motivation is an important factor to encourage customers doing co-creation. Furthermore, Roberts et al. (2014) explained that there are three consumer motivations in doing co-creation: egosentric, altuistic and opportunity/goal motive. Franke and Shah (2003) concluded that internal needs to get the satisfying products a sense of fun and excitement will make creative action.

Co-Creation has positive and significant impacts on the SMEs performance (B= 0.289; p<0.05). It can be concluded that H9 is accepted. The result of co creation is a desired product of the consumers. The consumers feel satisfied with product they get and it will influence their loyalty. The more loyal, it can give great impact on the SMEs performance.

CONCLUSION

This study is seeking how the impacts of social capital dimension, entrepreneurial orientation, and co creation on the success of the success of innovation and SMEs performance. The result showed that: first, the improvement of innovation is significantly influenced the quality of entrepreneurial networking and trust while entrepreneurial orientation, co creation cannot improve the success of Batik SMEs in innovating. Secondly, the performance of Batik SMEs can improve significantly if it is influenced by the quality of entrepreneurial networking, co-creation, and the success of innovation, while entre-

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preneurial orientation and the quality of entrepreneurial trust cannot improve the performance of Batik SMEs significantly.

The theoretic implication in this study are: first, the quality of networking and trust can improve the success of innovation of Batik SMEs. However, when the SMEs and consumers collectively create motives and design, this cannot improve the success of innovation for Batik SMEs. Secondly, the aim of creating value collectively is not to find something new but to improve the performance of the SMEs. Co-Creation only creates the trust in the consumers that they are cared for and appreciated in their opinion. This condition will not improve the innovation but the consumers can be loyal to buy and finally improve the performance of SMEs from the growth of sale and profit.

The managerial implication in this study are: first, focusing on building networking and trust must focused on how Batik SMEs conducting innovation. The strong networking and trust will relate with the stronger external party. This strength must be used by the entrepreneurs to absorb much knowledge, experience, and information from external party to bring something new for Batik product. Secondly, one of the ways to improve the work of Batik SMEs is by doing innovation. Innovation can be done if the employees have knowledge, experience, and skills in producing something new. The employees must have high creativity. Therefore, the SMEs must make cooperation with the government and private organizations to give training for the employees, so their skills making something new can be improved.

This research has some limitation. First, it is enabled that the choosing of the entrepreneurial orientation indicator is not suitable with the real situation of the field so it makes the results do not give significant impacts on the success of innovation and working. For the next research, it is suggested to choose the indicators which are suitable with the condition of the business. Secondly, the sample is very limited in number. It is needed to conduct some researches in other areas which become the cluster of Batik producers, such as Sragen, Pekalongan, and another. Thirdly, it does not consider the local culture to analyze the difference among the areas.

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Chapter 46
The Relationship between Entrepreneurial Competencies, Competitive Intelligence, and Innovative Performance among SMEs from an Emerging Country:
Competitive Intelligence in SMEs

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ABSTRACT

Competitive intelligence is vital to an organisation because it emphasises on understanding and measuring an organisation's competitive environment and the unstructured information that influence an organisation's strategic decision making. In fact, it also assists in creation of ideas and innovation. Yet, research on competitive intelligence practice among entrepreneurs is quite scanty. There is a need to investigate if entrepreneurial competencies and innovative performance is influenced by competitive intelligence. Thus, this study aims to analyse the relationship between entrepreneurial competencies, innovative performance and if competitive intelligence is the missing link among the entrepreneurs within the Malaysian SME context.

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INTRODUCTION

Over the years, Malaysia has made significant progress to become a fast growing developing nation. Bolstered by a relatively stable political environment, much stride was made in the economic and social spheres. The country now prides itself with robust industrialisation to further propel its economy that was once heavily dependent on mining and agriculture. In 1991, the idea of realising a fully developed nation status, a nation that is entirely competitive, dynamic, robust and resilient by the year 2020, was mooted (Economic Planning Unit, 2001). This vision, dubbed Vision 2020, is predicated on the assumption that the country will invest in, among other things, policies and programmes to unleash the innovative power of the economy's engines of growth. This is so because innovation, and hence the emergence of an innovation-based economy, is crucial to the competitiveness, dynamism, robustness and resilience of the country (Guha, 2011). An Innovation Economy denotes an economy that emulsifies knowledge, technology, entrepreneurship and innovation in order to accelerate productivity, which is the heart of economic growth (Janeway, 2012; Nelson & Winter, 2002; Schumpeter, 1943). In order to compete with other developed countries and achieve developed country status as enshrined in Vision 2020, it is imperative that Malaysia take steps to develop a more knowledge-intensive and innovation-driven economy.

Towards this end, the government of Malaysia of late has embarked on a new economic strategy known as the Economic Transformation Program (ETP) (PEMANDU, 2010). Specifically, the ETP seeks to transform Malaysia into a high-income nation, a prerequisite of a fully developed nation. One of the most significant and vital factors of the ETP is the leadership of the private sector in building the nation's economy. In contrast, the government acts as the catalyst in policy making and high-impact funding. The plan is for the private sector to fork 92% of the nation's economic investment from 2010 to 2020, where approximately 73% would be domestic direct-investment and 27% foreign direct-investment (PEMANDU, 2010).

An interesting fact disclosed by the Department of Statistics Malaysia is that 97.3% or 645,136 of the total established businesses in Malaysia are SMEs and only 2.7% are categorised as large organisations (Jabatan Perangkaan Malaysia, 2012). As a major investing sector, the importance of the SMEs in the transformation of Malaysia has been duly recognised by the government. In the Third Industrial Master Plan 2006-2020 (IMP3), for instance, special focus was given to them by the government with their needs being addressed (MITI, 2006). The SMEs provide 57.5% of the nation's employment (National SME Development Council, 2014) despite having 97.3% of the total number of business establishments in Malaysia. In terms of Gross Domestic Product (GDP), they contribute a meagre 1/3 or 32.5% (Star Business, 2013).

In Malaysia, the definition of SME revolves around two criteria, namely the number of people employed by the entity or the amount of revenue generated. Prior to 1st of January 2014, an entity is considered a SME if its annual sales turnover does not exceed RM25 million (approximately USD6.1 million) or if the number of employees does not exceed 150 people. Due to changes in the world economic landscape, especially triggered by price inflation, structural shifts and changing business plans, the definition of SMEs has been revised accordingly. The new definition has the impact of including even more organisations into its fold. This revision, which was effective 1st January 2014, is described in Table 1.

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Table 1. SME definition effective 1 Jan 2014

Classification	Manufacturing	Services and Other Sectors
Micro	Sales turnover of less than RM300,000 (USD74,000) or employees less than 5	Sales turnover less than RM300,000 (USD74,000) or employees less than 5
Small	Sales turnover from RM300,000 (USD74,000) but less than RM 15 mil (USD3.7 mil) or employees from 5 but less than 75	Sales turnover from RM300,000 (USD74,000) but less than RM 3 mil (USD736,000) or employees from 5 but less than 30
Medium	Sales turnover from RM15 mil (USD3.7 mil) but not exceeding RM50 mil (USD12.3 mil) or employees from 75 but not exceeding 200	Sales turnover from RM3 mil (USD736,000) but not exceeding RM20 mil (USD4.9 mil) or employees from 30 but not exceeding 75

Background

In recent years, the number of businesses in the SME sector has escalated in accordance to global development. A census conducted by the Department of Statistics Malaysia in 2011 established that 89.23% (591,883 establishments) of the SMEs are in the services sector, 5.98% in the manufacturing sector, 3.34% in the construction sector, 1.33% in the agricultural sector and only 0.063% in the mining sector (Jabatan Perangkaan Malaysia, 2012; National SME Development Council, 2014). Most of those in the services sector are involved in wholesaling, retailing, hospitality and food and beverages businesses.

In 2013, the performance of Malaysian SMEs was promising as indicated by many positive indicators such as increase in sales, increase in new orders, introduction of new products, business expansions within the country and even expansion to other countries (National SME Development Council, 2014). Despite this and the proliferation of SME establishments, SMEs generally are facing many challenges ranging from high cost of raw materials, shortage of skilled workers, low productivity and rising overhead costs, barrier to global sourcing, financing and credit issues, no accessibility to latest technology tools, high regulatory costs and lack of managerial capabilities (Mohd Aris, 2007; Muhammad -Mohd Zylkifli, Abdul Kamal, Mohd Rushdan, & Zakiah Hassan, 2010; National SME Development Council, 2014; Samad, 2007).

In order to address these challenges and to concurrently elevate SME competitiveness to be at par with those of developed nations, the Malaysian government has embarked on a commitment to support the SMEs via learning and development programmes, funding, matching grants, and outreach programmes. In addition, the government has stepped in to steer the economy away from being labour intensive to a more capital, knowledge and technology based that has the ability to innovate, design and develop new products and processes. This has the impact of making the SME sector more resilient (Tan, et al. 2011).

Nevertheless, despite all these assistances many SMEs still fail to sustain (Ahmad, Abdul Halim, & Mohamed-Zainal, 2010). Perhaps there are other factors that the SMEs need to consider in order to better grasp the reasons for their failure and their incapability to contribute sufficiently to the development of the Malaysian economy.

Transition into Becoming a High Income Status Nation

Like Malaysia, many other nations aspire to be a high-income nation. A study of thirteen countries that sustained a 7% yearly growth since 1947 noted that only six were able to achieve high income status. This accomplishment was driven by a revamping of the countries' SMEs. In five of these countries,

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namely Hong Kong, Singapore, Japan, Taiwan and the Republic of Korea, the SMEs contribute significantly to the respective countries' GDPs. In contrast, Malaysia, which started off at the same starting point as Taiwan and the Republic of Korea, has lagged behind these two countries in the past decades. The Republic of Korea, for instance, has shown tremendous progress due to the rapid emergence of a technology, knowledge and innovation led-economy that fosters entrepreneurship and infrastructure enhancement (Shukran, Sultana, & Rahman, 2011).

Another noteworthy factor is that the Republic of Korea invests heavily in innovation capability by leveraging on its competitive intelligence (Kim & Ha, 2010). The concept of competitive intelligence (CI) is not new but has typically been neglected by many organisations, particularly SMEs. By engaging in CI, the Republic of Korea has successfully transformed itself into a high-income advanced economy and the world's 11th largest economy by 1995 (International Monetary Fund, 2014). More pertinently, 99.8% of businesses in the Republic of Korea are SMEs and they provide the population with 87.5% of employment. The Korean SMEs also contribute to more than 50% of the national GDP in 2011(Asian Development Bank, 2014; Guha, 2011).

The experiences of the other five countries have similarly shown a hike in the SME contribution to their GDPs from 2012 to 2014. For example, Hong Kong SME GDP contribution is at 58% (Chen, 2012), Singapore at 50% (Singapore Government, 2013), Japan at 55.3% (Hafeez, Shariff, & Mad Lazim, 2013) and Taiwan at 85% (Ur-Rahman, 2013). The ranking of these five countries on the Global Competitive Index Report for year 2014-2015 are as follows: Singapore was ranked second, Japan sixth, Hong Kong seventh, Taiwan fourteenth, and South Korea twenty-sixth (World Economic Forum, 2014). On the Global Innovative Index 2014, Singapore was ranked seventh, Hong Kong tenth, South Korea sixteenth and Japan twenty-one (Cornell University, INSEAD, & World Intellectual Property Organization, 2014). Malaysia was ranked twentieth on the 2014-2015 Global Competitiveness Index and thirty-third on the 2014 Global Innovative Index. From these rankings it is clear that Malaysia needs to explore new strategies to be at par with others. The rankings are consistent with the findings of Che-Ha and Mohd-Said (2012) on the lack of empirical evidences of innovation activities being carried out by SMEs in Malaysia.

It is evident that Malaysia needs a lot of catching up to do before it is able to compete with others. The SMEs are still lacking in competitiveness and innovativeness. In this era of globalisation, the survival of Malaysian SMEs depends highly on the organisations' innovativeness, creativity, technology, knowledge and entrepreneurship. The study by Bilton and Cummings (2010) indicate that highly innovative SMEs tend to grow quicker than non-innovative ones. Hence, Malaysian entrepreneurs must be bold enough to reinvent themselves and make themselves more relevant to the needs of the times or else they will face the possibility of being ousted from the market. As the experience of the Republic of Korea shows, Malaysian SMEs should prioritise their strategies to become more competitive and innovative. They should also be more vigilant of what the SMEs in developed countries are doing and be prepared to emulate them.

In addition, to the Asian experience, Malaysia can also look to the European Union (EU) for inspiration. In the EU, 98% or 20.7 million of the total business establishments are SMEs. The SMEs provide 87 million jobs and contribute to 67% of the total EU employment today. Their contribution to the GDP is more than two thirds (Ecorys, 2012). For instance, since the 1990's, France is one of the countries in the world that support its SME expansion by providing intervention programmes, such as the Competitive Intelligence (CI) programme (Larivet, 2009). This programme heightens the awareness of the SMEs on the importance of essential skills in developing CI practices and the benefits to be derived from it. Consequently, France and Belgium made the decision to include SMEs in their economic policies and

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CI is part of the national agenda. This has made France and Belgium unique as compared to other countries. In contrast, most countries have yet to focus on CI as part of their strategy to enhance innovation. They only implement general plans involving scientific and technological information or knowledge management when planning their economic agenda (Bergeron, 2000).

According to Ahmad, Ramayah, Wilson, and Kummerow (2010), the studies on SMEs have typically been classified into two categories - external and internal. External studies focus on the role of governments in helping SMEs, particularly in creating the necessary environment that is conducive to their success, while internal studies are those that focus on organisational or individual variables like resource and managerial or planning competencies that influence business success. The present study looks at entrepreneurial competencies (EC) and their relationships to competitive intelligence (CI) and innovative performance (IP). It is thus an internal study.

Competitive Intelligence

Competitive Intelligence (CI) has been established in European countries as well as some Asian countries as a mechanism to enhance the innovative performance of SMEs. It is defined as an ongoing and systematic evaluation of the external environment for opportunities, threats and developments that could have an impact on the organisation and influence reactive decision-making (Strauss & du Toit, 2010). It entails the following of specific steps from the acquisition of raw information to the production of intelligence for decision makers (Roitner, 2008). CI has also evolved into a systemic application discipline (Bartes, 2010). As such, it is not only a product but also a process. CI is not just market research and information gathering. It is an ongoing process of translating data and information into intelligence by using psychological techniques and new technology. This ongoing process is to assist the decision makers to have a holistic understanding of their industry, the stakeholders, competitors' behaviour and capabilities, and finding ways to maintain or develop their competitive edge (Fuld, 2010). Various sources indicate that the generally accepted norm for the CI process includes the constructs of planning, collection, analysis, communication, and organisational awareness for decision makers in deciding action (Strauss & du Toit 2010; Saayman, 2008; Bose, 2008; Miller, 2001; Vedder et al.,1999; Gates. 1999; Kahaner, 1996). Support for this interpretation also comes from Muller (2002) observation that individuals who are knowledgeable in CI refer to CI as 'multistage process' which consists of identification of CI needs, data collection, analysis and distribution of information and feedback. Interestingly, the United States Central Intelligence Agency (CIA) CI cycle also consists of five phases which are planning, collection, analysis, dissemination, and feedback (Bernhardt, 1994; Calof & Dishman, 2002). Regardless of size, organisations normally establish systems to safeguard their internal environment by scanning the surrounding. However, they often miss to accurately assess the external environment (Herring, 1992).

The purpose of CI is to reduce environmental uncertainty and improve management decisions. It is a method by which an organisation aims to obtain strategies advantage by gathering actionable information about the factors that affect the business environment and apply the information to the planning process and decision-making in order to improve the organisation's performance (Saayman et al., 2008).

CI can assist the business in many ways, from the creation of new concepts, products, opportunities, markets, and positioning and the launching of new products, processes or services, to the generation of new ideas, the tracking of trends, mergers and acquisitions and the formulation of strategies (Wadie, 2011). A study conducted in the scientific township of Isfahan, Iran on the effect of CI on innovativeness indicates that the use of CI leads to innovation and ensures the survival of the organisation (Hussein,

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Farzaneh, & Amiri, 2011). This finding is corroborated by the study of small establishments in Canada that also shows a clear relationship between CI usage and innovative performance (Tanev & Bailetti, 2008). In addition to the effect on innovation, scholars of marketing have noted the importance of CI in shaping strategic decisions, the creation of new products and the building of the organisation (Jaworski, Macinnis, & Kohli, 2002).

Bisson (2010), in his article, remarked that French SMEs are increasingly dynamic in applying CI and getting connected to the globalised economy. For this reason, CI has a strong foothold in the EU. It has proven to be an important source of innovativeness and organisations are willing to invest heavily in this area (Priporas, Gatsoris, & Zacharis, 2005). Previous research on Malaysian SMEs has primarily focused on the external factor of governmental assistance and support in developing the growth of the SMEs (Saleh & Ndubisi, 2006). Too few studies were attempted to uncover and understand the internal factors that would influence the undertaking of CI by Malaysian SMEs.

Entrepreneurial Competencies

Entrepreneurial competencies (EC) refers to the "underlying characteristics such as specific knowledge, motives, traits, self-images, social roles, and skills which result in venture birth, survival, and/or growth" (Bird, 1995). For the purpose of this study, EC refers to the total ability package of an entrepreneur to perform the job role successfully, and this includes entrepreneurial, managerial and technical functional roles (Man, Lau, & Chan, 2002). EC is important for business growth, survival and success because it is capable of minimising the negative impact of business environment and is a key driver in SMEs (Ahmad, Ramayah, et al., 2010). It has been shown that successful entrepreneurs possess a high level of entrepreneurial competencies (Li, 2009). Therefore, EC is a crucial determinant in the examination of CI among Malaysian entrepreneurs.

According to Muller (2002), the success of CI is highly dependent on the availability of a set of required skills since CI is a multidisciplinary subject. Above all, Edelman, Brush, and Manolova (2002) stated that in SMEs all important and vital resources are held by the entrepreneurs and the SME performance depends on their skills, knowledge, abilities, experience and education. The entrepreneurs are the core decision makers and have the greatest influence on the organisation's roadmap formulation and the way the organisation is steered forward (Masurel et al., 2003). A preposition can be made that the result of a performance is affected by applying the appropriate knowledge into action, which is actually the competency.

It is important to examine the relationship of entrepreneur EC and CI because the SMEs' decision making process is a reflection of the entrepreneurs' competencies. An entrepreneur may personalise his approach on how the information is collected, analysed and ultimately used to improve innovation performance. This is pertinent in view of the fact that there exist very little findings on the relationship of entrepreneurial competencies and competitive intelligence to innovative performance relating to SMEs in Malaysia.

Innovativeness of Malaysian SMEs

In this era of rapid globalisation, the survival of SMEs depends highly on the organisations' innovativeness, creativity, technology, knowledge and entrepreneurship. Innovation, in turn, is the crucial building block for economic growth, development, and better employment. Rogers (2008) defined innovation as

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the introduction of new knowledge or the advancement or modification of existing knowledge. This is in tandem with the view of Damanpour (1996), who posited that organisational innovation can include managerial, in addition to process and product innovation. Innovation, then, is multi-dimensional. Many or most authors would agree that having distinguished and superior competencies are very important for the survival of SMEs because such competencies will spur innovation.

As mentioned before, there is a dearth of information on SME innovative activities (Che-Ha & Mohd-Said, 2012). Although the research by Sveiby (1997) suggests that knowledge transfer is critical to organisational learning and success since knowledge grows when being used and depreciates when not used, Malaysian SMEs are incapable of fully embracing the idea. In general, they do not invest enough in IT infrastructure to promote knowledge management and innovativeness. Part of the reason for this is the large financial cost involved, lack of top management commitment, poor organisational culture, and lack of policies on knowledge sharing also contribute to this malaise (Chong, Chong, & Gan, 2011).

In conclusion, as confirmed by Hussein et al. (2011), CI can lead to innovativeness and this will help to ensure the survival of the organisation. Hence, it is vital to examine the relationship between CI and innovativeness in the Malaysian SME context. Malaysian entrepreneurs must not only be vigilant in scanning the environment for information but must also be smart in intelligence generation. Generating intelligence is a stepping stone to the cultivation of innovation culture in any organisation. Thus, the survival of Malaysian SMEs will depend on how well they are able to operate in an ambiguous environment and their resiliency and ability to create their own competitive edge (Mohd-Said, 2012). Even with all these challenges, SMEs are indeed a source of dynamism and innovation in the new global economy.

Problem Statement

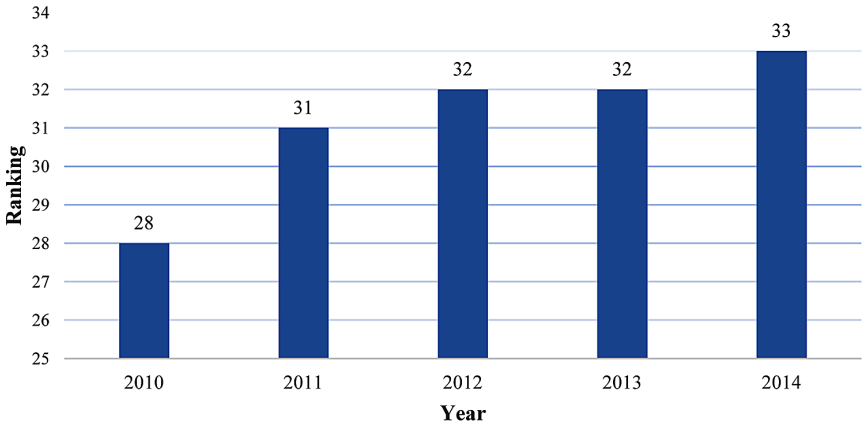
Malaysia is progressing into an innovation-driven economy to achieve the status of high-income nation by 2020. As highlighted in an earlier paragraph, the new transformation is piloted by the private sector (PEMANDU, 2010). Yet, in Malaysia, 97.3 percent or 645,136 of the total business establishments are categorised as micro, small and medium businesses (Jabatan Perangkaan Malaysia, 2012) . Despite the various initiatives provided by the government to escalate their productivity, SME's are not performing to the expected level and contribute to only 1/3 or 32.5% of the nation's Gross Domestic Product (GDP) (National SME Development Council, 2014; Star Business, 2013). Furthermore, Malaysian SMEs are not competitive and innovative in conducting their businesses (National SME Development, 2011). Malaysian entrepreneurs are slow in reacting to the environmental changes, robust competition and new innovation. It is self-evident that innovation is the route to economic growth as it creates new organisations. This creation of new innovations is the fundamental source of growth in business and also for their continued existence (Teece, 2010).

It is obvious that one of the ways for SMEs to become innovative is to rely on the entrepreneur's ability and creativity to innovate. Nevertheless, Malaysia's ranking as reported by the Global Innovation Index for the past five years has been stagnant. In fact, it has declined from 28 to 33 in 2014. This is exhibited in Figure 1.

Previous studies of SMEs are either external or internally focused. Of the latter kind, particularly those relating to organisational variables and individual variables, there is certainly a lack of materials. This gap fuels a strong suspicion that the Malaysian SMEs do not have the pre-requisite entrepreneurial competencies (EC) to engage in CI and consequently improve their innovation performance (IP).Thus, it is postulated that greater success can be accomplished if the SMEs were to adopt CI since CI has proven

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Figure 1. The Global Innovative Index from 2010 to 2014
Adopted from Cornell University et al. (2014).



to be effective in engendering business innovativeness and ensuring the survival of the organisation. Based on the above literature review, the following propositions are anticipated. Given the fact that entrepreneurial competencies have similarities with competitive intelligence skills, it can be anticipated that there is a positive relationship between entrepreneurial competencies and competitive intelligence. It can also be anticipated that CI has a positive relationship with innovative performance. This is because CI is also empirically proven to increase innovative performance in SMEs. According to Zaugg and Thom (2003), organisations with a greater pool of competency can convert the skills and knowledge into new or incremental products, services, technology or administrative practice. For an organisation to increase its innovation, it should have the ability to translate information into intelligence.

Hypothesis 1: There is a positive relationship between opportunity competency and competitive intelligence.
Hypothesis 2: There is a positive relationship between relationship competency and competitive intelligence.
Hypothesis 3: There is a positive relationship between conceptual competency and competitive intelligence.
Hypothesis 4: There is a positive relationship between strategic competency and competitive intelligence.
Hypothesis 5: There is a positive relationship between technical competency and competitive intelligence.
Hypothesis 6: There is a positive relationship between competitive intelligence and innovative performance.

METHODOLOGY

This study applied the quantitative methodology because most researches on these topics are conducted by positivists. The population for this study is the SMEs from various industries across Malaysia. This study employed the survey method and data is collected through mail questionnaires which are targeted at the small and medium enterprises (SME) in Malaysia. The respondents are Malaysian entrepreneurs who are also owners of SME businesses that have been in operation for three years or more. Only current active SMEs are considered to reflect the actual present-day SME environment.

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In deciding the sample size, this study utilising the statistical G*Power analysis (Faul, Erdfelder, Buchner, & Lang, 2009) and the minimum sample size with a medium effect size of 0.15 is 138. The researcher has decided to collect at least 138 samples because 50 samples as suggested by Hair et al. (2010) is the minimum number that the researcher must have in order to run a multivariate analysis. The measuring tool also plays a very crucial role in empirical research. The items for the questionnaire in this study employed measurements from the literature. Bachman and Schutt (2014) strongly suggest that if there are items already formulated, tested and provided good measurement, the items are recommended to be adopted or adapted. The measure for entrepreneurial competencies are drawn from Man, Lau, and Snape (2008), Ahmad (2007) and Chandler and Jensen (1992). Competitive intelligence is measured through the questions proposed by Saayman et al. (2008). This study also applies the measurement by Johannessen, Dolva, and Kolvereid (1997) to measure innovative performance.

Prior to conducting the quantitative data collection, a preliminary interview was carried out among 10 SMEs to obtain their perception on entrepreneurial competencies, competitive intelligence and innovation performance. This adhered to Morse and Richards (2002) who argued that employing a qualitative approach is appropriate if the purpose is to learn from the participants in a setting or process the way they experience it, the meaning they put on it, and how they interpret what they experience. Data obtained from these preliminary interviews are used to refine the survey instrument based on the local context.

A pretesting is also conducted to test the content validity and relevance of the survey instrument. The survey instrument was in dual languages as many Malaysian SMEs owners are more comfortable in answering surveys in Bahasa Malaysia. The translation in this study used the extended parallel translation procedure known as collaborative translation. This method assisted in achieving equivalence in meaning and captures the intended sense of statement (Douglas & Craig, 2007; Limpanitgul & Robson, 2009; Saunders, Lewis, & Thornhill, 2007).

Another major concern on measuring different constructs with the same method is the effect of Common Methods Biases. For the past fifty years, scholars have been debating about the biases effects that the measurement methods may have on the validity of the measurements (Podsakoff, MacKenzie, & Podsakoff, 2012). Common Method Biases (CMB) is defined as variance that is caused by the measurement procedure rather than the constructs of the measures (Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). As such, this study has taken pre and post remedies suggested by Podsakoff et al. (2012) to minimise CMB. The remedies taken are procedural and statistical techniques.

FINDINGS AND DISCUSSION

The model hypothesis testing was tested by means of the Structural Equation Modelling (SEM) procedure using the SmartPLS. SmartPLS was preferred over other approaches because it is able to handle constructs measured with single and multi-item measures, able to incorporate reflective and formative measurement models and most importantly it can measure complex models with many structural model relations (Hair, Hult, Ringle, & Sarstedt, 2014).

One thousand questionnaires are mailed out to the respective respondents. Only 167 replies meet the specifications of the study, giving a response rate of 16.7%. According to Dennis Jr (2003), a reply rate of 10% is common with SMEs. This finding is consistent with the arguments made by Abid, Rahim, and Scheepers (2011), Bakar and Ahmad (2010), Hilmi, Ramayah, Mustapha, and Pawanchik (2011) and Quek and Sha'ri Mohd Yusof (2003) who have conducted empirical research on Malaysian SMEs

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and have received a response rate between 5% to 25%. A Harman's one factor single test was conducted to test the presence of CMB. The result showed that 7 factors explained 74.19% of the variance with the first factor explaining for only 41.18% of the variance from the data collected. An assumption was made that the data was not being corrupted by CMB.

Prior to testing the model, the goodness of measure for all constructs is examined in order to test for their validity and reliability. The recommended items' loadings for reflective constructs cut-off value is 0.708 but 0.7 is considered acceptable (Hair et al., 2014). Nevertheless Hair et al. (2010) also cautions social sciences researchers to consider indicators with outer loadings between 0.40 and 0.70 instead of automatically removing them. The rule of thumb is, if deleting the items do not have any effects on the composite reliability and the construct's content validity, then the items can be retained. To measure the convergent validity, the composite reliability (CR) and average variance extracted (AVE) must be approximately 0.70 and 0.50 respectively because these are the acceptable value in many literature (Fornell & Larcker, 1987). Furthermore, Götz, Liehr-Gobbers, and Krafft (2010) argue that CR is a closer approximation of internal consistency compared to the Cronbach's alpha. Following this procedure, any loadings below the requirement are deleted giving the final AVE and CR value above the scale of 0.5 and 0.7. Table 2 demonstrates that the CR values range from 0.871 to 0.959 of which all exceeded the recommended scale. The AVE values for all the constructs range from 0.576 to 0.689 which are also higher than the recommended cut off scale. Thus, a conclusion is made that the constructs explain more than half of the variance of its indicators. Table 2 also summarise the results for the measurement model which clearly suggest that each construct shares greater variance with its own measurement items when compared with other constructs.

The Fornell-Larcker criterion is exercised to test the measurement model discriminant validity. Discriminant validity is the extent to which a construct is truly distinct from other constructs by empirical standard (Hair et al., 2014). It is important to establish the discriminant validity because it implies the construct is exclusive and describes observation not represented by other constructs in the model. As shown in Table 3 the square root of the AVE for each construct is higher than the correlation for each construct which indicates adequate discriminant validity for the constructs proposed in this study.

Figure 2 and Table 4 present the structural model and the path coefficients results which indicate the causal relations among the constructs in this study model. The analysis for the path coefficients and the hypotheses are performed using the bootstrapping method. Four hypotheses are supported with t-values larger than 1.645 and significant $p < 0.01$ and $p < 0.05$. From Figure 2 the R^2 value for innovative performance is 0.418 which suggests that 41.8% of the variance in the dependent variable is explained by competitive intelligence. The competitive intelligence R^2 value is 0.482 which means 48.2% of the variance in the competitive intelligence is explained by the opportunity, relationship, conceptual, strategic and technical competencies.

From Table 4, tests involving opportunity (H1) and relationship (H2) competencies reveal non-significant relationships with competitive intelligence. This perplexing finding is in contrast to the findings by Baron and Markman (2000), Kayakutlu and Büyüközkan (2010). According to these authors, opportunity and relationship competencies are important to the performance of competitive intelligence. Hence, care needs to be exercised in making sense of the result. The first point that needs to be noted is that research on competitive intelligence has mainly been done in western countries where the focus has been mainly on large organisations rather than SMEs. Unlike the SMEs where budget is a constraint, large organisations can afford entertainment and business expense to facilitate client engagement and business networking. Secondly, due to their financial stability and track record, large organisations are

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Table 2. Reliability of reflective constructs

Constructs	Items	Loadings	AVE	CR	Item(s) Deleted Due to Low Loadings
EC Strategic	ECS1	0.753	0.652	0.944	
	ECS2	0.736			
	ECS3	0.848			
	ECS4	0.785			
	ECS5	0.869			
	ECS6	0.788			
	ECS7	0.853			
	ECS8	0.854			
	ECS9	0.770			
EC Conceptual	ECC10	0.816	0.576	0.871	ECC 12
	ECC11	0.692			ECC13
	ECC14	0.787			
	ECC15	0.753			
	ECC16	0.741			
EC Opportunity	ECO17	0.840	0.680	0.895	
	ECO18	0.793			
	ECO19	0.854			
	ECO20	0.810			
EC Relationship	ECR21	0.744	0.608	0.903	
	ECR22	0.787			
	ECR23	0.826			
	ECR24	0.754			
	ECR25	0.766			
	ECR26	0.797			
EC Technical	ECT27	0.792	0.689	0.898	
	ECT28	0.813			
	ECT29	0.832			
	ECT30	0.880			

continues on following page

always given more attention and opportunities by the government and the business community in Malaysia compared to SMEs. Moreover, large organisations have established their reputation due to their branding and marketing strategies. Thirdly, cultural differences could also be a factor. According to the Hofstede's cultural dimensions theory, a society's culture is affected by the society's values and behaviour (Hofstede, 1984). Malaysia's culture from the Hofstede's lens of the 6D Modal identifies Malaysia as high in power distance, a collectivistic society and a normative culture. This means that businesses in Malaysia are not adverse to a hierarchical set-up, employer/employee relationships are perceived in

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Table 2. Continued

Constructs	Items	Loadings	AVE	CR	Item(s) Deleted Due to Low Loadings
CI	CI1	0.678	0.594	0.959	CI15
	CI2	0.765			
	CI3	0.750			
	CI4	0.766			
	CI5	0.584			
	CI6	0.760			
	CI7	0.840			
	CI8	0.840			
	CI9	0.743			
	CI10	0.790			
	CI11	0.844			
	CI12	0.844			
	CI13	0.776			
	CI14	0.840			
	CI16	0.733			
	CI17	0.733			
IP	IP1	0.802	0.588	0.895	
	IP2	0.801			
	IP3	0.794			
	IP4	0.650			
	IP5	0.763			
	IP6	0.777			

Note: AVE - Average Variance Extracted, CR - Composite Reliability.

Table 3. Discriminant validity of constructs

	CI	ECC	ECO	ECR	ECS	ECT	IP
CI	**0.771**						
ECC	0.627	**0.759**					
ECO	0.560	0.762	**0.825**				
ECR	0.570	0.722	0.657	**0.780**			
ECS	0.588	0.673	0.668	0.671	**0.808**		
ECT	0.615	0.691	0.570	0.660	0.663	**0.830**	
IP	0.647	0.608	0.578	0.514	0.576	0.508	**0.766**

Note: Values in the diagonal (bolded) represent the square root of the AVE while the off diagonals are correlations.

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Figure 2. Structural model

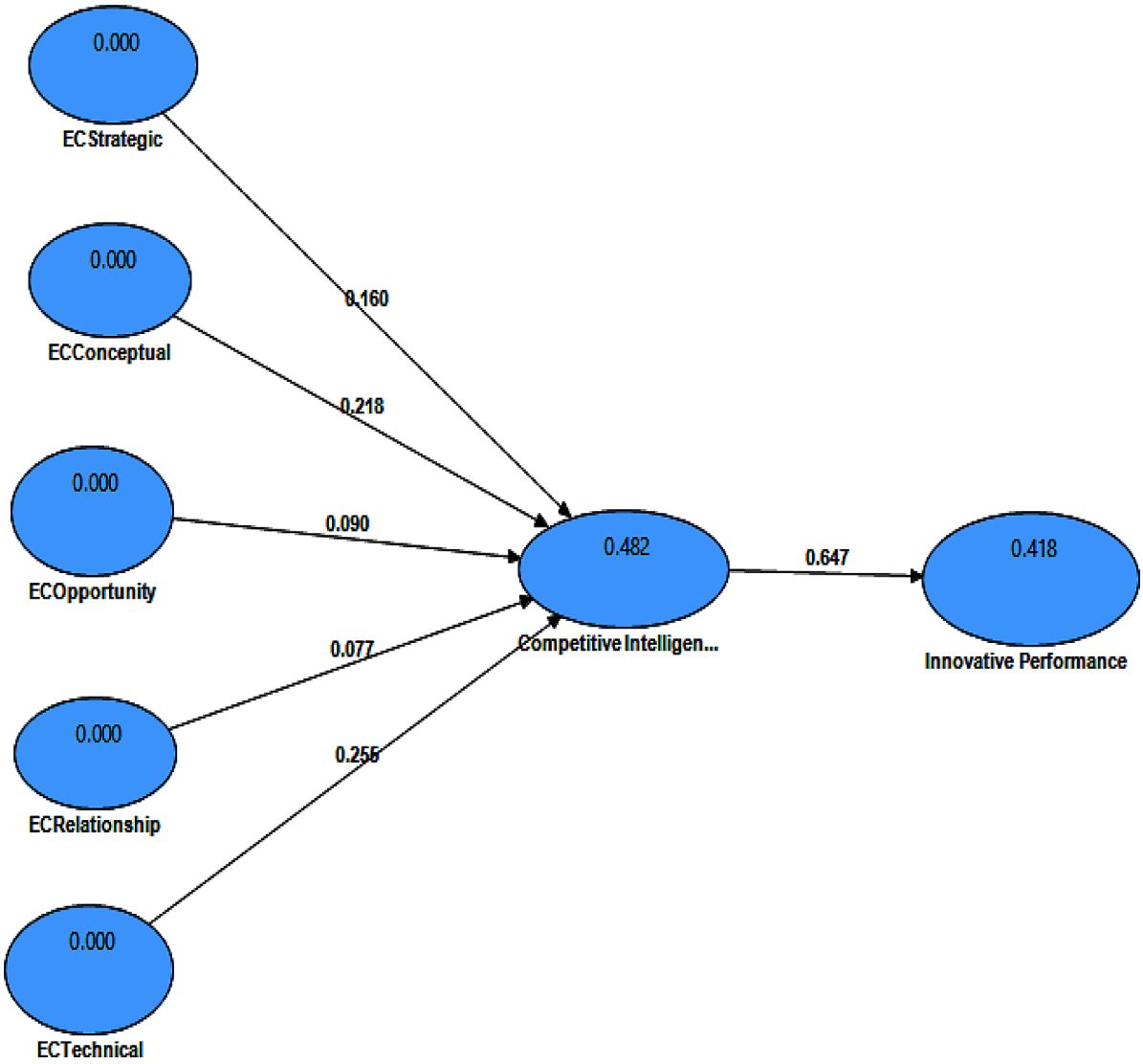


Table 4. Hypothesis testing

Hypothesis	Relationship	Std. Beta	Std. Error	t-Value	Decision
H1	ECOpportunity -> Competitive Intelligence	0.090	0.107	0.845	Not Supported
H2	ECRelationship -> Competitive Intelligence	0.077	0.092	0.839	Not Supported
H3	ECConceptual -> Competitive Intelligence	0.218	0.118	1.846**	Supported
H4	ECStrategic -> Competitive Intelligence	0.160	0.089	1.800**	Supported
H5	ECTechnical -> Competitive Intelligence	0.255	0.086	2.976***	Supported
H6	Competitive Intelligence -> Innovative Performance	0.647	0.041	15.737***	Supported

***p<0.01(2.33), **p<0.05 (1.645), *p<0.10 (1.28).

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moral terms and that there is a great respect for traditions. Due to cultural influence and budget constraint, SMEs in Malaysia may less likely invest heavily in relationship building with the business community and government agencies. Furthermore, in a hierarchically ordered society, the CEOs of the business entities are expected to be the contact point for all the higher level appointments and this can create time constraint and limitation on relationship building. Another conceivable reason for the non-significant relationship maybe due to the basic concept of *malu* (shame) in the culture of the Malays in Malaysia (Abdullah, 1993). Malay respondents constituted 79.04% in this study. To the Malays *malu* is an element of basic goodness and virtue in society and in one study, the Malays were reported to score highly on self-consciousness than other ethnic groups (Mastor, Jin, & Cooper, 2000; McCrae & Terracciano, 2005). The Malays are found to be *malu* to ask for favours and opportunities. Therefore, it is likely that opportunity and relationship competencies are less developed among the Malay SMEs due to the reasons given. However, mindful of the above discussion, it is plausible to conclude that entrepreneurs with superior conceptual, strategic and technical competencies are more likely to engage in competitive intelligence which may help them in enhancing their innovative performance.

Table 4 result confirms that conceptual competency has a positive effect on competitive intelligence with ß value at 0.218, t-value equals to 1.846 and $\rho<0.05$ significance level. The result is not surprising because as explained by Adidam, Banerjee, and Shukla (2012) the effectiveness of the CI depends exclusively on the implicit knowledge and expertise aptitude in linking the event, perceptions and data into trends in the organisation's decision making process (Grant, 2010). Furthermore conceptual competency requires the abilities to diagnose issues, analyse thoughts and match new concepts with the current knowledge and capabilities (Baron & Ensley, 2006; DeTienne & Chandler, 2004). The result in Table 4 also confirms that strategic competency has a positive relationship on competitive intelligence with ß value at 0.16, t-value equals to 1.80 and $\rho<0.05$ significance level. Strategic competency also requires the ability to plan for the short and long term and to anticipate issues (Ashurst, Cragg, & Herring, 2011).

Technical competency also has a positive relationship on competitive intelligence with ß value at 0.255, t-value equals to 2.975 and $\rho<0.01$ significance level. Thus, H3, H4 and H5 are supported. These findings are in agreement with Fai and Von Tunzelmann (2001) argument that organisations start with generic technologies and switch to incorporating new technologies to develop new processes and products innovation. Therefore, organisations with specific industrial technology and technical competency have a positive relationship with competitive intelligence. This line of reasoning is consistent with Sewdass and Toit (2014) which mentioned that to practise competitive intelligence, a person must be technically and scientifically competent to differentiate between information and intelligence. For CI to be successful, the core requirement is to be able to plan, collect, interpret, distribute and give feedback (Ranjan, 2009) which Muller (2002b) had identified as analytical skills and understanding scientific methodology. This agrees with Sarasvathy, Simon, and Lave (1998) study which has shown that entrepreneurs have these specific characteristics in information processing. Thus, strategic, conceptualisation and technical competencies play highly in determining the success of CI.

Table 4 also shows more pronouncedly that competitive intelligence is positively related to innovative performance with a ß value of 0.647, t-value equals to 15.737 and $\rho<0.01$ significance level. This is an interesting finding because there are evidences that lead to the conclusion that the use of CI leads to innovativeness, creation of ideas and increase in innovative performance (Hussein et al., 2011; Tanev & Bailetti, 2008). After all, Jaworski et al. (2002) has always emphasised the importance of CI in shaping strategic decision, new products and building the organisation. The outcome of H6 lends a strong support to the reasoning by Krücken-Pereira, Debiasi, and Abreu (2001) that competitive intelligence is a tool for

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innovation process. Competitive intelligence is designed to foresee customers actions, competitors and government strategy (Gilad, 1996). Competitive intelligence utilises and scans the whole competitive environment to gain insight into the market condition and is proven to support an organisation's business strategy, market penetration, and development and product innovation (Petri°or & Strãin, 2013). Therefore, competitive intelligence is a tool that assists in the development of an innovative performance of an organisation.

CONCLUSION AND IMPLICATION

The purpose of this study is to examine the relationships between entrepreneurial competencies, competitive intelligence and innovative performance. This study makes several contributions to the literature on Strategic Management. The result coincides with the Resource based theory that regardless of the size of the organisations, they are able to utilise the resources (tangible, intangible, competency and capability) to achieve competitive advantage. Secondly, while previous literature concentrates on large organisations and focus on the competitive intelligence process, this study extends the pool of literature by examining the SMEs entrepreneurial competencies that lead to competitive intelligence. It seems clear that this study acknowledges that entrepreneurial competencies and competitive intelligence are positively related to innovative performance but only *specific* entrepreneurial competencies exhibit significant relationship with competitive intelligence because these *specific* competencies (conceptual, strategic and technical) require high ability of scientific understanding. These *specific* competencies also demand high ability to link the past, the current and the future occurrences with depth understanding of the likelihood of the risks and the advantages from their decision making. Finally, the most important contribution of this study is that it conformed to the RBT that says that competitive/innovative advantage can be achieved more easily by exploiting internal rather than external factors and that this can be exploited from the bundle of valuable tangible and intangible resources of an organisation.

It is a common knowledge that entrepreneurship is indeed an important factor for a country's economic success. Although many studies postulate that entrepreneurial competencies impact on innovative performance, the intervening role of competitive intelligence does accelerate this impact. Therefore, the government agencies initiatives programmes should be more biased towards enhancing competitive intelligence behaviour. These training programmes need to be developed with the full comprehension of the cognitive psychology of the Malaysian SMEs and the programmes should be related to competitive intelligence and innovativeness rather than generic scientific and technological training programmes. Extra attention should be given to factors that relate to the championing of competency, such as cultural factors and prior experiences. Training programmes must be focusing on conceptual, strategic and technical competencies. For this reason, *specific* competencies (conceptual, strategic and technical) are essential in bringing about competitive intelligence. On the whole, the empirical evidence indicates that competitive intelligence boosts innovative performance. As a result, the model stipulates that competitive intelligence is a powerful tool that bridges the relationship between *specific* entrepreneurial competencies and innovative performance among SMEs.

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KEY TERMS AND DEFINITIONS

Competitive Intelligence: An ongoing, systematic evaluation of the external environment for opportunities, threats and developments that could have an impact on the organisation and influence reactive decision-making and follows specific steps from acquiring raw information to producing intelligence for decision makers in deciding action.

Entrepreneurial Competencies: The total ability package of an entrepreneur to perform the job role successfully which includes entrepreneurial, managerial responsibility, and technical functional role.

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Innovation Economy: An economy that emulsifies knowledge, technology, entrepreneurship and innovation in order to accelerate productivity, which is the heart of economic growth.

Malaysia: A country that practices federal constitutional monarchy located in Southeast Asia.

SmartPLS: A statistical software with graphical user interface for variance-based structural equation modeling (SEM) using the partial least squares (PLS) method.

SMEs: Malaysian small medium enterprise is classified as micro, small or medium and depends on two criteria which are full-time employees and annual sales turnover as defined by the National SME Development Council.

Vision 2020: A blueprint for Malaysia to become a self-sufficient industrialised nation by the year 2020 encompasses economic prosperity, social well-being, educational world class, political stability, as well as psychological balance.

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Chapter 47
Exploring the Factors to Green IT Adoption of SMEs in the Philippines

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ABSTRACT

Green IT adoption is a sustainable use of computing resources to address the growing environmental challenges resulted from business activities. Drawing from this need, this article aims to examine the influential factors that affect Green IT adoption in SMEs. This article is an initial attempt to understand the Green IT adoption experience of SMEs in the Philippines. A framework is created encompassing the interactions of factors that facilitate the successful Green IT adoption of SMEs in developing countries. The framework was then analyzed with data from multiple case studies of Philippine SMEs. The results suggest that individual attitude, IT infrastructure, managerial support, availability of budget, and government support have significantly facilitated Green IT adoption in SMEs. The results of this article will assist business owners, policymakers, and industry associations to further Green IT adoption by SMEs in the Philippines. Practical and research implications are presented.

1. INTRODUCTION

Green Information Technology (GIT) allows the use of resources in sustainable manners, both in the area of environmental protection and business resource efficiency. GIT covers a broad range of organizational activities, human, and managerial practices related to the information technology infrastructure and business operations in organizations (Loeser et al., 2017). GIT adoption has resulted in new approaches to doing business which offers substantial benefits to organizations through resource efficiency achievement by reducing business footprint while enhancing performance. The growth of GIT adoption has also enabled a greater appreciation of its environmental benefits and awareness of sustainability issues and challenges in organizations. Thus, GIT adoption is predicted as the driver for sustainability among organizations.

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The adoption of GIT has certainly provided useful benefits that enabled organizations to enhance their economic and environmental performance (Gholami et al., 2016) and develop better collaboration with their business partners (Kevin et al., 2015), and customers (Radu, 2016). The benefits suggested by adopting GIT have not only influenced for large firms to embrace it as well as the growing Small-Medium-Enterprises (SME) (Lim, 2015). The SMEs involvement in GIT adoption has afforded them better sustainable opportunities that they would not be able to achieve in the traditional notion on the adoption of information technology. Therefore, by involving in GIT adoption, SMEs have the opportunity to create a new market and sustain and reduce the impact of business on the environment, and leverage to remain competitive (Weng and Lin, 2011).

Despite the growing benefits of GIT adoption within organizations, a handful of studies is available on exploring the factors facilitating the successful adoption of GIT in SMEs, especially in developing countries (Kamaruddin et al., 2013; Piaralal et al., 2015). For example, the Philippines is one of the emerging economies with a growing number of SMEs in Southeast Asia region estimated at 774,664. The SMEs represent 99.6 percent of the total number of enterprises in the country. The Philippines was chosen as a reference to a developing world as it represents typical features of developing countries (Seyal and Rahim, 2006; Lertwongsatien, and Wongpinunwatana, 2003). The Philippines, despite the benefits from the stable economic development at an average of 5.2% between the period of 2010 and 2014, the e-Readiness Index (ERI) and Network Readiness Index (NRI) are still very low. However, The Philippine government started to dedicate a fraction of Gross Domestic Product (GDP) to Information and Communications Technology (ICT) adoption, to address the lagging technology adoption situation compared with other developing countries (Indjikian and Siegel, 2005). This situation is further difficult to understand as there are very few studies conducted to analyze the development of GIT adoption among SMEs and in the Philippines. Thus, it is necessary to understand the factors that facilitate the successful adoption of Green IT in organizations, most especially in developing economies. Therefore, this study attempts to investigate the fundamental research question:

What are the underlying factors for successful Green IT adoption in developing countries?

Hence, GIT adoption by SMEs has implications for the Philippines and the economies of other developing economies.

2. LITERATURE REVIEW

2.1. Green IT

The environmental challenges covering the rising carbon footprint emissions, depletion of natural resources and increasing waste ending in landfills is gaining more attention and discussion among public and private stakeholders (Hilty and Aebischer, 2015). These challenges resulted in the formation of accords in various regions to understand the implications of technology use on human safety, business, technology development, and environmental sustainability (Nisha et al., 2013). Conversely, it is a significant area of research in the information systems and environmental education. Thus, sustainability through Green IT was conceived as an important strategic focus for organizations. GIT is an efficient resource consumption using IT infrastructure as well as applying managerial and human practices, and

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organizational policies towards sustainability (Molla et al., 2014). To date, many organizations have been proposing their GIT agenda (Ardito and Morisio, 2014), and anchoring it to the sustainability mission and vision (Hernandez and Ona, 2016), to realize the full benefits of GIT, both for economic and environmental performance. Previous studies suggest that adoption of GIT in organizations have been very limited (Khor et al., 2015), especially in developing countries (Hernandez and Ona, 2015). It requires technological and organizational readiness, and support from the external environment to progress from simple to broad – complex GIT adoption activities (Deng and Ji, 2015). Hence, there is a greater need to explore and initiate GIT adoption in organizations in developing economies.

2.2. Overview of the Philippines SME Industry

The Philippines SMEs is one of the fastest growing sectors and plays a vital role in the creation of quality jobs, opening doors of economic activities, and diversification of investments in the entire country. In 2015, the SMEs provided a total of 3, 532, 935 jobs or 62.3 percent of total jobs generated by all types of business establishments and (Lanzona, 2015).

Presently, the SME industry comprises information technology, logistics, and supply chain, manufacturing, marketing and business development serving financial and banking, tourism, health and medical, game development, and sustainability services, among others. In the National Capital Region (NCR), a rising competition is experienced by SME firms with new entrants. Existing SME firms, however, constantly leads the NCR SME sector, in which, competition is extremely influential (Aldaba and Aldaba, 2014).

2.3. SMEs' Characteristics in Adopting New ICT

Previous studies suggest that smaller firms exhibit different characteristics with larger firms (Lee, 2009). These characteristics assist SMEs organizations to adopt new technologies requiring some level of knowledge and skills. SMEs are progressively engaging in IT adoption as positively influenced by the top management (Ghobakhloo, Aranda, and Amada, 2011), getting responsive to technology adoption due to familiarization with ICT (Nguyen, 2009), making available to financial resources and personnel, and knowledge (Kartiwi and MacGregor, 2007), progressively influencing business partners to adopt innovation, (Shah, Ali, and Jani, 2011;), and (5) continuous investment to new technology to improve business activities (Tehrani and Shirazi, 2014).

2.4. Factors to Green IT Adoption

The capacity to incorporate the internal and external factors indicates the success of GIT adoption (Lim et al., 2015) in an organization. The subsections present the internal factors covering individual (attitude) and organizational factors while external factors include IT infrastructure, government support and industry pressure the contributes to the successful Green IT adoption in SMEs in developing countries.

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2.4.1. Internal Factors

2.4.1.1. Individual

Prior studies argued that managers' attitude have some degree of impact on the decisions to adopt technological innovation as positive attitude elicits better acceptance of technology (Del Rio Gonzalez 2005; Kevin et al., 2015; Weng and Lin, 2011). Also, it signifies the faster realization of the benefits and deployment of technology innovation in organizations (Etzion, 2007; Kamaruddin, 2013). Yaha, Nair, and Piaralal (2014) found that CEO's innovativeness and knowledge of green practices and practices also influence the adoption of Green IT. Thus, it is essential to understand the top management attitude, motivation, and values toward adopting new technology or innovations.

2.4.1.2. Organizational

Organizational support is identified as a critical factor in any successful technology adoption. The financial resources available and support are necessary to a faster diffusion of technology (Weng & Lin, 2011). The organization size is associated with financial resources (Lee, 2008; Lee, 2009), large organizations are usually more rapid in technological innovation adoptions given the financial resource availability (Zailani, Amran, and Jumadi, 2011; Lei and Ngai, 2012). Moreover, managerial participation and support assist in increasing knowledge and awareness of the benefits of innovation adoption by constant communication with the employees of the organization (Lin and Ho, 2011; Nedbal et al., 2011) making available of the innovation needed, sponsoring education in the utilization of innovation (Gonzalez-Benito and Gonzalez-Benito, 2006; Zhu et al., 2008; Jeyaraj et al., 2006), thus, enhancing the possibility recognizing the merits and lowering resistance to change within the organization (Mithas, Khuntia, and Roy, 2010; Jung, Kim and An, 2011).

2.4.2. External Factors

2.4.2.1. IT Infrastructure

De Zoysa and Wijayanake (2013) found that the technological complexity and infrastructure levels are significant factors affecting the GIT adoption within organizations. More specifically to developing nations in which Internet Service Provider (ISP) infrastructure is still slowly developing, regulations are being created, and equal accessibility is crucial to GIT adoption. The Internet is one of the primary components for faster deployment of GIT, while, Internet infrastructure and access in developing countries are outlying from acceptable (Shah Alam, 2009). Molla, Cooper, and Pittayachawan (2011) found that there is a significant association between technological resources and firm innovativeness. Thus, firms need to invest in creating an adequate IT infrastructure and capacity as it plays a major role in progressing GIT adoption in organizations.

2.4.2.2. Industry Pressure

The aspects of industry pressure are all known to affect technology adoption in various countries (Hsu et al., 2013; Gholami et al., 2013). Conversely, an organization with state of the art IT infrastructure could find it easier to encourage external stakeholder such as business partners to adopt a certain technological innovation (Scupola, 2009). Thus, integration of SMEs and business partners is critical for GIT implementation.

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2.4.2.3. Government Support

The government can establish a constructive business environment and drive innovation adoption (Weng & Lin, 2011; Molla, 2009; Thomson, and van Belle, 2015). Moreover, the government must ensure legal guidelines, protection for GIT adoption activities, privacy and security procedures (Tan, 2009). Similarly, the government plays a significant function in offering the needed national IT infrastructure, for instance, reliable Internet connectivity with acceptable speed that follows relevant technology standards (Lawrence and Tar, 2011). Moreover, government support significantly affects decisions of organizations to adopt technologies (Aragon-Correa and Sharma, 2003). Certainly, the government programs aiming to offer financial and economic support structures help SMEs in the adoption of GIT (Rothenberg and Zyglidopoulos, 2007; Ho and Lin, 2012). In isolation, the study will examine government's function in influencing the adoption of GIT in the Philippines.

2.5. Conceptual Framework

Through the literature search and incorporating relevant theories of GIT adoption in developing countries, this research has identified five key factors facilitating the successful GIT adoption including individual, organizational support, IT infrastructure, industry pressure, and government support (Table 1). The conceptual framework is presented in Figure 1.

The dotted lines show the shared relationship among the factors involved in GIT adoption. These factors have direct and indirect influences through their effects on other factors that could contribute to the adoption of GIT in firms. As the government's influence shapes all other key factors, it is presented as a large square which covers the other factors. The organization and IT infrastructure factors are shown with a reciprocal relationship with individual factor as individual-manager with a positive perspective and attitude could progress GIT adoption (Klewitz, Zeyen, and Hansen, 2012) in firms. The industry is also foreseen to affect IT and organizational capability in a specific developing country. Large firms often have the power to influence their business partners to adopt GIT (Johnson and Schaltegger, 2016). Therefore, with the readiness of their industry to adopt GIT, organizations may achieve economies of scales by adopting GIT. Thus, organizations could be willing to implement GIT. The availability of IT infrastructure and capability may also assist the readiness of the industry to a certain level, which could result in faster adoption of GIT.

3. METHODOLOGY

As the purpose of this study is focused on examining the factors that influence successful GIT adoption, an exploratory approach is the most appropriate for this study to obtain a deeper understanding of the GIT adoption experience of SMEs. This research utilizes multiple case study approach (Dube and Pare, 2003; Yin, 2011) to investigate GIT adoption by SMEs in the Philippines. It allows researchers to explore the phenomenon of interest comprehensively over a period as it presently lacks in the literature on GIT adoption experience by developing nations. Moreover, multiple case studies offer compelling, robust and intuitive means to examine GIT adoption within the SME industry. It is preferred over single case study as rational conclusions are more influential from multiple cases rather than single case study alone (Hartley, 2004). This argument provides main motivation in selecting multiple case studies as the

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Figure 1. Factors contributing to the successful GIT adoption of SMEs in developing countries

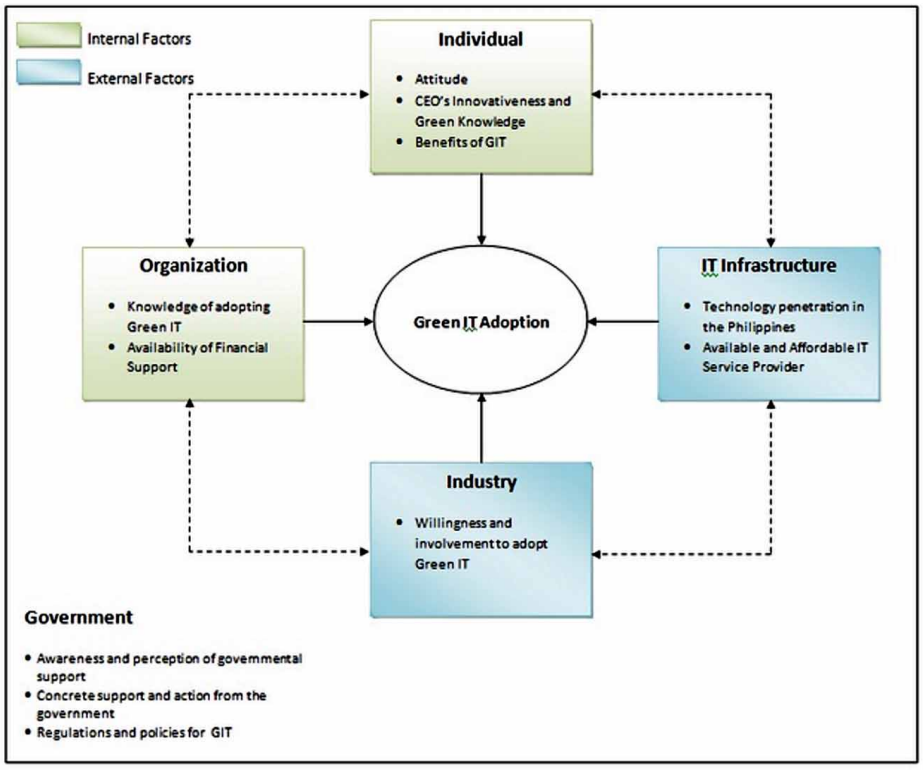


Table 1. Literature summary of GIT adoption in developing countries

Factors	Description	Research
Individual	• Attitude • CEO's Innovativeness and green knowledge • Benefits of implementing Green IT to the organizations	Del Rio Gonzalez, 2005; Etzion, 2007; Weng & Lin, 2011; Yahaya, Nair, Piaralal, 2014; Kevin et al., 2015; Kamaruddin, 2013
Organizational	• Knowledge of adopting green IT • Availability of financial support	Zailani, Amran, and Jumadi, 2011; Lei and Ngai, 2012; Weng & Lin, 2011; Lee, 2008; Lee, 2009; Lin and Ho, 2011; Zhu et al., 2008; Jeyaraj et al., 2006; Gonzalez-Benito and Gonzalez-Benito, 2006; Nedbal et al., 2011; Mithas, Khuntia, and Roy, 2010; Jung, Kim and An, 2011
IT Infrastructure	• Technology penetration in the country • Available and Affordability of IT Service Provider	Weng & Lin, 2011; Shah Alam, 2009; Molla, Cooper and Pittayachawan, 2011
Industry Pressure	• Willingness and involvement to adopt Green IT	Weng & Lin, 2011; Scupola, 2009; Hsu et al., 2013; Gholami et al., 2013
Government Support	• Awareness and perception of governmental support • Concrete support and action from the government • Regulations and policies for GIT	Weng & Lin, 2011; Aragon-Correa and Sharma, 2003; Rothenberg and Zyglidopoulos, 2007; Ho and Lin, 2012; Molla, 2009; Thomson, and van Belle, 2015; Lawrence and Tar, 2011

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research method of this study. Choosing different types of firms with various programs and activities within the SME industry is certainly significant for the rationale of this research. Thus, offering a broad understanding of the adoption practices, experiences, and processes. Interviews are widely accepted approach in qualitative research method to obtain in-depth information concerning the context and phenomenon involved. Thus, face-to-face interviews were chosen in this research to broadly understand the problems and gain detailed insights into the GIT adoption experience of the SME firms. This research employed semi-structured, open-ended questions to allow the participants to fully communicate their opinions, thoughts, and insights regarding GIT adoption.

3.1. Questionnaire Development

There were two different versions of question guide used based on the research of Perotti et al. (2012). The complete and detailed version of the questionnaire was maintained by the interviewer, and the shorter version was sent to the interviewees. The questions were organized into five main sections: Individual, Organizational, IT Infrastructure, Industry, and Government. Moreover, the SMEs were also asked about general questions regarding their firms.

3.2. Sample Selection

Table 2 lists the participating companies and the interviewees involved in each case study. A short profile of each company is provided in Appendix A. This study included a game development – SME, one software development SME and one IT support services - SME. These three firms are locally owned from the very start of their business operation in the Philippines.

The three companies have distinct business operations. SME A core business is in game development while SME B is engaged in software development, and SME C has involved in IT support services. Interviews were conducted between March 2016 and January 2017. All participants from the three SME firms were interviewed in three periods to ensure that the needed GIT adoption information was covered. Follow-up interviews were also conducted to understand the SMEs GIT adoption experience entirely.

3.3. Data Collection, Validity and Reliability

The Chief Executive Officers (CEO) of the firms were interviewed as they are main decision-makers within their firms, and therefore, play a vital role in deciding the adoption of GIT. The three SME firms are represented in the study as SME A, SME B, and SME C to maintain anonymity.

To address the validity and reliability of the data collection, this research has applied multiple case study approach which is proven to minimize the interviewer bias towards the results. The tape-recorded face-to-face interviews conducted consist of approximately one to two hours for each interview. These interviews were transcribed for analysis. For the validity of the interviews, the participants were asked to verify the conclusions drawn from each interview (Yin, 2011).

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Table 2. Firms chosen for the study

SME	Core Business	Employees	Annual Revenue	Designation
A	Game Development	79	USD 87,000	Chief Executive Officer
B	Software Development	95	USD 95,000	Company Owner
C	IT Support Services	120	USD 58, 000	Chief Executive Officer

4. DATA ANALYSIS

4.1. Individual Support

The participant in SME A revealed optimism in GIT, efficiency, and communication of environmental benefits was found significant in encouraging full support, and boosting the morale resulted in changing work attitude in regard to GIT. The attitude of the participant towards GIT is a vital consideration in the acceptability to adopt it, the CEO elaborates:

We already started Green IT, and I believe it is enough to adopt to this innovation which promotes energy saving, environmentally friendly use of computers, and disposal. I firmly believe that Green IT is a responsive approach towards sustainability.

Given that GIT is new in the SME industry, it was not only perceived applicable and profitable, the majority of the stakeholders felt positive about GIT. It is found that attitude towards GIT constitute positive perceptions accumulated in the participants' experience embodied with functional benefits reflects a complete experience that participants have with GIT.

The main reasons for the positive attitude to be actively present in SME B staff is because of the continued acceptance of technologies as means of conducting business and extensive successful communication in many ways. The participant also believed that people nowadays have a lesser resistance to technology because they are more bound to technology in the organization in conducting business compared to other staff in the past. Thus, they are more comfortable with interfacing with innovative technologies and are less uncertain in trying them. It is through better awareness and ease of use level minimizes resistance towards GIT.

In SME C, attitude is a key element in any IT adoption decisions. The participants' attitude towards technology adoption may be illustrated by their optimism behaviors' regarding the change introduced by the organization. The participant perceived acceptance to GIT as a positive behavior and effective communication of the benefits by the top management. The participants believed that changes are bound to take place, and they are expected to adapt to change, the company owner explains:

We grew up in this company introducing innovations…I am always going to adapt whatever is needed to help our business become sustainable…We see Green IT to bring our company to beneficial outcomes and sustainable resource saving initiatives.

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Also, the participant of SME C indicated that they are comfortable and felt easiness in using GIT, likewise, showing that they are educated and had a positive attitude towards IT usage and implementation. In addition, the CEOs of the three SMEs similarly have strong acceptance of innovation and knowledge on progressing green IT adoption process and processes within their organizations. The participants perceived constant innovation as a driver for sustainability in both economic and environmental performance.

4.2. Organizational Support or Readiness

The organizational support was an essential factor towards GIT adoption in SMEs. The participant of SME A revealed that managerial support highly encouraged GIT adoption by accelerating decisions, extensive communication, and support by building the morale of the staff of the organization.

The CEO ensures the continuity and drive of GIT adoption within their business operations. The organization has centralized decision-making approach, likewise, allowing for faster deployment of improvement activities relating to GIT, as the CEO of SME A explains:

The support towards the awareness of Green IT is visible. I lead various working teams and assist them in preparing our employees to apply Green IT, and that is something vital to our business strategy, where technology is integral part of our operations.

The managerial support to continue GIT adoption was essential to take advantage of its benefits. Moreover, the top management positions were occupied by professionals with strong technology knowledge and experience. As a result, it facilitated further decisions and implementation of GIT innovation within the SME A.

In SME B, the CEO facilitated collaboration to motivate and introduce change, adopt faster and influence financial resource allocation. The top management has a clear vision on GIT adoption by comprehensive communication and ensures that it is understood by the people in the organization, the CEO elaborates:

I have a strong conviction about using Green IT…All employees have contributions to the implementation of Green IT…they know what and why they should be part of the program…when I explained the benefits to all of them, they have a quicker turnaround and good results. I had reduced their concerns about it and their support was a huge factor.

Acceptance of new technological innovation such as GIT assisted the staff of SME B to improve their capabilities through communication of benefits, which helped them to become familiar with the practices and processes involving its initiation up to evaluation. Furthermore, the CEO was supportive of providing the essential resources for employing GIT activities and initiatives. Lastly, the CEO of SME B revealed that they regularly advised the employees to be updated with the most recent developments in GIT activities.

The findings showed that SME C had established leadership roles to further GIT in the organization. It is supported by their strong commitment to encouraging everyone to take part in achieving their GIT objectives. The top management builds the morale of the staff within the organization. For instance, senior management provides training to encourage GIT adoption by staff. The participant revealed that

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top management commitment was very essential in the succeeding adoption and implementation stages of green procurement as they believe that the lack of top management support would clearly bring GIT to failure.

Also, the CEO of SME C believed that GIT adoption practices must be based on consistent collaboration and cooperation by all stakeholders rather than simply oriented to a single business unit or function. The CEO explained that entire management team has strong commitment and support allowing them to spur innovation and promoted the continual use of technology to enhance value-driven GIT practices and processes among them.

The three CEOs also explained that they allocate financial budget to continue to expand the adoption of GIT within their organizations. These SMEs have fully utilized the financial budget allocation for GIT awareness building and education, research and development, procurement of energy-efficient IT equipment, and participation in various government and private campaigns toward IT end of life management (e.g. recycle, reduce, reuse (3R)), and improvement of office environment allowing intelligent and natural lighting systems, provisions for other green business practices. Overall, the financial budget allocation was vital in adopting GIT in SME firms.

4.3. IT Infrastructure

The three SME firms expressed satisfaction on the IT infrastructures offered in the Philippines as they perceived it sufficient to execute their business operations and technology adoption. The CEO of SME A expressed that is easy and convenient to avail for IT services by Internet Service Provider (ISP) firms in the Philippines as there is growing number of ISP providers that offer adequate, affordable and reliable services. Also, it was explained that the ISP firms in the Philippines had been rapidly growing, offering more affordable Internet packages and relative speed and cost. Therefore, it is recognized that the ISPs in the Philippines is making progress to advanced standards. Given the strong IT background of the SME organizations, they have accordingly assessed the ISPs capabilities to support the Internet service needs in their business processes where GIT is involved. It allows the SME organizations to deploy GIT based business services on the Internet quickly. Significantly, the SME organizations have been aware of the current conditions of IT infrastructure in the Philippines.

4.4. Industry Pressure

The SME A recognized the need to take action on the recommendations of their business partners to adopt GIT. Although most of them decided to implement as to their initiative, the CEO believes that considering all stakeholders inputs such as business partners have built a better relationship with them to strengthen the adoption of GIT, as the CEO explains:

We listen to our business partners, but our companies guidelines take precedence...on what is the most profitable for our business and not others…logically, the starting point is always our company…

The CEO of SME A revealed that industry pressure by important business partners' is based on recommendations to further GIT adoption leading to a more sustainable business and environment performance achievements.

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Industry pressure in SME B is characterized by the request of their important business partners. Likewise, the organization was forced to take positive action on initiating GIT adoption gradually to stay relevant with their business. Similarly, SME C experienced industry pressure through the recommendations by their business partners shaping their decisions to adopt GIT within the organization.

4.5. Governmental Support

In any technology innovation adoption, it was cited that regulatory support was an essential factor in GIT. The government encourages GIT adoption by formulating and implementing measures on energy-efficiency, legislation and incentives programs. Through the local agencies, they were encouraged to continue GIT campaign leading to resource saving, sound electronic waste management, and energy-efficiency.

The CEO of SME A rationally accepted that cooperative international and local agencies had put more likely some demands to adopt GIT as well as become more responsible by following environmental regulations by actively setting directions about GIT within the organization. Hence, formulate a proactive response to regulatory and legal measures to achieve GIT objectives. The government regulations were found significant to promote GIT adoption with their organization. It was made successful through constant support, incentive, and policies, which spearhead informed decisions towards GIT.

The findings from SME B revealed that the legal environment is conducive to promote GIT adoption and conduct business process innovation complemented with the regulatory support. The current subsidies encouraged cooperative relationships between the government and SME B which aims to help in the promotion and practice of energy-efficiency programs, as explained by the CEO:

We are compliant with government laws to operate…regarding the improvements in business….it is much easier for all SME companies…therefore, for us it is not only compliance but provide options to apply Green IT and business innovation given the policies applicable.

The CEO of SME C emphasized that direct control of regulatory activities related to GIT be constantly coordinated to ensure that significant provisions are followed at all times including quality of services, fostering environmental protection and social responsibility. Besides, the CEO of SME C emphasized that the government demonstrate a strong commitment to promoting GIT adoption through sectoral and industry cooperative agreements. These programs have direct impacts to the organization on their IT asset procurement processes, utilization of new technologies, and IT end of life management. The CEO elaborated on this view during the interview sessions.

5. DISCUSSION OF FINDINGS

5.1. Internal Factors

In this study, the participants from the three cases perceived that positive attitude affects GIT adoption. The majority of the participants agreed that they perceived GIT to take positive effect in their job and entire business operations. All participants revealed that through communication of the benefits of GIT, and positive attitudes are observed among the participants. The findings showed that positive experience

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in GIT innovation more likely develops an attitude to adopt such innovation and knowledge on green practices among CEOs. Therefore, new initiatives or activities trying to enhance GIT adoption in SMEs need to highlight the establishment of constructive attitude, innovation and knowledge on GIT among the stakeholders.

The organizational support analyzed from empirical findings revealed to have a significant influence towards GIT adoption in SME firms. CEOs with strong IT skills and competencies together with technology champions specializing in GIT adoption worked together to assist in promoting the benefits of using GIT based technological innovation. Comprehensive sharing and communication of technological innovation's advantages to the staff improved awareness and encourage positive mindset.

Such an ability for convincing the organization to apply proactive strategic decisions approach for technological innovation adoption plays significant motivational medium for a speedily and informed actions with any GIT adoption. It was commonly distinguished by most of the participants in all three case studies to perceive managerial support and commitment as a significant factor following the successful GIT implementation.

This research revealed that CEOs acquired the necessary skills and competencies before they involve employees to adopt GIT. Therefore, top management has a clear understanding of the advantages and disadvantages of GIT to experience some forms of resistance among staff and reduce negative attitude about the adoption of GIT.

Furthermore, the managerial support accelerated decisions and progressed by directly communicating the relevance and scope of GIT adoption in attaining sustainability as a long-term objective. Thus, the study is consistent with the belief that top management commitment and support is significant for optimal and faster deployment of GIT to enhance business practices and processes. Moreover, management roles and responsibilities, skills and competencies were important in enlightening the significance of technology change management within the SME organizations.

Also, availability and direct allocation of financial budget to progress GIT adoption were vital in SMEs. These firms have committed to further GIT adoption by providing the necessary financial support allowing CEOs and managers to infuse GIT in all aspects of business operations.

Therefore, organizational support and positive attitude towards any technological innovation adoption certainly affect the decisions to adopt GIT within the SME firms.

5.2. External Factors

The IT infrastructure was found a considerable factor to the SMEs and assists them in successfully progressing Green IT adoption. Also, these SMEs find the IT infrastructure in the Philippines to be sufficient and ready for any technology adoption needs. Moreover, the SME organizations have strong knowledge about IT infrastructure in regards of strengths and weaknesses given they have applied different kinds of electronic business practices in the past.

Prior studies prove that industry pressures such as by corporate partners force organizations to adopt GIT (Molla, 2009). Industry pressure came out in the analysis of data from three cases of the study. Majority of the participants strongly emphasized that it is important to respond the earliest to the request and recommendations of their corporate business partners to maintain optimal corporate relationships, while some mentioned that it would not affect their decisions as far as they were more focused on what is more beneficial for them.

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Collectively, the three cases have certain desire to have the capability to be compatible with technological innovations, by maintaining their competitive advantage, especially at the time that there are high levels of industry pressure. The organizations also perceived GIT adoption as cutting-edge approach appropriate for the present situation. Particularly, the sector they belong require GIT adoption due to the heavy use of IT and sustainability needs. The high GIT business awareness from its market-industry permitted the SMEs from completely engaging in the adoption of GIT and business. Thus, the pressure and demand of market and industry influenced the three case studies in becoming ready for GIT adoption.

The empirical findings revealed from the three cases that regulatory support experienced, and introduced by the government was found to have serious effects on the decisions to adopt GIT. More specifically, there was new energy-efficiency legislation in the country encouraging the organizations to take positive measures on energy-savings programs and initiatives. All participants from the three cases reported that moving forward to a more energy-conscious business offers value from energy-savings and other forms of resource reduction activities in the organizations were found effective. Also, the participants were familiar with government support to enhance GIT adoption in the Philippines. Thus, the action of the government is efficient and sufficient in directing SME companies in the adoption GIT.

Bose and Luo (2011) suggests that regulatory support affects the natural behavior of the organization relating to GIT and if incentives were provided it is more likely acceptable to adopt GIT. The findings revealed that their move towards GIT adoption is voluntary; however, they must be able to comply with certain regulatory legislations. Furthermore, all participants revealed that the legal environment in the country is conducive to promote GIT adoption and conduct business on it because the government provided incentives to them.

More importantly, all participants believed that the government has strong commitment and encouragement in promoting technological adoption by providing mediums with various stakeholders such as universities, research centers, and funding agencies to collaborate on new business opportunities from GIT adoption. It appeared that the government support is especially necessary for helping SME organizations to become more familiar with relevant legislations and programs in GIT to accept and implement it.

Besides, it appeared that regulatory support brought the willingness to SME organizations to implement GIT complemented by well-established energy-savings and resource conservation rules and regulations. Finally, having the assistance and support from the government is understood as a key factor for the faster GIT adoption rate in the Philippines and is not a key factor that interrupts SME organizations capability to adopt GIT programs. Thus, regulatory support highly affects SMEs to adopt GIT for long-term benefits and development initiatives.

6. CONCLUSION, IMPLICATIONS, LIMITATIONS, AND FUTURE WORK

This study is an initial attempt to provide an in-depth understanding of Philippine SMEs experience towards GIT adoption. Hence, this work contributes to the growing need to empirically examine GIT adoption experience in organizations most especially in a developing country perspective. More significantly, this study provides an understanding of the factors that facilitate successful GIT adoption in SMEs. Hence, this study contributes to GIT adoption discussion, more importantly, through developing a framework containing the interactions of elements that influence the adoption of GIT in developing countries.

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The study developed a conceptual framework that can be used to analyze the factors that affect successful adoption of Green IT in Philippine SMEs. The conceptual framework consists of two sources of influence: internal sources, and external sources. Four of the five factors were found significant in Green IT adoption in SMEs covering individual, IT infrastructure, organizational, and government support.

First, the study also found that the individual aspects significantly affects the initiation of Green IT adoption in SMEs considering their positive attitude, knowledge of technology, and recognized the Green IT benefits for the organizations. Second, the IT infrastructure is a contributing factor to the successful adoption of Green IT within the SMEs as the Philippines have satisfactorily IT infrastructure and ready to provide support for technology adoption needs. Third, the organizational support plays an important role in Green IT adoption, as managerial support, adequate financial budget and knowledge on Green IT was considerably available for three organizations. Lastly, government support is crucial in any adoption attempt of organizations; it is found that policies and guidelines are implemented to further the uptake of Green IT in organizations. Hence, the government is playing an active role in encouraging SMEs regarding Green IT and its benefits to contribute to the growing economy in the Philippines.

6.1. Implications

The findings of this research offer practical and theoretical implications. In regard to theoretical implications, the results can be used as a reference to further GIT adoption in developing economies. This study empirically investigated a conceptual framework that emphasized the five key factors comprised of both internal and external factors which might serve as factors for SMEs in adopting GIT practices.

The conceptual model could be further utilized as groundwork principles in investigating the factors to GIT adoption. It could be used as a guideline to enhance GIT situation in the Philippines. Also, this research has identified some of the main enablers by the SMEs in the country in GIT adoption.

Regarding practical applications, the findings of this study could be useful for policy creation and private organizations aiming to adopt in GIT practices. The findings could be used by legislators as a guideline in setting up plans, strategies, and approaches to accelerate GIT adoption level in the Philippines. Furthermore, present better intuitive information on which facets the government should mainly center on concerning the challenges faced by SMEs.

Moreover, the Philippine market has several business opportunities related to SMEs and ICT industries which are unexplored in the past years. Therefore, private IT firms could use these findings to be aware of the factors and grasp the potential and existing opportunities to serve and assist the unexploited market and completely lead and take advantage of GIT adoption to develop business operation and services.

6.2. Limitations and Future Research

Despite the contributions of this research, it is not free from limitations. First, this study only considers firms within the Philippines SMEs industry. Different industries (e.g., Business Process Outsourcing, Semiconductor) may have different profile and experiences in the adoption of GIT. Second, this research did not examine the roles of associations within the industry, standard bodies, and cooperating organizations in engaging firms in GIT adoption and its resulting benefits. By engaging these parties, a more inclusive and insightful understanding of GIT adoption could emerge. Moreover, the findings from the three firms revealed that these agencies and industry associations are actively taking part in promoting

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GIT adoption within the industry. It would be valuable for future researches to explore how the roles of these associations change over time and the implications this shift on the adoption of GIT processes with the SME sector.

Lastly, this research is based on multiple case studies comprising three private firms within the Philippines SME sector, and a smaller number of participants were involved, and only the CEOs of the firms. Hence, the results might be biased as they present CEOs point of view. Also, the limited data on Green IT in the Philippine SMEs has limited the data collected for this study. Thus, the results have limited generalization. Future researches could involve a larger number of participants to increase the statistical generalization, and achieve a more comprehensive understanding of the GIT adoption experience in the Philippines.

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APPENDIX

SME Companies

A.1. SME A: A game development provider based in Manila. The company was established in 2004 and growing its game development market by investing in research and development. To date, SME A has been serving mostly local firms. Thus, 90% of its game development products and services are produced for local and international firms. SME A's initiative to adopt GIT was driven by demand by its multinational firm competitors and the need to streamline its business process for operational and cost efficiency. SME A has been adopting GIT in working environment, waste management and data center operations.

A.2. SME B: Engaged in software development services to other companies. The company primarily serve local customers and suppliers mostly in the National Capital Region, while, they also serve other Asian countries such as Thailand, Singapore, Hongkong, and Malaysia. SME B has been actively doing GIT in end of life management, operations management, and data center operations. The company aims to engage in other GIT adoption practices fully, and processes as Sustainable Development Goals (SDG) in the Philippines was started. SME B believes that the software development business can be sustained by eco-innovation and eco-efficient strategies that encourage environmentally friendly business activity.

A.3. SME C: An IT support services firm. The company has considered a good number of GIT programs and initiatives in the past five years. SME C serves local and foreign clients in the IT support and services business. The company has been adopting GIT in procurement, business operations, working environment, and data center operations to attain sustainability in both economic and environmental perspectives. SME C is optimistic that GIT adoption can enhance customer satisfaction and competitiveness within the IT industry.

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Chapter 48
Real Estate Crowdfunding: 2015 and Beyond

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ABSTRACT

Like a juggernaut, "crowdfunding" has hit the media, the financial markets and the common narrative by storm. Incipient in many ways, the intermediation of financing transactions online has become a billion-dollar industry. As technology has advanced, even recreated, industries, there seems none more primed than "finance", an inherently information business. By creating improved efficiency, both art and science of finance are enriched. A 21st century vestige of the 1980's syndication business, real estate seems to be enjoying the fruits of the crowd, with $1 billion of property financings conducted online in 2014, with an expected $2.5 billion this year. For sponsors and investors, there appears legitimacy to the online approach, underscored by the level of venture capital now finding home in this burgeoning sector. Yet, like its progenitor, might real estate crowdfinance find legislative, regulatory, and practical headwinds, stunting its progress? Still early, with business models, scalability and sustainability still suspect, the current momentum seems promising.

WELCOME THE CROWD

While coined as a term only a few years ago, "crowdfunding" certainly has taken the markets by storm. Now in its pubescent period, the investment and financing methodology of aggregating small amounts of capital through online interactive platforms now accounts for billions of dollars (or Euros or Yen) in capital formation and a breadth of new investment opportunities for global participants. Gaining visibility in non-securities based fundraising, *ala* perquisite platforms such as Kickstarter and IndieGoGo, the power of technology to efficiently expose private investment offerings is creating a changed landscape for existing (and largely analog) financiers and intermediaries. This is particularly the case within the real estate realm. 2014 was a breakout year for real estate crowdfunding, with over $1 billion being infused into property-related investments through a hundred or so platforms, with an expected 250%

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growth this current year (2015) (Massolution, 2015). Whether the growth of real estate crowdfunding is a function of discerning and executing a new and improved way of intermediating capital providers with capital users, or rather taking advantage of an opportune moment as swelling regulatory and legislative oversight hampers the commercial banking mother lode, it does appear that the market, as of now, shall be characterized by exceptional progress. But we do remain judicious in our view of the quality and expanse of such advancement, and core to this view, is the sustainability of the underlying crowdfunding business model, particularly for real estate.

IF THERE'S A HISTORY, THERE'S NO MYSTERY

As I commented in the 2015 Massolution Real Estate Crowdfunding Industry Report, what we are witnessing is largely a 21st century manifestation of the real estate syndication model heavily utilized during the 1980s, at least for commercial real estate endeavors. Working either as a principal or as an intermediary, groups would raise funds from "syndicates" of accredited investors through the private placement of limited partnership offerings, with proceeds being used to acquire, rehabilitate, construct, or reposition commercial or multi-family real property. In the effort to aggregate such funds, the "syndicator" or say, sponsor, would prepare a placement memorandum, sometimes consisting of hundreds of pages, which it would provide individual investors generally by snail mail, and then "dial for dollars". Participant investment sizes were set at a level to induce broad participation, but not so low to the extent of creating a "herding cats" phenomenon. The verbal exchange between fundraising sponsor and prospective investors tended to be laborious, as many of the questions or comments were redundant from investor to investor, regardless the size of a particular investment commitment, whether $25,000 or $250,000. Telling the same story time and again, was a characteristic of the syndication process. And then there was the monitoring of who received a book, what the nature of the conversation was and finally allocating time to complete the one-on-one sales process. Post fundraise, the communication between sponsor and investors was equally arduous, layering more paper, snail mail, and repetitive repartee.

Enter crowdfunding, or more explicitly, the analog nature of fundraising communication between sponsor and investors going digital. Rather than authoring a paperback tome, crowdfunding platforms expose dozens if not thousands of investors simultaneously to an investment proposition through engaging and informative websites, with customer relationship management (CRM) systems to support both outreach and ongoing investor management. Simply, this has become the process of telling the story singularly to a plurality, underscoring the efficiency of digital communications. Consider the cost and time savings of creating a single digital copy and allowing through invited online access compared to the mailing out 500 individual books, and then following up on each. And yes, pursuant to securities regulations, each of the old style books were to be manually numbered and controlled. Further imagine if such "book" required an amendment or introducing an update in the project. The efforts and costs to distribute what needed to be shared for informed investment decision making drastically have been reduced. This has wide ranging implications: in reducing the cost of intermediation, smaller transactions might be economically "syndicated", as one can only assess so much in intermediation fees so as not to severely impact investable funds, nor gouge the economics in the end for the investor.

Another aspect of online syndication is that a broader audience can be reached. There has been nomenclature applied here, such as the "democratization" of investing, which respectfully has a semblance of truth. Reducing the cost of intermediation, and specifically on a per investor basis, smaller minimum

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investment sizes can be handled, leading to larger syndicates, which allegedly can be managed efficiently. A 1980s syndicator would be glassy eyed with a thousand participants in a million-dollar deal, and probably couldn't charge enough to make it worth his while, let alone spend time on property requirements.

Certainly one key difference from the syndicators of yesteryear is that the motivations on investors' part to invest has changed. Back in the 1970's and 1980's, individual marginal tax rates were elevated to 70% (Taxfoundation, 2015) for incomes over $200,000 and a key selling point of the syndications was that the periodic passive losses from owning real estate (largely through the depreciation expense) could be used to offset an investor's other ordinary income, thereby reducing taxes. Thus real estate syndications were real tax driven, as tax shields, and potentially in the end, if the property materialized a gain on sale, even better. Because of the huge demand for such tax shields, there was an onslaught of demand and syndicators continued to aggressively accumulate investor capital to put to work. What transpired though leading to a compression of this industry were: (i) the excessive level of investment led syndicators to invest in weaker properties and the actual losses ensued; and (ii) the federal government changed the tax laws, so that no longer could passive losses offset ordinary income. In effect, the syndication industry came to a halt.

A key difference between that period and now is the offerings made by the crowdfunding syndicates are investor motivation and the common usage of debt as a financing structure for the underlying properties rather an ownership equity position. Rather than owning the property as an equity holder, and advantaging the passive losses, the typical financing structure is a first lien secured loan, which would get paid back with interest upon the disposition or refinancing of the property. The interest rate on the loan, typically between 8% and 14%, addresses the appetite for yield that current investors maintain. We do recognize that many platforms offer equity type investments, but over 80% of 2014 RECF financings were embodied as secured promissory not

But back to the democratization spin: this is really not a new twist. In 1960, under an act of Congress, the Real Estate Investment Trust Act (Taxfoundation, 2015) was instituted, creating a mutual fund methodology for real estate investing. It was observed that real estate, particularly large commercial buildings and diversified portfolios of income-producing properties were the exclusive province of institutional investors, and legislators developed REITs as means for small investors to aggregate their funds to be deployed into larger real property. And to support the use of REITs as an investing aggregate, they were assigned a favorable tax treatment (namely the REIT itself was non-taxable subject to it distributing 90% of its income). The REIT methodology has proven to be advantageous to income-seeking investors, by offering portfolios of both real property ownership interests (equity REITs) and real property mortgage loans (mortgage REITs). The REIT industry is significant, with over $900 billion (REIT, 2014) of REITs outstanding, ninety percent of which are in equity form. In fact, taking the US lead, there are now REIT genres in over thirty countries.

APPETITE FOR ALTERNATIVES, REAL ESTATE IN PARTICULAR

Over the last twenty years and in particular the seven years, spurred with the convergence of the financial crisis and a broader quantitative easing from the Federal Reserve and other central banks, there has been dramatic shift in investment portfolios to alternative assets, and in particular real estate. With interest rates resting at an all time low, many investors are not only seeking out higher returns yet are desperate to find them given their own requirements. Think about pensions funds, whether public or

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private, that must address actuarial payout requirements to their respective retirees. Close to half of public pensions in the US are underfunded, so not only are they challenged to meet quotidian payouts, but they have catching up to do for the accruals that continue. Bonds, or debt obligations of private and public sector entities, including the sovereigns, may be less risky than holding real estate, but investors have recognized that spreads between prime commercial real estate assets and high quality bonds have increased significantly over the last ten years, and their risk/return thesis has steamrolled the growing interest into enhanced real estate allocation. Currently we have seen interest rate differentials of close to 300 basis points (3.00%), between prime assets and high rated bonds, thus in a low interest environ, one can understand the move.

In general, alternative assets are increasingly becoming a staple in larger investment portfolios. For decades, traditional or core assets, such as public equities and bonds, represented the bulk of an investment portfolio, whether that is an individual investor or an institution overseeing billions of dollars of investable funds. But certainly over the last ten years, we have seen a demonstrable allocation away from core assets into many things alternative, such as private equity, venture capital, real estate, hedge funds, and even commodities. This has been a function of macroeconomic challenges and conditions, coupled with a growing comfort in what had been heretofore considered illiquid assets. And we are witnessing this practice across investor classes.

From a current macro view, public equities are priced up, elevating to price/earnings (19x-27x for S&P500 based on the analyst, The S&P500 PE Ratio, n.d.) and other performance ratios to levels not reached in since the tech bubble years in the early 2000's. With a historical ten-year average of a P/E of 15, certain analysts believe that the equity market is over priced by 30%. This could continue to propel upward though assuming a return of the retail (small) investor into the market, who has been sitting on the sidelines since the financial crisis of the late 2000s, and the elongation of quantitative easing by the Federal Reserve Bank, keeping interest rates low and liquidity available. But low interest rates have softened the appetite for fixed income investments, like bonds, as investors are seeking higher returns that what is readily available. Further, as analysts suggest equity prices are high, they also anticipate that market interest rates will gradually rise, negatively impacting bond prices. All said, investment capital must find a home and with the challenges of generating targeted and required returns, we are witnessing a marketed shift to alternatives.

But this is not defaulted assertion, one of chasing yield, for the reallocation to alts. Alternative assets provide investors new avenues to manage portfolio risk and return, correspondingly targeting certain outcomes, addressing exogenous factors such as interest rate movement and inflation. In fact, alternatives have become a strategic imperative in most larger portfolios. Many sizable investors whom once allocated a small portion (<5%) in search of pure "alpha" (above market returns), have now developed increased internal capability to pursue alternatives as a fundamental strategy. This is not manifested as a merely an increased allocation to managed venture or private equity funds, which still command expensive costs with management fees and carried interests. This is rather the desire to commit more funds, with better economics, including high levels of direct investing in these asset classes.

For institutional investors, alternatives will account for over 26% of their portfolios, according to a McKinsey & Company 2014 research report (McKinsey Company, 2014), and this escalates to about 30% for those investors with over $10 billion of assets under management. And in respect to such portfolios, nearly ten percent is dedicated to real estate.

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REAL ESTATE AS AN ASSET CLASS

In assessing asset classes, investors' focus is generally on return, but in the context of other characteristics and criteria, such as liquidity, principal risk, comparability to other classes, interest rate levels, and volatility to name a few. And the basic premise is that the higher return being sought, the higher the risk being taken. With respect to real estate, some of its attributes are as follows:

- Its a tangible asset, i.e., you can see it and touch it.
- It typically generates return in two ways - through current income and capital appreciation
- With the exception of investing through publicly traded REITs, it is generally considered illiquid, meaning it will take some time to monetize the asset into cash, and when it is monetized, there is a high friction cost, such has there are typically selling or brokerage commissions.
- It is generally viewed as a complementary addition to the portfolio as it has low correlation with the core asset groups, i.e., its value moves independent of stocks and bonds, and thus can diversify or reduce overall portfolio risk.
- It is considered a hedge against inflation, as its income may rise through rents as overall price levels increase.
- It is financed with a combination of equity and debt. Debt investors may enjoy a fixed return through interest and principal payments while mitigating their risk with a secured interest in the property. Equity investors capture a variable and hopefully higher overall return, through rents and property price appreciation, which is enhanced by using the "leverage" of the aforementioned debt.
- And lastly, real estate's value tends to be highly localized due to market conditions, credit availability, and the timeliness and breadth of information available on the property.

In terms of investing in real estate, there are various methods, such as investing in pools of properties with others or on an individual property level, and in the financing instrument itself, namely equity or debt. As discussed, there are REITs (Real Estate Investment Trust), which enable investors to pool resources together and purchase a larger property or its underlying debt.

Other mechanisms to invest in real estate are through smaller limited partnerships or other Special Purpose Vehicles (SPVs), which also enable individual investors to pool funds to acquire medium sized properties, generally outside the range of the single investor individually. Sponsored generally by a syndicator, this further allows for diversification as well as passive investing, as sponsors serve as managers, for which they are compensated. Crowdfunding makes use of LP and other SPV structures to hold investment interests on behalf of the small investors providing for some level of bankruptcy or liability remoteness. And as stated, with either REITs or LP structures, real estate crowdfunding is the newest way to aggregate funds, but typically using online communications to facilitate capital raising and ongoing reporting back to the investors.

An additional way to gain real estate exposure is by acquiring property on one's own, be it residential or commercial, which is then rented out to a tenant. The investor, now landlord, bears all the responsibility of being the sole owner, such as being obligated on the mortgage financing, property taxes and insurer, dealing with maintenance and repair issues, and generally managing the relationship with the tenant. Certainly, there is a tradeoff in such active investing with doing something more passively, but there are costs and return limitations in the case of aggregated investing.

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TYPES

Real estate is not a one size fits all proposition and the crowdfunding industry has been exposing most to its investor communities. There are many subclasses of real estate, each enjoying different attributes, risk elements, and return expectations. Further, depending on the subclass and the purpose of the underlying financing, which investment capital is deployed, time horizons may differ, as well as the nature of return being sought. As earlier described, real estate can offer two means of return – current income and capital appreciation, and based on the structure of the financing program and type of property, returns could emanate from either or both means.

Amongst the various subclasses are (Massolution, 2015):

- **Commercial and Industrial (C&I):** This subclass generally consists of office buildings, warehouse and distribution facilities, and retail space, which are leased out to private and public parties, thereby generating rental income. Such leases can be structured on short-term or long term basis, consist of flat payments or have periodic adjustments, and can even be tied to the operating performance of the lessee, in the case of specialty retailers with "percentage rent" clauses. In recent years, there has been considerable investment in redeveloping existing properties as many of the most active urban areas are gentrifying and repositioning themselves, creating incremental lease rates, and thus yield for investors. This subclass constitutes the largest proportion of the REIT industry.
- **Hospitality:** Think hotels and resorts: these properties generate income from providing lodging paid on a short-term basis, while offering amenities, such as food and beverage services, i.e., restaurants, golf, spa, social function services and business conference facilities. Generally suffering during recessionary times as both business and vacation travel becomes anemic, hospitality participants have enjoyed a substantive upsurge since 2011, with improving economic conditions buoying both business and consumer spending. During 2014, one RECF platform offered a partial equity interest in the Hard Rock Cafe Hotel, combining both economic incentives with patronage elements.
- **Multi-Family Residential:** This subclass refers to those properties deriving rental income for periodic residency, such as apartment buildings, but also cooperatives, duplexes and condominiums, which may be individually owned, and serve as rental property or primary residences. As purchase prices of single family residential have risen over the last three years, the demand for rentals has escalated significantly, which in turn has provided compelling income streams for multi-family investors.
- **Single-Family Residential (SFR):** This represents properties independently owned and detached from other properties, which serve as either primary (or secondary) residences or used for rental purposes. The value of US SFR properties approaches nearly $20 trillion, making it the second largest asset class in the US. Globally, residential real estate has been estimated at over $110 trillion, witnessing a considerable move upward over the last four years, bouncing off the temporal nadir of the crisis years. New means of SFR exposure have been practiced during such time as large real estate private equity firms and sponsors, such as Blackstone, Starwood Waypoint, Colony and others have accumulated large SFR portfolios or have purchased bulk packages, known as "tapes", of SFR properties owned by mortgage lenders, a result of foreclosing on delinquent home loans. Such bulk purchases are generally done at deep discounts, with properties then becoming part of a growing rental home portfolio.

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- **Infrastructure:** Generally, this subclass includes projects funded by either public sector entities or in collaboration with private sector participants and non-governmental organization (NGO). Included projects would be roads, bridges, storage facilities, educational facilities, student housing, agriculture, including vineyards and forest lands. In many cases, municipalities may take the lead by "floating" tax-exempt bonds, or some combination of NGOs and for-profit organization participate with complementary funds. We have categorized this as potential revenues may be derived from such projects to repay the capital provider, such as a bond issuer.
- **Community Projects:** A subset to "infrastructure", there is a growing public sentiment and participation in financing community projects for the purpose of improving the socio-economic condition, rehabilitating dilapidated structures or creating a structure (e.g. fountain) honoring a community leader or organization. These developments are generally not "revenue generating", so no economic return or reimbursement is being sought by capital providers.

FINANCING AND INVESTMENT STRUCTURES

There are generally two approaches used in the structure of the applicable financing. The first approach is for capital providers to invest as equity participants, wherein they own a contractual percentage of the property being financed. Depending on the legal structure being used (to be discussed herein), such equity investors are "shareholders", much like stockholders are in an operating company, and whose economic return is largely based on the appreciation of such company. Certainly, such property "equity" holders may also participate in the current income that is generated from said property, such as corporate shareholders may enjoy periodic dividends. With the current interest rate environment, many real estate equity investors are primarily attracted to the stream of payments from lease income, and secondarily to the overall appreciation of the property, which would be realized upon its disposition. Net rental income as a percentage of the original investment principal may compare favorably with other fixed income alternatives, such as treasury bills and bonds, and corporate obligations.

The other approach is to serve as a lender on the project, i.e., provide capital in the form of secured debt. This has been the predominant form of finance for projects finance through crowdfunding platforms. From a risk and return perspective, investing in debt is generally lower risk, given that the property as collateral is pledged in support of the loan and such debt ranks senior to the equity in the case of liquidation. But with lower risk comes a lower anticipated return. Such return is generally limited to an interest rate, which in most crowdfunding cases, is fixed during the life of the investment. But given some apparent lack of credit availability from conventional sources, such as commercial banks, various platforms (like Patch of Land) provide high yield short term loans up to 12 to 18 months. Another area of debt financing which we will discuss is in the residential mortgage space, with platforms following the lead of non-bank mortgage originators offering attractive, price-driven, low friction mortgage loans to homebuyers and homeowners.

In either the debt or equity structures, sponsors or the platform will frequently set up an investment entity, a Special Purpose Vehicle (SPV) as earlier referenced, which serves as the aggregator of investor funds and acts as the nominal owner of or lender to the project. For legal, regulatory and management reasons, the SPV will be the single owner of the investment structure and be overseen by the sponsor, who will manage the project on an ongoing basis. The SPV structure has been used in large part to have a single "voice" or vote on select matters, and would represent as a single shareholder for corporate gover-

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nance purposes. While there are many SPV structures, the typical form is a Limited Liability Company/ Corporation (LLC), which blends elements of a corporation and a partnership, providing creditor and liability protection for LLC members, and pass-through tax treatment so that the SPV is not taxed as the entity level, thereby avoiding two layers of taxation – at the corporate level, and when distributions are made, as the member or shareholder level.

Table 1 is a comparison of the two financing approaches (Massolution, 2015).

It is worth noting that with the onslaught of crowdfunding, approximately 80% of the platforms and 90% of the funds raised to date have been in a loan or debt structure. On one hand, firms like Patch of Land, have made a market in providing short-term, high-yield loans to sponsors and developers seeking to renovate and "flip" a property. In 2014, Patch completed approximately sixty-five transactions, with an average transaction size of $350,000 (Massolution, 2015). Since then, both its overall capacity and average transaction size have increased precipitously.

The largest of the RECF platforms in terms of capital deployed, LendInvest, has focused on providing mortgage loans to aspiring homebuyers and homeowners, predominantly in the greater London market. During 2014, it is estimated that over $200 million of mortgage loans were originated by LendInvest, with a global reach continuing.

Table 1.

Structure	Debt	Equity
Role of Investor	Lender	Owner (Shareholder)
SPV Structure	Limited Liability Company, Limited Partnership, S-, C-, B- Corporation, Delaware Statutory Trust	Same
Fundamental Characteristic	Loan collateralized (secured) by real property and assignment of leases	Ownership Interest in the Property
Documentation	Promissory Note and Mortgage or Deed of Trust	Title of ownership on Grant Deed or Warranty Deed. Shareholder Agreement
Rights and Defaults	Creditor Rights – can pursue foreclosure in the case of default, such as non-payment of interest and/or principal when due	Shareholders Rights – Subject to underlying Investor Rights Agreement
Terms and Conditions	Fixed Maturity and Payment timing; Limitation on additional debt; balance sheet and operating covenants	Evergreen Maturity; voting rights; registration rights; and rights of first refusal on subsequent financings
Investor takes Property Price Risk	No. Debt is a fixed principal obligation	Yes. If the price rises, the investor enjoys gains. If price drops, investor incurs loss.
Economic Return	Periodic payments of interest on outstanding principal balance of loan, plus the return of principal.	Periodic payments of Income or dividends, plus participation in the price movement of the property, either up or down.
Liquidation Preference	Priority position over Equity.	Subordinate to Debt.
Transferability	Yes, subject to securities laws	Yes, subject to securities laws
Legal Recourse to Owner	Possibly, depending on legal structure of investment vehicle and terms of Debt by Lender	No. Generally limited to investment amount. Sometimes Equity Agreement includes capital calls, i.e.., request for additional equity investment.

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PLATFORM APPROACHES

While we have identified during 2014 nearly 100 platforms engaging in some level of real estate finance intermediation, such platforms take different approaches to how they conduct their activities. This is really a matter of what they do, and for whom, as well as the types of economics they may derive.

We distinguish between "objective" and "subjective" platforms, or in more colloquial terms, "marketplace" facilitators and "direct issuers". In the former case, there are numerous platforms that have constructed their respective platforms to serve as a *utility* for sponsors and other types of fund raisers. They have built the infrastructure for sharing an investment proposition with their online network of investors, and handle most activities through the fundraising process. Simply, their sponsor client is "renting" the platform to enable the fundraise, wherein the platform is compensated in usage fees. From a business model standpoint, these platforms are driven by volume of transactions and increase fee generation.

In the "subjective" category, this is generally sponsor-based, i.e., the platform is directed as an extension of the sponsor, possibly even owned by the sponsor to efficiently raise funds. Relationships with the investor network likely pre-exist, with now such relationships being moved from an analog engagement to one digitally. This is very much the 21st century version of the older syndication model, where technology is used as the means of communication, but the economics of the syndicator remain the same – earning various layers of fees, coupled with a significant profit participation.

There is a third approach, considered a hybrid, which in most ways is a marketplace utility as described above. However, as an added feature to the service offering, certain platforms have arranged for interim financing, via lines of credit, where the platform will pre-fund the investment opportunity, assuring the sponsor has the capital to pursue his effort, and then take it upon themselves to remarket on a fractional basis the project to its investor base. Taking principal risk in terms of pre-funding, such platforms remain confident that their investors will afford the necessary take out. A number of the platforms that have raised venture and operating capital, have used their balance sheet liquidity to enable such warehouse financing to take place, rather than third party credit facilities. Of course for taking such risk, these hybrid platforms earn higher fees and may in fact participate in the overall performance of the financed project.

THIS IS STILL A FINANCE BUSINESS

While we can wax on about the merits of the internet in capital formation, a most pressing palaver is one that is fundamental within the media industry: what is more crucial - content or distribution – to the success of a platform? Certainly we can default to affirming both, indicating that one needs to develop strong and absorbable content, while cultivating reach. But in the end, finance is an information business, and although the 'net enables investors to be engaged globally at tremendous pace, the quality of the content will determine winners from losers. Democratizing the investment process by introducing more levels of investors, one need take heed that while enabling investors to participate, are they being delivered appropriate information to make an informed investment decision, and further, do they have the acumen to comprehend the content and its caliber? And do the new world intermediaries, in their betrothal to online engagement, actually assess and, as many espouse, "curate" the transactions with the appropriate level of insight and discipline, or shall we see the exposure of deals adversely selected, as fundraising sponsors see this as a new, and maybe only, path to raising funds for their projects?

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As a directed aside, there has been an active, though lengthy, exercise at the Securities and Exchange Commission to reassess the current definition of "accredited investor" (Accredited Investor, n.d.). As of now, nearly every RECF platform exclusively directs its opportunities to the accredited investor. Developed as part of the Securities Act of 1933, the SEC provided an exemption to public registration of securities if issuers were to sell to those investors of means, namely those that had both the financial capacity to lose the capital they invest, but also had the wherewithal to investigate the merits of the opportunity. While earlier amorphous as to what constituted "means", in 1982 in a partial rewrite of the '33 Act, Regulation D was established defining an 'accredited investor' in terms of specific income and net worth levels. Yet since 1982, the absolute levels of income ($200,000 for single natural persons; $300,000 of married couples) and net worth ($1 million) have not been adjusted, with the exception of the personal residence exclusion from net worth. Well, over thirty-three years, one does recognize the value of the dollar has been impacted by time and inflation. Inflation adjusted, income and net worth levels to remain on par with 1982 would see a "bump" in income levels to $600,000 and a net worth threshold of over $3 million. This would in effect "de-democratize" the private investing world, removing nearly 70% of the currently classified "accrediteds" from the market.

In current Commission discussions about the definition, a key proposal deals with the financial acumen of the investor to determine whether or not s/he is capable of assessing the risks, given professional status, academic training, or germane credentials, such as a CPA or CFA. While not promulgated, the concept of credentials and observed acuity to determined accredited status makes tremendous sense, and, as stated, the ability to understand and assess the risk was core to the original definition. It does not go unnoticed that most of the wealth of the US is based in privately held companies and the ownership represented in unregistered securities. The existing exclusion for "insiders" (i.e., directors and officers) is predicated on knowledge of the company and its prospects.

This diversion into how the SEC may reconstitute the definition of accredited investor is apposite to the role of content provided by the crowdfunding platforms. Depending on the platform, and how they consider their role as a procurer of content, it is implied that is a level of responsibility on these screens to investing to provide adequate and comprehensible content for decision review and making, particularly as they are being paid to facilitate

CUSTOMER PROPOSITIONS

While we recognize that certain platforms are appendages of direct sponsors to supplement their direct fundraising activities, we will really address those platforms that are "fee for service" providers. Specifically, a sponsor of a real estate investment project is engaging a crowdfunding platform to assist in and manage the fund raising process, as would an investment bank or registered intermediary. To wit, the platform is compensated, largely on its success to raise the requisite funds through its online intercession with its installed investor community. Because of securities regulations, this is a 'closed system' where investors need to be registered within the platform and communication on any offering is done within a secured environment. In effect, while the platform gets compensated by the sponsor (user of capital), the sponsor engages the platform given its base of investors, prescreened with a hopeful appetite for the 'product' the platform avails. In essence, as with any intermediary, there are two customers - the buyer and the seller, in other words the sponsor and the investor.

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LET US REVIEW THE PROPOSITIONS FOR AND TO BOTH

Why would a sponsor engage a platform? Simply, to raise capital on its behalf. The use of intermediaries to drive the fundraising process is an old discipline, but one that typically has scale issues. The time and effort to develop content, package, distribute, engage and close investors is considerable, and sponsors may generally choose to allocate that responsibility to "hired help". Intermediaries, particularly investment banks, are engaged given a demonstrated ability to work with stables of investors, understanding their respective desires and inclinations for investment opportunities.

Sponsors, or users of capital, have a series of motivations for using a real estate crowdfunding (RECF) platform. Fundraising becomes much more efficient, as the financing process is the creation and delivery of information passed on to investors for review. By using an internet-based platform, the reach "horizontally" and "vertically" is tremendously enhanced. From a nomenclature basis, "horizontally" addresses the breadth of reach using online means; in other words, as simple and timely as communication can take place with an investor in San Francisco, the same communication concurrently can take place with investors in New York, Los Angeles, Chicago, even Rome and Hong Kong. Rather than using analog means, simultaneous distribution and reception of content through digital means has altered the landscape measurably. This is about telling a story "singularly to a plurality", as earlier stated.

Additionally, the use of technology allows the investment story to be shared in a more robust way, rather than merely in written format. The ability to depict the story "vertically" can enhance the investor engagement, deepen the knowledge of the project for the investor, which together can improve the likelihood that the investor may participate. Being able to use content beyond that which is "flat", such as script and photographs, sponsors and platforms can utilize videos, 3-dimensional depictions, interactive modeling, and provide online interviews with the principals: all of which creates more resonant story-telling.

Beyond the sharing of the investment to the network, technology also creates efficiency in ongoing investor management. Certainly, pitching the opportunity is key, but the administrative benefits through the fundraising process, say which may require updates, amendments or edits, can be performed with greater efficacy, and including post-transaction reporting. Do note that applied digital technology also addresses the ability to deal with more participants which may have smaller individual investments. Imagining an analog offering of $5 million, with a minimum investment of $5,000. Translating into up to 1,000 investors, this could be an absolute nightmare if dealing solely with analog (paper and phone) communications. This ability to deal with more fragmented networks enables broader reach to more levels of investors as compared to requiring larger minimum investment sizes.

And from the sponsor's standpoint, by having the ability to aggregate smaller sums from a larger contingent of investors, may in fact improve the overall economics of the deal for the sponsor. Many times, when a single large investor, *ala* an "anchor" investor, participates, such investor may desire to improve its own economics as it may view itself as critical to getting the deal done. This may translate into lower management or transaction fees to be earned by the sponsor, or a reduced profit participation. Either way, the "democratization" of investment can avail benefits to both the smaller investor and the sponsor.

Lastly, a growing motivation for sponsors to use such platforms is that financing may be committed up front. Whether a sponsor-driven platform or a hybrid, numerous platforms are taking "principal" risk, wherein they are prefunding the investment, intending to lay off the investment to their investors afterwards. For the sponsor, he receives his targeted funding without the risk of a crowd market's dismissal

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of the opportunity. Quite true that there is a cost for such "bridging", but for the sponsor, his returns are more clearly based on the funded project's performance, so eliminating the risk of the initial step (of funding), it appears to be a worthwhile tradeoff.

AND FOR THE INVESTORS

We also much consider the motivations from the other side of ledger, namely that of the investors. There are a number of reasons for the growing participation in crowdfunded real estate opportunities. One observation is that investors can have access to incredible numbers of investment alternatives, delivered efficiently and comprehensively in a web environment. Rather than searching out investments through reams of paper prospectuses, an investor can review either on one RECF site or various sites a multitude of investments. Like angel investing and the syndication activities of years gone by, much private placement activity was highly localized, i.e., that investors with relationships with sponsors were generally geographically nearby, and thus the opportunities were also characterized by such local flavor. Now, with the expanse of online communication, investors can be exposed to sponsors and projects from hundreds of locations, which allow for broader opportunity and diversification.

Additionally, within the breadth, investors also gain access to varying structures and return elements. Different platforms may offer short-term debt while others, longer-term debt, or possibly a hybrid of debt and equity to enhance a prospective return. Also, as with syndications, investors can benefit from the active engagement of the sponsor, rather than pursuing real estate investing on their own, dealing with "toilets, tenants and taxes". Sponsors, and hopefully the platforms, conduct significant review of the project, its potential and its risks, disclosing such to enable informed decision making. For many investors, they desire to deploy capital on a passive participation basis, relying on those sponsors to deliver the returns being advocated.

But this is an investment process that is not without challenges for the investors, which must be recognized. In general terms, the investments being facilitated by the platforms are unregistered securities, and as such, have a high degree of illiquidity, in other words, they cannot be resold on a simple and efficient basis. While there are discussions by some platforms of developing secondary markets and trading, this shouldn't be expected in the near term, and thus investors need realize that an indefinite holding period is likely.

And as mentioned above with respect to an "anchor" investor possibly impacting the economics of the sponsor, the lack of one can prove deleteriously expensive for the participatory investor. Whether through egregious fee levels, profit participation, and administrative expenses, investors are subject to the financial whims of the sponsor, which according to certain accounts, sponsor and non-sponsor platforms may enjoy as much as 40% of an investment's economics, at times without any principal exposure. This can serve to dampen the normalized returns to the capital provider.

One other area that has yet been broadly tested has been the role of the platform in a transaction that may not perform as anticipated. While sponsor-directed platforms have an economic motivation to deal with challenges on behalf of their investors through profit participation, other "objective" platforms may find themselves in a conflicted position. For example, while the platform is raising capital for its paying client, the sponsor, it has developed and brought to the table its investor network to participate in the sponsor's project. What happens in the case difficulties ensue with the project, such as cost overruns, financing or marketing issues, or even suspect activities? What if the financing needs to be restructured

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or refinanced or compressed from a loss? Which side of the table does the platform sit on – that of the sponsor, who has compensated the platform or that of the investors, which need to feel that their interests are being addressed in a fiduciary capacity, in hopes of mitigating risk? This to date has not yet been tested, with some of the platforms indicating the "outsourcing" to others for risk-mitigation and restructuring assistance, we do believe the jury is out on how sideways deals may be moderated and remedied.

SIZE OF THE MARKET

Over the last three years we have seen explosive growth in the real estate crowdfunding industry. Initially buoyed by a mere handful of platforms engaging in short to intermediate term commercial real estate loans or meager equity participation in relatively small rehabilitation or development projects, we have now witnessed a seismic shift in both number of platforms as well as types of financings being conducted. This phenomenon further has global breadth, as markets through Asia and Europe, Latin America and Canada, have developing platforms, particularly in the area of residential mortgage lending. In fact, one of the most notable crowdfunding projects was consummated in Colombia, where Prodigy Networks raised on behalf of the sponsor, approximately $172 million from 3,100 investors. A $240 million, 66 story, mixed-use residential/commercial building, BD Bacatá, is the tallest building in Colombia and certainly marks the power of the crowd.

The real estate crowd funding market continues to accelerate its growth and we anticipate this to continue as key segments, like originating single family mortgages, benefit from continued restrictive behaviors in the commercial banking market. From meager beginnings in 2012, where less than $20 million of financing was intermediated through online platforms, according to Massolution 2015 RECF Industry Report, we witnessed over $1 billion in 2014 volume with 2015 expected to advance by 2.5x that level, achieving about $2.6 billion across real estate asset classes and structures (Massolution, 2015). A snapshot of the market's growth is shown in Table 2 as we look at it from different perspectives.

Type of Real Estate

Since the beginning, C&I real estate has dominated the RECF product suite, with the exception of the BD Bagata project in Colombia in 2013, a mixed use (retail/residential) property sponsored by Prodigy Networks. Multi-family and single family residential properties continued to find interest within the platforms either in terms of "fix-and-flip" short term financing, or more recently, the growing appetite for first mortgage loans requested by sponsors in longer term rehabilitation and repositioning projects or homeowner/homebuyers in permanently financing their homes. Certainly, LendInvest, to date the most prolific of the platforms in terms of volume, has arranged over $200 million of mortgage financing in the London market.

We do anticipate that the growth in the home mortgage space will continue at a solid pace and to include the RECF players, as alternatives to bank originated mortgage loans have been on the rise since the financial crisis of 2008-2010. Non-bank originators now account for over 40% of US mortgage loans, of which 90% are ultimately being purchased by the government sponsored enterprises, Fannie Mae and Freddie Mac (Light, 2014). Notable US student loan platform, Social Finance (SOFI), expanded its product offering in 2015 by introducing higher loan-to-value, interest only owner-occupied purchase money and refinance loans, and is estimated to close nearly $400 million during this calendar year, with

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Table 2. RECF growth (in millions)

	2012	2013	2014	2015	2016	2020
Type of Real Estate						
C&I	$11.0	$113.0	$742.0	$1,425.0	$2,870.0	$35,000.0
Hospitality	$-	$10.2	$27.0	$55.0	$150.0	$5,800.0
Multi-Family	$5.0	$170.0	$53.0	$254.0	$450.0	$18,000.0
Single Family	$2.0	$77.0	$175.0	$825.0	$2,350.0	$65,000.0
Other	$1.0	$7.0	$18.0	$55.0	$125.0	$3,500.0
Geography						
North America	$12.0	$184.4	$530.0	$1,320.0	$2,940.0	$47,000.0
Europe	$6.0	$32.0	$426.9	$1,070.0	$1,945.0	$26,500.0
Asia	$0.5	$2.8	$21.0	$150.0	$850.0	$43,500.0
Latin America	$0.5	$157.0	$35.0	$70.0	$155.0	$8,500.0
Other (inc.Africa, Oceania)	$-	$1.0	$2.0	$5.0	$55.0	$1,800.0
Financing Structure						
Debt	$7.0	$159.0	$768.0	$1,923.0	$4,399.0	$87,000.0
Equity	$4.7	$218.0	$187.0	$570.0	$1,346.0	$39,500.0
Royalty	$0.3	$1.7	$16.0	$45.0	$75.0	$250.0
Hybrid	$7.0	$17.0	$42.0	$77.0	$125.0	$550.0
Total Financing	$19.0	$377.2	$1,014.9	$2,615.0	$5,945.0	$127,300.0
YOY Growth		1985%	269%	258%	227%	

institutional investors purchasing the growing pools. Through the European Union, Asia and elsewhere, mortgage originators are still largely the commercial banks, with covered bond programs offering the liquidity for refunding, with the commercial banks participating with many of the platforms as they become new source of originations.

Geographically, the US still dominates with over 90% of the North American volume. Of the 85 platforms identified by Massolution, 70 were domiciled in the US, with close to a dozen new platforms getting ready to launch in 2015. Europe, led by LendInvest, is witnessing additional activity across sub-classes of real estate, and the current year should see more than a doubling of total financing activity. Asia, while slower to develop in the real estate market, notes that dozens of platforms have launched or are soon to launch to hopefully follow the exceptional growth experienced in the peer-to-peer lending environment, which has built a $20 billion annual market with close to 1400 platforms in China alone.

As mentioned, the financing structure of most real estate crowdfunding projects takes the form of debt. Whether by ease of use or capturing the demand for higher yield, debt structures have been used across types of property and geographies. This is not uncommon across other financing segments in the crowd and P2P lending arena. P2P consumer lending, led by stalwarts LendingClub and Prosper, carved a niche for yield hungry investors, while SME (small to medium sized enterprises) platforms, or small business lending, has also attracted yield players as well as small banks, which are asset hungry, but can't originate on the same cost structure. In fact, OnDeck Capital, a leader in SME lending and a 2014 IPO, had disclosed that its average loan interest rate is over 51% per annum in its S-1 filing in

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(now since lowered to 28%). Why with interest rates as stratospheric as that are platform originations steamrollering financing across classes and geographies? Certainly investors are keen, but the overall availability of credit has led many borrowers to trade access to credit over cost of credit.

There is a confluence of factors that we believe account for the tremendous rise in marketplace lending, including of course within real estate. While we believe the marketplace lending is disruptive and providing a new avenue for capital to reach desirous capital users, we believe this is largely a response and opportunity afforded due to the financial crisis of 2008-2010 and the legislative and regulatory oversight placed upon the commercial banking sector. Whether from the Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, or the Third Basel Accord of similar year, more stringent capital levels, risk management and compliance requirements, stress testing guidelines, and market liquidity risk assessment have collectively contributed to how commercial banks conduct themselves and practice the art of banking and finance. In simple terms, the banking industry was subjected to a major scolding by the regulatory regime, which viewed the practices and results of the major banks threatening capital markets and amplifying systemic risk within general economies, leading eventually to a pull back on the industry's traditional business line, the extension of credit. From 2009 through 2013, lending fell off tremendously and then began to rebound, but this laid an opening for others to enter the field, drawn largely to areas where the banks had taken a significant hit, such as commercial real estate loans, consumer credit, and single family mortgage loans. This has become a bastion of the crowdfunding contingent.

With blistering penalties, added compliance costs and requisite reserves, coupled with an interest rate environment making it difficult to generate needed loan/deposit spreads, the lending activity of most banks, large and small, witnessed slower growth. Certainly, coming out of the recession period, centered with the financial crisis, there has been growth, but we see non-bank entrants playing increasingly larger roles. Many major banks generated the preponderance of their respective income from activities outside of conventional balance sheet lending, but whether due to the Volcker Rule or other disciplines, such activities have been required to be tempered if not eliminated. What's left is low margined business, that of credit extension, particularly if these lenders do lend and hold the loan. True, there is aggressive loan sales, particularly in the mortgage space (to the GSEs), but for markets that either securitizations or sales cannot take place, it seems like the industry would rather sit on the sidelines, holding (somewhat) gilt-edged sovereign securities, avoiding upped capital and reserve levels if they choose to reenter the lending streams as once they did. It is worth noting that over the last thirty years, the number of commercial banks have been reduced from north of 14,000 to about 5,500 currently (see Figure 1).

This recent retrenching of the banking industry during a period of external capital demand has given increased rise to what's become know as "shadow banking", i.e., the extension of credit outside the regulated commercial banking framework. According to recent reports, credit extension outside the banks now rivals loans on bank balance sheets in the US (59% for banks to 41% for non-banks, per Goldman Sachs) (Nash & Beardsley, 2015). And in fact, total liabilities in the "shadow" are estimated to exceed $120 trillion, including swaps and other derivatives.

But to regress, the changing and challenging banking environment has given rise to new players to address the funding needs of consumers, businesses, sponsors and investors. We do believe this to continue indefinitely and shall assume that in the near term, the buoyant competition between banks and non-banks will assimilate into various partnering efforts (see Table 3).

Table 3 represents the top producing RECF platforms according to the Massolution 2015 RECF Industry Report (2015). Some of the notable findings are:

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Figure 1. US number of commercial banks graph

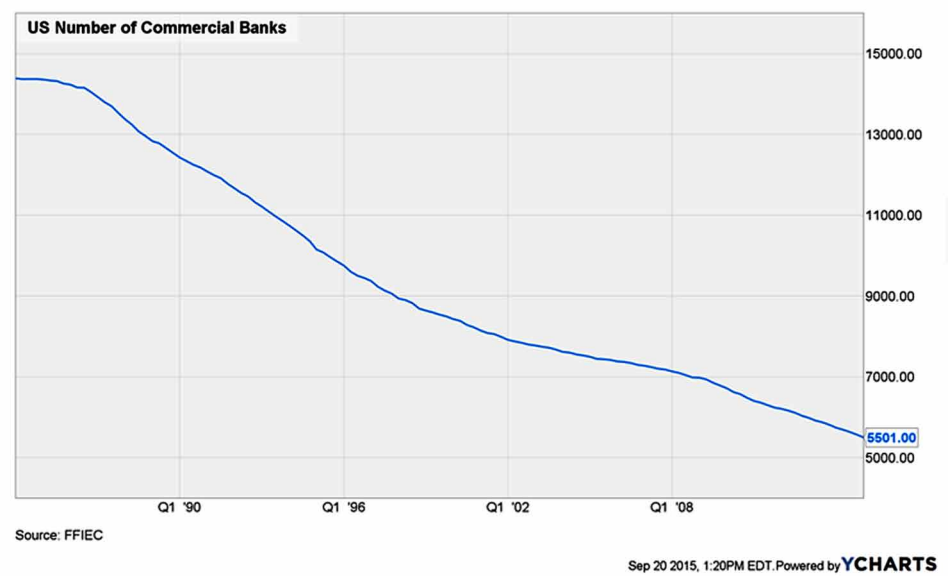


Table 3. RECFP volume ranking 2014

		Debt	Equity	Hybrid	Volume	Country
1	LendInvest	x			>$250m	UK
2	Prodigy Networks	x	x		>$125m	US
3	WeAreCrowdfunding (Carlton)		x		>$50m	US
4	Groundbreaker	x	x	x	$25m-<$50m	US
5	RealCrowd	x	x		$25m-<$50m	US
6	RealtyMogul	x	x		$25m-<$50m	US
7	SOFI	x			$25m-<$50m	US
8	Money 360	x			$25m-<$50m	US
9	CrowdMason	x	x	x	$25m-<$50m	US
10	Wealth Migrate		x	x	$25m-<$50m	US
11	DiversyFund	x	x	x	$25m-<$50m	US
12	Asset Avenue	x			$15m-<$20m	US
13	Early Shares	x	x		$15m-<$20m	US
14	Ifunding	x	x		$15m-<$20m	US
15	Fundrise	x		x	$15m-<$20m	US
16	Patch of Land	x			$10m-<$15m	US
17	CrowdBaron	x	x		$10m-<$15m	HK
18	CoAssets	x	x	x	$5m-<$10m	SPORE
19	CrowdStreet	x	x	x	$5m-<$10m	US
20	Sindeo	x			$5m-<$10m	US

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- Most platforms indicate a capability to avail both debt and equity finance on behalf of the sponsoring issuer. Ultimately, we have seen that 90% of the financing that has been done by the platforms is in a debt-like structure. The most common is a short term first lien loan, generally being used to finance a rehabilitation project.
- There is a growing movement into the owner-occupied single family residential mortgage space, with SOFI and Sindeo, playing off the success of LendInvest in the UK.
- Volumes continue to increase, particularly for those that have received some form of venture funding. They have had the ability to leverage their balance sheets, and either commit capital to close deals up front, later to syndicate the investment to their investors.

There has been additional movement in the recent year with a number of platforms now funded, beginning to experience some level of scaling. It is still suspect as to the overall revenue generation and sustainability, but we are seeing progress. Some of the RECF platforms (Times Realty News, 2015) that are demonstrating recent growth and deserve some notable profile are:

- *Realty Mogul* is a well-funded RECF platform which recently completed a $35 million Series B financing round, moving its total funding to north of $45 million. It has apparently consummated $80 million of property financings, largely debt, though there is a mix of equity participations in larger deals which it provided a minority tranche of the total equity. The company reports that it has invested in 240 different properties, which have a total project cost of nearly $500 million.
- *Fundrise* garnered quite a bit of visibility when it raised a significant funding round ($40 million) early in its development, from investor social media company RenRen and a series of New York commercial real estate developers. Uniquely, Fundrise has not limited its activities to accredited investors like the rest. It was first (and only) RECF platform to conduct securities offerings under Regulation A, i.e., under $5 million of funds raised, and before the Regulation A+ limits were established. It is estimated that Fundrise has completed $60 million of capital raises.
- *Patch of Land* has carved itself a niche is high-yield short term debt investments. Reducing the size of the participations to $5,000, accredited investors can participate in these short term loans, which yield from single to mid-teen digit returns. To differentiate its efforts, it has been practicing bridging the financing, using its own balance sheet, to fund a loan, later syndicating it to its investor network. Having raised over $24 million in venture financing, it has the capability to warehouse many of the loans it originates. Additionally, it is one of the few firms that is investing as a principal in its transactions. As of this writing, Patch has funded nearly $27 million in over 100 projects.
- *RealtyShares* began its activities in 2013 and has experienced some decent growth by offering both debt and equity participations in commercial and residential projects. Noteworthy, it has even included a bitcoin payment option. Recently, the company raised a $10 million Series A round. Thus far, it is estimated that RealtyShares have raised approximately $10 million for projects this calendar year.
- *iFunding*, another player in the real estate space, further reduces the minimum investment to $1,000 for accredited investors, placing such money into a variety of projects, whether multi-family residential, office or warehouse. It continues to experience growth as it placed just over $15 million in invested capital last year, and has seemingly doubled the volume through 2015.

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- *EarlyShares* is another emerging platform that actually began as a corporate finance platform, raising capital form early stage growth companies. Catching the wave of real estate investing, it began to focus on high-yield real estate investments, marketing average preferred returns of 7% and targeted overall internal rates of return of 18%.
- *Sharestates* is a New York based platform offering one-year senior secured debt investment opportunities, largely along the East Coast. The type of real estate focused on is generally multi-family, but the firm has moved into other subclasses. Of recent note, it inked a partnership with Ranger Capital, a mixed strategy asset manager, that has been increasingly committed to expanding its alternative asset portfolio. Under the partnership, Ranger is planning to invest up to $30 million in Sharestates deals.

HOW DO THE RECF PLATFORMS MAKE MONEY?

Many platforms have different operating approaches and as such they derive revenues in different ways. It is almost tautological on how the platforms state the benefit to each of their respective constituencies. There have also been certain accounts that the fees charged along the way have been excessive, on a deal by deal basis, where as much as 30% of the economics of a deal may be subsumed by the platform, rather than enhancing investor returns. Table 4 is an overview of the variety of fees or methods of compensation derived by the platforms.

HAVE THEY DELIVERED?

While we have discussed the growth in the market in terms of the number of operating platforms as well as growing volumes of transactions, can we state that the platforms are really delivering a "new world" of real estate financing and investing? Here are some takeaways from our research over 2014 (Massolution, 2015):

- Total project costs per deal ranges from $300,000 to $10,000,000.
- Funded participation by the crowd ranges from $150,000 to $4 million.

Table 4.

Compensation to RECF Platforms	% of Industry Revs by Fee Type
Application/Advisory Fee	3.0%
Construction/Development Fee	1.0%
Platform Usage Fee	20.0%
Transaction/Success Fee	32.0%
Financing Fee	10.0%
Management Fee	18.0%
Administrative Fee	8.0%
Carried Interest/Profit Participation	8.0%

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- Average crowd funded deal size in 2014 was $800,000.
- "Crowd" is being redefined – there are more institutional investors.
- Over 500 campaigns were run in 2014.
- Platforms averaged between 4 and 25 campaigns, but this is changing with size of platform and type of financing offered. Certain platforms, such as LendInvest consummated nearly 350 campaigns in two years.
- Success rate of completed funding – 65%, with that number improving with more platforms moving towards prefunding deals.
- Average all-in yield was 11.2% - 7.8% current + 3.4% capital appreciation.
- And – investment results are promising, as most deals are short-term loan, with good performance, yet equity is a longer term hold, which is too early to tell how returns will be.

DRIVERS TO FURTHER GROWTH

By all accounts, this is a growth space. While we recognized under 90 platforms in 2015 within the US, we now are identifying close to 150. Again, this doesn't address the dozens of international platforms through Asia and Europe. And many of the existing platforms are accelerating their respective growth, given both macro- and micro- conditions in the market. But growth, quantitatively and quantitatively, can be much different based on strategies and resource availability. With an apparent "wind at their backs", here are a number of drivers to continued growth:

- Relatively low interest rate environment leads to higher allocation to real estate investment allocation. The search for yield is being partially satisfied with offerings of high-yield short term secured loans or payouts on attractive lets.
- Many sponsors are developing their own platforms as the ability to connect, control, converse and even cajole investors through online vs. analog communication has proven beneficial. We are also seeing that a number of intermediary platforms are now deciding to take "principal" investment risk, and hopefully add to their company value through portfolio returns.
- Continued regulatory and capital pressure on commercial banks, a fundamental source of commercial real estate (CRE) lending, has created a bit of credit pull back, opening opportunities for crowdfunding and other shadow banking endeavors.
- Improving sophistication of platforms in terms of what they offer to sponsors and investors. Whether that is bridging the financing, or offering solid aftermarket reporting, those differentiators can accelerate preference to certain platforms.
- Capital availability is a huge stimulant to growth. And that is capital in two flavors. A number of platforms have raised internal growth capital from the venture community, which allows them to build capacity in deal review and processing, as well as using their balance sheets to securing bridge loans to pre-fund the crowd offerings. Further, institutional investors, similar to the P2P lending space, are increasingly participating in this space, with dedicated capital commitments to select platforms. In one respect, this negates the "crowdfunding" descript, as one or two larger players taking down an entire issue would not be characterized as a "crowd". So this reverts to the earlier observation of RECF is the digitized version of the 1980 syndication model.

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- With the aforementioned capital, and pre-committed and sizable investor participation, various platforms are doing larger deals. Like the P2P industry, the processing costs of a transaction, independent of size is largely the same. With larger deals, where transaction fees based on size are paid, the economic model improves.
- We anticipate seeing more strategic alliances and alignment between these *avant garde* platforms and their banking brethren, particularly in areas that origination costs for the banks has become unworkable. This is particularly expected in the single family residential mortgage market.
- While the mantra thus far has been about "deal flow" and "upsizing the deal", we do believe that in the end, within the finance world, the primary proposition of value will arise from data production and monetization strategies. With the exception of a mere handful, data monetization has not registered as important. We believe this will change.
- And while real estate is contained within the illiquid alternative asset grouping, as transaction volumes in size of deal and number, we anticipate seeing a return of the securitization market, with private label securities, which may include pools of crowdfunded offerings. SoFi has successfully securitized nearly $1 billion of student loans, and is intent of doing the same with their direct mortgage business.

And in discussing opportunity, we cannot be naïve in assuming clear sailing for unbridled growth. True, there will be obstacles. Some of the concerns to growth emanate around risk management, which in terms may alter the success of any particular crowdfunded investment. Could it be poor underwriting of the risk up front, i.e., adverse selection of deals; or post-funding oversight, i.e., if a deal goes sideways, how is risk mitigated and managed? Here are some of the issues that we believe will arise, which could have a dampening effect on the growth:

- While real estate crowdfinance may facilitate $2.5 billion in fundings for 2015, it is less than 1% of overall real estate financings conducted in the US. With an estimated $1.5 trillion in single family mortgages and just over $1.2 trillion in CRE financing estimated in 2015, the role of the "crowd" is *de minimus*. Nonetheless, the marketplace finance platforms are operating in the domain of a highly regulated commercial banking industry, and as one pundit suggested "If it looks like a bank, it could get regulated like a bank". One of the provisions with the Dodd-Frank Wall Street Reform Act addressed substantive non-bank financial firms, and in its "too big to fail" concerns established oversight on selected "systemically important financial institutions" (SIFIs). Using largely balance sheet tests (e.g., asset size, leverage, debt levels), these SIFIs are subject to the compliance requirements of their commercial banking compatriots. Among the acknowledged SIFIs are Metropolitan Life, Prudential, AIG, and GE Capital (Wikipedia, n.d.). Will any of the marketplace platforms become the size to warrant SIFI oversight? Highly questionable. But the regulatory and legislative tails into those operating in the "shadows" is a possible concern, independent of size.
- Risk management, particularly for problematic transactions, will reveal a needed capability and sustainability of many platforms. As we saw in the 1980s, as capital was abundant, syndicators were deploying funds is less than admirable projects. There compensation structures were premised on getting the deal done, with front end fees, only to see the ultimate project waste away.

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Might we witness the same with the current portfolio of RECF platforms? One mitigating factor is that most transaction structures involve senior secured debt, as opposed to the earlier equity participations. Certainly deploying creditor rights as opposed to being subjected to them offers a risk mitigant this time around.

- Further to the above point, we are currently seeing a weakening in credit performance in P2P and SME lending. Is this due to stretching one's underwriting protocols to "do the deal" and sustain growth, or are broader economic conditions weakening? Finance is as much science as it is art. We incurred the wrath of over-lenient financing from the banks leading to the financial crisis of 2008-2010. Might the quest for growth lead to underwriting leniency?
- Currently, the transaction sizes within RECF are relatively small. The average transaction size in 2014 was under $800,000 with the mean transaction size about half of that (Massolution, 2015). While we know there are platforms that have raised capital, are using their balance sheets, and have institutional commitments for what they offer, most are still undercapitalized and focused on very small transactions. This raises the question of business and revenue models, and their respective sustainability. If a platform successfully consummates a $500,000 senior loan, it may make in total fees up to $35-$40,000. With personnel review, infrastructure, technology and general overhead, dozens if not more transactions need be processed to achieve breakeven if not ongoing profitability. Note that such transactions are generally not review per a simple credit scoring module, as each property, sponsor, risk factors and other variables are different. So we ask, at what point does this become a scalable model? Intermediation in these CRE and other transactions can be laborious, even if you use online connectivity with investors. There is still front end analysis, structuring, and monitoring to be done. How much margin can one derive if one only generates $40,000 in gross revenues?
- And as a subset to the above, how should these platforms be valued by the investment community? Should they be valued off of transaction volume, revenues, earnings, or other self derived metrics, such as size of investor base, possibly ongoing (recurrent?) portfolio management fees? Late last year, as Lending Club and OnDeck Capital prepared to price their respective IPOs, this author questioned the market valuations place on them. In comparative terms, while in the consumer or small business lending businesses, they were being valued at revenue and asset multiples 10-20x other companies with larger dedicated franchises, such as Wells Fargo, Capital One, and JPM Chase. Yes, those are banks, but they have deployed significant technologies to conduct their business, and they are diversified. Should LC or ONDK enjoy what can only appear as "technology multiples" vs. financial institution multiples, even though the fundamental business is lending. Since the IPOs and the immediate aftermarket run up, both have settled at about half their IPO prices, and are doing whatever they can to perform and justify even the current values.

CAPITAL MARKETS, ENTERPRISE VALUES AND EXIT STRATEGIES

As earlier references, capital access for the platforms has been a key driver to their respective growth. We have witnessed many raising venture capital even some strategic funds to progress. Further, firms like Realty Mogul and Sharestates have, like the top P2P lending platforms, received committed capital for usage within their markets to insure capacity to fund offerings.

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Dot.com Redux?

During the early 2000's, the investment markets got whisked up in the next generation of commerce, namely the *dot.com* phenom. It appeared that a new value proposition was placed on companies that decided to move their business intercession to the internet for reasons of more efficient and less costly distribution. In fact, many upstarts decided to go directly on line to sell goods and services bypassing conventional distribution and sales channels. In many ways, there seems to be similarity in the growth of online financing platforms. During the dot.com days, there were those that succeeded (and still are) while there were many crash-and-burns. Rather than espousing the digital connection as the driver, the winners knew their basic businesses: Ebay in auctions, PriceLine in travel, Amazon in logistics, and eTrade in brokerage. But then we saw others like Webvan.com, which should have learned better the economics of the grocery business or Pets.com, which seemingly misgauged just how big its market was and its pet owning customer behaviors.

We know that venture capital has found a nice home in crowdfunding, particularly in real estate. But we ask on what basis are models being defined and valued. Recall the dot.com valued "eyeballs" even it there was no way to monetize such. Is investor network size or sponsor relationship bases to value? We have alluded to what the business of these platforms is – namely efficient intermediation for which fees are paid for success. The economics are still suspect with small transaction sizes, level of review and transaction volume.

A question that is raised refers to the potential value creation of such platforms for their investors. Many which have raised operational funds, upwards of $50 million, and at valuations that place post-money values in excess of $130 million. While we know the space is claiming to be "disruptive" to other real estate financing methodologies, such as banks and direct funds, we question whether the business and revenue models support such lofty values, and if so, what supports this. Unlike the P2P space, which is characterized by replicable financings, where some level of credit scoring and actuarial analysis can be performed, thus availing scale, can the RECF platforms be operated with the same mechanisms? Each transaction is seemingly different, requiring certain "laborious" analysis, assuming that the platform is doing some level of review and diligence. So the question is how many transactions can a platform undertake in a given week, a month, a year? As reflected in the mortgage origination business, it used to be that a loan officer could process 8-10 transactions a day. Now, maybe two, with the continued adds of regulatory and compliance requirements. With a cost of labor, and the size of deals which drive revenues per deal, how scalable is the model?

But we ask how should these companies be valued, based on their outlook for revenues and profitability, or on the use of technology to intermediate financial transactions? To expedite the review and processing of transactions, facilitated by technology is a plus, but will the investment results prove out in the end, or will, as some speculate, that adverse selection will creep in. Major financial institutions, all of which deploy technology across their organizations. But yet, they are still valued as financial institutions. For them, technology is a way to reduce costs, thereby providing desired financial services more swiftly and hopefully profitably. But that is their score card - delivering a product or service on a profitable basis. Referring to the platforms, technology too is an enabler, but should not be viewed as the end-all. These companies need to be measured the same way. What do they sell? How do they generate revenues? And can they generate revenues, servicing their clientele, on a profitable basis? We believe the jury is still out.

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Let's ask what does create value for the platforms, all of which will hopefully evolve into revenues and ultimate profitability. We see four main pockets of value, which we believe that platforms should position for:

1. **Differentiation:** While many platforms are offering the same "product" to their respective investor communities, such as short-term high yield notes, we ask what's the difference between one and the other, separating a platform from the pack? A good example of differentiation is SOFI, which began in refinancing student loans, but its recent move into mortgage lending is notable. Rather than offering what thousands of mortgage originators (online or offline) are pushing, it has structured a high loan-to-value (~90%) without the historically required mortgage insurance. Its underwriting process and focus is creating a unique niche, yes, differentiation, that continues to set it apart.
2. **Unique Customer Engagement:** Certainly nicely designed and user friendly websites are a given, but how and what the websites may do to enhance the lifetime value of the customer to the platform is a key. Besides generating fees on completed transactions, how frequently does the investor (and sponsor) return to the site and are there further ways to monetize that relationship. Might this be through "paid" analysis and research, or other products that could be cross-sold? How "sticky" and "monetizable" is the environment that the platforms engage their customer?
3. **Revenue Model and Scalability:** We have discussed this earlier. Do the platforms have a unit economic model that is profitable on a fully-loaded deal by deal basis, using applied technology? Or do they have to reach a certain level of volume, either in total dollar volume or number of transactions? Like the P2P industry, profitability is becoming visible largely with increased loan sizes, not sheer numbers of deals. What must be the volume, transaction size and fee level to have positive unit economics?
4. **Data and Analytics:** Finance is an information business first and foremost. The use of technology can move and refine information much more nimbly than humans, and with higher frequency transactions, ability to track performance, introduce indigenous and exogenous factors into the mix, new insights can be introduced. Improved risk management, pre- and post- deal, as well as improved pricing the risk can be the result. While some platforms understand this in basic terms, few have developed data strategies, including monetization of the fruits of their activities. We do believe this to be the ultimate Holy Grail of technology enabled intermediation.

Through various conferences and articles, platform principals have been queried as to where is the inherent value within their models. The responses are deemed suspect and in fact, we believe that in the end, are just basic business practices, coincident to all platforms, offering limited incremental value. We don't believe they necessarily "create value". Here are some of the typical responses:

1. **"Quality Deal Flow":** Many platforms espouse the nature of their deal flow, i.e., financial opportunities that they have been introduced to for consideration of funding. Building a successful portfolio of deals, proving execution history and ultimate investment performance, like a Goldman Sachs, builds reputation and more outside interest to "shop there". But stating that one sees $10 billion of transaction opportunities to yield $10 million being pursued, becomes a logistic issue as well as tough to place value on. Establishing relationships with highly successful sponsors that become "in house" exclusive clients, has some merit, but in the nascent stage of the industry, it would seem that few platforms have earned the desired reputational capital.

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2. **Diligence:** Being exposed to new transactional opportunities is critical, but more so is the review and analytical process to determine whether an opportunity should be pursued and if so, how to structure it. A challenge is that large intermediaries have teams to assess and deliberate, and ultimately choosing to move forward on its selections, for which they are compensated upon completion. The fees paid to larger intermediaries tend to reflect the relative size of the deal, i.e., bigger fees for bigger deals, which allow for broad upfront effort. When it comes to smaller transactions, fees tend to reflect such size, so is the level of diligence more limited? Or given the structures of the offerings such that diligence can be compressed, e.g., with short term secured loans. And as technology is applied, can the diligence become enhanced with lesser levels of labor, and produce improved decision making?
3. **Investor Network Numbers:** A key benefit of using an intermediary is the breadth of its relationships to funding sources. Rather than a principal who is seeking funds directly "dialing for dollars", using an intermediary with established contacts in the investment community facilitates the fund raising process. Further, it is hoped that the likelihood of successful fundraising is improved, as intermediaries may have a unique sense of their investor sentiments and appetite for a particular issue. When comparing to an online platform, such investor relationships may not be as close knit and generally, the sheer numbers of online investor networks, while impressive, may not be characterized by the same strength of relationship. While the numbers may suggest the law of average in terms of more investors lead to a higher chance of success, one may ask is it better to have 10,000 small investors rather than 1,000 active larger investors to effectuate at deal? And are such networks proprietary to a platform, or do investors, seeking new places to deploy investable funds, sign up to many platforms? Numbers alone seem not to tell the story, rather, how active are the networks to get the job done.
4. **Visibility to Break Even Operations:** This is a little discussed topic, in part as the industry is in development and growth mode. As referenced, small transactions, still requiring a level of analysis and processing, tend to generate smaller fees. Has the economic model, on a deal by deal basis, been assessed and what might have to be achieved to attain breakeven operationally?

PROGNOSTICATIONS

As an industry in development, with new entries and methodologies, what might we experience in the coming periods? While we have alluded to the significant growth over the last year and forecasting similar rates over the next few years, what may be possible futures for this space? Here are some of the observations that may impact, positively and negatively, for further expanse. To characterize the "what if's", allow us to deploy a couple metaphors, black swans and butterflies. This descriptive we used in the Massolution RECF Industry Report which was released in the Spring 2015 (Massolution, 2015).

A "Black Swan" hails from Nasim Taleb's manuscript on Black Swan theory, which addresses hard-to-predict impactful events that with hindsight could have been expected. And the "butterfly effect", articulated by Edward Lorenz, implies that small changes in conditions in one area can result in huge differences elsewhere.

Some of the black swans we may reflect upon are:

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- The demise of the "2 and 20" partnership model. Much of the institutional capital invested in alternative assets are generally managed through investment funds, where the manager garners a management fee, e.g., an annual 2% fee based on funds being managed, and a profit participation (or carried interest), which generally tracks at twenty percent (20%) of the earnings after return of initial capital. Over time, based on the performance of the funds, this can be a very expensive proposition to institutions, and many have developed internal capabilities to invest directly, thereby bypassing the aforementioned economic costs. With broader access to opportunities availed online, with professional underwriting, disclosures and portfolio management, it is conceivable that institutional investors will see the marketplace platform approach to deploying capital directly as a viable option, rather than through funds.
- While "crowdfunding" has typically been identified as small sponsors, entrepreneurs and other fundraisers using platforms to aggregate disparate capital for diminutive ventures, we have seen large corporate entities jumping into the fray. Not necessarily motivated by capital formation, but rather striving for better connectivity from their end consumer or client. Companies like Nike, Warner Brothers, CocaCola and Proctor & Gamble, have used the power of the "crowd" to facilitate engagement benefiting product development and marketing. As with consumer products, will larger real estate sponsor groups tap into crowd methods, harvesting a larger portion of the market for their own fund raising. Very likely, as we have already experienced
- Unsavory litigation. While most of the crowd platforms are operating under the 'accredited investor' exemption, i.e., offering investments to those that can 'fend for themselves', it is anticipated that eventually some form of Title III of the JOBS Act or Regulation A+ with enable non-accredited investors to participate in private and/or illiquid offerings. As such, might there be an occasion that a small investor, whom loses money in a deal, conclude that disclosures or overall management of a deal were less than adequate, casting a legal pursuit. Have the platforms accounted for such contingency? Or rather, while espousing the broader "crowd", will the platforms just remain affixed under the Regulation D exemption?
- Many platforms have successfully raised capital as referenced, with lofty valuations. With the IPO aftermarket performance of Lending Club and OnDeckCapital, will this put a damper on fundraising and valuations of companies pursuing marketplace finance. Recent exception is SoFi which consummated a $1 billion private financing led by SoftBank, valuing the business well into "unicorn" status. We remain cautious of both the flows and valuation of capital into this space. In fact, we do anticipate that there will be more strategic investment directed here, led by larger financial institutions.
- In the wake of The Dodd-Frank Wall Street Reform Act, financial institutions, large and small, have been subject to increasing levels of regulatory scrutiny as a result of the financial crisis of 2008-2010. Even large non-commercial bank financial institutions, characterized as Systemically Important Financial Institutions (SIFIs), such as Metropolitan Life, Prudential and GE Capital, are now subject additional layers of reporting and review. We have seen recently that the largest players in the P2P lending industry are now in dialogue with regulators about better or best practices, as well as risk management. We assume that as the RECF platforms gain in size, and intruding on the historic landscape of the banks, there will be the prospect of regulatory review, beyond the SEC's oversight of securities issuance. How this effects the practices and viability of the platforms is subject to speculation.

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And now, what about changes that might cause broad ripples, i.e., having a butterfly effect on the industry and its future. Among the "butterflies" we might just see are:

- Changing the definition of Accredited Investor. Having not adjusted the definition since 1982, the SEC has been reviewing what characteristics should define a "natural person" investor to participate in private (unregistered offerings). On one hand, by inflation adjusting the financial requirements (income and net worth) from the 1982 level to levels 2.5x higher would reduce the overall number of possible investors that could participate in such private offerings by almost 70%. In a constructive and historically sound manner, the SEC is reviewing other methods of "accreditation", such as professional and academic acumen as the tests for participation. We mention "historical" as the original exemption provision in the Securities Act of 1933 referred to not just the financial capacity of the investor, i.e., the ability to absorb losses, but also the ability to conduct an intelligent review of the investment opportunity. This "informed decision making" viewpoint is critical, particularly now in the "information age", and the ability to disseminate broadly requisite content to investors. This new approach may open up private markets, while underscoring the responsibility of platforms to articulate offering materials for investor consumption. Ultimately, this could enhance the overall numbers exponentially.
- While Title III of the JOBS Act has not been promulgated as of yet, there have been over twenty US states that have developed intrastate constructs for crowdfunding, thereby allowing unaccredited investors to participate, albeit limitedly, in private offerings. Will the states continue to take this up on their own in wake of the sluggishness at the federal level? We believe so.
- Crowdfunding is a subset of the growing "shadow banking" evolution, namely the extension of credit outside the regulated commercial banking market. We do see that both borrowers and lenders have a growing comfort in transacting outside the banking system. And with improving controls, risk management and accessibility, we see this to continue and accelerate.
- While access to investments through online mechanisms can avail investments to larger investor communities, this is not just about access but about opportunity. While the SEC's mandate has been proffered to mitigate risk through disclosure and reporting requirements in the '33 Act and '34 Exchange Act, crowdfunding should also be viewed as contributing to investment opportunity. Heretofore, venture and other alternative investments have been the province of the "upper class" which has the "qualifications" to participate in such higher-yielding investments, where the common investor could not gain access. In the narrative about income and wealth disparity at venues like the World Economic Forum in Davos, we need to find ways for broader communities to have access to compelling investments in order to build wealth, though the approach need be couched with certain protections and limitations. But of the three million businesses in the US, only 5,000 have public registered stock for investing and trading. Given that the preponderance of wealth has been created in privately held companies, might not a thoughtful approach to availing a more expansive miscellany of investments be constructive and economically elevating? We believe that the SEC, while in its quest to wrestle with risk, should also create frameworks for broader participation.
- Lastly, and in particular to the millennial generation, the crowdfunding phenomena has embellished philanthropic activities. This has been positively felt by small non-profit organizations, as well as community development real estate projects. We expect that this trend will continue at an accelerated pace.

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FINAL OUTLOOK

The real estate crowdfunding industry will continue with its explosive metric of growth. From new platforms, to expansions of product offerings and improved risk management protocols, and finally, growing investor comfort in the online investing practice: this bodes well for this burgeoning market both in the US and abroad.

We anticipate seeing a phenomenal growth in the residential mortgage market, which has already seen the impact of non-bank originators absorbing over 40% of the market's demand. New US entrants, such as SoFi and Sindeo, will further the competitive landscape in a trillion dollar setting. Already, LendInvest in the UK has demonstrated leadership.

There will be regulatory creep, as more activity is conducted through these platforms, with increasing scrutiny to protect both users and suppliers of capital. As one pundit exclaimed, "if it acts like a bank, it should be regulated like one"

2016 will mark a year of wins and losses. We will witness platforms gaining in size and capabilities, becoming formidable members of the financial markets. We will also see that the current frothiness of value, driven by amorphously described "disruption", see some dampening, and result in numerous platforms being shuttered or consolidating with others. That assumes that they recognize what the value they are creating really is.

Many platforms, and in particular their venture investors, may have had visions of public offerings during the coming 12-24 months at lofty valuations. Early litmus tests (LC and ONDK) and equity market conditions may cause rethinking in monetization strategies. Might we see two step partnerships with larger institutions, desirous of a "fintech" exposure begin to take investment positions, later fully absorbing these platforms: quite possible.

Overall, while playing in the "shadows", there will be much light shining from this industry over the coming years.

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Chapter 49
The Impacts of Trait Emotional Intelligence and Entrepreneurial Self-Efficacy on Perceived Behavioral Control Among Undergraduate Students

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ABSTRACT

The economy needs entrepreneurs to identify market opportunities to offer solutions to social problems. Therefore, understanding the factors that affect entrepreneurial intention has become an important research topic. This article examines perceived behavioral control as a determinant of entrepreneurial intention. It also analyzes how trait emotional intelligence and entrepreneurial self-efficacy impact on perceived behavioral control. The resulting model shows that integrating these competences in entrepreneurship programs has a positive impact on perceived control behavior. Gender implications are discussed.

INTRODUCTION

Entrepreneurship, or the process of launching and running a new business, is associate with economic growth and self-employment (Fritsch, 2011). For business organizations, the entrepreneurial behavior of their employees is also key to improving their competitiveness. Therefore, increasing attention is being paid to the factors that influence entrepreneurial intention (Ahmetoglu, Leutner, & Chamorro, 2011) and it has now become a "consolidated area of research within the field of entrepreneurship" (Fayolle & Liñán, 2014, p. 665).

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For Do Paço et al. (2013) there are two approaches to the analysis of entrepreneurial intention: one that focuses on personal characteristics and another that focuses on behavior. The first approach analyzes the personality of the entrepreneur (Dinis et al., 2013), emotional intelligence (Ahmetoglu et al., 2011; Neghabi, Yousefi, & Rezvani, 2011; Rhee & White, 2007) and entrepreneurial self-efficacy (Liñán & Chen, 2009; Zampetakis et al., 2009). These studies reinforce the idea that psychological characteristics (the trait approach) influence entrepreneurial intentions. The second approach analyzes the background to entrepreneurial intention, with Shapero's Model of the Entrepreneurial Event and Ajzen's Theory of Planned Behavior (Ajzen, 1991). In Shapero's model, entrepreneurial intention depends on the perceived feasibility and perceived desirability of the prospect of starting a business along with the propensity to act. The Theory of Planned Behavior focuses on attitudes and perceived behavioral control (PBC).

The inter-relations between the two approaches increase the complexity of the models for analyzing entrepreneurial intention. There is evidence to suggest that physiological states affect self-efficacy, with anxiety and stress lowering self-efficacy beliefs (Boyd & Vozikis, 1994). Salvador and Morales (2009) and Laviolette, Lefebrve and Brunel (2012) show that emotional intelligence significantly correlates with entrepreneurial self-efficacy. That is to say, people with a greater level of entrepreneurial intention are in favor of entrepreneurial behavior and they regard themselves as capable of behaving in this way (Morales-Alonso, Pablo-Lerchundi & Núñez-Del-Río, 2016).

This paper uses Ajzen's model (1991) to analyze those factors that affect PBC, the crucial element in entrepreneurial intention. The study carried out includes the gender perspective given the fact that there are fewer women entrepreneurs (Díaz-García & Jiménez-Moreso, 2010) and their different level of competence (Alcaraz-Rodríguez, Alvárez, & Villasana, 2014).

Higher education institutions need to understand this background because training in entrepreneurship has both a positive effect (Zhang, Duysters, & Cloodt, 2014) and a negative effect (Oosterbeek, van Praag, & Ijsselstein, 2010) on entrepreneurial intention and PBC. If entrepreneurship programs are designed to encourage the creation of companies, new explanatory models need to be explored to improve their efficiency.

The current article analyzes PBC and the variables it is affected by using a structural equations model, and highlights the differences between men and women. The first section presents the literature review and defines the research question, hypotheses and proposed model. Then the methodology is described and, finally, the results are discussed and the conclusions of the study provided. The results show that both psychological factors related to emotional intelligence and dimensions of entrepreneurial self-efficacy have a positive impact on PBC. These results are key to helping students, regardless of their background and personal traits, to meet today's labor market expectations through more effective training courses.

LITERATURE REVIEW

The Theory of Planned Behavior

The theory of planned behavior is one of the theoretical frameworks for studying entrepreneurial career choice (Autio et al., 2001; Ajzen, 1991; Shapero & Shokol, 1982). Entrepreneurial intention, defined as the conscious state of mind that directs personal attention, experience, and behavior toward entrepre-

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neurship (Bird, 1992), is the strongest predictor of entrepreneurial activity (Obschonka, Silbereisen, & Schmitt-Rodermund, 2010). Thus, the creation of a company is the result of planned behavior and it is best predicted by the intention present in the individual (Ajzen, 1991). It is a personal choice.

In Ajzen's model, intention is predicted by attitude towards the behavior (or how appealing being an entrepreneur is to the individual), subjective norms (or the perception of the social pressure on behaving in a specific way) and, PBC (or perceived self-capability). Attitude towards the behavior and PBC are better predictors of entrepreneurial intention than subjective norms (Morales-Alonso et al., 2016). Gender influences subjective norms and PBC because entrepreneurship is a less desirable for undergraduate female students and their PBC is lower (Díaz-García & Jiménez-Moreno, 2010). For Dinc and Budic (2016) cultural and social issues have a considerable impact on the formation of positive perceptions about entrepreneurship in the minds of women.

In general, PBC, is "a function of beliefs about resources, opportunities and other factors that can facilitate behavioral performance" (Yzer, 2012, p. 104). These beliefs originate from vicarious experience, persuasion, physiological states, and personal experience (Bandura, 1997). This means that it is important to study the effects of entrepreneurial self-efficacy and emotional intelligence on perceived behavioral control.

Entrepreneurial Self-Efficacy

Originally defined by Bandura (1994) as "one's belief in one's ability to achieve a certain level of performance or a desired outcome that can influence situations and affect lives" (p. 72), self-efficacy is key for detecting an entrepreneurial person (Markman, Baron, & Balkin, 2005) and predicting entrepreneurial intention (Moriano, Palací & Morales, 2006; Laguna, 2013). That is to say, if there is no perception of skills, the behavior will not be produced. Efficacy beliefs are concerned "not only with the exercise of control over action but also with the self-regulation of thought processes, motivation, and affective and psychological states" (Bandura, 1997, p.36). Therefore, entrepreneurial self-efficacy is included in the models that study entrepreneurial intention and its dimensions, like perceived behavioral control. Studies on the impact of entrepreneurship education on entrepreneurial self-efficacy remain inconclusive (Shinar, Giacomin, & Janssen, 2014).

On the basis of the above, the following hypothesis can be formulated:

H1: Entrepreneurial self-efficacy will have a direct and positive impact on perceived behavioral control.

Trait Emotional Intelligence (Trait EI)

One of the most important developments in the emotional intelligence literature is Petrides and Furnham's (2001) conceptual bifurcation resulting in two distinct perspectives on emotional intelligence: ability EI and trait EI. The ability EI perspective conceptualizes EI as a constellation of cognitive-emotional abilities located in extant frameworks of human intelligence (Petrides, 2011). It involves actual abilities and it measures with 'maximum-performance' tests (Petrides & Furnham, 2001). On the other hand, trait EI is defined as "a constellation of emotional self-perceptions located at the lower levels of personality hierarchies" (Petrides, Pita, & Kokkinaki, 2007). It involves a collection of emotion-related self-perceptions and emotional self-efficacy, that is, the confidence in one's capabilities to perform various tasks (Bandura, 1997). It is a personality trait rather than a cognitive ability.

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Trait EI is an important factor in the prediction of entrepreneurial outcomes (Ahmetoglu et al., 2011) and entrepreneurial behavior (Bahadori, 2012). Given the social nature of entrepreneurial activities, trait EI can predict entrepreneurial success. Indeed, higher levels of trait EI are necessary to exploit opportunities and innovations (Chell & Baines, 2000). Therefore, there is a relationship between entrepreneurs' Trait EI and their success (Karimi, Kloshani, & Bakhshizadeh, 2012).

Regulating stress may be one of the pathways that links trait EI with positive attitudes towards entrepreneurship and entrepreneurial intentions. Therefore, "trait EI, as an index of emotional self-efficacy, may be an important personality antecedent to entrepreneurial attitudes and intention" (Zampetakis et al., 2009, p. 610) through a higher level of self-perceived control. In parallel, Mortan, Ripoll, Carvalho and Bernal (2014) show that the capacity to appropriately manage and use emotions plays an important role in entrepreneurial self-efficacy.

Studies by Salvador and Morales (2009) and Laviolette et al. (2012) show that emotions affect entrepreneurial self-efficacy, a variable that is not unconnected to gender roles (Mueller & Conway Dato-on, 2013) or cultural barriers (Shinnar, Giacomin, & Janssen, 2012). Other studies, however, show the contrary (Mueller & Conway Dato-on, 2008, 2013) and authors such as Zhao, Seibert and Hilla (2005) consider gender to be more closely related to emotional intelligence than entrepreneurial self-efficacy.

Accordingly, the following hypotheses can be formulated:

H2: Trait EI will have a direct and positive impact on PBC.
H3: Trait EI will have a direct and positive impact on entrepreneurial self-efficacy and, therefore, will have an indirect impact on PBC through entrepreneurial self-efficacy.

METHODOLOGY

Participants and Procedure

This research aims to explore the factors that affect PBC using a questionnaire sent to undergraduate students during the academic year 2016-2017. The final number of participants was 459, of whom 76.2% were women. Of all these, 63.7% had never been employed but 37.7% had been on work experience programs during their courses. A total of 40% of the participants study Social Sciences and Law; 8.1% Architecture and Engineering; 12.4% Sciences: 27.5% Health Sciences; and 12.0% Arts and Humanities.

Measuring Instruments

Below we describe the scales and the psychometric properties of the assessment instruments used.

Perceived Behavioral Control

This variable is the participants' perception of their own ability to create and manage a new company. A questionnaire of four questions has been used (Autio et al., 2001), with a Cronbach's Alpha of 0.856.

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Entrepreneurial Self-Efficacy

The scale used to measure this variable is the ESE questionnaire by De Noble, Jung and Ehrlich (1999), in its version validated by Moriano et al. (2006). The final version of the scale consists of 23 items. In accordance with these authors the goodness of the construct was measured, which gave four factors that explain 56.9% of the variance. The resulting factors are: Networking or the ability to enter into effective relations; Innovation or the ability to construct an innovative environment; Proactivity or the ability to recognize new opportunities; and Stress or the ability to rise to unexpected challenges. Cronbach's alpha for these factors is, respectively, 0.86, 0.747, 0.791 and 0.665. Therefore, reliability is high (De Noble et al., 1999, Moriano et al., 2006; Moriano et al., 2012a).

The Trait Emotional Intelligence Questionnaire-Short Form (TEIQue-SF)

The instrument chosen to measure trait EI is the TEIQue-SF (Petrides & Furnham, 2006). It has four components: well-being, self-control, emotionality, and sociability. In general, individuals with a high score on well-being are fulfilled and satisfied with life. The self-control factor refers to one's degree of control over urges and desires. Individuals with a high emotionality score possess a wide array of emotion-related skills: recognizing, perceiving and expressing emotions. The sociability factor focuses on social relationships and influence.

The psychometric properties of the instrument are supported by Petrides (2009), Siegling, Vesely, Petrides and Saklofske (2015), and the recent work by Andrei et al. (2016). For the present study, the Alpha coefficient for reliability was 0.84 for the trait EI scale and 0.8 for the factor of Emotionality (8 items), 0.6 for Self-control (6 items), 0.82 for Well-being (6 items) and 0.67 for Sociability (6 items).

Contextual Factors

Participation in Entrepreneurship Education (Variable Education)

Some studies have found that entrepreneurship education has a positive impact on students' entrepreneurial self-efficacy (Cooper & Lucas, 2006; Kilenthong, Hills, & Monllor, 2008; Setiawan, 2014). The questionnaire included three questions on whether participants had received training on entrepreneurship at university or elsewhere. Cronbach's alpha was 0.518.

University Environment (Variable Environment)

Following Autio et al. (2001) and Coduras et al. (2008) we asked the participants about the resources available at the University for encouraging entrepreneurship (for example, dedicated start-up units, incubators and specialist advice services). Participants gave their personal perception of the degree of the university support to entrepreneurship. The scale yielded a Cronbach's alpha of 0.804.

Major (Field of Knowledge)

Hassan and Wafa (2012) found that students on the science program have significantly higher entrepreneurial intentions than business or arts students. So, major has been included as a contextual variable.

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Working Experience

The Jack-of-all-trades approach by Lazear (2005) shows that having experiences in many different roles increases the probability of becoming an entrepreneur (Miralles, Giones, & Riverola, 2015). Greater experience is related to greater entrepreneurial competence (Camuffo, Gerli, & Gurbita, 2012) and a greater PBC (Liñán & Chen, 2006; Liñán et al., 2011).

Incorporating contextual factors enables the following two hypotheses to be formulated:

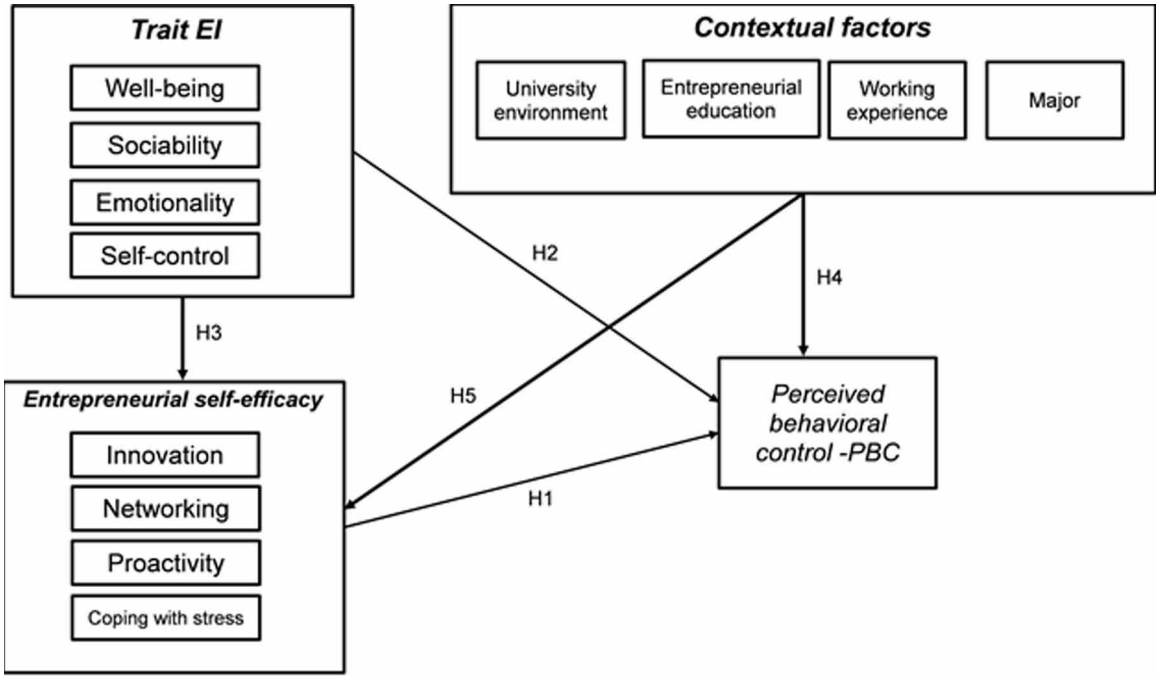
H4: Contextual factors will have a direct and positive effect on PBC

H5: Contextual factors will have a direct and positive effect on entrepreneurial self-efficacy and, an indirect effect on PBC

Validation of the Final Model

The model proposed considers that psychological factors – particularly Trait EI – and the perception of one's own abilities – entrepreneurial self-efficacy scale – have a direct impact on PBC. It also considers that the entrepreneurial culture of the university – University environment –, any training that students have been given in entrepreneurship, their work experience and knowledge area – Major – also affect PBC. Gender is also taken into account and the model is validated independently for men and women. Figure 1 synthesizes the proposed model.

Figure 1. Proposed model (Source: Own elaboration)



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RESULTS AND DISCUSSION

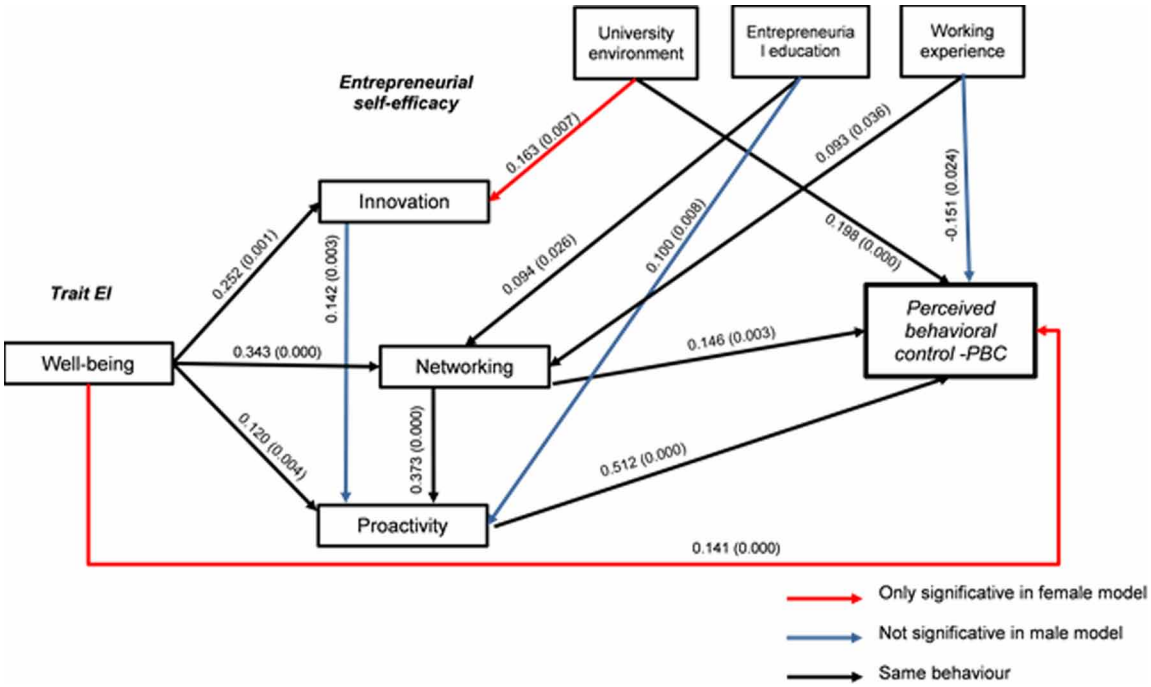
To validate the model a bootstrap analysis was carried out with 500 samples with the program SMART-PLS. The general model and the models for men and women were tested. Below we discuss the results of the model that presented the best reliability.

Figure 2 shows the result of the Bootstrap analysis, with the standardized path coefficients. For the endogenous variable PBC, the R-square value is 0.669, meaning that about 66.9% of the variance in PBC is explained by the model. The R-square for Proactivity is 0.468, and for Networking and Innovation it is 0.331 and 0.154, respectively.

Construct Validity and Reliability

The validity of the instruments used was checked using convergent validity, discriminant validity and construct reliability. All the statistics of the outer model loadings are significant, which confirms the convergent validity of the construct for both the general model and the individual models for men and women. Discriminant validity, assessed using the average variance extracted, enabled the discriminant validity of the instrument to be confirmed. Finally, the composite reliability was checked with Cronbach's alpha. All alphas were above the value of 0.7 normally accepted to corroborate the construct for both the general model and the individual models for men and women.

Figure 2. Path coefficients (Source: Own elaboration)



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Hypothesis Test and Results

Figure 2 and Table 1 show the paths and indirect effects for the whole sample and the model for men and women. To facilitate interpretation, only the significant paths are shown.

Hypothesis 1 stated that entrepreneurial self-efficacy affected PBC. This hypothesis is shown to be correct only in the case of the variables Networking and Proactivity. Unlike other studies, there were no differences in the behavior of men and women (Laviolette et al., 2012; Do Paço et al., 2013). The variable Networking has an indirect effect on PBC through Proactivity (Table 1) and the impact is greater in men. This result is interesting for purposes of education in entrepreneurism because people "who are aware of their entrepreneurial potential are more likely to get involved in entrepreneurial training and will benefit more from it" (Luca, Cazan, & Tomulescu, 2013, p. 1049), which could have an impact on entrepreneurial intention (Bae, Qian, Miao, & Fiet, 2014).

Hypothesis 2 (impact of Trait EI on PBC) is confirmed only for the dimension Well-being and for behavior in women, so it is not as important as in the study by Mortan et al. (2014). The direct effect on PBC is supplemented by the indirect effects of the variables Innovation and Networking (Table 1). The effect on Proactivity of emotional intelligence has already been discussed by Zampteakis et al. (2009).

Table 1. Indirect effects

	Original Sample	Sample Mean	Standard Deviation	T Statistics	P Values
Education -> PBC	0.086	0.087	0.026	3.314	0.001
Female	0.070	0.069	0.031	2.240	0.026
Male	0.132	0.138	0.059	2.241	0.025
Environment -> PBC	**0.111**	**0.112**	**0.030**	**3.747**	**0.000**
Female	**0.111**	**0.115**	**0.036**	**3.110**	**0.002**
Male	0.132	0.142	0.081	1.628	0.104
Innovation -> PBC	**0.073**	**0.071**	**0.025**	**2.949**	**0.003**
Female	0.053	0.055	0.030	1.741	0.082
Male	**0.167**	**0.160**	**0.061**	**2.741**	**0.006**
Networking -> PBC	0.191	0.189	0.029	6.476	0.000
Female	0.188	0.188	0.036	5.235	0.000
Male	0.216	0.215	0.055	3.900	0.000
Well-being -> PBC	0.190	0.190	0.029	6.524	0.000
Female	0.177	0.180	0.032	5.512	0.000
Male	0.242	0.237	0.075	3.235	0.001
Working experience -> PBC	**-0.064**	**-0.065**	**0.026**	**2.456**	**0.014**
Female	**-0.062**	**-0.065**	**0.029**	**2.175**	**0.030**
Male	-0.065	-0.060	0.057	1.158	0.248

Source: Own elaboration

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Hypothesis 3 is only corroborated for the dimension Well-Being of the Trait EI scale and three dimensions of the entrepreneurial self-efficacy: Innovation, Networking and Proactivity (Figure 2). Well-being affects PBC through these three variables.

As far as hypotheses H4 and H5 are concerned, Education does not seem to have a direct effect on PBC, in contradiction of previous studies (Dinc & Budic, 2016; Fayolle & Liñan, 2014). It does have an indirect effect, however, through the variables Networking and Proactivity. Also, as is only to be expected, a university culture that supports entrepreneurship (Environment) has an impact on PBC, as has been shown by Shinnar et al. (2016) and Coduras et al. (2008). It should be pointed out that it only affects ESE in the dimension Innovation and is only important for women. Rae and Woodier (2006) highlight that the role of significant others (e.g. parents, friends, role models) is more influential than career development centers. The variable Networking is significant in all cases.

Finally, we should point out that Working experience is significant for the variables Networking and PBC but only in men. This partially corroborates studies such as the one by Miralles et al. (2016) and Liñán and Chen (2009). For PBC it does have a significant effect in men although the effect is an inverse one. The more work experience, the lower the PBC.

CONCLUSION

Entrepreneurship is an important productive force in the economy, vital to the progression of organizations and economies and it plays an important role in economic growth. In recent years the working environment has undergone structural changes that have given rise to opportunities for entrepreneurism and made self-employment a channel for professional development. Therefore, the factors that affect attitudes to entrepreneurship need to be understood.

This study examines perceived behavioral control as one of the main determinants of entrepreneurial intention. It studies how trait EI and entrepreneurial self-efficacy impact on perceived behavioral control, and includes the gender perspective. The results obtained show that psychological factors related to Trait EI (well-being) in the case of women, and some dimensions of entrepreneurial self-efficacy (particularly Networking and Proactivity in both men and women) have a direct, positive impact on perceived behavioral control. Paradoxically, entrepreneurial education does not affect perceived behavioral control, which should prompt education institutions to redesign its curricula so that they can provide more effective courses. Although the number of education programs has increased in recent years it is not clear whether the approach will increase the vocations for creating companies.

By incorporating perceived behavioral control into the entrepreneurial intention literature, we have attempted to contribute to research into entrepreneurship by shedding light on what has consistently been identified as an under researched issue. The hypotheses tested may be able to guide future empirical investigations in the critical role perceived behavioral control plays in the development of entrepreneurs.

This exploratory research has some limitations, largely due to the methodology of the model of structural equations used to test the relationships between the constructs. The reliabilities of the scales were not as accurate as desired, which suggests that the results need to be interpreted with caution. Not all the components included in the instrument were found to be significant. Therefore, the model is an initial contribution that needs to be studied in other contexts and with other tests to be more generaliz-

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able. For example, the study analyzed one academic year and used data from a single university, so it would be interesting for future studies to include longitudinal data from several years and compare them with other universities to increase the generalizability of the results. In general, more research in this area would improve our understanding of the impacts of trait EI and entrepreneurial self-efficacy in perceived behavioral control among university students.

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Chapter 50
Entrepreneurship Development in Northeast Region of Romania

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ABSTRACT

The actual trend of a growing entrepreneurial phenomenon at international level, makes a priority also for Romania to improve its local entrepreneurship level, by developing and implementing strategic measures for sustaining the entrepreneurial activities in rural and urban areas all over the country. The first step for achieving this it is to make an analysis for obtaining an accurate current stage of development of Romanian entrepreneurship at local and regional level. Using statistical data analysis and questionnaire survey, this study represents a clear mapping of entrepreneurship development status and SMEs evolution in the Northeast region of Romania. The results can be used to propose further measures for supporting local and regional entrepreneurship and the research methodology was also applied in a similar study conducted by author in the Southeast region of Romania

1. INTRODUCTION

The present study aims to answer the problem of identifying viable solutions to medium and long-term effect on support entrepreneurial initiatives and sustainable development of SMEs. This current issue is important, considering that entrepreneurship at international level has an increasingly significant share in the economy. Research methods used in this study are analyzing statistical data provided by the National Institute of Statistics and Eurostat and questionnaire survey, administered to a sample from Northeast Region of Romania (own data collection). The first part of the study presents an analysis of statistical data recorded in the Northeast region of Romania, such as: structure and dynamics of SMEs, SMEs situation at one year after start, the density of SMEs; number of employees in SMEs; the gross investments of SMEs and the share of innovative enterprises. The second part of the study presents the results of a survey regarding the interest for developing entrepreneurial activities in the Northeast region, which was applied on a sample of 246 respondents.

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The questionnaire contains 12 closed questions, of which 7 are referring to the subject of the investigation and 5 are referring to socio-demographic characteristics of the respondents. The paper ends with a set of conclusions and results of the study, which can be used to elaborate and implement strategic measures to stimulate entrepreneurship in the medium and long term, both in the Northeast region and at national level.

2. LITERATURE REVIEW

The recent period is one of the spectacular changes in all areas of socio-economic activity worldwide, the most important of them being registered on technical, informational, educational, cultural and political domains. Among the significant changes lately noticed in Europe and other highly developed countries is the position of entrepreneurship and SMEs in the center of economic and social development, by transforming them into a dynamic element and a strong creator of added value, jobs and financial resources to central and local budgets (Cirstea et al., 2016)

Thus, the development of small and medium sized enterprises (SMEs) represents an important part of economic policy, which influences the rhythm of the long lasting economic growth in Romania (Istocescu, 2005). Romanian business environment is still facing a lot of problems, such as: decrease of internal demand, excessive taxation, bureaucracy, high credit costs and difficulties for accessing loans, delays in revenues from customers and so on. (Nicolescu, 2010). According to some recent studies, the major reasons for the failure of businesses seem to be management competence, lack of planning and securing financial resources (Mughan et al, 2004). That's why the entry of new firms is often held to be beneficial for economic efficiency and growth because new entrants stimulate competition and efficiency and may also generate, disseminate and apply innovative ideas (Bruno et al., 2008).

But for SMEs to become a real factor of local economic dynamism, they must also be integrated into a well-structured environment, into coherent territorial network for producing relations, exchanges between them and other operators, such as banks, higher education institutions, training centers, consultancy firms, local governments (Istocescu, 2005). In these circumstances the present study of entrepreneurship level is welcomed in order to elaborate and implement a set of strategic measures to sustainable develop entrepreneurship in Romania.

3. ANALYSIS OF SMEs INDICATORS IN NORTHEAST REGION

This section presents a data analysis over a set of indicators related to SMEs activity in the Northeast region of Romania. The first part of the analysis presents the structure and dynamics of SMEs in the region.

3.1. SMEs Structure and Dynamics

Having a number of 53997 active SMEs in 2015 the Northeast region owns only the 6th position at national level, surpassing only West and South West regions. In the period 2012 - 2015 the number of active SMEs increased at regional and national level. The dynamics of micro and small enterprises was positive, but the regional increase in Northeast (7%) was less than the national level, where both categories of enterprises increased by 8% in the period under review. In 2015 the number of active SMEs

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in Northeast region increased by 3835 units compared to 2012 and by 850 over the previous year, due to relaunch of the business sector and to the programs for stimulating entrepreneurship and business development (see Table 1).

It was also observed that among the counties constituting the North-East region the largest number of SMEs in the period 2012 - 2015 was recorded in Iasi county, followed by Suceava while in Botosani and Vaslui were recorded the fewest enterprises.

From the point of view of active SMEs distribution by size class in 2015 the highest share was the micro-enterprises with 89.1%. But this high percentage is changing from one year to another, due to the average life span, which is shorter than the other classes of sizes. Small businesses accounted for 10.8% of the total active SMEs, while medium-sized enterprises accounted for 1.6% of the total number of active SMEs in Northeast region. Another negative indicator is the number of SMEs/1000 inhabitants, where the Northeast region is situated on the last position, compared to the other regions of Romania.

3.2. The State of SME Over One Year from Start

Table 2 gives an overview of SMEs after one year of existence, classified in active, inactive and closed, in the period 2012-2014.

In 2014 the largest share of SMEs established less than a year were active (81.1%), while 13% were inactive and 5.9% were closed. It should be noted that in the period 2012 - 2014 it increased the percentage of enterprises that have remained active, along with a reduction in the percentage of those inactive. At regional level, the Northeast region is on the third position at maintaining the activity of the firms in the first 12 months of operation, being surpassed only by Bucharest-Ilfov and Center. Also, the average for this indicator is higher than the national average in the year 2014, which shows a good capacity of entrepreneurs to surpass the first year od enterprise life span. It thus appears that, in order to maintain and even to increase the rate of survival of SMEs in the region, there are necessary measures to stimulate investment in business training, mentoring and expert advice in this area and also grants to stimulate the initiation and development of medium and long-term business in the region.

Table 1. Number of SMEs at regional and national level

	2012	2013	2014	2015
National level	470547	483476	505766	512135
Northeast	50162	51267	53147	53997
Bacau	10371	10547	10900	10909
Botosani	3651	3758	3915	3996
Iasi	13759	14158	14794	15078
Neamt	8055	8166	8410	8473
Suceava	9935	10220	10623	10925
Vaslui	4391	4418	4505	4616

Source: National Institute of Statistics, 2017

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Table 2. The state of SMEs over one year from start - %

State	Region	2012	2013	2014
Active	National level	75,9	74,1	81,1
	Northeast	72	63,8	81,8
	South	71,7	75,5	78,8
	South West	68,1	70,2	74,1
	North West	80,6	74,3	79,7
	West	68,4	63,8	72,1
	South East	68,3	70,1	77,7
	Center	79,1	77,1	85
	Bucharest - Ilfov	84,4	85	87,2
Inactive	National level	18,5	15,8	13
	Northeast	20,1	23,9	13,2
	South	18,6	14,9	14,2
	South West	24,5	16,7	18,5
	North West	14,2	13,2	13,9
	West	24,8	23,7	17,4
	South East	27,7	23,1	14,2
	Center	16,3	15,2	12,4
	Bucharest - Ilfov	12,6	6,9	9
Closed	National level	5,6	10,1	5,9
	Northeast	7,9	12,3	5
	South	9,7	9,6	7
	South West	7,4	13,1	7,4
	North West	5,2	12,5	6,4
	West	6,8	12,5	10,5
	South East	4	6,8	8,1
	Center	4,6	7,7	2,6
	Bucharest - Ilfov	3	8,1	3,8

Source: National Institute of Statistics, 20167

3.3. SMEs Density

In Table 3 it is shown the density of SMEs in 2015 in Northeast Development Region and in the component counties.

With 32.51 active SMEs per 1,000 inhabitants the Southeast Region remains in fifth position in recent years after Bucharest-Ilfov, Northwest, West and Centre regions. Furthermore, the density of SMEs in this region is under the national average. The higher density of SMEs at the level of 2015 was recorded in Iasi county, followed closely by Neamt county. At the opposite were Botosani and Vaslui, where there is a certainly need of measures for stimulating entrepreneurship development.

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Table 3. SMEs density

	SMEs number	Inhabitants	SMEs density (number of SMEs at 1000 inhabitants)
Northeast region	106437	3273367	32,51606
Bacau	21830	606589	35,98812
Botosani	7848	403088	19,46969
Iasi	29632	780948	37,94363
Neamt	16837	461869	36,45406
Suceava	21260	631410	33,67067
Vaslui	9030	389463	23,18577

Source: Own calculations based on National Institute of Statistics data, 2017

It is also to be taken in consideration that at regional level in the past few years, large progress was made, knowing that the SMEs density doubled its value between 2013 – 2015 in the Northeast.

3.4. Number of Employees in SMEs

Analyzing the number of employees at the regional level it can be observed a positive dynamic of this indicator in the period 2013 - 2015, both at national and regional level. The number of employees in 2015 to the Northeast region accounted for 11.18% of the national total, this indicator having a growing trend from the previous year. The positive dynamics of this indicator recorded at regional level in 2015 was the same registered nationally, a sign that the region's economy is slowly increasing (see Table 4).

However, compared to the other regions of the country, the percentage of the national total number of employees is low.

3.5. Gross Investments in SMEs

In the period 2013-2015, the gross investments of SMEs in the Northeast region registered a grow of 25%, following an upward trend all over the period. Regarding the share of gross investments in SMEs from national level it can be shown that in the 2013 – 2014 period it registered a growing trend, but a downtrend in the next year. However, the level of gross investments in the Northeast region in 2015 recorded the smallest value among the other regions of Romania (see Table 5).

Table 4. Number of employees in SMEs at national and regional level

	2013	2014	2015
National level	4801104	4900684	5041186
Northeast region	536899	545432	563378
%	11,18	11,13	11,18

Source: National Institute of Statistics, 2017

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Table 5. Gross investments in SMEs (thousands lei)

	2013	2014	2015
National level	61076	66569	72883
Northeast region	4119	5018	5180
%	6.74	7.53	7.1

Source: National Institute of Statistics, 2017

3.6. The Share of Innovative Enterprises by Size at Regional and National Level

The number of innovative businesses nationwide declined in recent years, from 33.31% in 2010 to 20.67% in 2014. The downward trend was also maintained in this period also in Northeast region, where it was recorded a falling from 47.19% in 2010 to 32.17% in 2014 on the share of innovative enterprises. Comparing with the other regions in 2014 Northeast ranked the second position, being surpassed only by South East region. In 2014, both at national level and in Northeast region, the medium sized enterprises have a higher share of innovation (36.94% for Northeast region and 26.57% for national level) (see Table 6).

4. THE EVALUATION OF CONCERN FOR ENTREPRENEURIAL ACTIVITIES IN THE NORTHEAST REGION

In order to identify the concerns of initiating and developing entrepreneurial activities in the Northeast region, a structural survey was applied, to a sample of 246 people residing in the counties of the region. The questionnaire contains 12 questions, of which 7 are regarding the subject of investigation and 5 are regarding the socio-demographics characteristics of the respondents.

The first question regarded the intention of respondents for starting and developing an entrepreneurial activity in the near future. To this question a percentage of 52.2% of respondents said "yes", while 47.8% answered that they are not interested in starting a business in the near future. For the following questions were considered only the respondents who declared that were interested in starting a business in the near future.

The next question aimed at identifying the domain that respondents want to work in business. To this question, most respondents (28.6%) said they want a business in the creative industries (advertising, architecture, art, crafts, design, fashion, film, music, TV, radio, research and development etc.). In contrast, the lowest business areas preferred by respondents are wood and furniture (0.1%), textiles, leather goods, IT and health by 4.8%. Other responses were engineering and construction, baking and beekeeping.

Another question was about the entrepreneurial knowledge and/or experience of the respondents. To this question, a percentage of 52.4% of respondents said they have entrepreneurial knowledge and / or experience in business, and 47.6% said the opposite. A cross-sectional analysis between labor market status and responses given to this question indicates that 16.95% of those who have entrepreneurial skills or experience in the field of business are students, 47.46% are employed, 5.08% are unemployed, 16.95% are self-employed and 8.47% are entrepreneurs. The remaining respondents have other employment statuses (retired, homely, child raising etc.).

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Table 6. The share of innovative enterprises by size at regional and national level

Region	Size	2010	2012	2014
North West	Total	27,63	27,75	12,04
	Small-sized	23,69	24,68	9,98
	Medium-sized	38,70	38,58	20,33
Center	Total	30,57	24,46	21,19
	Small-sized	25,94	19,02	19,70
	Medium-sized	41,37	37,05	22,14
Northeast	Total	47,19	42,57	32,17
	Small-sized	44,91	39,94	30,65
	Medium-sized	52,32	51,38	36,94
South East	Total	44,62	36,90	36,48
	Small-sized	42,81	33,69	36,42
	Medium-sized	46,57	45,70	35,13
South	Total	30,65	33,01	17,29
	Small-sized	27,04	28,57	11,53
	Medium-sized	36,06	41,78	31,02
Bucharest Ilfov	Total	35,81	32,66	18,54
	Small-sized	33,15	29,91	14,11
	Medium-sized	40,59	38,51	29,19
South West	Total	25,97	30,88	19,79
	Small-sized	20,42	28,53	20,15
	Medium-sized	38,71	36,68	17,05
West	Total	20,52	18,52	14,37
	Small-sized	15,60	15,32	12,97
	Medium-sized	32,81	22,89	15,44
National level	Total	33,31	30,82	20,67
	Small-sized	29,85	27,54	18,25
	Medium-sized	40,85	38,75	26,57

Source: National Institute of Statistics, 2016

Also, by age it is shown that the largest share of respondents who said they had entrepreneurial skills or experience are aged 25-34 years old (40.68%), followed by those with aged 18-24 years old (18.64%).

Next question probed the interest for participating in entrepreneurship training programs. To this question, an overwhelming percentage of 90.5% of respondents said yes, while only 9.5% said they are not willing to participate in entrepreneurship training programs to improve knowledge and skills in this area.

Cross-sectional analysis revealed that among those who said they would participate in entrepreneurial training programs, 56.79% are people who have previously declared to have knowledge or experience in entrepreneurship or in the field that they want to set up a new business.

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From the questionnaire was identified also the percentage of people who have attended training in entrepreneurial skills over the past three years.

Analyzing the data collected shows that only 14.3% of all respondents participated in the last three years to courses for developing entrepreneurial skills.

Regarding the structure of the sample:

- 14.3% of respondents are students, 52.4% are employed, 4.8% are unemployed, 19% are self-employed, and 9.5% are entrepreneurs.
- 14.3% of respondents are in the age group of 18-24 years old, 33.3% in the category 25-34 years old, 38.1% in the category 35-44 years old, 14.3% in the category 45-54 years.
- Regarding the sex of the respondents, 42.9% were male and 57.1% were women.
- In terms of monthly income, 23.8% reported income below 500 lei per month, 19% between 500-1000 lei, 9.5% between 1000-2000 lei, 23.8% between 2000-3000 and 23.8% over 3000 lei.

5. CONCLUSION

Analysis at the level of Northeast region revealed that among Romanian regions and compared with national averages, the South East has low socio-demographic and economic indicators during 2012-2015.

Regarding the analysis of the structure and dynamics of SMEs the study showed that construction domain had a better share in Bucharest-Ilfov, North-East and Centre; Trade was the major orientation of entrepreneurs in South-Muntenia, South-West Oltenia and Center, while the transport sector has higher shares in the North-East and South-East regions.

Regarding the interest of the residents of Northeast region to initiate and develop entrepreneurial activities it is shown that there is a high interest for the creation of start-ups for all ages (between 18 - 64 years) with a greater preponderance of people between 35-44 years. Also, although the majority of respondents have mid-level knowledge about market data, management, marketing, they are willing to improve their knowledge and entrepreneurial skills, both through training activities in the field and through counselling sessions with experts in entrepreneurship and internships at companies, to learn the secrets of entrepreneurship.

The lower socio-economic and SMEs indicators recorded lately in the Northeast Region impose coherent strategic measures to support entrepreneurship through specialized training, consultancy and mentoring to initiate and develop business and also infusion of financial capital (for example by giving minimal aid for start-ups).

A set of measures have to be implemented for economic rebound in the region and to support the development of SMEs and start-ups. In this sense, the lines of action must focus on:

- Developing and implementing projects with European financing to support entrepreneurship among the unemployed, employees and / or students from the region that have a set of logic and chronological steps: entrepreneurial training and consultancy for making a business plan, entrepreneurial mentoring and internships in companies from similar fields, supporting grants for initiation and development of business, consultancy for new businesses development in the market
- Supporting innovative SMEs from European funds and venture capital
- Developing specialized advisory services oriented to the needs of SMEs

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- Simplifying and improving the legislative and administrative framework
- Developing public-private partnership for supporting SMEs
- Developing national network of business incubators and science parks
- Free access to loans for SMEs with low interest rates, leading to an increase in gross investments followed by an increase in staff employed in SMEs

The expected results in the short, medium and long term for supporting entrepreneurship in the Northeast region should be:

- Increasing the number of active SMEs, which generate revenue and jobs
- Increasing the share of innovative enterprises in the region
- Increase participation in adult vocational training in the region
- Decrease the phenomenon of migration in the region
- Increasing the employment rate in the region
- Increasing wages and living standards
- Lowering the level of poverty in the region
- Improving the situation of SMEs in the first year of existence, increasing the survival of SMEs and increasing the chances of medium- and long-term development of SMEs in the market
- Increasing the gross investment in SMEs, with ripple effects on the entire economy both regionally and nationally

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Chapter 51
Maximising Value Through IT and Business Alignment:
A Case of IT Governance Institutionalisation at a Thai Bank

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ABSTRACT

Contemporary business organisations need to be responsive to internal as well as external changes. Organisational intuitiveness, being fundamental to this responsiveness, requires that these organisations develop and manage their information processing and management infrastructure to enable an integrated and informed environment. Organisations generally have a deterministic approach to technological infrastructure development and do not give requisite attention to soft factors that shape its use. Information technologies, however, are strategic resources that require supportive human action through appropriate set of roles, responsibilities, and decision rights to works effectively, evolve in use, and enable value on continuous basis. This paper presents a case of an information technologies governance in a financial services organisation. It highlights that governance practices need to be institutionalised in the organisation, such that they become an integral part of the organisational, social, and technical environment of the business.

INTRODUCTION

Information technologies (IT) are predominantly socio-technical systems that bind organisations and individuals together through information that enables business processes and manages business operations. Business managers thus focus on the broad uses of IT by questioning how individuals and organisations use IT, how IT can solve problems, how IT supports business processes, how to build and strengthen

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skills to use IT proficiently, and how IT delivers soft value to enhance organisational performance. There are three areas of technology implementation and adoption theories: technology determinism (IM, technology-enabled business, and agency theory), socio-technical interactions (actor network theory, socio-technical theory, and contingency theory), and organisational imperatives (strategic competitiveness, resource-based view theory, and dynamic capabilities theory) (Haider 2013). Technology deterministic theories focus on the success of IT projects to support thriving business. Technology deterministic theories mainly consider adopting recognised best practices, frameworks, business models, along with compatible and applicable technologies that are user-friendly with potential and capabilities to deliver business competitiveness, growth, and more productivity. This means that these technologies enable business processes by handling and responding to business requirements precisely to deliver successful IT projects. Socio-technical theories mainly involve the alignment of the technology and organisational environment to deliver stronger relationships with positive business performance that meets business objectives. Organisational imperative theories aim to develop strong relationships between end-users with multiple responsibilities in different business operational areas and technology within complex environment that are capable of aligning business and IT strategies.

Literature review suggests that technology managers take a deterministic approach to technology implementation (see for example, Haider 2013), whereby they focus on the promises associated with technology rather than the cause and effect relationship, and the contextual intricacies that realise those benefits. As a result, the information technology environment in the contemporary business landscape is replete with vulnerabilities, like lack of fit between technical infrastructure with strategic business considerations, incompatible technology, lack of information ownership, overdependence on outsourcing, inability of the organisation to assign responsibility and accountability, budget blowouts, and ineffective risk assessment and mitigation. As a result, employees in large sized service organisations maybe technically competent, yet they cannot fully appreciate the soft and hard role of information technologies in the organisation, and cannot fully apply their knowledge and skills for the optimum advantage of the organisation.

Managing value from information technology infrastructure is the core tenet of IT governance. It provides the decision rights and accountability framework that encouraging desirable behaviours in the use of information technologies within the organisation. These behaviours are shaped through the mutual interaction of cultural, social, technical, and organisational environments prevailing in the operating context of the organisation. IT governance, therefore, is not the job of a few individuals in the organisation or the information technology department; it is everybody's responsibility. At the same time, the Thai service industry is a complex environment, which consistently struggles to work within the established norms of Thai culture—particularly large sized service organisations, which are forced to have a reactive rather than proactive approach to information technology infrastructure development and use. It is, therefore, important to assess how these organisations institutionalise governance of their information technologies within their operating environment, such that it becomes an integral part of the business workflow embedded through organisational values.

This paper starts with conceptual explanation of IT governance and explains its significance for service organisations. It then discusses the institutional theory and highlights the social, organisational, and technical factors that help institutionalise a system in an organisation. This is followed by a detailed case study of a Thai bank and its experience with IT governance, using the theoretical frame of references developed in the earlier sections of this paper.

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CONCEPT OF IT GOVERNANCE

Different scholars have defined IT governance from different angles. For example, Grembergen (2004) suggests that IT governance is the organisational capacity exercised by the Board, executive management and IT management to control the formulation and implementation of IT strategy and in this way ensure the fusion of business and IT. The author suggests that in order for IT to function properly in the organisation, alignment between IT strategic business orientation is a must. On the other hand, IT Governance Institute (2003) argues that, IT governance is the responsibility of the Board of Directors and executive management. It is an integral part of enterprise governance and consists of the leadership and organisational structures and processes that ensure that the organisation's IT sustains and extends the organisation's strategy and objectives. This is by far the most comprehensive definition because it not only talks about who is responsible for IT governance, but also explains why it is necessary and how it is related to other strategies and plans. Weill and Ross (2004) suggest that IT Governance is the decision rights and accountability framework for encouraging desirable behaviours in the use of IT. This paper adopts this definition because different organisations use IT differently. And even in one organisation, different employees use IT differently. Therefore, IT governance is not just about how resources are allocated and managed and how resource capability and capacity of the organisation is developed. IT governance is about how resources should be changed, who is responsible for this management and development and who is responsible if things do not go according to plan. This means that simply assigning roles and responsibilities is not enough. Employees in the organisation have to be encouraged, coerced, motivated, and trained to operate and manage IT in a way that helps an organisation achieve its objectives.

IT governance leads IT to move an organisation forward in different ways. However, it is important for the board of directors, with its decision-making powers, to be involved, and business and IT managers of different business areas to attend the meetings to discuss different issues on the IT agenda: business initiatives, IT-enabled business processes, project approvals, business performance, and the process of technology implementation, deliverables and benefits. These leaders are well-aware and conscious of the value of business performance that involves business transformation, risk management, accountability and responsibility, business continuity and performance measurement (Brown 2006; Aguilera and Jackson 2003). They are keen to acknowledge the type of requirements, resources and people to involve in different projects to make them succeed (Nolan & McFarlan 2005). Likewise, communication strengthens their relationships and collaboration to achieve effective implementation of IT governance (Johnson & Lederer 2005). Hence, communication and decision-making are the first priorities of IT governance to operate a business productively and responsively. This means meeting outcomes involving decision-making and consensus agreement, accountability and of IT managers to ensure the organisation does not encounter survival difficulties in the competitive business market.

IT governance requires considerable information from business and IT strategies to create an understanding of an organisation and form strong relationships between the business and IT arms of the organisation (Bowen, Cheung & Rohde 2007). IT governance aims to support senior managers to make decisions to allocate organisational resources carefully by ensuring they align properly with business and IT strategies (Brown 2006; Grembergen 2004). Subordinates then become aware of scarce resources, and use them wisely and responsibly. IT governance focuses on planning organisational strategies, controlling system reliability and mitigating risk (O'Donnell 2004). This means IT governance primarily

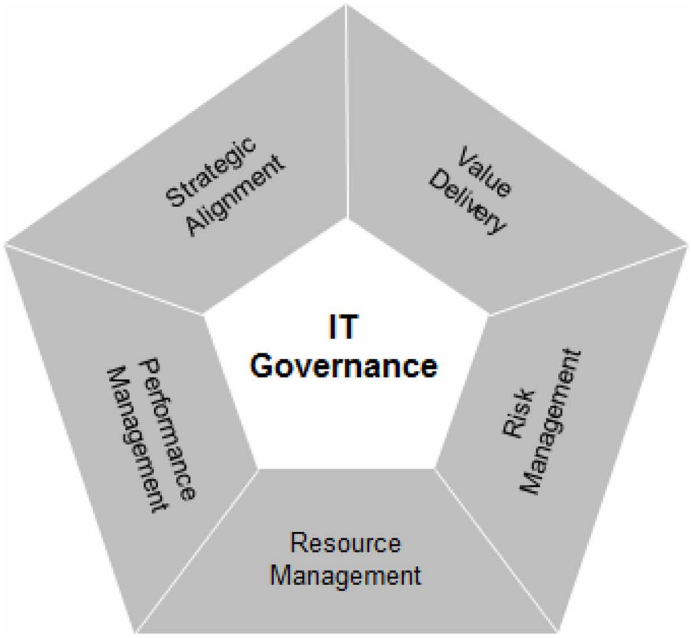
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focuses on business strategy with attention to the adoption and alignment of technology with business initiatives. Thus, it is important to understand that strong business knowledge and effective IT skills are required to implement IT governance effectively (Liu et. al. 2008).

Figure 1 illustrates the scope of IT governance. It focuses on five domains, i.e., strategic alignment, value delivery, risk management, resource management, and performance measurement. The most significant and fundamental domain of IT governance, i.e., strategic alignment calls for establishing the relationship between business and IT planning, thereby ensuring that IT operations are aligned with business operations. This means that all IT implementations in the organisation must be fully mapped with the organisational information requirements, such that the collectively the IT infrastructure works as the enabler of organisation's strategic and operational information requirements. Therefore, the value delivery domain calls for practices that ensure that IT does deliver the perceived benefits against business strategy, while at the same time optimizing costs and enabling tacit as well as explicit value of technology. This, in return, requires the organisation to make sure that IT stakeholders comply with business requirements and that risks posed to information and information managing resources are properly identified and managed; hence the third domain, i.e., risk management. The fourth domain, performance management, contributes to other domains and calls for monitoring organisational IT performance on various accounts, such as, strategy implementation of IT and project management, monitoring compliance completion and usage of IT, and measuring process performance in terms of service delivery and achievement of business objectives. The firth domain certifies proper management of IT resources (both technology and human) and managing investments in infrastructure and people.

The effectiveness of IT governance is compromised if relevant change management strategies are not put in place. Organisations, therefore, need to blend execution of IT governance practices and learning together to bring about learning and innovation in an organisation. IT governance is, therefore, not a one

Figure 1. IT Governance Scope. Source: Adapted from (IT Governance Institute 2007)



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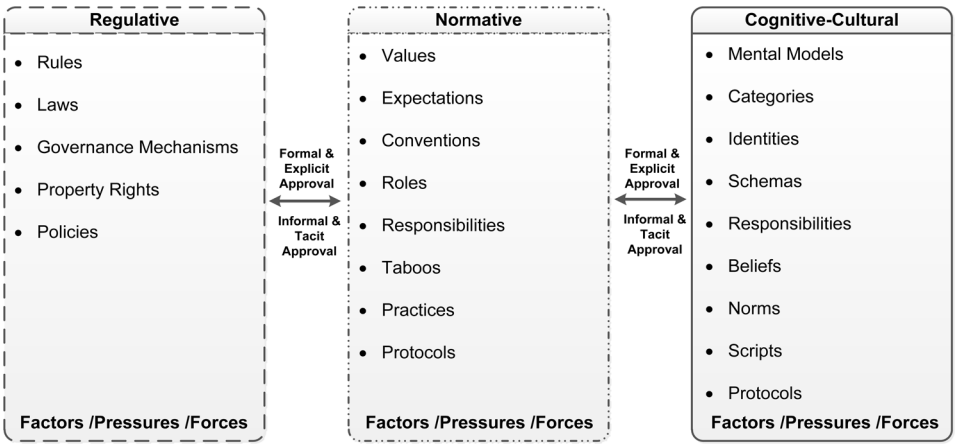
off endorsement of some business activities, processes, and controls. It should be treated as a governance mechanism of continuous learning aimed at the evolving use of IT, shaped through alignment between the organization's strategy and diffusion and application of IT within the organisation, guided by the value profile that stakeholders attach to it. IT governance is, therefore, not just a managerial concept, and requires commitment and understanding of every employee in the organisation. Its effectiveness, however, depends on the way it practices, controls, and processes have been institutionalised in the organisation.

INSTITUTIONAL THEORY

In institutional theory, there are five key concepts, i.e., isomorphism, organisational fields, institutional logics, institutionalisation/legitimacy, and organisational and institutional change (Washington & Patterson 2011). These concepts are shapped by three types of social forces in an institution, i.e. regulations, assumptions and expectations, and cultural cognition (Macfarlane et al. 2013; Scott et al. 2000). An organisation, thus, integrates and aligns different and similar variables to create organisational value (Washington & Patterson 2011) by systemising all processes, practices and ideas. In other words, these interactions help an organisations evolve and institutionalise various concepts, such as technology use, across the organisation through the processes of facilitating and sharing, which leads people understand and make sense of their roles, jobs, and activities by enabling them to practice, communicate, and co-operate collaboratively.

Figure 2 summarises a view of institutional theory, integrated with its pressures, forces and factors. It shows that institutional theory focuses on paying high attention to holistic assessment of dynamic operational processes to gain better alignment with more internal process synergies. External variables concern competition, social regulations, technological change, and the economic and political environment, all of which impact organisational capabilities in meeting organisational objectives. Dynamic relationships in the organisation are built through the organisational structure, which allows people to understand their roles and responsibilities to deliver effective organisation performance (Greenwood & Suddaby 2006). In other words, everyone being aware of the structural change within an organisation (Dorado 2005) aids understanding of clear organisational strategies and policies (Battilana 2006).

Figure 2. Institutional Theory. Source: Adapted from (Scott 2001)



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People make sense of what they have to follow to manage organisational change and consequent organisational development (Lawrence & Suddaby 2006). Best practices are implemented to assess institutional change and gain institutional stability, while supervising people so they learn from past mistakes (Mutch, Delbridge & Ventrescu 2006) and leading them to understand all institutional domains vertically (Chizema & Buck 2006).

Institutionalisation is achieved when a phenomenon is embedded in organisational life in such a way that it becomes an integral part of organisational life. This integration means that business cannot be executed legitimately (in economic, social, and technical terms) without it. Institutional isomorphism means that the whole organisation conforms to the same set of principles, rules, and norms regarding a particular phenomenon. It occurs through three factors—coercive, normative and mimetic. Coercive isomorphism is the result of presses from internal and external forces that force the organisation to exhibit specific behaviour. These social, cultural, regulator, economic, technical and political forces are exerted on an organisation such that it conforms to the rules and desires of a dominating party. For example, rules and regulations regarding taxation and employee relations, set forth by the government, are examples of external coercive forces. Another example of external coercive pressure is making a trading partner conform to a specific technology standard because that will make it easy for the dominating business in the supply chain to transact business. These pressures emerge from legal mandates, or are influenced by political structures and power relations in organisations, involving authority and approval to meet requirements or expectations.

Normative isomorphism refers to the collective effort of employees to evolve a social, cultural, economic and technical environment that breeds a desired behaviour as well as controlling it. It arises from resources (training, knowledge, technologies and related areas), which are adopted to gain professional practice and achieve effective and productive outcomes (Macfarlane et al. 2013; Washington & Patterson 2011). Thereafter, effective organisational change management and organisational relationships certainly embrace the organisational environment, which gains effective cooperation internally and externally. This isomorphism is achieved through management policies, education and training of employees, job descriptions and experiences, and networking through professional associations. Norms and values thus evolved in the organisation increase the similarity of knowledge, skills, and attitudes of employees in a specific work environment. Mimetic isomorphism calls for deploying successful best practices, solutions or remedies of other organisations (Washington & Patterson 2011) to empower employees in uncertain situations (Macfarlane et al. 2013). When organisational technologies are poorly understood, when goals are ambiguous, or when the environment creates symbolic uncertainty, organisations may model themselves on successful organisations, within the same industry or outside of it (DiMaggio & Powell 1983). For example, a technology platform adopted by a competitor may be considered by an organisation to address uncertainties occurring due to changes in the business environment.

Applying institutional theory to IT governance means that unexpected situations are avoided and risks mitigated. People are encouraged to improve their individual skills learn to gain more knowledge to support and remedy IT governance and related domains in the organisation by sharpening their technical efficiency or organisational performance to meet organisational/stakeholders' expectations. It thus, aims for responsive behaviours under the institutional forces in an organisation.

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RESEARCH METHODOLOGY

This research employs an interpretive epistemology with a qualitative perspective. The aim of this research is to explore how large sized Thai service organisations institutionalize IT governance practices. In order to address the research question for this study, 17 middle to senior managers representing various roles in the organisation were interviewed and a further 141 surveys were completed among the staff of Company A. were selected The interviews were conducted over a one to one and half hour period and included a cross section of job descriptions that participate in IT governance practices at various levels. This cross section includes staff involved with development, implementation, supervision, management, and use of technical as well as non-technical practices and processes relating to IT governance in company A. The interview questions were open-ended and interviewees had freedom to describe their experiences and problems beyond the scope of the questions. In addition, researchers were provided access to all documentation as well as access to sites of concerning IT governance. The interviews were transcribed and data from all sources were analyzed using NVivo software using its features of themes, descriptions and assertions. Survey data was categorized through various visual descriptions. The conclusions drawn in the following case, thus, represent interpretations of the evidence as understood by the author. To comply with confidentially agreements with the case study participants; theirs as well as their organization's identity has been suppressed.

CASE STUDY

Company A was established in 1945 with a registered capital of THB5 million (USD156, 885) and 21 employees. It has been one of the major local commercial banks in Thailand since 1976, and is listed with the Stock Exchange of Thailand. It is indexed with the bank of Thailand, which operates as the central bank—designating monetary policy, examining financial systems, supporting banking assistance to the government and financial institutions, releasing securities and new prints of banknotes, and controlling the foreign exchange rate in Thailand. Company A is one of the five largest commercial banks in Thailand as determined by its total assets, loans and deposits.

Company A's services include personal saving and investments, fund transfers and bill payments, foreign currency services, personal loans, international trade services, bank guarantees, credit and debit card services, cash management, domestic credit, international banking, investment banking and securities. Currently, it has a registered capital of THB30,486 million (US958 million) with total revenue in 2013 of approximately THB1.43 billion (US44,966 million). There are over 19,000 employees who work in over 900 branches across Thailand, with 11 overseas offices in the US, Hong Kong, Cayman Islands, China, Japan and Myanmar, with trade partners worldwide. Table 1 summarises Company A's key information.

Organisational Structure

Company A is a large organisation with significant involvement in Thai monetary policy and operations. As Figure 3 shows, there are 13 core business divisions with numerous smaller departments, sections and teams. The top management in the organisation represents four major components—shareholders, board of directors, independent directors' committee, and the management committee. In addition, the

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Table 1. Key Information about Company A

Business Dimension	*Features*
Nature of business	*Banking and financial services*
Year of establishment	*1945*
Head office	*Bangkok, Thailand*
Location	*Across Thailand with designated countries*
Total revenues 2013	*Approximately THB1.43 billion (USD44,903 million)*
Registered capital	*Approximately THB30,486 million (USD958 million)*
Total branches	*Over 900*
Total overseas offices	*11*
Total employees	*Over 19,000*

board of directors is advised by a range of directors and committees. The executive management team governs and controls the operational divisions and provides directions and guidelines for the business. Individual divisions collaborate closely across different product areas. The organisation has decentralized formal management, thereby, individual divisions have extensive authority to run business activities.

Information Technology Organisation at Company A

In Company A, IT is in the systems division, with 14 key IT operating subordinate departments (see Figure 4). The CIO is the manager of the systems division, and is responsible for executing and controlling all IT functions related to all business activities in every business division and each subordinate department throughout Company A.

IT operational services are divided into two areas of responsibility—corporate and divisional IT. Corporate IT operates under the IT planning department in relation to the use of IT at the strategic level only. Divisional IT focuses on IT operations, and maintains all IT activities and services in the business division levels, including all subsidiary departments and branches. Therefore, the systems division handles all IT concerns and operates all IT activities in relation to all business transactions. The systems division is located at head office in Bangkok, leading all in-house and outsourced IT operations within head office and throughout the branches all over Thailand.

Major Technologies at Company A

Table 2 lists the various IT systems and applications that are implemented and operated to meet the business requirements of Company A. It classifies six business programs: (1) marketing, (2) personal online banking, (3) business online banking, (4) electronic funds transfer, (5) IT security and (6) banking operations.

The core banking system delivers all financial and banking data integration in real time: transaction banking, lending, mortgages, deposits, and online and mobile access. The credit management administration system controls credit transactions by integrating the selected vendors to facilitate data exchange with corporate and retail customers. Moreover, the credit management administration system enables the

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Figure 3. Organisational Chart of Company A

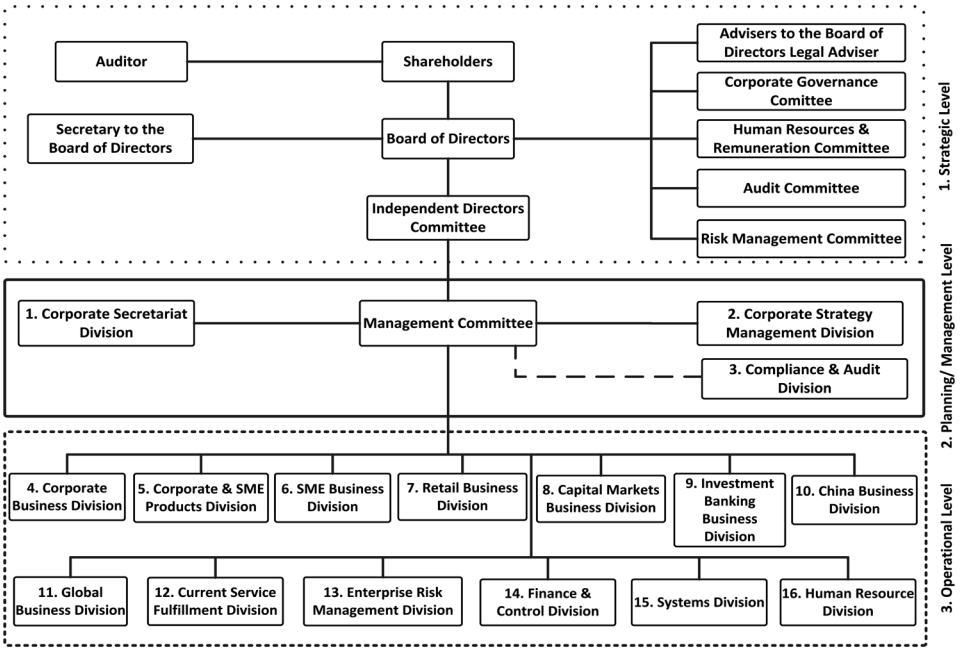
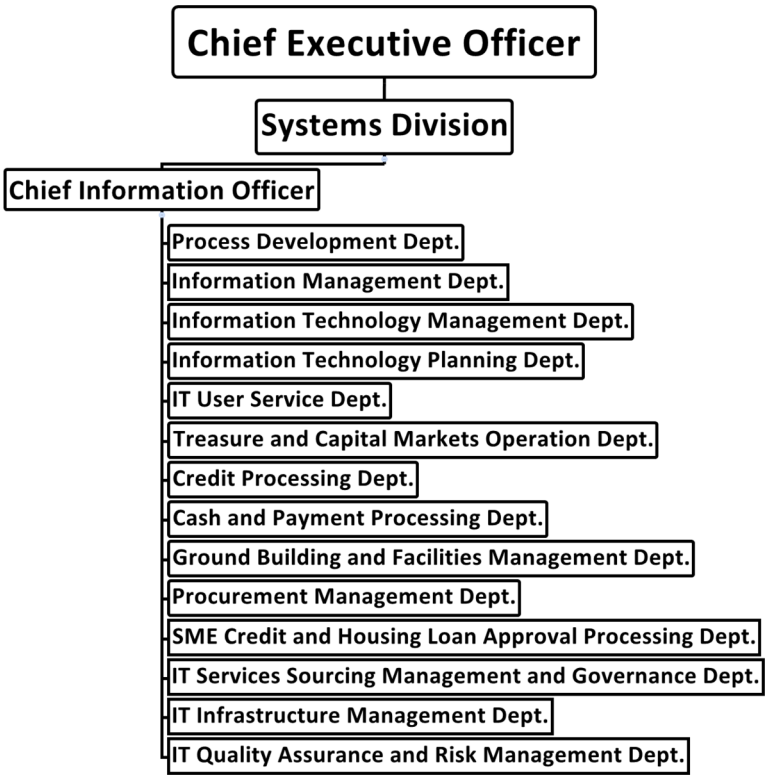


Figure 4. Organisational Structure of IT at Company A



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Table 2. IT and Operational Technologies Infrastructure at Company A

IT Infrastructure	
Marketing:	*Social networking service*
	Customer relationship management
	Sales force automation system
	Campaign management system
Personal online banking	*Verified by Visa and MasterCard SecurityCode*
	One-time password
	Short message service and email notifications
	Online virus scanner
	Security software
	Mobile banking
Business online banking	*Electronic data capture system*
	Near field communication technology
	Mobile banking
Electronic funds transfer	*Dynamic currency conversion system*
	Payroll systems
	Real time exchange rate trading system
	Bulk payment system
IT security	*Data security and branch service systems*
	Virtual server and storage
	Key risk indictors
	Risk event database
	Record management systems: financial data, accounting and Payroll, operations, compliance, data security, policies, compliance, standards and regulations
Banking operations	*Core banking system: transaction banking, lending, mortgages, deposits, and online and mobile access*
	Credit management administration system
	Loan origination system
	Queue system
	Document imaging system

loan origination system to control and monitor all steps in loan application processing. With over 900 branches across Thailand, Company A facilitates customer service by implementing a queue system, a document imaging system and related banking systems.

Company A originally implemented data security and branch service systems. However, data protection issues arise from the different business processes, business applications and record management systems implemented on servers. Thus, a virtual server and storage was introduced to strengthen safety and protect data from attacks or risks from viruses and malicious intrusions. Risk-management tools,

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such as key risk indictors, risk event databases and related systems, monitor and control risks. Record management systems are the key applications that manage and interact with different business activities and systems, for instance, financial data, accounting and payroll, operations, compliance, data security, policies, compliance, standards and regulations. For business online banking, an electronic data capture system validates online credit card transactions over e-commerce websites for safe online payments. It detects fraudulent credit cards trying to make online transactions. This process focuses on strengthening the safety and accuracy of online financial data to support merchants that are business customers of Company A. NFC technology has been employed and developed for mobile banking. Customers can easily check their balance, transfer funds, top-up savings and make payments via their mobile phone. A dynamic currency conversion system allows electronic funds transfer so credit card holders can make payments converted into local currency from 35 different currencies. In addition, a real time exchange rate trading system is available over Company A's website. The bulk payment system allows transfer of large transaction payments.

In terms of personal online banking, Company A focuses on safer online financial transactions. Verified by Visa and MasterCard Security Codes are used to deliver fraud detection systems to strengthen customer shields. One-Time Password is a unique password notified by Short Message Service (SMS) over customers' mobile phones and email to immediately update and confirm transactions. Company A was the first bank in the Southeast Asian region to bring this technology to the banking industry. This service encourages and supports customers shopping over the internet and making payments through online transactions. Online security is vital for business online banking. Customers can easily access Company A's website to scan for viruses online and download security software products to help increase online protection.

Company A considers that IT infrastructure is vital to its business. It is implemented in different functional areas of the business divisions to ensure its products and services deliver value. A social networking service is also a key marketing channel that connects customers easily and interactively, possible as a result of strong growth in the use of social media. It markets new business products and services. A CRM system is implemented in both retail and corporate business divisions to ensure good relationships using technology to cooperatively manage and automate sales, marketing, customer service and technical support. A sales-force automation system is adopted to collaborate with CRM to drive and increase performance and profitability. Company A adopts a campaign management system to design and promote multichannel marketing initiatives and follow up their effects by analysing customer classification.

Information Technology Operations and Management

Company A mainly focuses on two areas of IT performance—management of outsourcing and vendors and business-IT strategic alignment. The SLAs focus on measuring performance and processes of different outsourcing activities and vendors. In addition, the BSC measures IT performance against alignment with business models, processes and strategies in response to profitability. Company A adopts a back-office centralisation solution to increase productivity and decrease expenses and staffing levels throughout all branches in metropolitan areas. All the non-core business functions are centralised in a shared environment.

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Implementation of IT infrastructure routinely involves IT service management. The ITIL is adopted to support the IT planning department configure management, focus on organisational strategies and projects, and coordinate other teams and departments vertically and collaboratively. ITIL was adopted to create a master plan by allowing the IT planning department to manage all IT projects thoroughly, transform them properly and assign the responsible people correctly.

Strategic Alignment

Company A has a well-established procedure for technology implementation. Each new technology is introduced in the organisation in response to some strategic considerations. The organisation follows an extensive process of performance audit, whereby performance of processes as well as technologies is measured periodically. This evaluation provides management with feedback on the efficiency of processes as well as technologies. This assessment helps in identifying the technology and process gaps, which helps technology implementers identify the right kind of technologies that suit the business. Once they understand what technology is right for the business, proposals or quotations are sought from technology vendors. Doing so, not only organisational managers know what type of technologies is right for the business but at the same time they also know the limitations and capabilities of technology, which helps them with change management. The head of software quality assurance summarises the process:

We list all priorities from each business improvement initiative. We check the most useful technologies and methodologies that match the business requirements. The various committees that we have then meet on this IT agenda and take decisions on technology developments/procurements/improvement. These are thus able to indicate project stakeholders as well as resources required to undertake the projects.

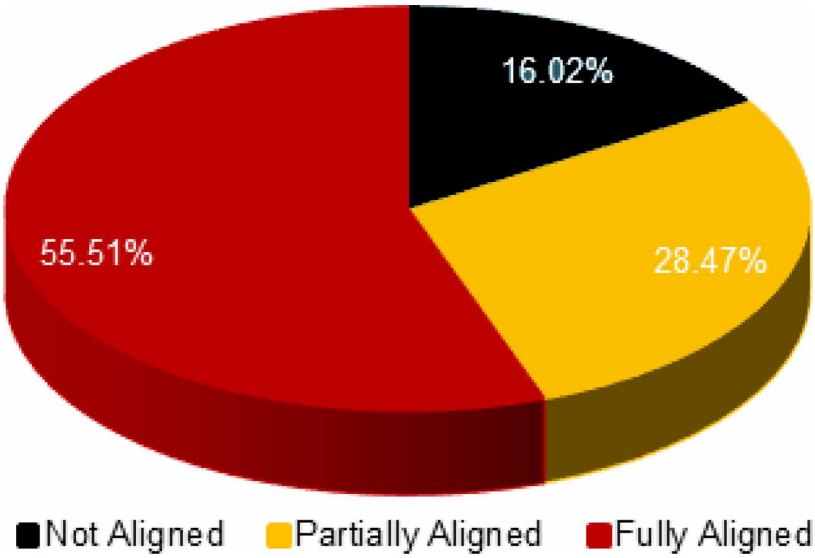
Figure 5 shows that most respondents in Company A (55.51%) believe that IT is fully aligned with business model. On the other hand, 28.47% of the respondents believe that IT is partially aligned with business model, and relatively low number of the respondents (16.02%) believes that it is not aligned with the business model. This shows that Company A has a relatively low number of employees in the organisation who do not understand and interpret business requirements properly, and are not able to understand how technology is used to address these business requirements. Company A takes a closer look at IT-based enterprise architecture and business processes to investigate where the business needs are and adopts the right solutions to improve performance and mitigate risks related to IT infrastructure. Conformance to enterprise architecture not only helps with better performance, but also identifies root causes of the issues and loopholes that contribute to problems and issues with business processes.

Strategic Information Technology Implementation

Company A is a technology savvy organisation. Top management supports technology introduction, operation, and management at various levels in the organisation. There is fair bit of confluence between top management and the CIO. Once the top executive provides clear directions and visions on where the business is heading, the CIO is able to map business requirements with technology. The close association between the CIO and the CEO helps the organisation grow in synchronisation with technology. In this way, technology becomes an integral part of organisational growth. The head of IT strategy and policy further explains:

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Figure 5. IT Alignment with Business Model



I think the most important is sponsorship from top management. It can improve IT systems, processes and the methodological thinking of people. It would be much simpler if the board of directors agree and support the intention to keep moving using technology. Their strong lead can support IT implementation to minimise difficulties in the business processes and achieve better results. Once this is done, the rest is easy because we provide education and training along with clear communication to involved people. They will clearly understand benefits of IT in the business.

External influences from both local and global environments impact the business of Company A, especially political factors. It is important for Company A to be aware of changes that directly and indirectly affect the ability of business and investment to meet organisational strategies and achieve business objectives. Company A focuses on government factors and legal concerns by anticipating and influencing public policy actions. In doing so, Company A complies with the bank of Thailand as mandated by the Thai Government. Senior managers take into account major political realities, such as, government-driven tax laws, trade quotas and restraints, regulatory frameworks, industry subsidies, investment incentives, local content manufacturing requirements, regulated pricing, trade agreements, economic treaties and bureaucratic processes. Since political developments and changes control business direction, Company A follows and updates practices according to directions from the bank of Thailand. This approach helps Company A to avoid problems and issues emanating from noncompliance and financial malpractices. A senior IT architect specialist provides insight in to this:

The regulatory team is responsible for working with the latest guidelines and policy from the bank of Thailand. These changes directly affect all banks in Thailand. The regulatory team is always aware of changes and understands what to change and improve. It also updates the latest information and reports to the participating people in the organisation, including our internal and external stakeholders.

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To keep up with the changes, Company A relies heavily on IT. It is not only proactive in implementing new technologies, refurbishing and upgrading existing ones, but also keenly peruses BPR for continuous improvement. IT governance is the cornerstone of these strategies, whereby the company adopts and customises only reliable and trustworthy existing IT governance frameworks to meet its business considerations. The expected benefits of these existing frameworks meet the business objectives of Company A. The guidelines available through these frameworks help Company A to cope with its business effectively and proficiently. A senior IS auditor states:

We adopted and customised CobiT and ITIL in some areas. These methodologies support monitoring of different workflow processes relating to project management, quality assurance, capacity management, and customer relationship management. These help us mitigate risks and incidents from unexpected situations. They also reduce controlling processes and minimise costs for long-term management of processes.

Information Technology Investment

In Company A, the IT department works closely with other business functions. This collaboration helps IT people recommend solutions in terms of returns on investment and benefits expected in the future. For example, the senior IT strategy and policy specialist comments:

We acknowledge what kind of problems the business department has and encounters daily. We know what type of IT solutions to adopt and support them. This knowledge helps us understand the requirements and propose a variety of solutions for the end users to select from.

In Company A, a steering committee manages IT investment decisions. The committee pays attention to details in project scope, goals, plans, schedules, timelines, costs, quality expectations, tools and deliverables. They focus on reporting of project progress, and project changes and results of measurement. The senior software quality assurance specialist explains:

The committee highly focuses on making decisions on IT investments. They always inquire about the problems in the business departments that are related to the use of IT and the IT department always gets involved. They support the need to align business and IT and achieve better relationships.

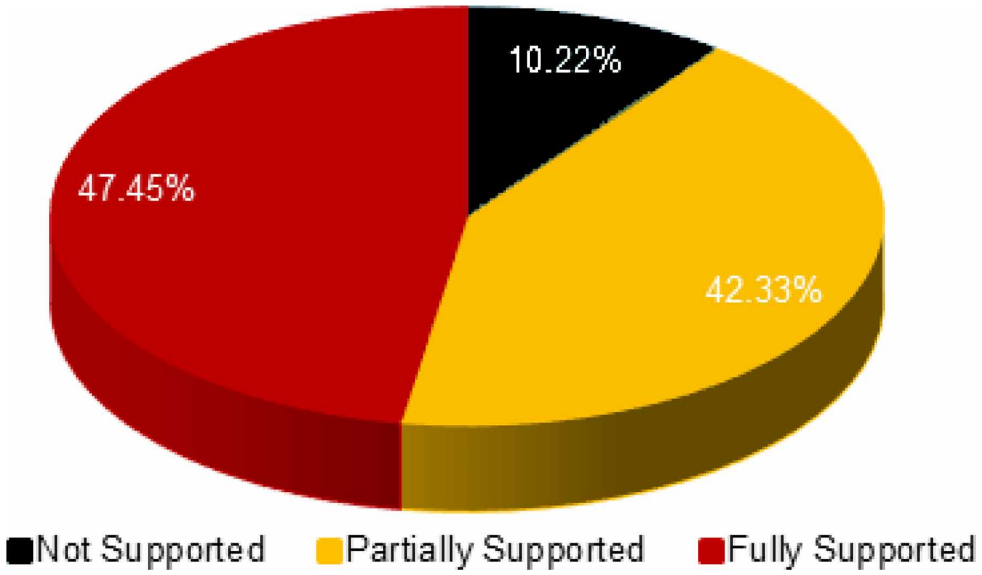
Value Delivery

Figure 6 shows that 47.45% of the respondents in Company A believe that IT system fully support business services, with an almost equal number of employees suggesting that they partially provide support. This shows that Company A spends significant effort in taking care of the vulnerabilities and technology as well as the processes enabled by technology. Otherwise, the IT support systems can be a burden that can slow down the business. However, since the bank also involves third party technology services, it requires the IT department to continuously monitor and check the progress against value profile required of IT and related processes and procedures, and SLAs.

Company A operates in a highly volatile environment. However, its internal workflow and procedures are fairly stable. This helps the organisation to not only focus on an acceptable level of service to accelerate value for customers, but also helps it to continuously innovate and transform its business to

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Figure 6. IT and Business Service Support



meet and exceed internal and external customer expectations. This has led to very high level of employee turnover. As a result, retention of expertise is an issue with the bank. Company A has limited number of experience skilled employees who have in-depth knowledge of IT related to backend banking processes. IT also has a fairly large number of new or relatively newer employees who are not fully trained and do not possess the same level of expertise. The head of software quality assurance confirms this:

It is essential to have people who are ready and information well-prepared in advance to gain high productivity or high efficiency in a banking environment. Otherwise, I will say that we would waste time. I would like my department spend less time in preparing the department to provide the required level of surveys and more timing actually providing that surveys.

It is understandable why most respondents (25.42%) believe that lack of expertise is the main cause of failure to achieve expected value from IT (see Figure 7). Other major impediments to achieving value from IT as reported by the respondents include high costs of implementation and lack of planning. It is important to note that 15.57% of employees believe that employees are reluctant to change. This is because employees in Company A are fairly proactive in learning new technologies and do not have any issue with learning new technologies and new ways of doing business.

Figure 8 shows that 47.42% of respondents believe that the organisation's IT infrastructure's value delivery is mature whereas 42.01% of the respondents believe that value of IT service delivery is emergent, which means that the existing IT infrastructure is effective in providing required results. It also shows that IT is aligned with the business model, and IT support services are fully supported for business processes. The existing technologies are up-to-date and are not a hindrance to specialists. The existing technologies are contemporary and add value to the work of employees in the organisation. In other words, IT infrastructure fulfils the demand of higher workload and capacity to meet the rapid work of business, such that mistakes are avoided and delays in business processes and delivery of transactions are minimised.

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Figure 7. Causes of Failure of IT to Deliver Expected Value

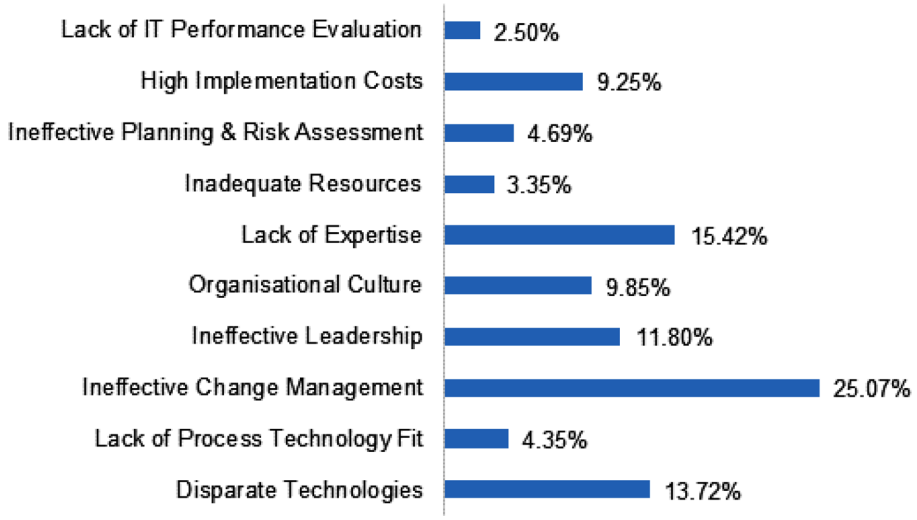
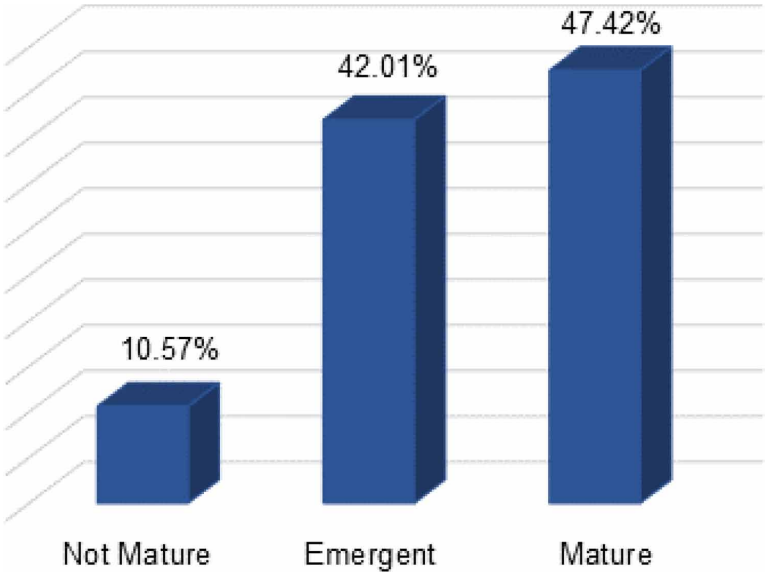


Figure 8. Value of IT Service Delivery

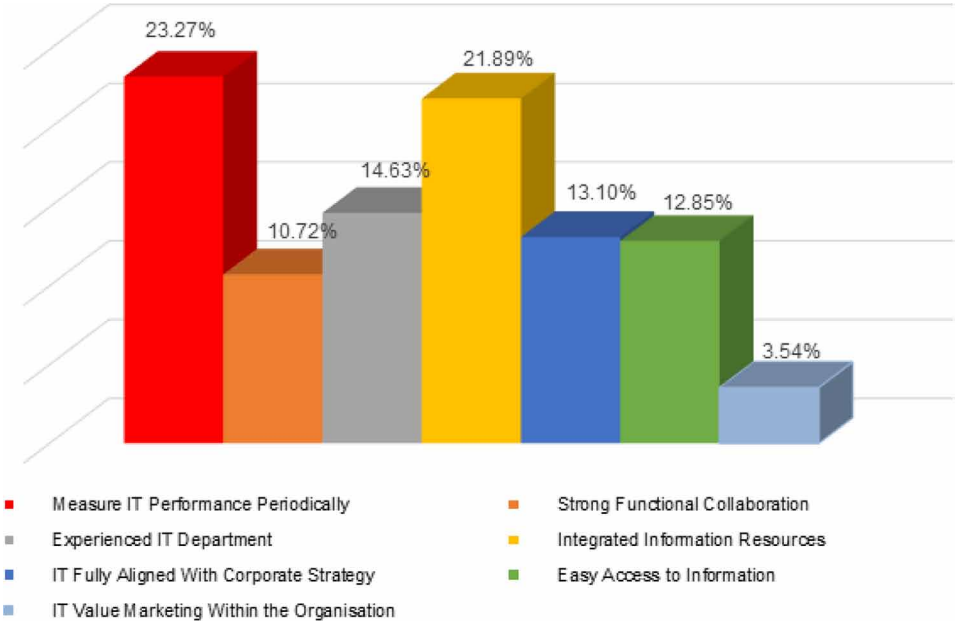


Since Company A is a financial institution, it has a propensity for measuring performance in financial terms. For this reason, most respondents (23.27%) agree that measure IT performance periodically is the key strategy to improve the perception of value delivery (see Figure 9).

Integrated information resources is rated by 21.89%. This reaffirms that the organisation is fully programmed to view IT as means to developing a robust CRM infrastructure. The fairly even response rate in other categories indicates that the role of IT is well-established in the organisation. Considering Company A's business, the results are not surprising. It shows that employees understand the business well and know how to maximise value from IT. It also shows that Company A considers performance

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Figure 9. Key Strategies to Improve Value Delivery Perception



measurement in a variety of business areas and utilises resources to ensure that employees understand the value of IT. Company A regularly monitors contractors and vendors and accesses the SLAs to mitigate risks and unexpected situations. The capability and capacity of IT infrastructure is used to support business growth.

Resource Management

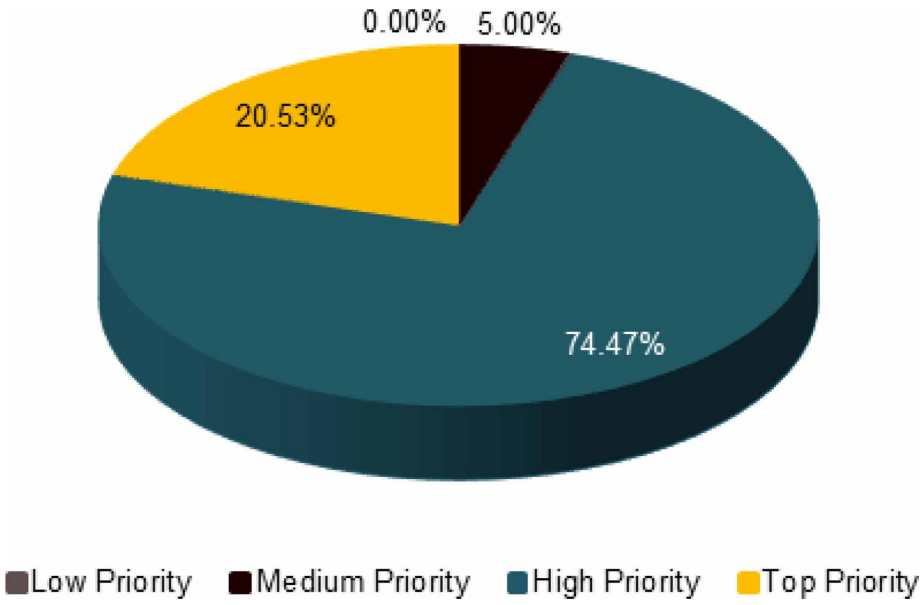
Being a financial institution operating in a highly competitive and technology intensive industry, Company A is quite keen on managing its critical IT resources. In terms of resources, it not only proactively manages the critical technology resources, such as hardware and software, but also the HR related to IT. A senior IT strategy specialist provides a statement about the organisation in terms of resource acquisition and management:

The planning team follows strategic directions from top management and update their plans with regards to ITIL change and configuration management. This team receives a master project plan that integrates other plans together and ascertains technologies required and assigns the responsibilities to people according to their experience and expertise. Senior management thus ensure that work is high quality, knowledge of employees is utilised properly and other employees learn from their expertise.

In Company A, there is a high turnover of technically qualified HR, therefore, it relies on well-thought out plans for employee retention, knowledge sharing, and peer based learning. Company A also lays equal importance on investing in existing hardware and software resources to upgrade and/or re-furbish them to gain continued and sustained value from them. This explains why 74.47% of employees in Company A believe that the organisation uses resources wisely and effectively (Figure 10). This shows

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Figure 10. Efficient Use of IT Resources



that employees are trained to not waste resources and help organisation to reduce costs. Company A thus gains savings and is able to channel resources where required. Company A employs this technique to capitalise on opportunities in cautiously applying IT resources and strategically preparing itself for improved economic conditions. The response to the survey also indicates that employees in the organisation understand the criticality of IT resources and can relate to their efficient use for the overall competitiveness of the organisation.

At Company A, top management has made IT an integral part of organisational life—employees cannot think of doing their job without technology. Company A encourages multiskilling of employees, which enables employees to build and strengthen their skills across various functions and platforms. Apart from technical and operational skills, they also learn particular banking skills specific to Company A's business. The organisation also provides ongoing support to employees, they become proficient in technology use within the organisation. The business analyst explains the support available to employees, so that they are trained to handle different aspects of IT based business execution:

We have a team that provides training and service support to internal staff. They are technically sound and picked from various departments. This cross-functional collaboration helps them create all inclusive training programs, which I think would be pretty expensive if commercial trainers were hired. In our case, this team is able to give a thorough perspective of critical technologies to employees in a much friendlier and close to home environment.

In addition, Company A also utilises vendor-based training and support. External vendors provide support services to the organisation on an as-required and where-needed basis. A senior software quality assurance employee explains the overall training paradigm:

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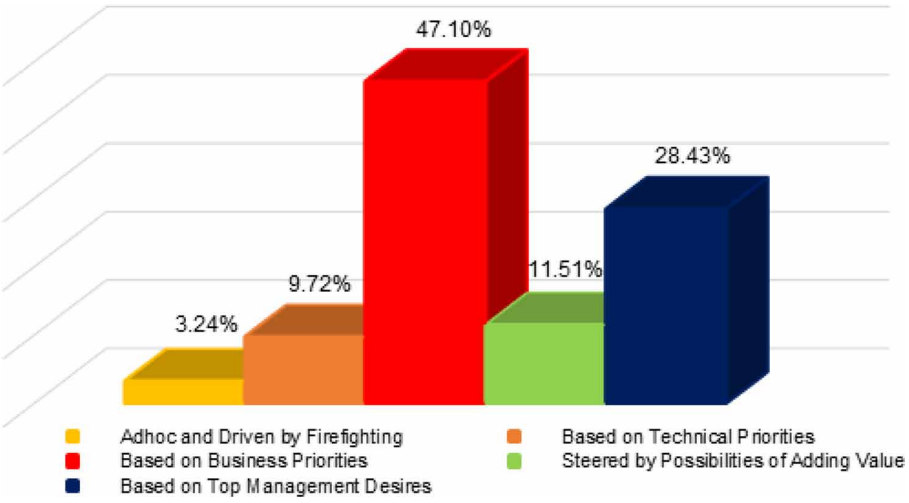
We have external IT specialists from IBM to organise IT service support, in terms of applications and servers at headquarters and branches. We hardly get IT problems. Vendors are required to follow all IT infrastructure master plans that have been created and directed by IT architecture team. If there are new policies, new guidelines, new processes and new designs, organisation will pass them on to vendors, so they update their training programs.

At Company A, top management is proactively involved in IT resource acquisition, allocation and management. At the same time, their technology implementation is derived from strategic business considerations, such that employees understand the rationale of technology, its utilisation, and how it contributes to individual efficiency as well as the overall business's profitability. It is, therefore, not surprising to note that 47.10% of respondents believe that resources allocation should be based on business priorities and 28.43% are of the view that it should be steered by possibilities of adding value (see Figure 11).

Budget Allocation

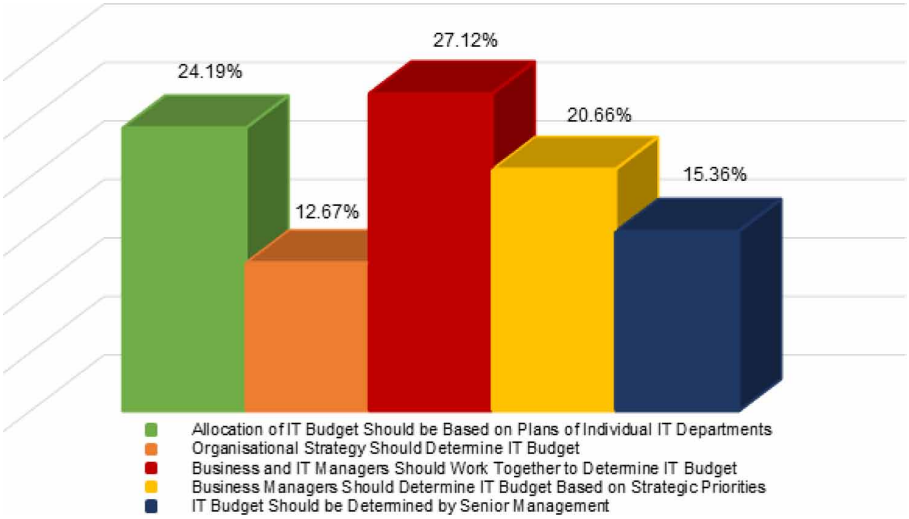
As explained earlier, Company A is a technology savvy organisation and allocates substantial budget for IT related infrastructure. The organisation has a fairly supportive CEO, who supports IT implementation at various levels in the organisation. It is, therefore, not surprising to note that majority of the survey respondents (27.12%) believe that business and IT managers should work together to determine IT budget (see Figure 12). This is because they have faith in, and trust top management that they will allocate funds when required. It is equally important to note that 20.66% of respondents believe that business managers should participate in IT planning and approval of budgets based on strategic priorities, whereas this organisation has IT infrastructure which is well aligned with its strategic business model. Similarly, there are only 12.67% of respondents who believe that organisational strategy should determine IT budget. It could be argued that these responses are somewhat biased because of continuing support and heavy involvement of the top management in Company A with IT related initiatives. In any

Figure 11. Allocation of Resources



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Figure 12. IT Budget Allocation



organisation with similar characteristics and a non-supportive CEO, responses in these two categories maybe higher. Nevertheless, in Company A budgets are granted for approved projects only where business opportunities are evident. Budgets are monitored and controlled to make sure that they are spent wisely and effectively.

Risk Management

Risk management is perhaps the most important concern of Company A. It has put in place various technologies to monitor and manage risks related to information as well as the systems that create/capture, exchange and store it. These initiatives are complemented with policy and procedural controls to monitor vulnerabilities and develop effective risk mitigation and management plans. The head of IT strategy and policy notes:

We focus on the efficiency of security systems by considering the type of security vulnerabilities, importance of system, and priority of information service. We classify results in different categories: type of incidents, level of severity and weakness. The results are used to develop an estimation plan that ascertains level and severity of risks, which is then used to allocate resources and develop assessment techniques, and risk mitigation and/or risk management plans, procedures and technologies.

The risk estimation process at Company A ascertains the probability or the likelihood of the risk occurrence. This exercise helps the organisation establish the criticality, interconnectivity, and the likelihood of risk occurrence. The systems administrator explains:

Once we conduct risk assessment, we create the improvement plan by checking the level of risks. Then, we create action plans by concentrating on the issues in action plans to manage the risks. The action plan is about the necessary steps to be taken, to avoid the risk as well as to initiate resources and raise alarms. So that, other departments can take defensive measures.

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Figure 13. Technology Risk Management

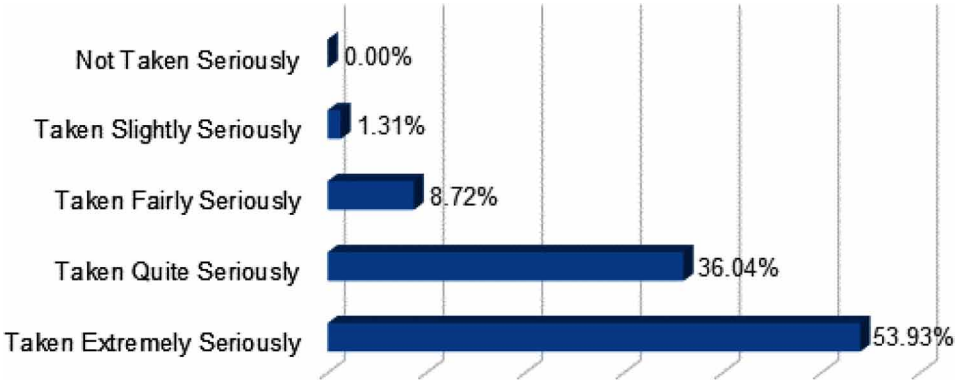


Figure 13 illustrates that 53.93% of respondents indicate that IT risk management in Company A is taken extremely seriously. It is unsurprising and understandable that senior management considers risk as the most important element of IT infrastructure in a banking environment. It is for the same reason that senior management pays close attention to IT risk management while considering business priorities and new and attractive business initiatives. It is also not surprising to note that none of the respondents believe that the organisation takes IT risk management slightly seriously or does not take IT risk management seriously at all.

At Company A, all departments have their own tools to investigate and monitor risks. Experts who work within their departments develop risk assessment reports. These risk reports are then shared among all functional areas of the business, thus employees in different functions understand vulnerabilities are coming from other functions. This not only helps senior management to develop all-encompassing IT risk management plans and processes but also helps in educating employees on different risks emerging from their own department as well as from other departments affecting their work. In the same way, the organisation also lays maximum emphasis on external risk sources. For example, the head of software quality assurance comments:

We always conduct risk analysis and assessment for outsourced work. Although we do not outsource any critical information, still risk assessment from external sources is a critical component of the overall risk management process in all departments.

Performance Measurement

Company A has a fairly well-established performance measurement regime. It utilises frameworks such as Balanced Scorecard to measure the overall performance as well as functional performance in different areas of the business. For example, for IT performance measurement the head of software quality assurance asserts:

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We adopt balanced scorecard to measure IT in a detailed way in different units. This gives us an in-depth analysis on the value assessment of IT to the stakeholders, customer service, and development of organisational capability. We couple this assessment with other assessments, such as; information quality, system reliability and availability, incident management, etc. to prepare detail analysis of IT infrastructure performance in the organisation.

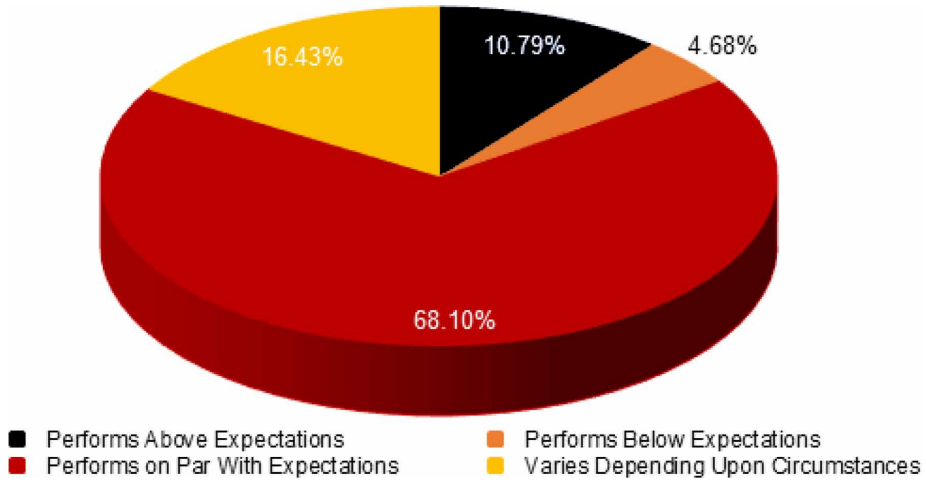
Company A also continuously measures the performance of SLAs with the third parties. This complements the organisational effort in measuring performance of IT hardware. For example, the business analyst states:

We regularly measure performance of IT infrastructure, i.e., servers and networks. When we use this information along with the SLAs that we have with our major technology vendors, we can forecast future technology requirements and capacity planning. For example, IBM always reports us the capacity of hard drives and we make decision whether to invest more.

Performance measurement and management is not just an IT department function. It should be a critical component of every department's work agenda. This sentiment is reflected in the survey result illustrated in in Figure 14. Most respondents (68.10%) believe IT performance performs on par with expectations. They realise that the existing technologies can handle and support requirements of all business cases. This means most problems are responded and solved on spot with the right IT services and supports. This indicates that technology solutions and practices in Company A are well-suited to main business areas that are set in the business priorities. So, they deliver effective results.

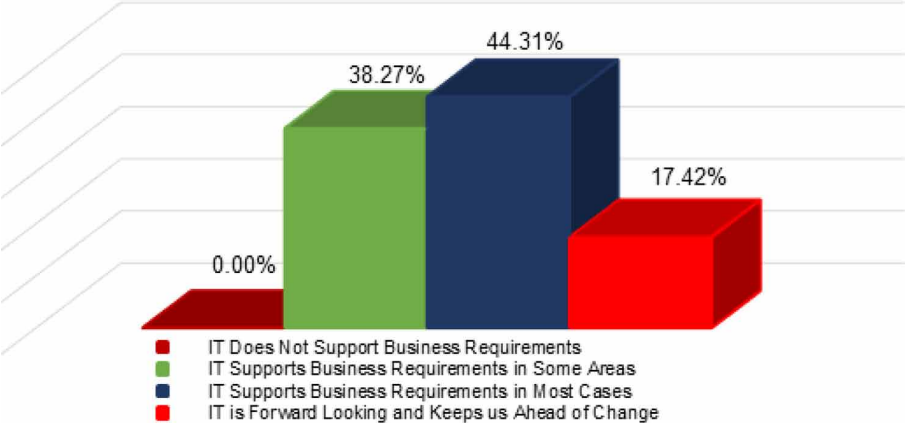
Company A acknowledges that IT infrastructure is the primary organisational foundation to an agile business. It is vital to routinely investigate the capability and performance of IT infrastructure. Thus IT internal auditors or analysts collate monthly performance scorecards and provide cross-functional reporting for all operational areas. The performance is addressed in a report with recommendations for improvement to stakeholders and leadership team members. At Company A, performance measurement also focuses on measuring vendor performance in meeting SLAs. This signifies that the organisation

Figure 14. IT Performance



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Figure 15. IT Capability



understands that IT depends on internal as well as external support, and business departments can only access service attributes of technical infrastructure as available at any given time. Therefore, in order to get the full value of IT infrastructure performance, both these perspectives have to be accounted for.

Figure 15 specifies that most respondents (44.31%) believe that Company A has an effective IT infrastructure, which supports business requirements in most cases. However, it is interesting to note that 38.27% of respondents are of the view that IT supports business requirements only in some areas. This means that in some business areas existing technologies and practices are not well-designed, incompatible, and unqualified to support business requirements.

Information Technologies Governance at Company A

As Company A heavily uses IT in its business, it is unsurprising that most respondents (35.50%) believe IT governance allocates responsibilities and accountabilities relating to IT use (see Figure 16). This means that employees clearly understand their roles, rights and tasks about how to use IT properly and responsibly on all IT operations with the desired behaviour and actions. They realise that IT governance is embedded in their routine jobs, daily systems and working lives. Some (27.18%) believe that IT governance allows them to use IT assets to direct and control risk management and productivity in the organisation. This signifies that the boards focus on how to use resources wisely. They are the responsible people who decide to approve and allocate plans and budgets. Budgets are granted only for approved projects that provide opportunities, and are transparent. The boards monitor and control budgets to make sure that they are spent wisely, smartly and effectively.

It is not only employees who are required to utilise resources wisely, but contractors and vendors are also monitored and assessed. Training in different techniques occurs so consumables and resources are not wasted, and to capitalise on opportunities by cautiously applying IT resources and strategically preparing for improved economic conditions. Hence, Company A minimises unnecessary costs, has fewer expenses and limited possibilities to encounter unexpected large payments. This means Company A gains more savings and more earnings in the meantime. Particularly impressive, Company A employs this technique to capitalise on opportunities in cautiously applying IT resources and strategically preparing itself for improved economic conditions.

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Figure 16. Expectations from IT Governance

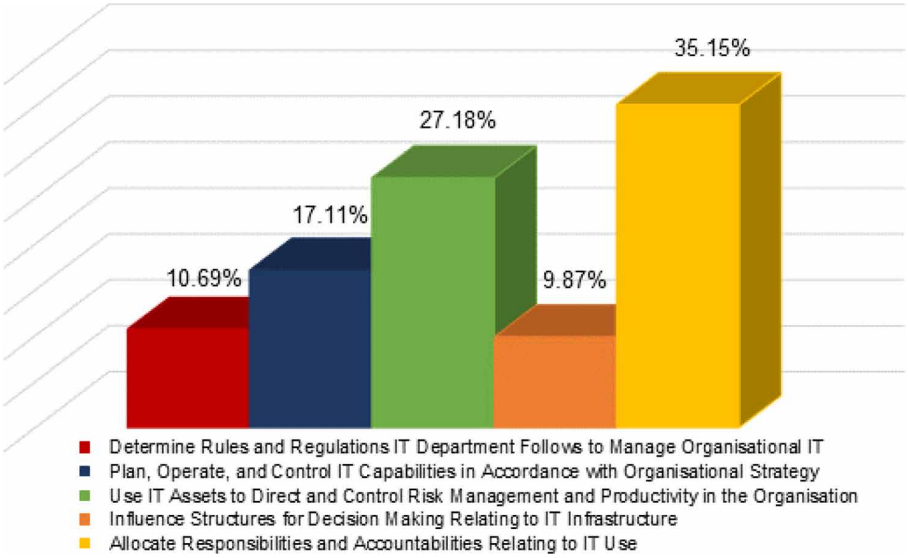


Figure 17. Involvement of All Levels of the Organisation in IT Governance

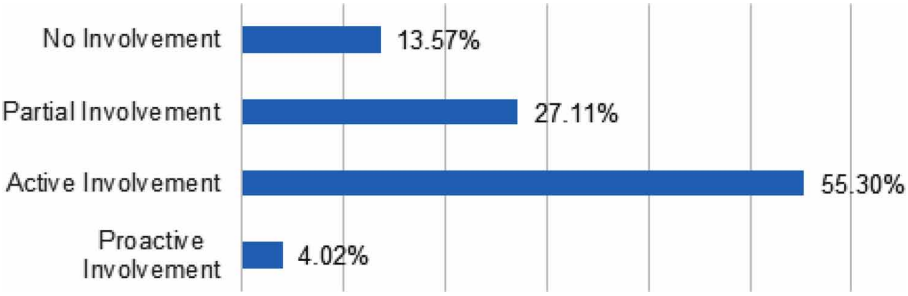


Figure 17 shows that most respondents (55.3%) believe that Company A has active involvement of people at all levels of IT governance. The boards and senior managers are careful and conscious of what is working. The hidden issues, the unforeseen problems and the benefits are predicted and expected. It is unsurprising that their subordinates are well trained and work hard. Moreover, effective communication is the golden key in this shared environment where the boards, the CEO, the CIO and subordinates routinely collaborate. Everyone understands their responsibilities and scope of decision rights. Therefore, everyone in all levels of Company A is eager to be involved in decision-making to achieve desirable behaviour in the use of IT and expected performance.

DISCUSSION

Company A, being a financial institution, has security of information at the top of its strategic agenda. It is also evident in its philosophy towards the way it has institutionalised technology. Company A treats IT as a strategic asset, though the overall scope of technology is limiting and has a passive stance. Imple-

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mentation and utilisation of technology is policy driven and follows directions set by top management. Utilisation of technology is more focused on risk monitoring and management for known or detected risks. At Company A, proactive and pre-emptive risk aversion, however, is not associated with the value profile of technology. In certain areas of the business, there is complete alignment with technology, such that employees understand its rationale and show a positive attitude towards its use as well as gaining expertise. At the same time, there are other areas, where employees do not understand the justification for technology use, and work with it purely because it is supposed to be used. In these circumstances, it is difficult to assign or assume information ownership, which leads to bigger issues like assigning responsibility and accountability for inept and inadequate understanding and use of technology. The end result is that there is no single 'definition' or 'explanation' of technology use in Company A. The definition or explanation as intended by the top management is not followed by the entire operational level. Although, the top management is technology savvy and has been very actively acquiring and managing technology resources, yet their focus or obsession with security and risk management has resulted in divided opinions. It is just like citizens are required to pay taxes in most economies around the world; however, there are a relatively low number of economies where the results of taxation are evident through public emancipation. In the rest, although people pay taxes they do not see that money being reinvested in their social uplift. That may be due to government corruption or inability of the government to comprehend or prioritise what is important for the public. Whatever the case may be, the general public loses faith in taxation, even though, in theory, it is understood that the government is charging these taxes in return for safeguarding individual and collective interests of the public. Hence, there are issues like tax evasion and frauds. In the same way, the intent of Company A's top management is evident through the active agenda of implementing contemporary technologies, allocation of resources for their use and management, and training employees on the same. However, due to focusing on specific functions, lack of proper education of employees about the utility of technology, and inability of planners and managers to take the 'value chain' perspective of the entire organisation, technology use is treated differently in different functions.

In terms of mimetic pressure, the organisation draws from contextual forces that shape banking or service industry. In doing so, it has implemented best practices for CRM and those relating to backend financial transactions. It is further supported by Company A's keenness to follow alignment of the business model with technology, which helps employees to increase their capacity to understand the causal relationships between technology and business execution. Company A's upskilling and reskilling agenda helps employees to learn from peers within the organisation as well as from within the industry. This helps Company A with a better understanding of why, how, and what organisational aspects are to be focused in various types of change processes.

In terms of coercive pressure, there are three factors acting on Company A. First and foremost, pressure comes from the Bank of Thailand, which sets the legal, operational, and social direction as mandated by the Thai Government. In response to these guidelines, Company A deigns its products and services, business processes and their enabling and support infrastructure like IT, regulatory frameworks, investment incentives, and controls. The second factor is the pressure coming from within the banking industry, which is evolving technologically on a continuous basis. Company A has to change technologically continuously to remain relevant within its industry as well as to utilise the technological innovation relevant to the banking industry. The third type of pressure comes from the customers of Company A, such as commercial organisations as well as the general public. With growing automation of human life and connectivity among the general public, there are increasing demands for availability,

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security, confidentiality, and completeness of information. This forces an organisation like Company A to continuously update its technical infrastructure to keep in sync with the technological changes in the operating environment well as the changing information needs and demands of the public.

Normatively, Company A has developed a culture that works as a well-oiled machine. Company A's CEO is committed to developing a robust technological infrastructure. The CIO of the organisation has significant input into strategic and policy direction of the company. Top management is, thus, quite liberal with financial and non-financial resource allocation. The company actively embraces new technologies, refurbishes existing technologies, and upskills its knowledge workers on contemporary technologies. Company A has a centralized structure, whereby technology implementation and management decisions are made by head office. However, top management also believes in delegation, and has delegated technology lifecycle management and majority of training to branch offices. This helps with the empowerment of middle management. Culturally, the organisation is security conscious and allocates a lot of resources and efforts in risk monitoring, mitigation and management. This has resulted in intensive internal competition between various functions on risk management. It helps employees in different functions understand technical and non-technical vulnerabilities originating from other functions of the business. This allows planners and managers to develop well-rounded IT risk management controls and plans, and in educating employees about the various types of risks posed to the organisation. However, the organisation seems overtly focused on security and risk, and often at the peril of improvement and innovation in other areas of the business. Company A also routinely conducts performance audits, where it assesses the value of the existing technical infrastructure, IT skilled HR, technology vendors, and SLAs, to the business. This evaluation is an ongoing activity in the organisation and the feedback is acted upon as and when deemed appropriate by the management.

CONCLUSION

This study presents a view of the institutionalisation of IT governance in large sized organisations. It contributes to theoretical research, as well as practice, in the field of IT diffusion and management and business management. There have been many research studies in IT governance; however, they have been focused on implementation diffusion and management aspects of IT governance. This study assesses how the case organisation has made IT governance an essential component of its organisational life. The findings from this study provide critical understandings about the organisation's view of technologies, as well as the psychology behind implementation of IT governance practices, as conceptualised and implemented in the organisation. This understanding helps understand how technology is viewed and absorbed within the social, cultural, organisational and technical environment of the organisation. At the same time, this understanding provides foundational knowledge for the development of more research to review further intricacies of IT governance practices and their interaction with the difference organisational, social, culture and technical systems within the organisation.

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Chapter 52
Information and Communication Technology for SMEs' Competitiveness

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ABSTRACT

Competitiveness of a firm is its capacity to achieve its targets. These targets are likely to be expressed in a variety of terms depending on the context (Barney 2002). Within a macroeconomic perspective, a competitive firm develops and sustains a level of performance that contributes to the Gross Domestic Product (GDP), employment opportunities, and the wealth of the people. From an entrepreneurial perspective, a competitive firm needs to survive in the market and to achieve market share and profitability. This paper deliberates regarding the theory of competitive advantage and discusses the role of Information and Communications Technology (ICT) for augmenting SMEs' competitiveness.

INTRODUCTION

Competitiveness of a firm is its capacity to achieve its targets. These targets are likely to be expressed in a variety of terms depending on the context (Barney, 2002). Within a macroeconomic perspective, a competitive firm develops and sustains a level of performance that contributes to the Gross Domestic Product (GDP), employment opportunities, and the wealth of the people. From an entrepreneurial perspective, a competitive firm needs to survive in the market and to achieve market share and profitability. The success of a competitive firm can be measured by both objective and subjective criteria. Objective criteria include return on investment, market share, profit and sales revenue, while subjective criteria include enhanced reputation with customers, suppliers, and competitors, and improve quality of delivered services (Barney 2002). A study of the SMEs in the Netherlands adopted a resource-based approach to identify the source of competitive advantage in a sample of 63 firms representing manufacturing and service sectors (Tilley & Tonge 2003). According to this study, "front runners" were distinguished from

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"back members" by the way in which they combined three sets of competencies: market, technological and organizational. Wickham (2001) also apply the resource-based theory in their analysis of competitive advantage in entrepreneurial firms.

Although there are many economists who used the concept of competitive advantage before, Porter's work (1980, 1985, and 1990) is still the starting point for any discussion of competitive advantage (Jones, 2000). Barney (2002) argues that the term of competitive advantage did not appear in Porter's work until the year 1985, while Penrose (1959) and Ansoff (1965) used the concept of competitive advantage before that time. With this brief introduction, this paper based on in depth literature review, secondary published sources and contextual analysis deliberates regarding the theory of competitive advantage and discusses the role of Information and Communications Technology (ICT) for augmenting SMEs' competitiveness.

LITERATURE REVIEW

Barney (2002) discusses four approaches to measure the firm's competitiveness. These measurements are firm's survival, stakeholder approach, simple accounting measures, and adjusted accounting measures. Porter (1985) indicates that a firm experiences a competitive advantage when "its actions in an industry create economic value and when few competing firms are engaging in similar actions." De Wit and Meyer (1999) and Buffam (2000), indicate that a firm has a competitive advantage when it has the means to edge out rivals when competing for the favour of customers. Barney (2002) explains that a firm experiences a competitive parity when the firm's action creates economic value applied in several other firms engaging in a similar action. An important goal of a business enterprise is to optimize shareholders' returns. However, optimizing short-term profitability does not necessarily ensure optimal shareholders returns since shareholder value represents the net present value of expected future earnings. One of the techniques that reflect the shareholders return is the concept of the Balanced Scored Card (BSC) as an indicator for the firm's competitive advantage.

Resource-based theories of strategy have become increasingly influential in the recent years and most writers take their inspiration from the work of Penrose (1957). Whereas Porter (1980) intended to see the competitiveness of the firm as a result of its market position, resource-based theorists do claim that if firms within an industry are doing well, the reason for this is their core competencies. Core competencies are the collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technologies as explained by Prahalad and Hamel (1990). Prahalad and Hamel (1990) focus on the resources, capabilities and competences of the organization as the source of competitive advantage rather than the environment, as in the traditional approach. Penrose, in her work 'The Theory of the Growth of the Firm (1959) is often credited with the idea of the resource-based view. Also, the work of Selznick (1957) stressed the role of distinctive competences and Chandler (1962) demonstrated the importance of organizational structure in the utilization of a firm's resources. Rumelt (1997) adopts the resource-based view. Senge (1990) and Argyris (1994) stress the acquisition of competences through internal mechanisms of individual and collective learning.

The resource-based theory becomes more and more subject of critique under the pressure of globalization. Some of these critiques are:

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- The most important problem to the resource-based view is the lack of a clear and coherent treatment of dynamics; it does not theorize the mechanisms underlying the creation of new resources (Barney 2002);
- The application of the resource-based approach to the strategic management of the small firms has been limited.

Porter's Diamond

Porter (1990) identifies four stages of national industrial development: the factor-driven stage (characterized either by natural-resource-based activities (primary extraction or by labour-intensive manufacturing), the investment-driven stage (associated with the manufacturing of intermediate and capital goods and infrastructural building), the innovation-driven stage (when a country is human-capital abundant and active in research and development) and lastly the wealth-driven stage. He argues that the correct policy for industry and government depends on the nation's developmental stage. As well, Porter (1990) provides a useful concept that can help firms to explore improvements for productivity. The key principles of the competitiveness paradigm can be summarized as follows:

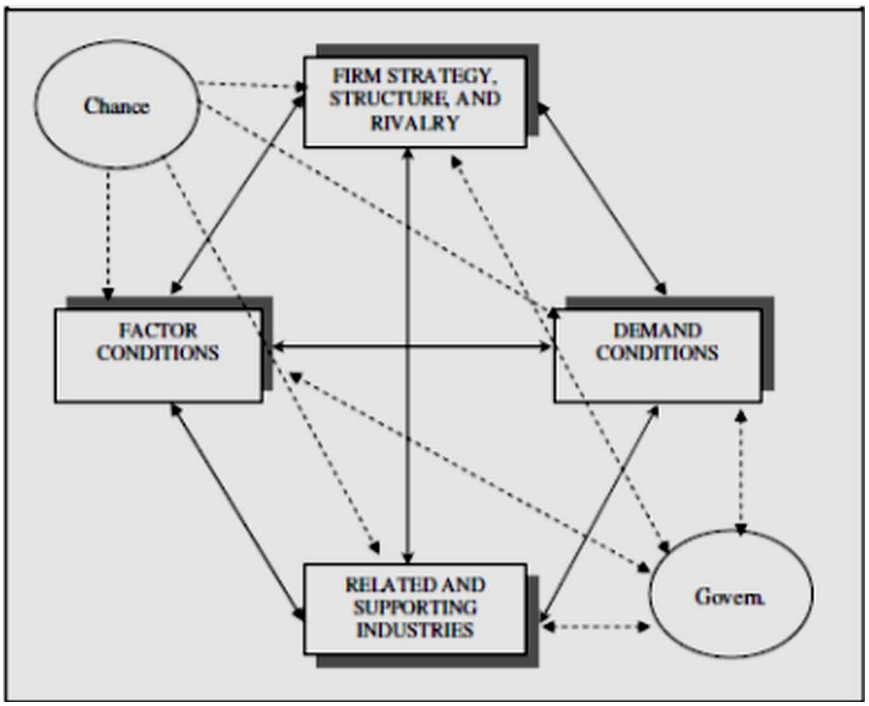
- Firms need a healthy home base to assist them in developing and sustaining the capacity to innovate. But firms, not nations, are on the leading edge of international competition;
- Competitive advantage results from an effective combination of appropriate firms' strategies and its environment;
- Competitive advantage is sustained through continuous innovation and upgrading of the productive capacities of the firms.

However, Porter's theory of national competitive advantage (1990) becomes more and more subject of critique under the impression of the digitalization, globalization and deregulation. Hence, although Porter makes a contribution to the theory of international trade and strategic management, none of the four determinants offered by Porter is new (Barney 2002). It means that Porter's work lacks the originality.

Porter has gained all his information from case studies of different industries in different nations. He does not offer any empirical or statistical evidence to support his theories. Although this criticism is mainly true, it should be stated that by using such a qualitative framework, Porter introduces several interesting points like the advanced and specific factor creation mechanisms and sophistication of demand conditions, which would have been very difficult to capture if he had just focused on quantitative method and formal modelling. According to Porter, domestic demand conditions of an industry are amongst the important determinants of the international competitiveness of this industry. The relationship between international competitiveness and the size of home demand is one of the issues that are open to dispute since there are two conflicting arguments concerning this relationship: firstly, if home demand is large, firms may feel secure to invest in industries where there are economies of scale, and given that there is intensive domestic rivalry and local buyers parallel foreign demand, this may encourage international competitiveness and secondly however, if home market is large enough, firms may not bother trying to export and may prefer to concentrate solely on the home market.

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Figure 1. Determinants of national advantage (Source: Adopted from Porter 1990)



Determinants of the national competitive advantage are grouped in four categories: factor conditions, demand conditions, related and supporting industries, and firm strategy, structure and rivalry (Figure 1).

After analysing the competitive industries, Porter extended his theory to the national economy as a whole. However, his ideas became more subject of critique under the impact of the ICT.

Clusters Approach

The goal of the economic development is to achieve prosperity for all citizens. Productivity and productivity growth determine the economic growth. Whereas, innovation is a key driver of productivity growth, and clustering supports both productivity and innovation (Porter 1990). Once a cluster is formed, the whole group of industries becomes mutually supportive. Clusters include an array of linked industries and other entities important to competition and they promote both competition and cooperation (Porter 1998a). Thus, clusters can affect competition by increasing the companies' productivity, deriving the direction and pace of innovation (Porter 1998b). Furthermore, being part of a cluster allows companies to operate more productively in sourcing inputs, accessing information, technology and needed institutions, coordinated with related companies, and motivating improvement (Fisher and Rueber 2000).

Porter (1998b) makes a convincing case drawing on lessons from experience:

…government, working with the private sector, should reinforce and build on established and emerging clusters rather than attempt to create entirely new ones. New industries and new clusters emerge best from established ones.

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Clusters are a driving force in increasing exports and attracting foreign investments. For example, Business Network Program in Australia noted that the rate of increase in exports is four times higher in cluster networks than in non-cluster environments (Singh 2001). Singh (2001) discusses some of the common qualitative and quantitative performance measures to determine a cluster's success in creating and sustaining competitive advantage:

- The presence of upstream and downstream industries;
- The level of competitive inputs such as services, machinery and equipment;
- The level of employment in all business activities related to the cluster;
- The rate of increase in value-added products and services;
- The rate of increase in exports of value-added goods and services;
- Inter-firm cooperation and the quality of the linkages and interactions;
- New start-ups.

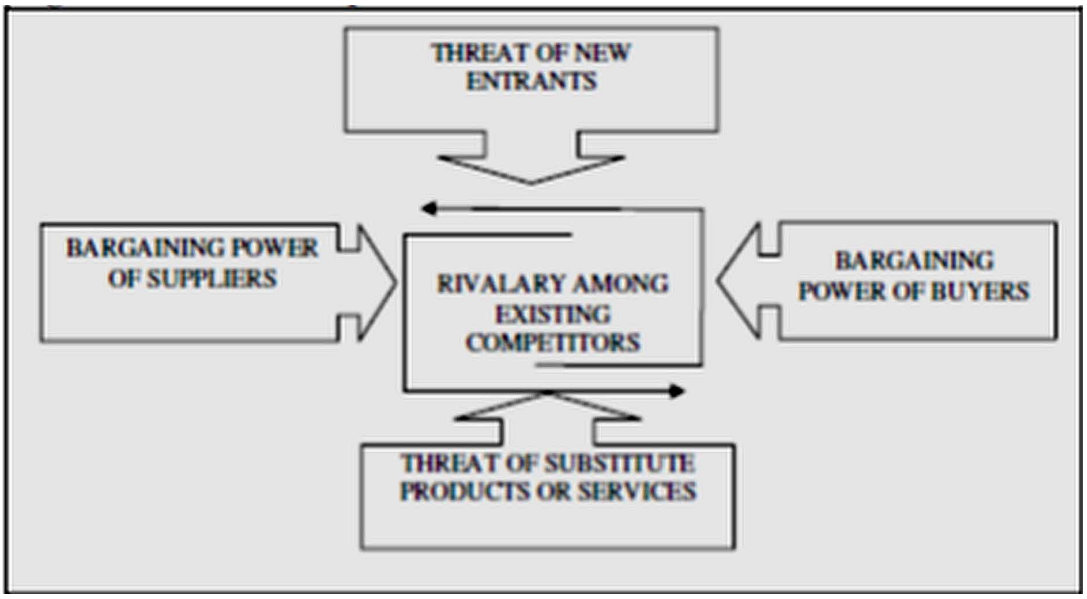
Porter's Five Forces Model

One of the basic areas of concern in industrial economics is the interaction between firm and the characteristics of the market forces. Economists, belonging to this school of thought, perceive the significance of the link between environment and strategies employed by the firm. They use the structure–conduct-performance diagram. Such a paradigm assumes basic conditions of supply (input, technology, etc.) and demand (growth of demand, price elasticity, etc.). Market structure is then put into perspective in terms of number of market players (buyers and sellers), barriers to entry, cost structure and product differentiation in relation to conduct that is illustrated in the pricing, product strategy, research and innovation (Porter 1985). Within such a paradigm, market structure, strategy and performance would comprise the variables that influence the firm's competitiveness (Kazem 2004). Porter (1980) attempted to explain the existence of the above-normal profits, as an expression of the firm's market power. In this paradigm, the industry-structure determines the firm conduct (e.g. pricing, advertising), which in turn determines the economic performance. Porter (1980) interpreted this line of thought by substituting conduct with strategy, and arguing that the firm performance is dependent on industry structure. Therefore, the level of analysis is the industry rather than the individual firm. Industry attractiveness depends on the level of the opportunity and the threat in an industry. The average performance of firms in the economically very attracted industries will be greater than the average performance of firms in the economically unattractive industries as explained by Barney (2002). According to Porter (1985), the rules of competition are represented in "five competitive forces" as shown in Figure 2. These competitive forces are entry to the new competitors, threat of substitutes, bargaining power of buyers, bargaining power of suppliers, and rivalry among the existing competitors.

Chaffey (2002) supports Porter's classic model of the five main competitive forces and he says that it still provides a valid framework for reviewing threats arising in the ebusiness era. The value of Porter's model enables managers to think about the current situation of their industry in a structured, easy-to-understand way as a starting point for further analysis. However, in the economic sense, the model assumes a classic perfect market. The more an industry is regulated, the less meaningful insights the model can deliver. The model is best applicable for the analysis of the simple market structures. A comprehensive description and analysis of all five forces gets very difficult in complex industries with multiple interrelations, product groups, by-products and segments.

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Figure 2. The five competitive forces (Source: Porter 1985)



DISCUSSION AND IMPLICATIONS

Small and Medium Sized Enterprises (SMEs)

Peterson et al. (1986) explain that both quantitative and qualitative measures are used in defining the SMEs. These definitions vary according to the geographic area and the purpose of the study. Quantitative measures are the most popular tools to define the SMEs such as the number of employees and the annual turnover. The most frequent upper limit is 250 employees as in the European Union. However, in the United States the SMEs include firms with less than 500 employees. In general, small firms are those with fewer than 50 employees, while micro-enterprises have at most ten and in some cases five workers (OECD 2000). Financial assets are also used to define the SMEs. Some of the potential economic and social benefits of the SMEs to their capacity as follows: (a) create jobs at low cost of capital; (b) contribute positively to the Gross Domestic Product (GDP); (c) provide an opportunity to expand the entrepreneurial base; (d) provide the required flexibility to adapt to market changes; (e) provide support to large scale enterprises; (f) enter into market niches which are not profitable for larger enterprises; and (g) contribute to development policies that are more oriented towards decentralization and rural development. Nevertheless, all the above may never be fully realized without an adequate regulatory system and an encouraging environment.

Story (1994) defines the SMEs as follows: (a) enterprises with a relatively small share of their market; (b) managed by owners or part-owners in a personalized way, and not through the medium of a formalized management structure; and (c) acting as separate entities, in the sense of not forming part of large enterprise or group. While it is acknowledged that using the number of employees as a measure of firm size may create a number of anomalies. Besides, smaller firms' organization structures are likely to be organic and loosely structured rather than mechanistic and highly formalized as in smaller firms, all the roles will either be performed by one manager or by a very narrow range of managers who may have been

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appointed because they are family members or friends rather than on the basis of ability or education. However, small firms generally have little commitment to research and development (R&D) and hence are highly dependent on external sources of knowledge. The size of the SMEs in the developed countries is interlinked with the size of the international niche markets where they compete, while the size of the SMEs in the developing countries is mostly determined by the domestic markets where they operate. Moreover, the SMEs in developed countries are more likely to be highly specialized compared to those in the developing countries. Most of the SMEs in the developing countries are one-person businesses, and the largest single employment category is working proprietors (Fisher & Reuber 2000). This group and its family represent the majority of the workforce in most developing countries.

Theory of Small Firm Growth

In order to improve the competitiveness of small firms it is not only about understanding problems confronting businesses but also about better understanding of how to overcome these barriers. Although many factors are hypothesized to impact on business outcome, there is no consistent pattern to the characteristics, which contribute to business competitiveness, success and growth (Gibb 1996; Audretch 2001). Employment generation may be an appropriate growth function (Smallbone & Wyer 2000). As pointed out by Storey (1994), the numerically dominant group of small businesses is those that they are small, and even if they survive they are always likely to remain small-scale operations. Kotey (2005) shows that small family firms are less likely to pursue growth compared with similar non-family firms. Although medium family proprietors desired growth, their actual growth was lower than similar non-family firms. Kotey (2005) shows that management practices are less formal in family firms, and the gap between family and non-family firms in this area widened with growth. As well, exports are low for both firms at the small level. However, medium family firms are less likely than similar nonfamily firms to export.

Personality-based approach is a model for understanding small firms' growth which looks at the entrepreneur as fundamental to the growth process that links the success of the firm to its owner-manager's competences. It also consists of a number of variations such as these that seek to link the personal characteristics of an entrepreneur with planning and the performance of the firm (McClelland & Winter 1969; Carsrud & Johnson 1989), while others like Brochhaus and Horwitz (1986) have researched personality types. Another approach is based on business management, where growth is seen as a function of the marketplace and focuses on the financial performance as well as diversification, profitability and product/market development (Penrose 1959; Ansoff 1965). Storey (1994) and Smallbone and Wyer (2000) suggest that consideration of the growing small firm should be based on a categorization of three components. These include the starting resources of the entrepreneur (e.g. motivation, age, education, management experience, family history and training); the firm (e.g. age, sector, location, size and ownership) and the strategy of the firm (e.g. training, market positioning, planning, and external equity). Wickhman (2001), on the contrary, shows that there is a very little evidence to suggest that any particular trait leads to successful entrepreneurship.

Zairi (1996) presented a two-staged model that provides push and pull-forces to achieve competitiveness for small business through continuous process improvement. In order to develop a conceptual model of the SMEs' competitiveness, the entrepreneurial competencies ahould include the process dimension and the entrepreneur should scan the external factors and focus on the firm's internal capabilities (Figure 3). Competitiveness is the mean by which entrepreneurs can improve their firm's performance, and which can be measured according to a number of dimensions including market share, profit, growth, and duration.

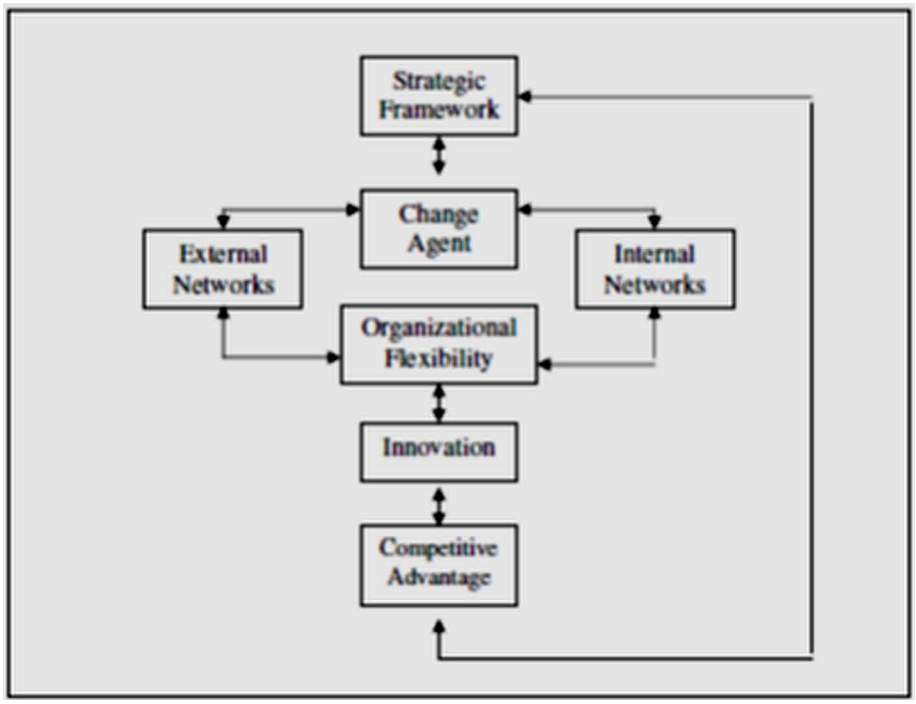
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Jones and Tilley (2003) develop a conceptual framework for the competitive advantage in small firms (Figure 3). To be effective, Jones shows that the starting point for the SME must begin with the owner-manager establishing a broad strategic framework for the firm. He also ensures that organizational flexibility is the key source of competitive advantage for most SMEs. Jones and Tilley (2003) argue that the best measure of competitive advantage for the SMEs is value-added rather than profit, return on investment or market share.

SMEs' Strategies

There are different definitions for the firm's strategy. All these definitions are sharing in defining the strategy as an action to be taken in the future. Mintzberg and Waters (1985) consider corporate strategy as a political process, which is socially constructed rather than an unproblematic aid to the rational decision-making. Porter (1996) defines strategy as "The creation of a unique and variable position, involving a different set of activities." He states that the essence of strategy is choosing to perform activities differently from rivals do and those firms must consider strategic positioning and strategic fit when crafting strategies. Barney (2002) defines the strategy as "A firm's theory about how to compete successfully." The principle strategies that the SMEs have pursued to create and sustain competitiveness have been discussed in Bologna 2000 SME Conference. These include the following.

Figure 3. Framework for the competitive advantage in SMEs (Source: Jones & Tilley, 2003)



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Porter's Generic Strategies

Porter (1980) determines three generic strategies firms can possess: the cost leadership, differentiation and focus. By concentrating on the industrial level, Porter (1979, 1980, and 1985) underestimated the importance of the unique resources within the firm. Further, recent work contradicts Porter's assertion about being "stuck in the middle." This work suggests that the firms that are successful in both cost leadership and product differentiation can often expect to gain sustained competitive advantage (Barney 2002). Porter and Stern (2001) indicate that a firm can obtain profits more than the average actor by operating at a lower cost, or by charging a premium price, or by doing both. Differentiation is more attractive to small companies, particularly when linked with focus. Providing higher quality products when compared to competitors and being innovative are the key elements of the differentiated strategy (Jones & Tilley 2003). Besides that, marketing, development of alliances and the focus on the ethical issues comprise important components of the differentiated strategy (Kazem 2004). The generic strategies rely on a static picture of competition, and thus understate the role of innovation (Stalk et al. 1992). As well, they overemphasize the importance of industry structure (Rumelt 1991) and the wider environment, while they de-emphasize the significance of individual company differences in the procession of resources, capabilities and competence.

Innovation Strategy

Innovation is a broad term that encompasses any new development in firms (OECD 2000a). It can involve creating or reengineering products or services to meet new market demand, introducing new processes to improve productivity, developing or applying new marketing techniques to expand sales opportunities, and incorporate new forms of management systems and techniques to improve operational efficiency (Porter & Stern 2001). The most important impediments to innovation in the SMEs (OECD 2000a) are: limited resources research and development; access to new technologies and know-how and ineffective rules, procedures, education and training programs. Porter (2001) showed that innovation is a process rather than a single event and the internal factors that drive innovation are undeniable, but the external environment for innovation, at least, has the same importance. One of the most systematic examinations of innovation in the SMEs utilizes resources-based theory, which stresses the way in which internal factors including knowledge, skills, patents and brands are combined in unique ways by means of managerial capabilities (Grant 1998).

Network and Cluster Strategy

The SMEs belonging to clusters and networks are often more competitive and innovative than those operating in isolation (OECD 2000c). Some clusters are structured and formal while others are informal. Some clusters are share general information, while others deal with more specific objectives. Networking allows the SMEs to combine the advantages of smaller scale and greater flexibility with economies of scale and scope in larger markets – regionally, nationally and globally (Baporikar, 2015). A large number of firms result in greater competition for new ideas and facilitates (Porter 1990). Competitiveness of small firms is strongly influenced by the level of the inter-firms collaboration. The links take different shapes in which different firms join together to co-produce, co-market, or co-purchase, cooperate in new product development, or co-share information.

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Flexibility Strategy

The SMEs have the ability to change the direction quickly at low cost. Small businesses offer some of the best options for making meaningful productivity gained in the global marketplace based on their flexibility and speed in adapting to market dynamism (Baporikar, 2016). According to Jones and Tilley (2003), organizational flexibility is the key source of competitive advantage for most SMEs.

INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT)

The emergence of the ICT especially the internet challenges the traditional business logic. The new economics of information therefore creates opportunities and threats to the firms. Thus, the shifts will occur at different speeds with varying intensities for all industries. Information and Communications Technologies (ICT) include technologies such as desktop and computers, software, peripherals and connections to the internet that are intended to fulfil information processing and communications functions. According to Porter and Stern (2001), internet is an enabling technology- a powerful set of tools that can be used, wisely or unwisely, in almost any industry and as part of almost any strategy. The introduction of the internet and the World Wide Web is leading to fundamental changes in operating models employed by businesses. Thus, firms must consider new business models that take advantage of existing and emerging internet-based technologies in order to stay competitive (Baporikar, 2014). Venkatraman and Henderson (1999) show that the new economics of information challenge traditional business logic, and thus the appropriateness of the current business model rooted in the industrial economy is questionable. Many organizations view investment in information not as means to cost reduction but as a way of adding value. To achieve that, they need an information systems strategy that is an integral part of their business strategy (Galliers 1987). Levy and Powell (1997) identify two dimensions of customer dominance and strategic focus for the strategic context that create four competitive scenarios namely: efficiency, coordination, collaboration and innovation as given in Figure 4.

One can observe the following in these competitive scenarios:

- ICT in the efficiency quadrant is for control of the business, primarily financial control, but no integration of ICT with business strategy;
- ICT in the coordination quadrant is the systems required to keep costs down and core additional use is in improving customer care, but limited integration of ICT with business strategy and viewed as a cost to the business;
- ICT in the collaboration quadrant reflects increase in the sophistication of the technology used and a shift of ICT integration with business strategy;
- ICT in the innovation quadrant is where real integration of the ICT ensues with business strategy.

One way of looking at the role of Information Systems (IS) within an enterprise is the five-era view (Applegate, McFarlan, & McKenney, 1996) which is: Data Processing, Management Information Systems, Strategic Information Systems, Business Process Reengineering, and e-Business. Venkatraman and Henderson (1999) develop five levels of IT- induced reconfiguration as shown in Figure 5.

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Figure 4. Four competitive scenarios for SMEs and ICT (Source: Levy & Powell, 1997)

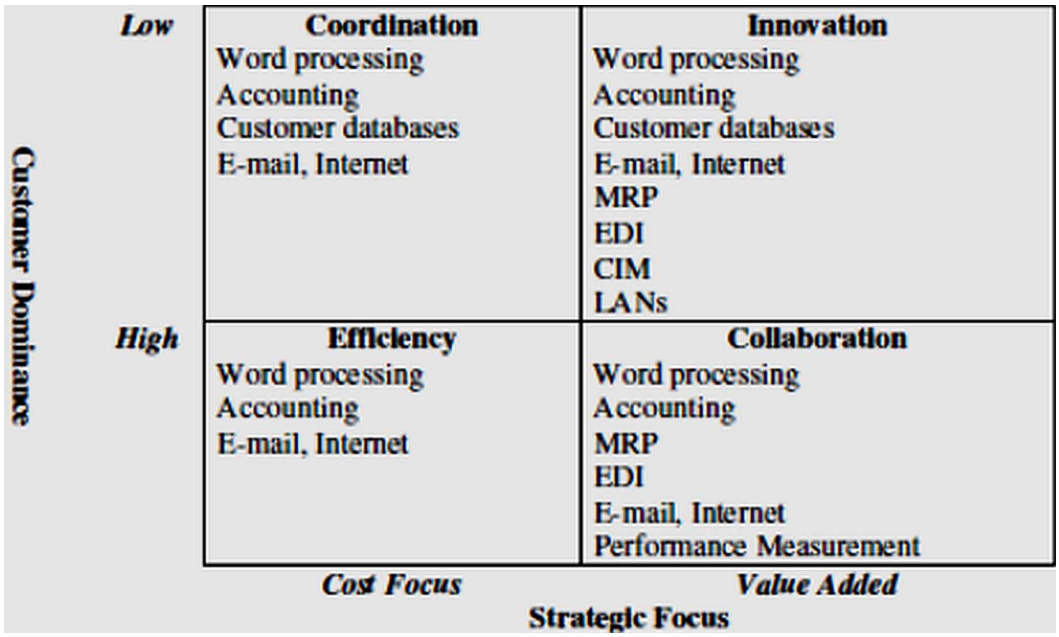
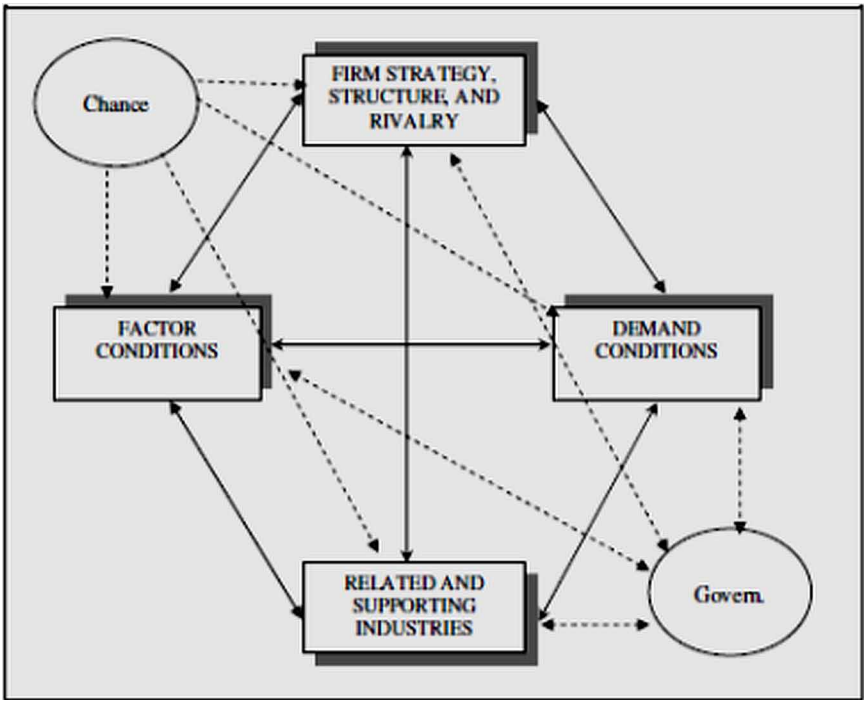


Figure 5. Five-levels of IT-induced reconfiguration (Source: Venkatraman & Henderson, 1999)



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These are localized exploitation, internal integration, business process redesign, business network redesign, and business scope re-definition. However, these levels are not conceptualized as a stage of evolution model but as distinct levels of business reconfigurations with an explicit focus on the role of Information Technology.

Applications of the ICT and the SMEs

The SMEs tend to move into electronic business (e-business) in stages. The first step involves using the Internet as a tool for communicating and obtaining information. In a second phase, the SMEs consider basic electronic commerce activities such as buying and selling. Finally, the SMEs start conducting banking and financial transactions (OECD 1998, 2000c). Lucchetti, and Sterlacchini (2004) carry out an econometric analysis on the adoption and effective use of the ICT among a sample of the Italian SMEs. In order to understand the main factors that drive the SMEs to the adoption of the ICT, they divide the available technologies according to a taxonomy based on their typical function.

Buhalis and Deimezi (2003) argue that the traditional economies have experienced a slower uptake of e-commerce. This is attributed to the difficulties in enhancing the usage of personal computers and in increasing the utilization of the Internet and the ICT throughout their production mechanisms. Duan et al. (2002) focus on the ICT skill challenges in the SME in Great Britain, Poland and Portugal. They show that the SMEs play a pivotal role in sustaining employment and creating income and prosperity. Shiels, Mclvor and O'Reilly (2003) show the phenomenon of the internet has forced organizations to examine their existing business practices and adopt new methods of working, both for existing and potential customers. However, introduction of the internet into the SMEs tends to be fragmented and also there is a tendency in SMEs manufacturing sector to view investment in the ICT as a cost (Baporikar, 2017). A report by the Organization for Economic Co-operation and Development (OECD1997, 1999a and 1999b) shows that the ICT sector is not a prerequisite for economic growth. Countries with a strong information technology sector, such as Japan, have recorded slow overall growth while, on the other hand, countries like Australia have shown strong growth without the benefit of a large ICT sector (Singh 2001). Moreover, only a few countries have the necessary competitive advantage to succeed in the ICT output, especially among developing countries. This means that the competitive advantage of marketing efficiency is not automatically achieved with the adoption of the internet. Hashmi and Cuddy (1990) point out that one of the problems for the SMEs is their propensity to invest incrementally in information systems rather than in a planned fashion. While on the one hand the new economy may weaken the traditional obstacles to the transformation of the SMEs into global players. It may also confront the SMEs with new obstacles and threats as many SMEs have little understanding of, and cannot comprehend, future technology developments.

Competitive Elements and the ICT

Some of the benefits of the electronic commerce OECD (2000c) are: it allows automation of common processes, requirement by large businesses, application in product design, higher level of product customization, standardization in production and effective logistics. Further these technologies help SMEs actively to create new products, adopt new business practices and change their way of interacting in the marketplace. Engaging in B2B or B2C induces them to improve their business process. Further, business procedures conducted informally are rationalized and institutionalized. Smallbone et al. (2003) are

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concerned with the nature and extent of product and process innovation and adoption of the ICT in the SMEs. Small and Medium Sized Enterprises (SMEs) in developing countries need to be able to figure out how, when, and where to use ICT to reap the above gains. SMEs in the developing countries are facing more challenges when trying to gain than businesses in the developed countries. Some of these challenges are relating to technical infrastructure, laws and regulations, and limited logistics systems (OECD 2000a).

CONCLUSION

This paper presents the conjectural background of the three major areas of the research: small and medium sized enterprises (SMEs), competitive advantage, and the role of information and communications technologies (ICT) on the competitive advantage of the SMEs. As well, the paper discusses different models for the small businesses' growth. Competitiveness of a firm can be expressed in a variety of terms depending on the context. Within a macroeconomic perspective, a competitive firm develops and sustains a level of performance that contributes to the Gross Domestic Product (GDP), employment opportunities, and the wealth of people. From an entrepreneurial perspective, a competitive firm needs to survive in the market, at present and the days to come, and to achieve market share and profitability.

The Information and Communications Technology (ICT) allows automation of common processes, shortening the design process, leading to a higher level of product customization and standardization of parts, lowering inventory costs, and re-examining the cost structure of the value chain and their competitive strategies by redefining functions and skills (Baporikar, 2013). Furthermore, the ICT can contribute to solving the SMEs' problem in terms of the lack of resources and access to technology by promoting transfer of knowledge through the use of integrated processes.

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Chapter 53
Optimizing Virtual Communities in Tourism to Facilitate Development of Small and Medium-Sized Enterprises

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ABSTRACT

The chapter presents the essence of online/virtual travel communities and examines their current significance for SMEs. It presents types and characteristics as well as the most popular virtual travel SME communities and discusses ways of optimizing the development of SMEs by applying a strategy of virtual communities by selected hospitality SMEs. An eight step strategy to implement virtual travel communities by SMEs is elaborated. One of the main findings of the author is that virtual travel communities can be very useful for optimizing the development of SMEs by supporting all the stages in the decision-making process, focusing on pre-planning, making the decision and after the tourist and business visit stage. In order to understand how virtual travel community can optimize the development of SMEs, the author discusses tools for measuring the effectiveness of social media. Both future research directions and a conclusion are outlined.

INTRODUCTION

Virtual travel community has many definitions and advantages for small and medium sized enterprises (SMEs). One of those benefits is the internet which has fundamentally changed the way SME customers make their decisions. Nowadays, they are more affected to make decision by travelers from travel virtual communities, rather than their friends. In this vein, virtual travel communities support consumers in the pre-planning and planning process, during the trip and after it as well (Gulbahara & Yilidirima, 2015). Therefore, guest experience has become a dominant factor in the selection of a hotel, so review sites continue to be the fore-front when consumers are planning a hotel room purchase (Gulbahara & Yilidirima, 2015).

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Consequently, travel online communities provide unbiased information and customers can easily without any effort find out what the others recommend about visiting a certain destination, which hotels are recommended by travelers who had already visited the place (Casaló, Flavián & Guinalíu, 2011). On the other hand, social media have become a very important part of the marketing strategy of SMEs as they provide an opportunity for engaging with customers and generating brand advocates (Oztamur & Karakadilar, 2014). In this regard, social media allow destinations to contact visitors at relatively low cost and higher levels of efficiency that can be achieved with more traditional communication tools (Kiralova & Pavliceka, 2015). In other words, travel online communities help SMEs in building their image, reputation and creating long-term relationships with customers by engaging them in constant communication by the blog or forum they provide to their web-site. Moreover, *web-based platforms* allow for real-time recording and sharing of tourist experiences and thereby add to advances of personal virtual identities (Munar & Jacobsen, 2014).

This chapter has three main aims:

1. *To present the meaning of online/virtual travel communities* (VTC) and examine their current significance for SMEs in the available literature;
2. To present VTC types and characteristics;
3. *To provide ways of optimizing the development of SMEs* by applying a strategy of virtual communities by a selected hospitality SME.

Following the above described structure, the VTC discussion will proceed with future research directions. Finally, the chapter is completed with a conclusion.

BACKGROUND

Internet affected the business by changing the business models. In this regard, SMEs have in fact started taking advantage of social media, and it has become quite a popular tool (Oztamur & Karakadilar, 2014). SMEs can benefit in many ways from applying virtual communities as part of their business. In this regard, SMEs now have the potential to access increased opportunities to innovate on an unprecedented scale (Jones, Alford & Wolfenden, 2015). SMEs define target markets, as digital marketing offers an unparalleled access to information at a granular scale, which can redefine the ways in which customer segments are created using free-to-use web-based tools (Jones, Alford, & Wolfenden, 2015). This allows the potential user to enter any person or brand's Twitter handle and analyze their followers.

The benefits of using a travel online community can be summed up, as follows:

- The traveler receives useful information about the trip planned;
- There exists easy access to information from other travelers.

In addition, companies and SMEs benefit from using online communities in the following ways:

- Through deep and constant relationship with customers.
- Through better customer service.

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- Through personalization of the message sent to the customer, according to his/her preferences and needs.
- By increasing brand awareness, brand engagement, word-of-mouth marketing, friends liking, trust and social validation (Kiralova & Pavliceka, 2015).

HIGHLIGHTS OF VIRTUAL TRAVEL COMMUNITIES IN SME DEVELOPMENT

The main focus of this chapter section is to present the essence of virtual travel communities, its types and characteristics. This will be followed by development of a strategy that will optimize the development of SMEs.

First of all, different types of virtual travel communities are presented and discussed. Based on the type of information exchanged between parties these are the main types of virtual interaction between travelers:

- **Blogs:** Short recordings that are chronologically ordered and contain media materials; Blogs are very useful for SMEs as they provide opportunities for feedback with customers. If the SMEs have a blog in their web-site, they can easily get constant feedback and understand the weak points in the service provided.
- **Chats:** Real-time communication through instant messaging programmes; Some customers prefer online assistant or living chat in making decision to buy from the web-site. They can improve optimization of SMEs by developing close contact to customer and assisting him during his decision.
- **Forums:** Web-sites for online discussions on specific topics, give more communication opportunities that chats or blogs. Most of the customers visit forums in their pre-research on certain topic. They are very useful and help increase competitiveness of SMEs by helping the customer to get acquainted with the information he is looking for. The more useful the web-site is, the more visited and preferred by customers it will be.
- **Wiki-Sites:** The web-sites aimed to deliver collective knowledge.
- **Social Networks:** A virtual network aimed to establish relations among its users, e.g. Facebook, MySpace, Vkontakte, etc (Liu & Park, 2015). They are very popular in the hospitality as SMEs use them for many reasons. They are the most used as virtual community as promotion tool, providing special promotions, etc.
- **Online Travel Reviews:** They are very useful tool for gathering information of certain destination as well as making the decision what to visit and why. They are very important information source that allow consumers to search for detailed and reliable information by sharing past consumption experiences (Liu &Park, 2015). The extensive travel information available online by using social media enables people to save time and efforts (Liu & Park, 2015). The researchers in online consumer reviews have focused on two main questions: the consumer decision making as a process and how it is affected by trust of people. Online reviews are useful for business as well as for consumers. On the business side, the hoteliers can understand how customers perceive the quality of the service provided such as accommodation, restaurant facilities. On the other hand, the potential tourist is affected to a greater extent by the marking given to a certain destination by a traveler who has been already there (Nguyen & Coudounaris, 2015). In other words, the tourist image of a certain destination can be formed through online reviews, involving:

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- Specific aspect of the service offering reviewed;
- The overall valence of the set of reviews;
- Valence of the information presented first;
- Whether or not easy to process graphical information is present (Browning & Sparks, 2011).

The content of review-staff or core values affects the willingness to make online booking and perceptions of trust in a hotel. Then the overall valence of the set of reviews is held constant, a series of hotel reviews that is framed with negative reviews results will lead to lower willingness to book the hotel (Browning & Sparks, 2011). The virtual travel communities with this form of communication optimize the contact with a customer by converting it to a long term relationship.

Characteristics of Online Communities

There are several characteristics of online communities. Some of them are succinctly defined by Preece, (2001):

1. **Purpose (Content of Interaction):** Virtual communities are built around a common purpose, but there can be many different common interests among the members such as travel, golf etc. The purpose of the community defines the goals and members it has as well as its content.
2. **Place (Extent of Technology Mediation of Interaction):** It concerns the technologies, protocols and norms of the online community inside the community's space.
3. **Platform (Design of Interaction):** In virtual communities, interaction can be either synchronous (e.g. chat rooms) or asynchronous (bulletin boards, newsgroups). It concerns the response time of the participants. The faster the time for response is the more reliable is the community for its participants.
4. **Population Interaction Structure (Pattern of Interaction):** Interaction pattern in the online community is related to the group structure and type of social ties.
5. **Profit Model:** It is related how profit is created by using this business model.
6. **Sense of Belonging:** The sense of belonging plays a prominent role in understanding the realities of the community as a social universe (Qu &Lee, 2011). It is a crucial for the existence of a travel community. It can be formed on the net though travel members' active communication around shared travel interests. There is a relationship between community identification and positive member behavior. If managers can understand how community affects its members, then the community manager can use this advantage by exerting influence on individual travel members through applying a more specific management strategy (Qu &Lee, 2011). In this regard, community manager can provide rewards. The community rewards are often given to a member to recognize its efforts, consistent behavior and contributions this member makes to the virtual travel community (Wang et al., 2015). In other words, being a member of certain community is rewarded and is valued highly by its members.

Main Components of a Virtual Community

In this regard, following Wang, Shuang & Li (2015) the author defines the following *main components* that compose a virtual community of interest for SME development:

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1. *The users* who interact online with a mutual interest to satisfy their needs, which is where SMEs directly come in;
2. A *purpose* for a certain information exchange. In the author's view this is a very important component as it defines why the community exists;
3. Guiding *principles* that compile a communication *policy* which concern users and their access.
4. *Network facilities* that work as an intermediary in the communication process, whereby the facilities can be managed by SMEs;
5. *Relationship building* in online communities is a very important component of the online community. Relationships can lead to offline transactions. For example, people look for someone known in Facebook (Facebook, n.d.) and add them as friends. It is interesting how online relationships can lead to offline. Good online community reputation coupled with good online communication behavior leads to higher travel community member's willingness to participate in an offline relationship;
6. *Sustainability of community* is another characteristic of the virtual community (Wang et al., 2015). Sustainability of the community is its longevity of over an extended period of time. It can be measured by the number of participants the community has and the number of posts and its quality. Participant loyalty and trustworthiness are important for making a community sustainable. This component is also of utmost importance as it defines the quality of the relationship that users have. That is the main idea to form online communities, i.e. to gather people having similar interests and preferences at one virtual place. In online community its members are strangers and their aim is to share impressions and experiences about trips and discuss specific information about destinations, so it helps future tourists to avoid wasting extra money or missing important attractions in an unfamiliar place (Wang et al., 2015). Tourists and SMEs can share their experience and thus support potential new clients or help them choose which destination to visit.

The Role of the Word-of-Mouth

In relationships the electronic word of mouth (EWOM) is a very powerful tool affecting the communication in travel virtual communities. It is connected with the opportunities provided by online communities with constant interaction between them. In this regard, it can be said that *Internet* provides a platform for immediate interaction and communication in real time. EWOM has important implications for the design and development of online environments and interactions with consumers (Standing, Holzweber &Mattson, 2016). It plays an important role in influencing customers to use online recommendation sources and has influence on their product choice. According to Standing et al., (2016) EWOM is crucial, especially when people are socially independent or the level of commitment in decision-making is low. In this regard, it involves building trust, attracting traffic, creating awareness and most of all turning browsers or surfers into buyers. One of the main functions of EWOM is to transmit emotions of its participants and as such it is very important for tourism. According to the study, women are more likely to use the positive comments. For example, one negative review does not affect the next so much, whereas several negative emotions expressed influence product value evaluations (Standing et al., 2016). The intention to visit certain destination is directly affected by the online word of mouth. Since, the decision to visit a destination is interpreted as a rational calculation of the costs and benefits of a site of alternative destinations, which were derived from external information sources, including word of mouth and traveler's blogs (Abubakar & Ilkan, 2015).

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Word-of–mouth (WOM) has a strong influence in the tourism industry, primarily due to the intangible nature of tourism services. According to the reports, more than hundreds of millions of potential tourists visit online reviews and consult with them prior to making any decision to travel. In this regard, WOM has the potential to reduce uncertainty, risk and has a significant impact on the tourists' destination image. The income, destination trust and WOM affect positively to the intention to travel to certain medical destination (Abubakar & Ilkan, 2015). In optimizing the development of SMEs, it is crucial for managers to know what the key components of the travel online community are.

Main Customer Online Intentions and Traveler Motivation

It is necessary to understand what provokes customers and SMEs to be involved in a virtual community. What is their motivation? Few studies focus on the real reasons provoking customer participation in virtual communities, and even less so for SMEs. In this regard, Amaro & Duarte (2015) discuss the *main intention* of the customers to purchase online and mention the following:

- *Intention to purchase online* which is the main predictor of customer behavior;
- *Attitude towards online travel shopping*, because positive attitudes clearly lead to purchase.
- *Online travel shopping self-efficacy* defined by the authors as consumers' self-assessment of their own capabilities.
- *Controllability* which is defined as individual judgments about the availability of resources and opportunities.
- *Perceived relative advantage of online travel* that increases trust in online travel shopping.

Several internal motivations for customers to participate in virtual community such as self-discovery, maintaining interpersonal interactivity, social enhancement and entertainment value are revealed by through research (Wang et al., 2015). These motivations are categorized as motivations for interdependence and motivations for independence. Interdependence focuses on building and developing relationships and affiliation with others. Independence is related to internal traits. It is very important for marketing managers of SMEs in hospitality to know the motivation of customers which is not only to attract them but also to keep them as loyal to the online community. For example, SMEs in hospitality in Korea experienced some difficulties in application of electronic commerce (Kim, 2006). Therefore, knowing real customer motives can be crucial as it will not only attract customers to the community but will keep them as loyal. Therefore, it is a factor leading to an optimization of the whole virtual travel community involving customers and SMEs alike.

One of the observed motives for joining a community discussed above is a sense of loneliness (Qu & Lee, 2011). By providing connectedness the travel online communities permit individuals to reduce their sense of loneliness among users (Qu & Lee, 2011). In this regard, online interaction provides individuals with an opportunity to share experience and exchange ideas with people who are physically distant form them. In this regard, *Internet* provides an opportunity for some customers to overcome their shyness and share emotions with unknown people, having similar interests or hobbies. Lonely individuals are likely to utilize online travel communities to uncover their emotions within respect to their travel needs and desires through effective peer interactions because online communities serve as an important platform for supporting community organized trips (Qu & Lee, 2011). The participation of the customer

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is rewarded by providing certain motivators, such as rewards. Several types of rewards that can be given to community members, such as a member-ranking list, virtual medals and granting access to special information which others cannot access (Wang et al., 2015).

Furthermore, *the motivation* of travelers to participate in a travel virtual community also includes the following identified factors:

- **Knowledge Sharing:** It is the travel member's willingness to share their expertise or experiences with other members (Qu & Lee, 2011). For example, one member may be an information seeker, while the other prefers to be more actively engaged. Based on these criteria, there are several types of customers. It is very important that community manager knows what needs the customer has in order to send a personalized content, based on his interest;
- **Self- Construal:** It is the extent to which an individual interacts with others and views the self as an independent identity or in relation to others (Wang et al., 2015).
- **Behavioral Changes:** The participation in virtual travel community leads to changes in behavior. This is a result of having a sense of belonging to a certain VTC. The more members categorize themselves as part of a VTC, the more likely are they to accept and purchase products according to their members' suggestions (Qu & Lee, 2011).

Significance of Online Travel Communities for SMEs

The online travel communities are useful in the three stages of the traveler and SME behavior: the pre-travel phase (a destinations research, booking, and purchase), the during-travel phase (interactive forums, blogs) and the post-travel stage (feedbacks, reviews on hotels and destinations, shared visuals). In this regard, online travel communities should be included in the web-site of the hotel as they support the customer during his relationship with the company. Obviously a hotel can be an SME. The travel online community can help the customer with the choice of a hotel, during the booking and after the visit of the destination. It is important to know not only the motives of consumers in joining virtual travel community, but also to recognize different characteristics of the online community.

In sharing of ideas to people with common interests who meet online together and exchange ideas, social media may in fact create online community which spreads a sense of belonging to its members. The main aim of the organization is to cultivate sense of belonging to a group in the real or the virtual world, which engages consumers and introduces them to a sense of belonging (Kavoura & Stavrianea, 2011). Clearly, if the SMEs can create a sense of belonging for its customers, it is a prerequisite for the development of the business organization.

Travelers trust more the comments made in the social networks where other travelers place their point of view, share information and their experiences, they are influenced by the information provided and these networks consists of socialization and interaction among like-minded people with similar interests (Kavoura & Stavrianea, 2011).

There are many examples of travel virtual communities of significance for SMEs. A classification made on the criteria type of shared knowledge is used by the author. In this regard, the professional oriented online communities involve *Learning and Expert networks*, where SMEs are typically service providers (Dencheva, 2014). Also, the commercially-oriented online communities have the main purpose of generating revenue, and as such are most important for SMEs involving two types:

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1. Business-to-Business or SME2SME: it supports the supply chain, better organization and communication between business SME organizations. Trading is involved between SMEs.
2. Business-to-Consumer or SME2Customer: communities are created by SME organizations to support and market a product to the end customers.

AN OUTLINE OF STRATEGY TO IMPLEMENT TRAVEL ONLINE COMMUNITIES BY SMEs

The advent of digital technologies affected all spheres of life, as well as SME businesses. The customer has become the most powerful factor of SME development due to the information provided by *Internet*. It is expected that in the future many more SMEs will use the economic benefits of sustainable travel by applying virtual communities in their business models particularly for smart travel tech for SMEs Business trips, optimal travel management and online booking strategies for SMEs, SME contract for car rental, airline ticket, hotel and ticker pricing strategies (Amaro & Duarte, 2015).

In the next section the chapter analyzes and recommends for further consideration the use of VTC for SME travel agency optimal marketing strategy1. The strategy of the SMEs follows certain steps. The most important is to set the goals of the SME business organizations. They are quite specific for each business, but the main idea is to understand what the aim of the *Internet* presence for the company is. The company might exist in the real world, not just as an Internet company and use *Internet* only as another communication channel to boost its sales. On the other hand, it may be real virtual company which aims to conduct business through Internet. The right definition of goals means defining who the target customers are. It is easier targeting on *Internet*, as customers are self-targeting. They decide which websites to visit, from which to buy. In this regard, it is very important to choose the right business model.

Strategic Step 1: Choice of SME Internet Business Model

The first step in the strategy is definition of the right internet business model responding to the main goals of the SME and defining its value proposition. According to Timmers (1998) definition of a business model is: "An architecture for product, service and information flows, including a description of the various business actors and their roles, a description of the potential benefits for the various business actors and a description of the sources of revenue" (p.2).

The business model is focused on understanding the customer, his need and how to meet his expectations. The most common types of e-business models on a worldwide basis are B2B (business-to-business), B2C (business-to-consumer), B2E (business-to-employee) and C2C (customer-to customer) all of which are applicable for SMEs.

The Business-to-business model is focused mainly on conducting sales relationships between two companies or developing relationship between company and its suppliers.

For example, in the Bulgarian hospitality industry, the Business-To-Business e-business model represents in most of the cases, relationship between a travel agency and a hotel. Other possible business-to-business relationships can be relationship between a hotel and an airline. Bulgaria has 1000 travel agencies. Based on this, it can be said that the travel industry is quite developed in the country and this represents a huge opportunity for the development of B2B e-business model. Based on the facts that,

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through almost every single tour agent website, the online users can afford whole packages, including accommodation, flight tickets, it can be emphasized that the B2B e-business model in this country is very developed.

Tourist Service Providers (business) such as airlines and hotels sell their products to other businesses such as tour operators like (Wizzair, n.d.). To promote tourism, this model works with the collaboration of different businesses (i.e. Airlines, Hotels, Tour Operators, Agents etc.) and can provide dynamic packages to the tourists. On the *Internet*, services are often realized by huge networks and at the onset it is not always clear who profits and how much. This is especially true in the field of E-Tourism where many different companies co-operate in order to produce the final customers' service.

With the advent of Internet technologies, new forms of business models have appeared. One of the most popular remains the Business to Customer Model (B2C). What is specific for this model is the direct contact of the tourist provider with tourists. Tourists have an opportunity to make reservations on their own directly from the web-site of the hotel without the assistance of a tour agency. B2C business model in tourism is an advantage for both sides. Customers have access to information and can contact directly the hotel. On the other hand the hoteliers can receive fast feedback about the level of service they provide to the tourists.

The C2C e-business model represents online business relationships between with a seller (negotiator) and a buyer. In this model, a tourist can communicate with other tourists through the *Internet* (forums, blogs and email groups etc.) and can develop a tourist community.

The choice of a business model is affected by the usability and design of the web-site. In this regard, visual aesthetics is defined by Sanchez –Franco & Cataluna (2010) as"an artistically beautiful or pleasing appearance" (p.3.). Visual aesthetics is the extent to which customers believe a virtual community is pleasing to the eye. If customers find virtual communities pleasing, it is likely that both their state of mind and subsequent evaluations will be favorably enhanced and it will influence their emotions and their inclination to conduct business (Sanchez-Franco & Cataluna, 2010). The next feature that marketing managers should take into account when they develop their web-site as well as choose the business model to be applied is the usability of the virtual community. The usability of the web-site is connected with the ease that the customer can experience in what he looks for and make it fast (Dencheva, 2014). Therefore, usability is the ease with which the customer is able to learn to use the system and memorize its basic routine operations (Sanchez-Franco & Cataluna, 2010). Ultimately, the usability and aesthetics have a positive influence on customer satisfaction in virtual travel community.

Strategic Step 2: Analysis of the Competition

Second step of the strategy is conducting analysis of the competition. By analysis of the competition, the author means comparing the best practices, used by competitive web-sites and taking into account how the competition uses social media.

Strategic Step 3: Choice of Key Words

This is a very important tool, leading to a competitiveness of the company to be among the first ten results displayed in a product category. If the potential customers are interested in trips, and the company offers packages for a certain destination, marketing managers must think how to reach them. In this regard, Italian SMEs hospitality firms are promoting their destinations by using social media. According to

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Mariani, Felice, & Mura (2016) the type of posts made by regional domestic destination has an impact on the engagement, especially the visual types of posts, such as photos are having positive impact on the engagement of tourists. According to the study, evening and weekend posts have a positive impact on the engagement of tourists. The engagement rate is more important for marketing managers. Clearly, it is more important how people react to a Facebook post in terms of sentiment, rather than using just the numbers (Mariani et al., 2016).

Social media marketing initiatives cannot be measured commercially, as they mean to what extent their strategies on Facebook (Facebook, n.d.) and other social media are increasing the number of tourist packages and services purchased at the destination. In other words, by using social media SMEs in hospitality, at least on the example of Italian hospitality enterprises, cannot only reach potential travelers but also keep the loyal ones. The other opportunity is to create a forum, where the travelers can discuss their experiences with others. If the business organization is focusing on increasing the traffic to its web-site, it is a very useful tool. In this way, the number of visitors will be increased as well as the conversion rate which is the number of customers who will actually become buyers and loyal customers.

It also can be pointed out that customers trust in greater extent to their friends in making decision to visit a certain destination. At the same time, the number of people who trust a traveler is higher too (Dencheva, 2014). Virtual communities are an excellent tool to achieve the goals of the company, the trust of customers and develop SME brand recognition. In this regard, it is important to know what the real reasons are why people join the virtual travel community. There are different types of consumers on *Internet*, having different motives. Some are entertainment-seekers, while others are information-seekers.

Strategic Step 4: Analysis of Customers

Analysis of the customers is needed to understand what type of customers represent the SME audience, what interests and motives they have on *Internet*. In this regard, there are several types of customers:

- **Content Creators:** These are people publishing information in blogs who can be offered to upload or download their own video, audio.
- **Conversationalists:** These are people who visit social media, as they want mainly to communicate with other people and should be offered opportunity to chat with others in real time. An online program for communicating will satisfy them.
- **Criticizers:** These are the customers who always comment, show critical attitude towards all topics.
- **Collectors:** These are customers who visit different media, lead by the idea to collect points or win certain reward, look always for promotion and need to be engaged, stimulated. In this regard, these customers can be offered competitions, lotteries, games, as they have these needs.
- **Spectators:** The percent of these customers is highest. They only read the comments in the online communities, need an opinion of other customers to take certain decision.
- **Passive Customers:** They do not take part in the discussions nor take any position on certain questions.

In order to attract customers to the online community, different rewards could be given. For people who are looking for a place to express their opinion, this might mean giving them opportunity to share their travel experience or expertise on certain problem. The list of motives that customers have is very

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precious for the marketing and social media managers. It will give an opportunity for self-targeting of customers. In this way, customers agree to become a part of a certain database and to receive information from a certain company and its products. In this way the company creates digital relationships with consumer.

Strategic Step 5: Creating a Sense of Belonging for Customers in the Travel Online Community

As discussed before, the sense of belonging is a very important characteristic of the virtual community. Managers should focus their efforts on offering value for which the customers will feel engaged and being a part of certain travel online community. Creation of the sense of belonging is connected with the social identification of the individual. Being a part of certain online community, the customer agrees that the values and principles of the community are part of his behavior. In this regard, he identifies with the community. It means that he is proud being a part of this community, as he fully identifies with it, as it is with the fans of renowned hotels for example.

In order to create a sense of belonging customers need to have an opportunity to publish their own messages as well as video and audio materials. Any business organization can use the opportunities provided by *Internet* for presenting information in order to create the online experience of the customer. Offering such online experience means the customer will be able to visit the web content again and again.

In this regard, use of video gives opportunity for brand creation and brand recognition as well as for full study of the opportunities of product or service offered. People have always tried being a part of a certain group. Marketing managers need to analyze very carefully the motives of people of using virtual communities. Motivation theorists argue that unobserved needs and desires motivate behavior, the purpose of which is to satisfy needs (Zhong & Luo, 2015). Congruence of user need satisfaction in social media marketing can be achieved by aligning the marketing content, process and goal with users' needs of using social media. To develop their marketing strategy and design appropriate advertising appeals, it is critical that marketers identify and understand the needs and motivation behind social media usage. This will give an opportunity for communication with their targeted audience on a personal, meaningful level through social media (Zhong & Luo, 2015).

The community needs to have an image of a communication channel to which customers can trust. In other words, the virtual travel community is perceived as a valuable information source to which recent and potential customers can rely in their choice of a travel destination (Dencheva, 2014). After the SME business organization knows and understands the motives why customers join the travel community, the next step is to give them an opportunity to share the opinion they have and provide them with different status, based on the motivation they have. For example, people interested in active participation in the travel community can be given a status of an administrator. It will be very motivating if the community manager provides certain reward for the community members. For example, giving full access and administrative rights for certain period for the publishers might be challenging and motivating for them.

How a business model will be organized is crucial for the effectiveness of the travel community. By business model is meant the organization of business processes and way of making a profit as well as attracting customers. After the motivation of customers is defined, it is important to know the opinion of the customers. In this regard, it will be more effective if the company creates a blog or forum to their web-site. In this way the company will have the opportunity to track the behavior of its customers, by

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showing them interesting events and turning them to loyal. If the virtual travel community focuses not only attracting members but keeping them loyal then it should build an individual approach to a customer by applying various tools of digital communication technologies.

Strategic Step 6: Achieving Personalization for Customers in the Online Community

The development of a personalized content is an opportunity to interact with potential clients on a more personal level. Thus, the following recommendations are aimed to increase the SME personalization issue:

1. Develop a registration option or log in via social networks, so a visitor of the web-site is able to create his/her profile. The form includes personal details and preferences so when the customer logs in, he sees information content according to his preferences. In this case, the customer behavior can be tracked easily by knowing his preferences. Every time he/she logs in the web-site, a personalized content will be sent to him/her according to the personal details and information gathered about him/her. Each web-site is providing this option. However, registration is an opt-in option, which means that it is not obligatory. Some customers prefer to remain anonymous as it is one of the advantages provided by *Internet*.
2. Use *cookies* for user authentication, storage of personal preferences and settings; monitor the user status on the web-site, analyze the history and purchase behavior of the customer. There should be again opt-in option as some customers avoid using cookies.
3. Develop an internal search engine as well as online tour selection section, so a web-site use can easily access and buy a service offered by the respective company. It is a good option for fast and easy navigation in the web-site. As already discussed before, the visual aesthetics is very important tool for the success of the virtual community.
4. Develop an online assistant so that the customer can speak with a travel agent online. Online assistant is very effective especially for customers who prefer to have direct contact with real seller.
5. The web-site can be translated in several languages, based on the targeted customer group.
6. Send personalized e-mails to customer in birthdays or other celebrations. Personalization can be achieved not only by e-mail marketing campaign. If the customer is greeted on some occasion, he/she feels engaged with the community.
7. Send news to customer if he/she has given his consent.
8. Inform about events and tours offered with enclosed tour packages considering clients preferences and previous travel experiences. It is a part of an e-mail marketing campaign.
9. Develop a subscription option on the web-site for the newsletters and send newsletters to the clients about the new trips, destinations, "last minute" propositions.
10. Create a special travel community: "Travel-territory".

The web-site should provide an additional section called "Travel-territory" which is a place where each registered user can have his/her travel territory. This page will allow the tourist and SMEs to obtain supportive information regarding the destinations, make friendships with the other travellers, share experiences and impressions from travelling with the SME travel agency.

The proposed online community should have 2 subsections: *Tourists* and *Meeting Point*.

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- **Tourists and SMEs:** This is the page where all the user profiles will be represented. Each user profile consists of Names, About yourself section, Contact information, Friends, Map of destinations, Photo blog and Ratings. One registered user can visit a page, make a friendship and give "likes" to the pictures and blogs of the other registered user.
- **Meeting Point:** A forum, where a user or SME travel agent can create a topic and make discussions, ask questions and follow dialogues. Having a news portal is an important tool to make the customers visit the web-site and check the updated information on daily bases. In addition, there must be options to leave a comment on the post and share the post via social networks. In such a way, the information will be delivered to a wider SME audience and moreover the web-site will gain promotional benefits which can also be managed by SMEs.

Strategic Step 7: Developing a Popular Travel Online Community

The next important step is attracting customers, i.e. developing a popular community which is interesting so that people will be glad to join it. The openness of the online community is a very important characteristic which means easy access to its members. There are various approaches in popularizing it such as search engine optimization. The key moment in using search engines is finding the right word that the customers use. The first goal is that the company can be found easily among other things. It can be achieved by choosing all the words that are related with the product. All business organizations are trying to be on the top of ratings. It means that they can be found easily. After that the customers must find the content of the community useful and easy to use, share it to their relatives, friends and others. Therefore, in the beginning the main goal is traffic generation and focusing efforts on the information presented, on its content.

After it becomes popular, the next aim is to increase the number of likings. If customers like it and recommend it to each other, then the customers will be engaged with it. In order to achieve it, the interest of the customer would be taken into account by updating its content on a regular basis. In this regard, there should be a specialist dealing with it, working on regular posting, updating the information content so that it will be useful to its customers. If the web-site is well organized as navigation and design, and is user-friendly, then it will be recommended to others. In this way the customer base will be increased.

If the hotel creates a blog to its web-site but does not pay attention to the interest and does not present events latest, news, etc, there will be a great risk of distrust among customers. Blogging is one of the ways of promotion, which is considered as an inexpensive marketing activity as compared to traditional advertising. In this way, hotel companies have realized their advantages and have encouraged visitors to write comments on their hotel blogs with rewards (Gulbahara & Yilidirima, 2015).

Strategic Step 8: Measuring the Effectiveness of a Travel Online Community

It logically follows from the first seven strategic steps that virtual travel communities can help increase competitiveness of the SMEs by having direct contact with customers. They can be very useful for SMEs. The virtual travel community can help increase the number of customers by attracting customers not only from the regional country but also foreign customers. In this regard, virtual travel communities can increase the competitiveness of the SMEs by making them more competitive not only on local level but also internationally. On the other hand, if the SMEs focus its marketing efforts on increasing the visits, its effectiveness can be measured by number of likings and clicks. Engagement is proving the interest of

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customers. It is impossible for a very short time, to increase the likings of the company with less marketing efforts and on low price. Internet allows such opportunity for SMEs. By presenting the company in any social media, it can receive fast feedback and clicking of customer to the main webpage of the company. The power of *Internet* is huge not only in attracting new customers to the company but also in keeping them loyal. In this regard, virtual travel communities provide excellent opportunity for SMEs to focus their attention on loyal customers by the recommendations they made to other future prospects.

In the beginning the main goal is visit and then the next goal is increase of the engagement rate measured by likings, clickings, etc. In order to be engaged in active communication, members of virtual community must be engaged in active communication. In this regard, managers of the community should have different approaches to customers, having in mind the differences in their behavior. In this regard, managers should stimulate the activity of their participants by giving them freedom to express opinion, comment, etc. For example, a guest of the hotel can be invited to share their experience in the book for guests. If there is a forum in the web-site of the hotel or blog, guests can easily publish their photos. It will be quite useful for potential guests of the hotel. In this way, the hotel can support prompt and provide quite feedback with customers that will be useful for both sides, as customers and company.

A lot of SMEs always offer some competition, lottery and other advertising methods to keep customers engaged. Having a dialogue with the company and its customers leads to higher engagement. It is beneficial for both sides. On one side, customers can express very fast their opinion and share experience they have with other potential customers. It is also useful for the company as they can understand the weak points in the customers' service. It is the challenge nowadays to have a long term relationships with customers and to see the customer as a partner. In this regard, interesting topics should be chosen. If the topics discussed in the forum, blog, web-site of the hotel are interesting for the customer, he will be attracted. The name of the company is not so interesting and attractive for the customer but rather its activity, values, etc. Customers are aiming to become a part of certain virtual travel community based on the motives they have. For example, info-seekers are focusing on professional blogs, forums, where they can find help and expert advice.

In order to understand how virtual travel community has optimized the development of SMEs, measuring the effectiveness needs to be conducted. By effectiveness is meant that the goals set by the company have been achieved with the results achieved (see table 1).

As emphasized before, the goals of the SMEs are defined with the right choice of the business model to be applied. If the company aims to use *Internet* as another communication channel to reach its customers, then the marketing managers are using the criteria for cost effectiveness of the campaign. If the company aims at creating brand awareness, then the brand awareness can be measured by number of people, who like and use the social media (Hoffman & Hodor, 2010). Also these people can be fans or make a reservation. Brand engagement can be measured by number of active participants compared with passive. Active users are people who active use the social media. They comment, like or share with friends. These people are engaged in company and can share it with friends. This is good because they made the company more popular for others. Therefore, the effectiveness of social media can be measured by the number of people who use, like, and share it. If many people see the company in social media that means this social media is effective for the company.

If the goal of the SMEs is to use social media for attracting audience, the appropriate measuring criteria can be Facebook Fans. The opportunity provided by social media is to create for free a Facebook page. Once the SMEs create a business page for free on Facebook it is possible to track the number of people that become a fan of this company. It is also possible to track the number of people who visit the

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Table 1. Metrics for measuring social media effectiveness

Social Media Application	Brand Awareness	Brand Engagement	Word of Mount
Social network Facebook	•number of members/fans •number of installs of applications •number of impressions •number of bookmarks • number of reviews/ratings and valence +/−	•number of comments •number of active users •number of "likes" on friends' feeds • number of user-generated items (photos, threads, replies) • usage metrics of applications/ widgets •impressions-to-interactions ratio • rate of activity (how often members personalize profiles, bios and links)	• frequency of appearances in timeline of friends •number of posts on wall •number of reposts/shares • number of responses to friend referral invites

Source: Hoffman & Hodor (2010)

web page and the number of new fans. Facebook provides a decent free tool to track all of these stats (Facebook, n.d.). The social media gives excellent statistics who are the customers. Knowing the total number of visits will provide information if the campaign is successful in achieving traffic to the web-site.

FUTURE RESEARCH DIRECTIONS

The effectiveness measuring has been addressed in the last section and this remains to be studied in details in the future works. In order to understand how effective the VTC is, several factors should be further studies. At first, the goals and the choice of business model, followed by the analysis of the competitors. Effectiveness will give proper understanding for the marketing and community managers if the travel online community is meeting its goals and provides ways for optimizing it. In order to understand how effective were the digital marketing campaign, the focus of future research should also be on the entrepreneurial goals. They are quite different, ranging from (personal and business are often intertwined) which more effective digital marketing can help to facilitate. Future research also needs to focus on business sustainability and growth (customer acquisition and retention and combating seasonality), innovative marketing through digital media and autonomy (reducing dependence on marketing intermediaries), personal development, satisfaction in mastering digital marketing and technology and profitability-more effective and efficient marketing.

Future research needs to incorporate how SME companies can benefit from electronic commerce including access to information on tourism services, providing better information on tourism services, and providing convenience for customers.

It is expected that future research will prove that virtual travel communities can be very useful tools in achieving not only customer acquisition but most of all retention. In fact, it is due to the usefulness of the travel communities that people are brought together from different regions, united by their same interests or hobbies. The general idea of the community is sharing knowledge. In this regard, VTC not only helps travelers in making their travel decision but serves also as profitability centers. In other words, future research should explore whether higher level of satisfaction of its members leads to higher profitability of the communities.

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CONCLUSION

The travel virtual communities represent an excellent opportunity for increasing the competitiveness of SMEs. The most important factor that needs to be taken into account is how *Internet* will be used by SMEs. Therefore, their choice of business model is very important. The steps of the strategy for applying virtual travel community are various and were elaborated by the author. They depend on the business. The chapter presents steps of strategy that could be taken by SMEs in the hospitality sector. However, the strategy presented can be applied to different companies from lines of business as well. The author presented the main steps to be followed by the entrepreneurs, operating in the *Internet era*. The chapter has further shown that virtual travel communities can optimize the processes in SME business organizations, not only externally but also internally. They provide fast feedback from customers. In this regard, the business organization can react faster and adapt to the requirements and needs of the customers. On the other hand, the community leads to optimization in the company inside. It is performed by close interaction between community managers and managers of other departments so that the company will function more effectively in the new *Internet* marketing paradigm.

Virtual travel communities provide an environment that facilitates users' interaction and search for devices. SMEs from the hospitality industry can change the way in which business is traditionally conducted, with travelers as co-creators and travelers as co-distributors. The travelers are becoming co-creators as they create the content in the travel community by posting photos, videos from the visited destination, by sharing their experience. As a result, a new SME business model has appeared the model of the community. It includes: the traveler, the business organization and the online tourism domain. It is created in most of the cases by the customers, and managed successfully later by the business organization. It is the key of success and future development of SMEs, particularly in the tourism industry.

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KEY TERMS AND DEFINITIONS

Blogs: Short recordings that are chronologically ordered and contain media materials.

Conversion Rate: The number of customers who turn to buyers.

Electronic Business Model: An architecture for product, service and information flows, including a description of the various sources of revenue, business actors and their roles, their potential benefits for various business actors such as SMEs.

Likings: Criteria for people who express positive attitude towards a certain web page, i.e. they like it.

Personalization: Sending a personalized content to the user according to his/her preferences.

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Social Networks: A virtual network aimed to establish relations among its users potentially supporting SME development.

Virtual Travel Communities: An aggregation of people able to exchange ideas, beliefs, experiences online through space and time with potential to support SME development.

ENDNOTE

[1] Editors' note: The notion of strategy has been discussed in chapters 14 and 16 from other important points of view.

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Chapter 54
Working Capital Financing by Banks in Small Enterprises:
Problems and Challenges for Bangladesh

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ABSTRACT

Among all the economic players, small enterprises (SEs), by number, dominate the whole world business segment. However, it is a very common problem for SEs, in every economy either developed or developing, to get access into formal financial sector. Working capital can be treated as the life blood for SEs to be operated. But unfortunately, most of the small enterprises face serious problem while obtaining such loan from banks. On the other hand, banks face a lot of problems to finance working capital to SEs. Therefore, this chapter intends to identify the problems faced by SEs in obtaining and by banks while financing working capital. A total of 413 small enterprises were interviewed through a structured questionnaire administrated directly by the researchers and selected purposively from the capital city (Dhaka) of Bangladesh. The major findings indicate that about 72% small enterprises got the access into banks for working capital loan although all of them face a lot of problems while obtaining such loan from banks. To identify the problems and challenges faced by banks while financing working capital to SEs, 34 commercial banks' officials working in SME department were interviewed through questionnaire and selected purposively based on their high involvement into SME sector lending. Bankers encountered different problems and challenges related to working capital financing in SEs. Based on the survey findings, a good number of solutions have been formulated for policy initiatives.

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INTRODUCTION

Among all the economic players, small enterprises (SEs), by number, dominate the whole world business segment (EdinburghGroup, 2013). In consideration of the contribution to the world GDP, it varies from 16% (in low income countries) to 51% in high income countries (EdinburghGroup, 2013). In terms of employment creation worldwide, research suggests that small and medium enterprises are the dominant contributors in all the regions. Beyond the contribution towards the GDP and employment, small businesses are also significant for the society for building social network, ensuring life standard of poor people, export earnings, reducing social unrest, creating new entrepreneurs, satisfying consumers' needs with competitive price, fulfilling the requirements of many large businesses and others (Mamun, Hossain & Mizan, 2012).

Small and medium enterprises are considered as the backbone of the economies of Asia region. During 2007–2012, on an average SMEs account for 98% of all enterprises and constitutes more than 66% of the national labor force in Asia (ADB, 2013). This report also reveals that in the same period the sector contributed 38% (on average) of the GDP or manufacturing value added and 30% total export values. SEs are also the backbone of Bangladesh economy and their contributions can reduce poverty to a satisfactory level by creating jobs for the skilled and unskilled manpower in this sector. In Bangladesh, SME sector contribute 25% to the GDP, about 40% of gross manufacturing output, account for 90% of the private sector enterprises and about 70% to 80% of the non-agricultural workforce working in the sector which is around 25% of the country's total labor force (Alo, 2014, Februry 7).

Bangladesh economy is characterized by high population, low per capita income, high level of unemployment and underemployment, mass poverty and high income disparity (Mamun, Hossain & Mizan, 2012). In these circumstances, higher growth of SEs which is treated as an engine for economic growth and machine for job creation may reduce poverty of Bangladesh to a satisfactory level by creating employment for the skilled and unskilled manpower in this sector. Despite the high potentiality and remarkable contributions towards the economy, still the sector is facing severe financing problems almost all the Asian countries, along with other multidimensional problems depending on the countries, which are hindering their survival and jeopardizing potentiality of future growth.

As part of SEs financing requirements, working capital (WC) plays a significant role in the success of SEs. According to Kwenda (2015), working capital can be regarded as the reservoir of internal financial resources and can be used for supporting the growth or expansion of business. WC is that portion of a firm's capital which is employed in short term operations. It is a significant issue during financial decision making as this is a part of the investment in total assets that requires an appropriate financing investment (Bhunia, 2010). Although working capital problems can be experienced by organizations of any size, it is usually small businesses that experience most problems, especially during periods of start-up and expansion (McCosker, 2000). Too little of working capital will result in cash flow problem, failing to pay suppliers on time and being unable to claim discounts for prompt payment. On the other hand, too much resource tied-up in working capital will earn a lower-than-expected rate of return on capital employed. Proper management of working capital is important to guard the financing constraints (Ding, Guariglia & Knight, 2013). As a result, optimum investment in working capital is the precondition for the small business success. Therefore, Peel, Wilson and Howorth (2000) suggest that an efficient working capital management is particularly important for small and medium-sized firms due to the greater difficulties they have in obtaining funding on the long-term capital markets and, hence, their greater dependence on trade credit and bank credit as major sources of debt.

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As SEs are heterogeneous in nature and lack proper business plan, required documents and formal business structure, they traditionally faced difficulty in obtaining working capital from formal sources (Mamun, Hossain & Mizan, 2012). Availability of required working capital in appropriate time is the significant problem for most of the SEs. For the day to day business operation, timely availability of working capital and its utilization is required. This kind of problem arises mainly due to delay in payments made by the debtors. In his study, Hossain (1998) reveals that SEs in Bangladesh encounter great difficulties while rising working capital because of the reluctance of banks to provide loans to SEs. On the other hand, WC financing in SEs is one of the key area for the banks where they face challenges. Most of the entrepreneurs in our country are illiterate and are unable to prepare proper business plan that may help them to get money from bank (Mamun, Hossain & Mizan, 2012). Lack of proper documentation, un-structured business record, on the other hand, create major problems for them.

The number of studies that have addressed the financing and capital structure of SMEs are mostly for developed countries (Hughes, 1997; Watson & Wilson, 2002; Zoppa & McMahon, 2002; Hussain & Matlay, 2007); only a few address for developing countries (Peterson & Shulman, 1987; Aidis, 2005; Abor, 2005; Bhaird & Lucey, 2011). Research into the area of working capital financing to SEs in Bangladesh is very scant, particularly research investigating the problems of WCF in SEs and banks. Therefore, this chapter focuses on the problems faced by SEs in obtaining and by banks while financing working capital.

OBJECTIVES OF THE CHAPTER

This chapter examines the problems faced by small enterprises in Bangladesh while obtaining working capital loan from banks and problems and challenges encountered by banks for financing working capital to SEs. Thus the specific objectives of the chapter are:

- To represent present scenario of working capital financing by banks to SEs and their existing mechanism.
- To identify the problems faced by SEs in obtaining working capital loans from banks.
- To point out the problems faced by banks while financing working capital to the SEs.
- To propose some solutions for policy initiatives.

PRESENT SCENARIO OF WORKING CAPITAL FINANCING BY BANKS

At present banks and financial institutions are coming forward to provide finance to the small enterprise sector. Different initiatives have already been taken and practiced by the financial institutions in order to facilitate small enterprise financing mostly for the behest of Bangladesh Bank (Mamun, Hossain & Mizan, 2012). The present scenario of working capital financing in SMEs has been analyzed in terms of percentage of total working capital financing by group of banks, bank group-wise total working capital financing, industry-wise working capital financing by group of banks, and working capital finance in small and medium industries by banks.

Table 1 shows the working capital financing by all banks in terms of percentage. It is evident that, the State Owned Banks' (SOBs) and Private Commercial Banks' (PCBs) working capital financing increased in 2014 compared to 2012. But the working capital financing by Specialize Banks (SBs) and Foreign

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Table 1. Working capital financing by group of banks (in %)

	2012	2013	2014	CAGR*
SOBs	15.24%	9.91%	15.69%	20.49%
SBs	4.76%	5.95%	0.43%	-46.19%
FCBs	8.71%	10.71%	5.12%	0.16%
PCBs	71.29%	73.43%	72.80%	20.18%
All Banks	100.00%	100.00%	100.00%	19.35%

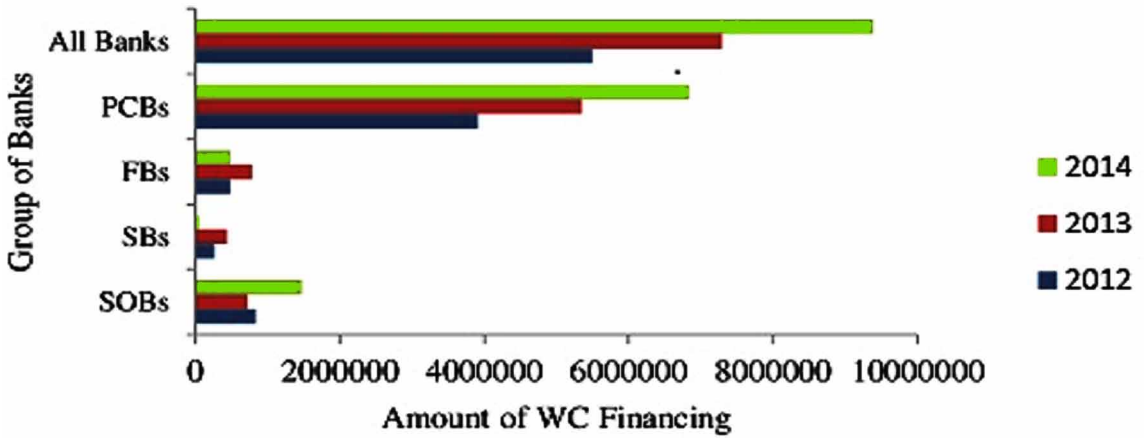
Source: Authors' calculation, Data: Scheduled Banks Statistics, Bangladesh Bank.
* CAGR stands for Compound Annual Growth Rate.
Note: SOB- State own Bank, SB- Specialized Bank, FCB- Foreign Commercial Bank, PCB- Private Commercial Bank.

Commercial Banks (FCBs) decreased from 4.76% to 0.43% and from 8.71% to 5.12% respectively. Among all, PCBs' financing was highest (72.80%) in 2014 followed by SOBs (15.69%). In terms of working capital financing, the compound annual growth rate (CAGR) of SBs was the lowest (- 46.19%) among all the banks in last three years (2012 to 2014). However, SOBs and PCBs achieved almost the same CAGR which are 20.49% and 20.18%. Therefore, the CAGR of all the banks shows the remarkable increase from year 2012 to 2014. This is a positive indication for accelerating the growth of economy.

Although the PCBs remained the major partner in working capital financing in 2014, the percentage of financing is slightly decreased from 2013. However, they are playing a significant role in fulfilling the working capital needs of the borrowers. Figure 1 depicts the bank group-wise working capital financing in terms of amount, which also shows that all the banks together increasing their contribution towards the working capital financing in different industries.

The industry-wise working capital financing by banks is shown in Table 2. The PCBs are playing the dominant role in working capital financing among all banks. In 2014, in all categories of industries except the cottage industries, the PCBs' working capital financing was highest. In large industries' PCBs provided 75.33% working capital in 2014, the SOBs' position was second (11.94%), followed by FCBs and SBs. Small and medium industries got maximum working capital financing from PCBs and SOBs.

Figure 1. Group wise total working capital financing by banks (Tk. In Lacs)



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Table 2. Industry-wise working capital financing by banks (in %)

Size and Nature of Industrial Credit	2012				2013				2014			
	Large & Medium Industries	Small Scale Industries	Cottage Industries	Service Industries	Large Industries	Small and Medium Industries	Cottage /Micro Industries	Service Industries	Large Industries	Small and Medium Industries	Cottage /Micro Industries	Service Industries
SOBs	16.10 (1830)	6.92 (3261)	36.65 (3110)	4.51 (324)	12.79 (880)	8.69 (4309)	30.46 (2180)	1.10 (815)	11.94 (977)	28.29 (5914)	52.47 (1213)	1.57 (516)
PCBs	70.99 (32703)	68.54 (4125)	39.07 (1119)	79.25 (1541)	75.95 (19634)	69.56 (22706)	38.36 (1586)	72.06 (87043)	75.33 (25345)	63.15 (110922)	34.77 (1467)	85.37 (93496)
SBs	4.39 (5600)	23.22 (1936)	24.27 (5195)	0.22 (1122)	0.92 (44)	19.90 (24091)	30.96 (11063)	0.35 (121)	1.69 (125)	6.76 (6185)	12.70 (4996)	0.92 (525)
FCBs	8.52 (1603)	1.32 (58)	0.00 (0)	16.02 (78)	10.34 (1667)	1.85 (382)	0.21 (5)	26.49 (220)	11.05 (1522)	1.80 (373)	0.06 (4)	12.15 (181)
All Banks	100 (41736)	100 (9380)	100 (9424)	100 (3065)	100 (22225)	100 (51488)	100 (14834)	100 (88199)	100 (27969)	100 (123394)	100 (7680)	100 (94718)

Source: Authors' calculation, Data: Scheduled Banks Statistics, Bangladesh Bank.

*Parentheses indicate the number of account.

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However, PCBs contribution towards the small and medium industries reduces from 69.56% to 63.15% from the year 2013 to 2014 whereas the contribution of SOBs increases drastically for the same period from 8.69% to 28.29%. The contribution of FCBs in this regard is negligible and SOBs remained in moderate position.

In terms of the working capital financing in cottage/micro industries, SOBs played a pivotal role in 2014 which account for 52.47% followed by the PCBs (34.77%). However, in consideration of the service industries PCBs contribution was highest in 2014 which is 85.37% followed by the FCBs (12.15%). The stake of working capital finance by the SOBs and SBs is marginal in this regard.

Table 3 shows bank-wise amount of working capital finance and their compound annual growth rate (CAGR) in small and medium industries. All the groups of banks except the SBs show the positive trend in financing small and medium industries. The CAGR of SOBs shows the highest increase (121.35%) while SBs shows negative (-28.49%). The FCBs' and PCBs' CAGR also show the positive and almost similar. In aggregate, the CAGR for all banks is 22.67%, although the group of SBs' affects negatively. It is worthy to mention that the small enterprises' access to working capital finance in the SOBs, PCBs and FCBs are positive, meaning greater extent of financial inclusion in this segment.

EXISTING MECHANISM OF WORKING CAPITAL FINANCING BY BANKS

The SMEs of Bangladesh suffer from scarcity of working capital although day by day this portion is increasing as part of financial inclusion. However, these are not sufficient compared to the larger demand. Therefore, small businesses are using both formal and informal sources to finance their working capital needs. One of the important problems the entrepreneurs facing while financing from informal sources is the high interest rate. On the other hand, the absence of required documents and prior banking relationship mostly hiders those to get access in formal sources and also facing problems in getting finance on emergency basis.

Irrespective of many problems for the banks to provide funds to the SEs, most of the banks are providing working capital facilities to their SE clients. The banks follow different mechanism in providing finance to the SE clients. Usually the mechanism involves several steps. These are (i) Client selection based on the information furnished in the Know Your Customer (KYC) (ii) Assessment of the loan proposal by the credit officer (iii) forward it to the credit committee (including documentation and the comments based on the assessment) (iv) Re-assessment by the credit committee (v) Decision and Disbursement of the loan. The mechanism depends on the operational procedure (centralized or De-centralized), practices,

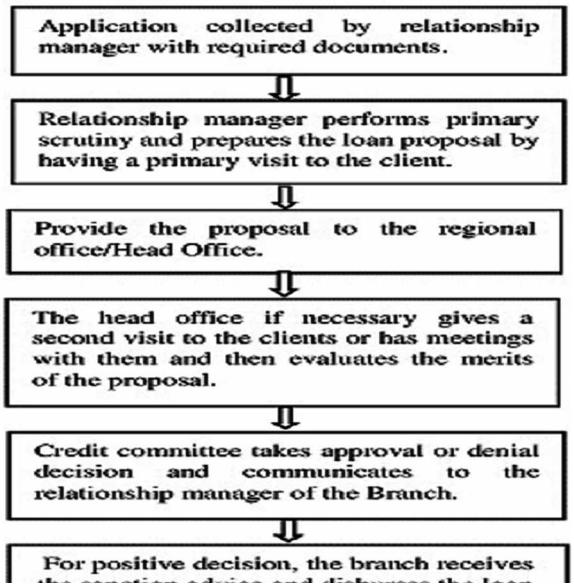
Table 3. Working capital financing in small and medium enterprises by banks (Tk. in Lacs)

	2013	2014	CAGR
SOBs	165,453	810,682	121.35%
SBs	378,802	193,700	-28.49%
FCBs	35,264	51,485	20.83%
PCBs	1,324,360	1,809,301	16.88%
All Banks	1,903,879	2,865,168	22.67%

Source: Scheduled Banks Statistics, Bangladesh Bank.

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Figure 2. Process flow chart of working capital loan disbursement



risk management procedure of individual bank. The working capital financing mechanism also largely depends on the attitude of the individual banks to the SE clients. The current flow chart of working capital financing followed by different banks is shown in Figure 2.

The process shown in figure 2 for financing working capital to SEs is not a straight forward process rather it varies from bank to bank and even for client to client. For some clients, especially for the credit worthy firms, the mechanism may be pretty simple but for other cases it goes some rigorous process. While financing working capital, a few PCBs including some foreign banks operating in Bangladesh follow the best practices and emphasis more on cash flow of small business. But the other PCBs and SOBs are still heavily dependent on the traditional collateral based lending.

While appraising the proposal for working capital financing, the relationship manager or the credit officers of banks evaluate different factors. The selection depends on the strategic commitment of the individual banks towards the SEs. It is also very much dependent on the approach of the individual bankers related to working capital financing to the SEs. The common factors are the experience of the entrepreneur, the net worth of the business, security provided by the entrepreneur, the status of the banking relationship, cash-flow etc.

METHODOLOGY

The study emphasizes on the three broad sectors of small businesses operating in Bangladesh namely, manufacturing, trading and service sectors. It is evident from the SME Foundation cluster approach that out of 177 SME clusters, 38% small businesses are located in Dhaka division and most of them are concentrated in Dhaka city (Abdin, 2015, March 5). Therefore, the study considers Dhaka city as the study area. According to the census of Bangladesh Bureau of Statistics (2015), there are a total of 178,829 small business units are operating in Dhaka city. As the list of small enterprises including their

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addresses except the total number is not available in Bangladesh, the probabilistic sampling technique cannot be applied. Hence, the study considers non-probabilistic sampling technique to make the survey manageable but within reliable limits.

The study considers Krejcie and Morgan (1970) table to determine the total sample size. Based on the Krejcie and Morgan table 384 small businesses are selected as the sample size. However, to reduce the sampling error and to minimize the non response rate, the total sample size are multiplied by two (Hair, Wolfinbarger, Ortinau, & Bush, 2008). Therefore, the total 768 questionnaires are administered in Dhaka city those are purposively selected. Since the focus of the study is working capital financing problems faced by both small businesses and banks, the unit of analysis is small firms operating in Dhaka city and bank officials of SME department. Therefore, to collect the information about the firm, interview has been conducted through the structured questionnaire among the owners or the managers where owners are absent from their businesses operation and also from the bank officials of some selected banks in the same city. The total numbers of 768 questionnaires were distributed among the enterprises in Dhaka city. The researcher could able to receive 437 questionnaires (response rate 56.90%) from the interviewee. Out of the 437 questionnaire 24 were rejected by the researchers due to the insufficient information regarding specific answer. Finally, the total of 413 enterprises was selected and has been taken as the sample. Among 413 small enterprises, 114 (27.60%) enterprises are from manufacturing sector, 237 (57.39%) are from trading sector and the rest 62 (15.01%) are from the service sector.

For collecting the information from banks, a purposive sample survey has been conducted on 34 commercial banks considering their high involvement into SME sector. Among 34 banks, four state owned commercial banks (SOB), twenty-four private commercial banks (PCB) including six Islami banks, two specialized banks (SB), and four foreign banks (FCB) are selected. To justify the problems raised by the small entrepreneurs, both the accepted and rejected loan proposals of some particular banks were also reviewed. Published literature, research papers, different books were reviewed to complete the theoretical background and relevant websites were visited to collect secondary information.

This chapter is divided into six sections. After a brief background as part of introduction (section 1), section 2 highlights the present scenario of working capital financing by banks. Section 3 shows existing mechanism of working capital financing by banks. Section 4 presents the findings and discussion of survey results. Section 5 represents some proposed solutions for policy initiatives. Finally, section 6 and 7 present the scope of further research and chapter conclusion.

FINDINGS AND DISCUSSIONS OF SURVEY RESULTS

In order to identify the small enterprises access to working capital finance, problems faced by them while obtaining WC finance and the problems cited by banks to finance them, current study surveyed on 413 enterprises belonging in different sectors. The survey results are presented and discussed in below:

Survey Results of Small Enterprises

Small Enterprises' Access to Banks for Working Capital Loan

Access to finance has a beneficial impact on business start-ups and growth, which will ultimately contribute to the economic growth. It is the prerequisite for ensuring the overall growth of small businesses.

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A large body of literature on different countries shows that there is a good association between access to finance and the growth or performance of small firms. Some studies highlights that the availability of finance is the prime factor for the success and growth of SMEs (Cook, 2001; Ou & Haynes, 2006). Some studies conclude that financing constraints have negative influence on the firm growth (Ayyagari et al., 2008; Beck et al., 2005). For example, Beck et al. (2005) from their cross-country analysis reveal that firms bear a 3% growth penalty that face finance as a main constraint compared to the firms that do not face it. Study done by of Beck and Demirguc-Kunt (2006) finds that for SMEs the impact of financial constraint on their growth is highly severe. Another study in Eastern Europe reveals the interesting findings that firms with access to formal financial institutions exhibit 9% higher employment growth and 36% higher sales growth for the period of 2002 to 2005 (WB, 2009). Therefore, it is understandable that for the overall growth and contribution of small firms towards the economy, there access to the formal financial sector is the vital requirements.

In order to analyze the access to credit in formal sector, the study collected information through survey about the capital structure of small firms who took loan both from formal and informal financial institutions. A total of 349 (84.50%) enterprises got the access in both sources and their average capital structure is shown in Table 4. According to Table 4, the average debt/equity ratio of the manufacturing sector is the highest (41.67%) compared to other two sectors. This is because manufacturing sector needs working capital in different phases of their production including other requirements.

From the last column of Table 4 that describes for range of debt and equity position, it is clear that some of the firms are highly leveraged, while some are low leveraged. High leveraged enterprises are riskier for bank to finance further and the low leveraged small enterprises tend to be less risky. The manufacturing sector shows the highest range from 12.43% to 73.55% and the overall range of debt equity is from 4.63% to 73.55%. The lower debt equity ratio indicates that most of small business highly relied on their own financing due to the lack of greater access to formal financial sector or they do not need bank loan.

Figure 3 shows the overall scenario of sample small firms based on their access to banks for external financing. Although 84.50% firms got the access into the formal and informal sources for funds mobilization, the 71.91% got the access into banks only. The other 28.09% did not get access into banks and relied on their own or informal sources. Choudhury & Raihan (2000) conducted a survey on SME access to credit and found that, only 35.79% of SME stakeholders enjoy unrestricted access to the formal credit while 50.53% did not get any kind of access. Therefore, it is evident that the access to credit in formal sources increases highly due to different initiatives and programs of central banks and all the commercial banks operating in Bangladesh.

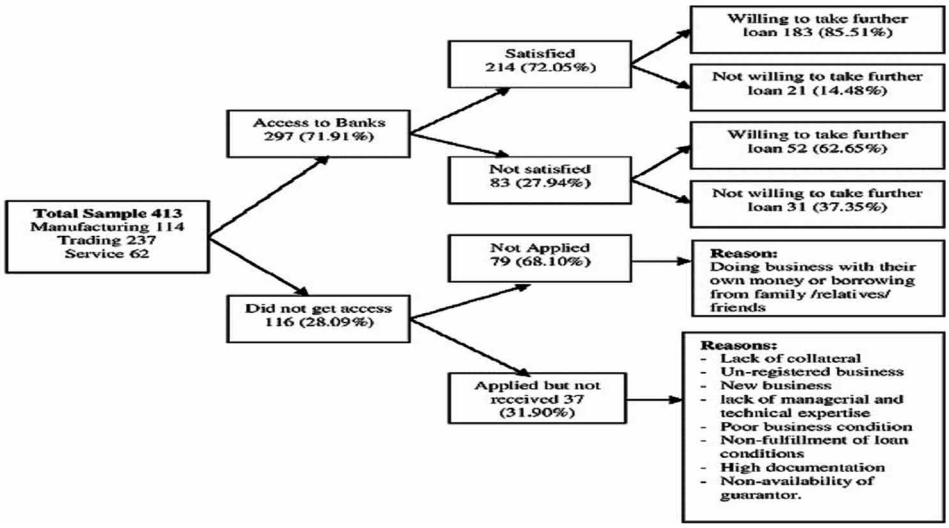
Table 4. Average capital structure of sample enterprises (group wise and total)

Business Type	Number[1]	Capital Structure		Range	
		Debt (%)	Equity (%)	(% of Debt)	
Manufacturing	93	41.67	58.33	12.43	73.55
Trading	209	27.33	72.67	7.44	62.49
Service	47	22. 71	77.29	4.63	69.85
Total Sample	349	31.94	68.06	4.63	73.55

Source: Authors' calculation based on survey questionnaire.

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Figure 3. Summary of survey results on access to formal credit from banks



Enterprises those got the access to banks, 72.05% enterprises are satisfied in terms of loan covenants and, of them, 85.51% enterprises are willing to take further loan. But 14.48% enterprises were not willing to take further loan from banks mainly due to the fact that they do not need further loan. On the other hand, enterprises those received loan from banks, 27.94% enterprises are satisfied with the loan covenants and requirements. Although they are not satisfied with their banks, 62.65% enterprises are willing to take further loan which mean that there is a big gap between the demand of loan and the supply.

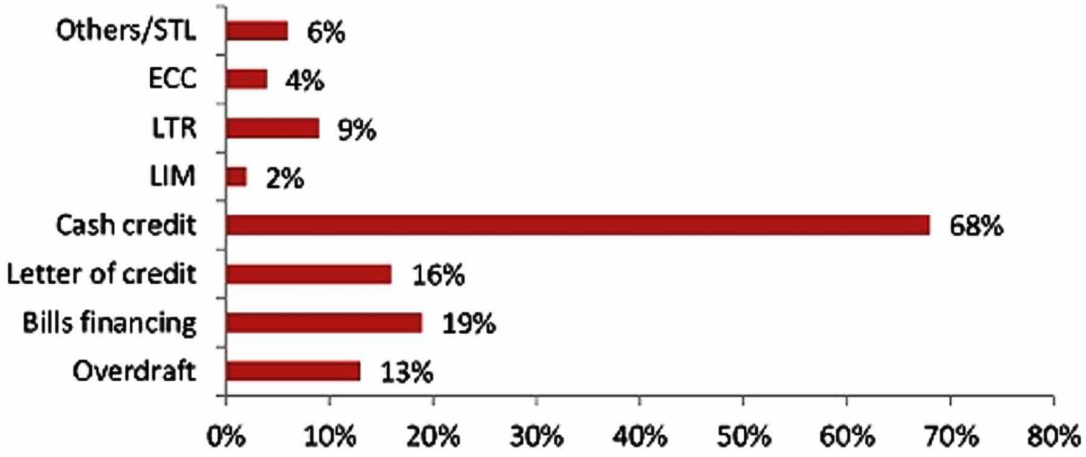
From figure 3 it is also evident that out of total enterprises who did not receive loan, 68.10% enterprises did not apply in banks for any loan since they do not need formal finance or do not want to involve with banks for financing needs rather borrowing from other informal sources like family, relatives and friends. On the other hand, 31.90% enterprises applied for the loan but they were rejected by banks. Some major reasons for that rejection also depicts in figure 3. The study also identifies that the trading sector got the highest access among the all sectors although the access of manufacturing sector should be more important as it acts as a catalyst of the economic growth of Bangladesh. Above all, it is evident that gradually the small enterprises access to the formal credit is improving due to the awareness of the customers as well as the eagerness of the banks and some regulatory compulsions of the central bank.

According to the survey result, many enterprises did not receive the full amount they applied for. In case of working capital, 63.87% firms obtained the full amount they applied and other 36.13% enterprises did not get the full amount they applied for. This kind of funds shortage may create problem for their business operation. Small enterprises generally receive working capital loan in different forms. Most of the funds they receive in the form of cash credit. Figure 4 shows different modes of working capital financing by banks and received by small enterprises.

From figure 4, it is evident that, the borrowers are availing a number of financing options such as cash credit, overdraft, letter of credit, bills financing, other short term loans, loan against imported merchandise (LIM), loan against trust receipt (LTR), export cash credit (ECC). Out of all the modes, they receive 68% through cash credit followed by bills financing (19%).

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Figure 4. Different modes of working capital loan received by small enterprises



Small Enterprises' Sources of Working Capital Financing

While financing working capital, small enterprises generally use different sources. Among them internal financing is the most common source and includes owner investment, as well as funding through retained profits, and / or the sale of assets. On the other hand, more common external sources in Bangladesh are debt finance in the form of loans and overdrafts from bank and other financial institutions, micro credits, leasing and hire purchase, factoring and trade credit etc. More often, small firms need to use a combination of financing sources, depending on the sector, and the stage in their growth and development. Table 5 highlights the sources of finance for small business start-up and working capital needs. According to the table, at the start-up phase most of the enterprises (92%) finance their business with their own savings as formal lenders do not find much interest and are reluctant to finance the small business during the early stage of business cycle.

Table 5. Small enterprises' sources of working capital financing

Sources of Finance	% of Respondents	
	Working Capital	Business Start-Up
Bank credit	67	13
Gov. credit	05	01
Retained earning	47	12
Supplier credit	53	22
Owner's saving	38	92
Family borrowing Factoring	26 4	52 0
Other borrowing	17	9

Source: Authors' calculation based on survey questionnaire.

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For business start-up, Small businesses use their family as one of the vital sources of finance and 52% of the respondents mentioned it as the second source. Supplier credit is the third and bank credit goes fourth one for financing their business start-up. In case of working capital financing, commercial banks are the important source for the small businesses. As shown in Table 5, 67% of the respondents are using banks as the prime source for their working capital needs. Now-a-days commercial banks are offering different types of products for serving their SE clients in respect to the working capital financing. Supplier credit is the second highest source for them as the working capital financing which is supported by the answer of 53% response. Supplier credit helps small business for effective management of their cash flow due to the delay payment facilities. This facility reduces the dependency on banks for short term credit.

Owner's savings for working capital financing is the most reliable and suitable for small businesses. About 38% of the respondents mentioned that they use their own savings for this purpose. They also use family borrowing for fulfilling these working capital needs. Sometime these sources help them to meet the gap they are demanding from formal sources and funds supplied by the institutions. Retained earnings are also the great source for their working capital financing tools. 47% of the respondents mentioned it as the source of working capital financing. Moreover, the respondents use some other sources for the same purpose like, factoring, other borrowing, government credit, etc.

Small Enterprises' Utilization of Working Capital Loan

Working capital are required to meet the needs of day-to-day expenses such as raw-materials, stores, power and fuel, salaries, wages, administrative expenses, interest, sales and distribution expenses and other expenses to produce the saleable goods, up-to the realization of the sale proceeds. Small businesses generally use most of their funds for fulfilling the working capital needs. In order to identify the utilization of working capital loan as well as fund diversion, a tentative list in the questionnaire is provided. Respondents are asked to provide their response in a format measured through Likert type scale where 1 means 'not use' and 5 means 'mostly use'. Table 6 summarizes the responses of the small entrepreneurs.

Table 6. Small enterprises' utilization of working capital loan

Parameters	Mean Value	Parameters	Mean Value
Raw material/Stock purchase	4.37	Investment in cooperative	2.11
Land Purchase	2.83	Improvement of personal land/building	2.48
Invest in another business	2.72	Purchase of valuables	1.86
Payment to other lenders	2.91	Personal use	2.53
Transportation	1.78	Medical treatment	1.36
Purchase/Modernization of machinery	2.92	Purchase of personal car/motor cycle	1.64
Payment of wages	3.17	Education / Marriage of children	1.24
Factory building	2.74	Sending children abroad	1.41
Investment in share market	1.68	Others (if any)	2.67

Source: Authors calculation from Survey Questionnaire.

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It is evident from Table 6 that the mean value for using working capital to purchase raw materials is the highest (4.37) indicating that most of the loan they use for this purpose. The second highest mean value is 3.17 for the payment of wages. These two items are the clear evidence of proper utilization of working capital loan. Besides, it is also evident that many respondents utilized their fund in purchasing/ modernization of machinery (2.92), and invested in factory building (2.74), meaning they are utilizing it in their business, but it should not be financed from the working capital loan rather it should be utilized from term loan. On the other hand, a number of respondents diverted a portion of their working capital loan by purchasing land (2.83), investing in another business (2.72), paying to other lenders (2.91) etc. Table 6 also evident that there are many other areas where the working capital loans are being partially diverted.

Major Problems Faced by Small Enterprises in Obtaining Working Capital Loan

In order to justify the severity of the problems small enterprises are facing while obtaining loan from banks, nine tentative problems are given in the questionnaire. Enterprises are asked to fill the questionnaire according to the Likert type scale where '1=No problem at all' and '5=Most severe problem'. Table 7 highlights the problems enterprises ranked base on the severity of the problems.

Collateral is typically an obligatory condition for granting a loan. Most of the financial institutions are reluctant to sanction credit to those firms who might fail to offer collateral. However, small businesses often have difficulty in providing sufficient and good-quality collateral to banks. Therefore, it is a major obstacle for obtaining loan from the formal financial sector. Survey result shows that the mean value for excessive security and guarantee requirement is highest (3.81) which is the most severe problem for obtaining loan from banks. The finding of this study is slightly differ with the study conducted by Mamun, Hossain and Mizan (2013) where they find the Security and guarantee is the second highest problems and interest rate is the prime barrier to get access in banks. The dimension is changed mainly due to increasing the ability of enterprises to repay but unable to offer suitable collateral, informal borrowing is costlier to them, high dependency on bank financing and so forth.

Table 7. Severity of the problems for obtaining working capital loan from banks

Sl No.	Obstacle	Importance*
1	Excessive Security and Guarantee Requirement	3.81
2	Complexity of Documentation	3.62
3	High Interest Rate	3.48
4	Long Loan Processing Time	3.15
5	Banker's negligence or lack of interest	3.08
6	Fail to obtain loan on time	2.73
7	Fail to obtain required amount	2.68
8	High sunk cost for Obtaining Loan	1.51
9	Malpractices in Sanctioning Loan	1.46

Source: Authors' calculation based on survey questionnaire.

* Importance is ranked from 1 to 5, with 5 being the most significant.

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Documentation is another obstacle for small businesses. Most of the businesses are family oriented and they do not maintain proper documents necessary for their business. On the other hand, banks require a standard set of documents to lend money. From the survey it is observed that complexity of documentation is the second highest problems with mean value 3.63 to get access in banks for working capital loan. Respondents also claim that they face a lot of problems while obtaining documents from different issuing authorities and even it takes much longer time.

Due to the fund shortage from their own, many small businesses are heavily relied on commercial banks for financing working capital. However, they consider interest rate as one of the prime barriers. The mean value of 3.48 indicates that the current interest rate for working capital loan is so high. Beside high interest rate, many banks impose different service charges and processing fees which ultimately increase their effective rate of interest.

Loan should be disbursed when needed. Some time it is found that, due to the time lag of loan requirement and disbursement many businesses cannot continue their operation in line with the market demand. In many cases especially for the businesses that are seasonal in nature face this problem seriously. As per the survey opinion, this is the number forth problem (mean value 3.15) for getting working capital loan. However, a few of the commercial banks in Bangladesh have reduced the loan processing time to one week or less than that. But still most of the banks need more than 15 days to process a loan even it requires a month to several months in some cases.

Generally, banks are very much reluctant to finance small enterprises with the perception that they are highly risky and not profitable to them. Most of the entrepreneurs opined that many officials of banks do not cooperate with them properly or timely, when they need financial services. Survey result shows that, the average rank score is 3.08 which reflect that the variable is marginally significant. As a result, due to the negligence of some bank official the small enterprises could not obtain working capital loan timely and when required.

Due to the long loan processing time, sometime small enterprises do not get the loan in time and cannot meet the requirement of customers. According to the survey, the mean value of respondents is 2.73 for 'fail to obtain loan on time'. Timely availability of working capital loan is one of the critical factors for sustainable business growth. If it is unavailable during the required time, they may be affected by seasonality. After this problem, enterprises rank the problem 'fail to obtain required amount' with a mean value of 2.68. Both over financing and under financing are the problems for small enterprises. When the enterprises do not receive loan amount they applied for, they cannot implement their business plan accordingly.

In order to enter into the formal credit sector small enterprises have to incur more sunk cost than their counterpart. Because, financial institutions do not easily provide their services to the small firms to fulfill their financial needs. Therefore, small businesses try to get the loan from different financial institutions one after another which increases their sunk cost in various forms. From the survey it is evident that the average rank score of this problem is 1.51 indicating the variable as marginally significant. Sometimes malpractices in sanctioning loan also hinder small enterprises to have access in the formal credit. Enterprises rank this problem with the score of 1.46. Although this is not a severe problem, it should be the concern of the policy makers. A few of the entrepreneurs claimed that some officials of banks demand extra money other than the stipulated fees or charges in order to get the required loan amount which they called bribe. Also, sometimes ineligible borrowers avail working capital loan from some corrupt bank officials.

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Survey Results of Banks

Commercial banks are playing significant role in financing small enterprises although in some extent they are reluctant to accept the loan request from SEs. The increased involvement of banks in financing small enterprises, to the large extent, mainly due to the central bank's policy initiatives, directives and creation of business opportunities. Previous section highlights several problems of the small enterprises for their access to finance from banks. To identify the problems and challenges faced by banks, the study also conducted another survey cantering the banks that are supplying funds to small enterprises. The subsequent sections discuss the survey results.

Problems Faced by Banks in Sanctioning Working Capital Loan

Banks also face different problems while financing working capital to small enterprises. As a part of that the bankers were asked "what extent do you think following are the problems for financing working capital to small enterprises?" and a tentative list were given related to the problems they face during assessment and disbursement of working capital loan. Table 8 represents the problems banks ranked base on the severity of the problems.

Structured financial information is an important requirement for the banks to assess credit worthiness of borrowers. Unfortunately, most of the small businesses do not record financial information properly and fail to fulfill bank's loan requirements. From Table-8 it is evident that bankers ranked lack of proper and structured financial information with a mean value of 4.21 signifying the number one problem. Therefore, most of the respondents indicate that during working capital financing it is a challenge to get the real financial data about the enterprises and even if it is available in many cases there are some faulty representations and are not sufficient for assessment.

Most of the banks emphasized on proper documentation as one of the severe problems. There is a great dilemma that small enterprises claim banks require many documents and condition to get loan whereas banks claim small enterprises fail to produce the set of appropriate documents without those

Table 8. Severity of the problems for financing working capital loan by banks to small enterprises

Sl No.	Obstacle	Importance*
1	Absence of structured financial information	4.21
2	Lack of proper documents	3.78
3	Non-disclosure of information	3.53
4	Lack of collateral and guarantee requirement	3.26
5	Absence of good business plan	3.12
6	Lack of business experience	2.86
7	Lack of previous banking relationship	2.72
8	Low banking literacy	2.31
9	High interest rate	2.29
10	Fund diversion tendency	1.66

Source: Authors' calculation based on survey questionnaire.

* Importance is ranked from 1 to 5, with 5 being the most significant.

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they cannot go for financing. Bankers ranked this item as the second highest problems where the mean value is 3.78 indicating that lack of proper documentation creates barriers in providing working capital loan to a small enterprise even if the enterprise is financially capable to pay the loans in due time.

Material information from the borrowers is important for the banks to assess their financial credibility. However, respondents rank this problem as the third major problem with a mean value of 3.53 that indicate borrowers do not like to disclose all the material information to the banks and sometimes request banks for working capital loans with fraudulent motives. Bankers also claim that, some of the good entrepreneurs sometime show reluctance to disclose financial information related to their businesses.

Collateral and guarantee become the next major problem (mean value is 3.26) identified by bankers. For smooth recovery of loan, banks require some collateral and guarantee form small businesses. According to the bankers' opinions, most of the small businesses operate in a rental house which is risky for them. However, collaterals offered by the small enterprises are either inadequate or inappropriate for a particular type of financing. Banks usually provide working capital financing against inventories as collateral. But it becomes very difficult for banks to value inventories offered by the client as collateral. On the other hand, in case of collateral free loan the borrowers face hurdle to get third party guarantee.

From a good business plan bankers get the idea about current and future movements of a business. Therefore, it is very important document the borrowers need to submit to get the loan from the commercial banks. Survey result shows that the mean value of this problem is 3.12 indicating the absence of business plan or borrowers cannot prepare proper plan of their business.

Banks usually consider small business having previous experiences for providing working capital loan. Previous track record helps them to justify future direction of the business. The mean score of the respondents for this problem is 2.86 that signify the medium level problem. Therefore, it is evident that prior business experience is necessary for small businesses to have working capital loan from banks. On the other hand, Banks can easily identify the behavior of small businesses if they have any previous banking relationship either depository or borrowing. Therefore, they consider this item as the moderate level problem where mean score is 2.72. Most of the small enterprises settle their transactions by cash. So, there is little or no evidence of banking transactions.

Beside the major problems banks face while lending working capital to small enterprises, respondents also consider low level of banking literacy (mean 2.31) among the entrepreneurs, the interest rate offered by banks (mean 2.29) and tendency of fund diversion by borrowers (mean 1.66).

Challenges Faced by Banks in Financing Working Capital

Recently banks are coming forward to finance SEs with a good number of products and services. However, these are not sufficient compared to the larger demand. In many cases bankers are facing a substantial amount of challenges for financing working capital. The common challenges banks face are shown in Figure 5.

According to Figure 5, most of the respondents (87%) encounter information asymmetry as the prime challenge for them. Bankers usually assess the borrower based on the information they disclose in loan proposal and from a short site visit. Besides, banks take some interview or even communicate personally with the proposed clients. However, respondents claim that in many cases small enterprises do not like to disclose some material information that leads them to take incorrect assessment. The second challenges they face is the competition among themselves. Majority of the respondents (74%) state that a very significant challenge they are facing now is the competition among banks. As the number of banks

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Figure 5. Challenges cited by banks in financing working capital



increases to 56, there is a great presence of unhealthy competition among banks. The third challenges they are facing is the un-supportive business environment. The total of 62% respondents opined that the current business environment, the political as well as the economic, is not supportive. Therefore, small enterprises do not like to invest money both in existing and new business.

Fund diversion tendency is another important challenge that banks are facing to lend working capital in small borrowers. Bankers response that, although there may have some lacking in ensuring proper monitoring, but the general tendency of the borrowers to divert funds has gradually increased. The 68% respondents claim in favor of fund diversion tendency. For small businesses, it is easy to enter or exit from the industry. As the small enterprises have easy entry and exit barriers, they can change the businesses frequently which create serious difficulty in ascertaining the use of fund by banks. This leads difficulty in collecting bad loans. Respondents (54%) claim that when the business condition is not good or favorable, some business owners stop operation and hide them to repay the loan amount. The next challenge bankers are facing is the absence of personal guarantee. A total of 52% respondents encounter that due to the increase of nonperforming loan (NPL), no people would like to offer third party guarantee which make them reluctant to lend money.

Over financing is another important challenge for banks. Due to the unhealthy competition among banks, many small enterprises can get the access of more funds rather than the requirements. Respondents (48%) also state that the rejection of proposal by one bank may be accepted by another bank for financing. During the survey the bankers (37%) point out another important challenge which is absence of proper risk measurement tools which lead to select some disqualified borrower. The other challenges respondents identify are delay of Credit Investigation Bureau (CIB) information and few clients' dependency of many banks.

SOME PROPOSED SOLUTIONS FOR POLICY INITIATIVES

The study survey on both small enterprises and commercial banks in Bangladesh to identify the problems they are facing while obtaining and financing working capital. Based on the findings from the survey results, some proposed solutions those are shown in below have developed for the banks and policy makers.

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1. Survey result evident that collateral and guarantee is the major problem both for bankers and borrowers. For small business it is difficult to manage the required amount of collateral and guarantee, but without sufficient collaterals banks are reluctant to finance working capital. To solve the problem, banks may introduce group guarantee or guarantee based on cluster for working capital financing. Credit guarantee scheme may be introduced although it has some limitations. Besides, financial institutions may take care for the collateral free loan where personal guarantee is strong and the project has good future prospects. Moreover, different collateral substitute such as, group based lending, frequent visit as part of strong monitoring, introduction of cash flow based lending, strong banker-customer relationship, development of credit products that automatically generates savings may be taken into consideration to provide working capital financing.
2. Regarding the required documentation both banks and small enterprises face serious problem. Bankers demand a set of required documentation without which they are reluctant to provide working capital, on the other hand, small firm in most of the cases fail to manage all the documents demand by banks. Therefore, it remains a challenge for the banks to complete the documentation during working capital financing. To address this problem, a coordinated effort is required among the Government, Bangladesh Bank and Commercial Banks to enhance market information availability and make the process easy for getting document from government office. Banks may circulate document checklists to make aware about the documents and may also provide consultancy services to the SEs in completing the documentation process. Moreover, the relationship officer should be very friendly in explaining the terms, documentation process and other aspects of the credit.
3. High interest rate as encounter by small enterprises is another significant problem for working capital financing. Although the prevailing interest rate of banks is not so high compared to the informal sources, the effective interest rate is slightly higher for some additional fees or service charges. Still banks may reduce the rate of interest by searching low cost funds. In this context, Bangladesh Bank, Government and other stakeholders can provide low cost fund to banks and enable them to finance small enterprises at a lower interest rate in consideration of economic development. With a large number of clients in the portfolio along with standardized process, banks can reduce its administrative cost and thus the interest rate on loans. Bangladesh Bank may introduce more refinancing facility for working capital financing which will ensure a low cost source of fund for the commercial banks and thus enable them to reduce interest rate. In addition, banks may keep an SE database and should practice credit scoring model that may reduce their monitoring cost which ultimately help to reduce interest rate.
4. Sometime small enterprises do not get working capital loan when needed due to the long loan processing time. Long loan processing time may be reduced by adopting standard loan approving procedures based on information technology and maintaining better information management. For example, to ensure quick process of a loan requires support of accounting software, strong MIS, skilled and dedicated manpower along with good commitment from the top management.
5. The survey provides a few instances of banks' negligence in dealing with the SE clients. Although it is few, but the information is very significant for better access to working capital. In this case, bankers should change their mindset first, should have good customer relationship, and positive and caring attitude towards the small entrepreneurs. Bankers have to nourish the small entrepreneurs to become successful. This relationship should be like partnership. Moreover, banks should diversify their portfolio in SE segment for their own profitability as well as sustainability rather any compulsion from the central bank.

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6. Many small enterprises claim that they do not get the required amount of loan as per their need. To minimize the problems related with insufficient working capital loan, banks should not consider the prior relationship with the borrower only rather they should also put emphasis on the business prospects of the borrowers. Banks should assess the need of borrower properly so that actual amount of working capital can be disbursed. Besides, banks should make them understand about the process of working capital assessment and the minimum time required for the approval of such capital.
7. Survey evident that frequent visits of the clients to the banks for getting working capital loans raise their sunk costs in terms of money, energy and time. In this regard, relationship officer should be very friendly in explaining the terms, documentation process and other aspects of the credit and should provide the prospective borrower a check list so that the borrower might visualize all the requirements of the loan clearly. Moreover, to reduce the knowledge gap of the borrower in fulfilling the loan requirements, banks should undertake extensive skill development program of their employees who will deliver services to the SE clients.
8. A few enterprises claim that sometime credit officer demand extra money from them to get working capital loan. To address the issue of such malpractices (taking bribe, nepotism etc.), banks may adopt better internal control and governance mechanism to identify such activities, and if found, involved officials must get exemplary punishment.
9. Unstructured financial information is a serious barrier for the entrepreneurs to get access to formal finance. Banks may encourage SE clients to provide accurate and authentic financial information for their analysis and assure them that the information will not be disclosed elsewhere for any other purposes. Beside, business owners should be encouraged to use proper accounting records on their business transactions by educating them to know the benefits of accounting and financial information and by setting up simple SEs accounting standards. In this regard, commercial banks can develop and circulate a simple customer friendly financial template in Bangla for the SEs so that they can record their financial transactions in an organized and structured manner.
10. In order to reduce the information asymmetry, a very good relationship between banks and its SEs should be established by which SEs can identify the potential suppliers of financial services and evaluate the cost of the financial services that are being offered by banks as well as the financial service providers can easily receive the feedback of managerial attributes and evaluate the risk and prospects of the SEs.
11. Bankers claim that most of the entrepreneurs have very low level of knowledge about banking norms and practices and cannot prepare a proper business plan as per banks requirement. In this regard, central bank can prepare a simple business plan template in bangle and circulate it among existing and potential SE borrowers. Bankers may educate the customers and provide consultancy services to help them for preparing good business plan.
12. Another important challenge banks face is the fund diversion tendency of small enterprises. As credits provided to SME clients are monitoring based credit, banks may create a dedicated monitoring team to ensure end use of the financing to avoid fund diversion. Bankers can reduce direct cash based credit and introduce transaction based credit so that the clients will not be able to use the fund at his will. Moreover, bankers may create awareness among the SE borrowers to avoid funds diversion.

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FUTURE RESEARCH DIRECTIONS

Commercial banks in Bangladesh are coming forward to finance working capital in small enterprises with a good number of initiatives although these are not sufficient compared to larger demand. In this circumstance, if banks and other stakeholders follow the proposed solutions, in future financing in this sector may increase which will be the benefits both for banks and their clients. Current chapter focuses on the working capital financing problems faced by banks and also problems faced by small enterprises while obtaining working capital from banks. The sample selected from the capital city (Dhaka) of Bangladesh only. Therefore, further study can be done on easy financing mechanism, developing different products and services for working capital financing, how to finance through collateral substitute, business process reengineering for working capital finance considering the sample from both rural and urban areas.

CONCLUSION

Small enterprises sector is one of the major economic players in Bangladesh and contributor in the GDP. Hence, it is immense important to ensuring their access to formal credit like banks for greater economic benefits. The study has pointed out a number of demand side problems while obtaining working capital from banks and also identified the supply side problems and challenges for financing working capital. Small enterprises claim that they face severe problems with banks. On the other hand, banks claim most of the problems exhibit with SEs for financing working capital. Both SEs and banks encountered some common problems like documentation, collateral and guarantee, information asymmetry with a number of many other problems. To address these problems, this chapter recommended some solutions. It is highly expected that if banks and other stakeholders adopt the recommended solutions, these may reduce the current problems they are facing and will ensure a better access to banks for small enterprises to have working capital loan.

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KEY TERMS AND DEFINITIONS

Commercial Bank: Commercial bank is a licensed financial institution that act as an intermediary to provide variety of financial services.

Small Enterprises: A *manufacturing concern* with total assets at cost including installation of fixed asset and excluding land and building from Tk. 5 million to 100 million and/or number of employee ranges from 25 to 99. A *service concern* with total assets at cost including installation of fixed asset and excluding land and building from Tk. 0.5 million to Tk 10 million and/or number of employees ranges from 10 to 49. A *trading concern* with total assets at cost including installation of fixed asset and excluding land and building from Tk. 0.5 million to Tk 10 million and/or number of employees ranges from 6 to 10.

Working Capital: The actual amount of capital required for a business for its day-to-day operations and is measured as the current assets minus current liabilities.

ENDNOTE

[1] Those who took the loan from both formal and informal sources.

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Section 5

Organizational and Social Implications

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Chapter 55
Risk Management Usage and Impact on Information Systems Project Success

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ABSTRACT

This article explores the usage of risk management practices on virtual Information Systems projects to address the growing industry practice of geographically separated teams. A survey of 557 virtual-project managers assessed usage of risk management practices and association with successful outcomes. The Theory of Reasoned Action is used to model attitudes and behavior. Correlation analysis indicated a strong relationship between risk management and successful outcomes, irrespective of success measured by budget, functionality, or schedule. Findings indicated that while the highest levels of risk management usage were characteristic of project success for virtual projects, many well-trained project managers are short-cutting use of all three core practices. While risk assessment and risk control are typically performed, only 52% of participants completed the final step of developing a risk management plan. This may not only lead to sub-optimal project outcomes, but also renders the first two actions an inefficient use of resources.

INTRODUCTION

The emergence of virtual projects with the use of distributed resources has changed the way some project management practices operate. Although traditional face-to-face and virtual projects are alike in some ways, their differences can make managing virtual project teams more complicated and complex. Virtual projects, also referred to as distributed projects, consist of non-co-located project team members who typically reside in different geographical locations, may operate in different time zones, and rely on

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information communication technologies (Reed & Knight, 2011). These types of projects are common due to the global nature of many organizations. The key aspects that define virtual project teams also include their sources of complexity, which include problems with communication, culture, and trust (Berry, 2011; Brandt, England, & Ward, 2011; Nydegger & Nydegger, 2010). These complexities can cause virtual projects to be higher in risk and thus more likely to require risk management practices.

Prior research into project risk and risk management established its role in the success of projects (Addison & Vallabh, 2002; Boehm, 1991). The importance of effective risk management practices was more recently stressed in a report by PMI on the outlook for project management in 2012 (PMI, 2011). Unfortunately, research also identified risk management practices as the least mature of the project management knowledge areas identified by the Project Management Institute (PMI) (PMI, 2013; Yazici, 2009). This deficiency continued to be emphasized in the PMI 2015 Pulse of the Profession report (PMI, 2015), where risk management was listed as a foundational practice that needed greater attention. The 2015 report stated more rigorous risk management was needed since "This year, 83% of high performers report frequent use of risk management practices compared to only 49% of low performers" (PMI, 2015, p. 4).

Research into Information Systems (IS) projects has long recognized the importance of project management techniques (Ibbs & Kwak, 2000; Kerzner, 2001). Huang and Han (2008) indicated that problems with software development were prevalent, citing "cost overruns, project delays, unmet user needs, and unused systems," and labeling these problems as chronic (p. 41). The Standish Group's Chaos Report, published annually since 1994, is a leading indicator of the software development industry (Hastie & Wojewoda, 2015). The Standish Group determined that failed and challenged software projects represented approximately two-thirds of all project outcomes, while only about a third of those projects were successful (Standish Group International, 2009). The Chaos Report classifies project outcomes into one of three categories: successful, challenged, or failed. These classifications are defined as:

- **Success:** Meets scope criteria within a range acceptable to the organization.
- **Challenged:** Project delivered but fell outside of an acceptable range for time, budget, or quality.
- **Failed:** Project could not deliver a completed solution.

The 2015 Chaos report shows failed and challenged projects at 71 percent, which demonstrates no improvement over 20 years of data tracking (Hastie & Wojewoda, 2015). Also of note is that the definition of success has evolved, from strict adherence for meeting time, budget, and scope, to accepting a "range" of acceptable outcomes as long as the organization and customer are satisfied. While the Chaos report establishes project management expertise, which includes risk management, as one of the top 10 success factors for projects, it does not differentiate between face-to-face versus virtual projects. Thus, the goal of this study was to explore the usage and impact of risk management practices on virtual IS projects with the underlying research question to determine if a relationship existed between risk management usage and virtual project success.

This research contributes to the existing body of knowledge on risk management value and usage by extending the information on virtual IS projects. This also contributes to practitioner knowledge of risk management by identifying specific practices where improvement is likely to have an actual impact on virtual project success. The paper utilizes the Theory of Reasoned Action (TRA) with data collected

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from an extensive survey of IS project management practitioners. The paper continues with a review of literature defining risk management, establishing the definition of project success factors, and then examines the impact of risk management on project success. This is followed by a discussion on TRA and the research methodology. Results are presented along with discussion, and are followed by a conclusion which addresses the paper's limitations and avenues for future research.

REVIEW OF LITERATURE

In order to assess risk management on virtual information system projects, a review of literature was conducted on risk management practices, the impact of risk management, and definition of project success.

Risk Management

Risk is defined by de Bakker, Boonstra and Wortmann (2010) as "all situations or events that cause disruptions in the plan, and jeopardize the timely delivery of the project results agreed upon within the budgetary limits" (p. 496). That being said, DeMarco and Lister (2003) point out projects without risk often have few if any benefits. In other words, although risks can have a negative impact they generally accompany any project that is worth doing. Project risk as defined by Schwalbe (2011) states that risk is "an uncertainty that can have a negative or positive effect on meeting project objectives" (p. 425). The occurrence of unmanaged risk on projects is typically unwanted because risk can easily cause havoc in many areas and can eventually lead to unsuccessful and/or failed projects. Therefore, risk management is a project management practice generally employed on projects to handle negative possibilities by lessening the impact or eliminating them.

Risk management consists of tools, techniques, and practices such as risk identification and risk assessment, often used by project managers to reduce or eliminate the possibility of project failure (Addison & Vallabh, 2002). The Project Management Body of Knowledge (PMBOK) suggests that reactive risk management can lead to project failure, while proactive risk management reduces the impact of a realized risk (PMI, 2013). One specific tool defined in the PMBOK is the risk management plan which includes items such as methodology, roles and responsibilities, and a probability and impact matrix (PMI, 2013). Failing to create a risk management plan falls into the reactive category and is likely to affect the way risk is handled and the subsequent impact of those risks. More importantly, the risk management plan should be created early on, during the planning phase of a project, and should outline the type of risk management to be used on the project. The plan can range from an elaborate document to a simple bullet-point list.

More recently, research by Williams (2017) indicates current risk identification methods might be insufficient for targeting key project risks. More holistic approaches may be necessary due to potential inadequacies in current methods. In particular, complex projects need to identify risks both individually and as systems, since some risks can interact with each other (Williams, 2017). Further, there are always questions about how much and to what degree risk management tools are used due to the attitudes and beliefs of the project manager and project stakeholders.

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Risk Management Impact

The process of identifying key risks and subsequently creating strategies to deal with them was proposed as early as 1978 by Alter and Ginzberg (de Bakker, et al., 2010). They note that the risk management process was believed to improve the chances that an IS implementation would be successful. Following the early introduction of risk management to IS projects, literature explored the causes and impact of risk on IS projects (Barki, et al., 1993; Boehm, 1991; Keil, et al., 1998; Reed & Knight, 2011; Wallace, et al., 2004). Research also includes studies that investigated the value and usage of project management practices and their relationship to either project success or project performance (Raz & Michael, 2001; Raz, et al., 2002; Besner & Hobbs, 2006; de Bakker, et al., 2010; Papke-Shields, et al., 2010).

Ropponen and Lyytinen (1997) conducted a study of risk management impact on system development performance. They investigated which risk management practices, as well as environmental and process factors, were related to improved performance in managing software risks. Results were related to risk management and project outcomes. "Overall, the respondents believed that risk management methods had a positive impact both on the development process and its outcomes" (Ropponen & Lyytinen, 1997, p. 3). Their study employed the top-ten list of risk factors created by Boehm (1991):

- Personnel shortfalls
- Unrealistic schedules and budgets
- Developing the wrong functions
- Developing the wrong user interface
- Gold plating
- Continuing stream of requirements changes
- Shortfalls in externally furnished components
- Shortfalls in externally performed tasks
- Real-time performance shortfalls
- Straining computer-science capabilities

Raz and Michael (2001) extended the research on tools by ranking Project Risk Management tools and their relationship to project success. They found risk mangement practices fell into all categories, however, risk identification was very commonly used. Raz et al. (2002) then focused on risk management tools and techniques and their usage across different types of projects. Their findings suggested risk management practices were not widely used and they concluded "risk management is still at its infancy" (Raz et al., 2002, p. 108). However, when used, a positive relationship existed between practice and project success (Raz et al., 2002). Besner and Hobbs (2006) found project management tools fell into categories ranging from "super tools" to "underutilized tools" and usage levels ranging from "extensive use" to "less than very limited use." A notable finding indicated several risk management tools fell into the "underutilized tools" category, meaning they have a lot of potential to improve performance, but are not often used (Besner & Hobbs, 2006).

Other risk management work not specifically related to the tools included research by Wallace and Keil (2004) on project execution risk, which includes risk planning and control. They concluded that project execution risk was likely more important than any other type of risk in influencing project outcome. Also,

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results of a study by de Bakker, et al. (2010), indicated risk factor knowledge and control strategies are assumed to help reduce risk in current or future projects. Papke-Shields et al. (2010) conducted a research study which developed a set of metrics and used them to assess usage of project management practices. Their findings reinforced the existence of a link between usage of project management practices and increased project success (Papke-Shields et al., 2010). While quantitative risk analysis and contingency planning had the most significant results, risk management practices fell into the less-frequently-used category (Papke-Shields et al., 2010).

With respect to attitudes and beliefs of project managers, a recent study by Fabricius and Buttgen (2015) investigated the effect of project manager overconfidence on risk management practices in relationship to project success. Specifically, they studied both risk occurrence probability and potential risk impact on project objectives. Their study concluded project managers neglected to consider risk impact on project objectives such as cost, time and quality. Instead, they tended to only consider risk occurrence probabilities. This likely leaves a gap in exposure, particularly for high impact risks, if these risks actually occur (Fabricius & Buttgen, 2015).

A study which analyzed competency of the skills, attitudes and knowledge of the project manager on a software development project identified some positives and negatives related to risk (Ruano-Mayoral, Colomo-Palacios, Garcia-Crespo, & Gomez-Berbis, 2010). This study conducted a content analysis and found the project managers competency in leading of risk evaluation and risk tracking to be an important knowledge area. However, when mapping important competencies to the PMBOK, the research found risk management as well as communications and cost management to be areas of low focus (Ruano-Mayoral, et al., 2010). This result for risk management is consistent with other research previously mentioned in this section.

Project Success

Incumbent upon any study on risk management is defining project success. The PMBOK defines project success by the traditional triple-constraint measures: 1) time/schedule, 2) cost/budget, and 3) functionality/quality goals (PMI, 2013). These success measurements are found throughout project management literature (de Bakker, et al., 2010; de Wit, 1988; Jiang, Klein, & Means, 2000; Jugdev & Muller, 2005; PMI, 2013; Reed & Knight, 2012, Thomas & Fernandez, 2008; Wallace & Keil, 2004). However, there are competing views of project success criteria. Some researchers indicate success means different things to different people, and is therefore context-dependent (Jugdev & Muller, 2005; Thomas & Fernandez, 2008). Additional measurements of success are sometimes related to stakeholder satisfaction and to product/service value (Jugdev & Muller, 2005; PMI, 2013). As previously mentioned, the Standish Group "enhanced" their definition of success in 2015 (Hastie & Wojewoda, 2015). Time and budget remained objective measures, but "quality" aspects of the deliverables adopted a more flexible definition to accept a range of acceptable outcomes based on customer opinion. Although the definition of success may be under duress and evolving for IS projects, this research utilizes the more traditional definition since De Bakker, et al. (2010) found about two-thirds of publications they studied used traditional definitions of time, budget, and requirements (quality) as criteria.

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THEORETICAL FRAMEWORK

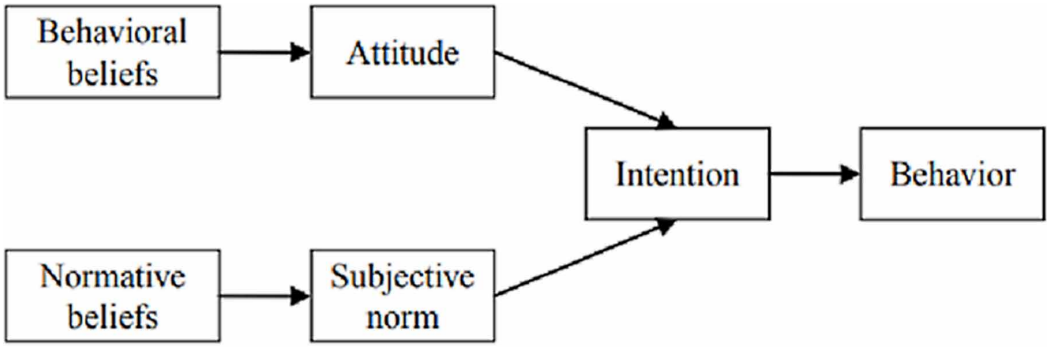
The Theory of Reasoned Action (TRA), developed by Ajzen and Fishbein (1980), is a prevalent theory used to explain various behaviors, and is based on an individual's attitudes and the behaviorial norms of their environment. For this study, the psychological theory is extended to an individual's attitude regarding the use of risk management, and belief in the value that risk management has in contributing to project success (Ajzen & Fishbein, 1980).

Early work by Fishbein developed theories on attitude that formed the Expectancy Value Model (EVM) (Ajzen, 2012). This model established that people's attitudes are determined by their subjective belief of the probability that an object has a certain attribute. According to EVM, a person's overall attitude toward an object is determined by subjective values, or evaluations of the attributes, associated with the object and by the strength of these associations. Such attitudes are acquired automatically and inevitably as people form beliefs concerning the object's attributes, and as the subjective values as attributes become linked (Ajzen & Fishbein, 1980).

TRA assumes that human beings are rational and they make systematic use of information available to form beliefs (Ajzen & Fishbein, 1980). TRA suggests that an individual's intention may be predicted by the individual's attitude and the subjective norms regarding a behavior (Zhang & Fai Ng, 2012). As shown in Figure 1, TRA stipulates that the intention to perform a particular behavior is a joint function of a person's attitude and a perceived subjective norm. An individual may have a large number of beliefs about a given behavior, but can only attend to a relatively small number of beliefs at a specific moment (Ajzen & Fishbein, 1980). Attitude is determined by beliefs concerning the likely consequences of engaging in a behavior. Subjective norm is determined by "normative beliefs," which is about the likelihood that important referents encourage or discourage the behavior (Ajzen & Fishbein, 1980).

For this research, risk management is considered the object, about which attitudes and beliefs are developed by project managers through experience, and referents are considered organization managers and customers. The normative construct in the TRA referred to perceptions of what important referent individuals or groups think a person should do. Fishbein and Ajzen (1980), expanded the normative component to include descriptive norms as well. This was done in recognition of the fact that we can form beliefs as to what is expected of us not only by inferring what is important to others (injunctive norms) but also on the basis of the observed or inferred actions of those important referents (descriptive norms) (Ajzen, 2012). Therefore, if project managers perceive value in the use of risk management practices or are aware of successful use by their counterparts they will likely also use them.

Figure 1. Theory of Reasoned Action Framework (Ajzen & Fishbein, 1980)



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METHODOLOGY

This research focused on the use of risk management in virtual projects to address a lack of literature due to the complexity and nature of distributed project team. Nydegger and Nydegger (2010) noted the complexity of virtual teams, in that "working at different times, and perhaps working from different countries and time zones, and even with different native languages, one can see how quickly the levels of complexity dramatically increase" (Nydegger & Nydegger, 2010, p. 69). Additionally, Brandt, et al. (2016) pointed out that "what works well for co-located teams is generally not effective for virtual teams" (p. 62). Information Systems projects were chosen for this study due to their inherent complexities, which include diverse and changing customer desires, and continually evolving technology. A survey instrument was used to collect data, which was crafted to determine if the following associations between project risk management and virtual IS projects could be established:

- **H1:** A statistically significant relationship exists on virtual IS projects between risk management usage and project cost attributes.
- **H2:** A statistically significant relationship exists on virtual IS projects between risk management usage and project schedule attributes.
- **H3:** A statistically significant relationship exists on virtual IS projects between risk management usage and meeting functionality requirements.

The importance of these associations lies in the connection between risk and project success established within the PMBOK. The use of risk management practices includes identification of specific risks, probability of their occurrence, and impact on project outcomes. The PMBOK indicates risk impact assessment is necessary to determine the potential effect on project success, which is comprised of three core project objectives: schedule, cost, and quality or performance (PMI, 2013). Fabricius and Buttgen (2015) studied project managers' risk management practices, both probability of occurrence and impact. Although risk management practices were used, they found project manager overconfidence negatively affected risk impact estimating. "Estimates of risk impact – unlike risk occurrence probability – appear insufficiently considered when project managers form expectations about project success" (Fabricius & Buttgen, 2015, p. 258).

First, the survey collected data to determine if three core risk management practices defined by Boehm (1991) were executed: 1) risk identification, 2) risk assessment, and 3) risk monitoring and control. Likert Scale questions rated how risk management practices were utilized, and results compared to project success attributes. Correlation analysis was employed to determine existence of any relationship between levels of risk management usage and project outcome. Participants were asked to answer all survey questions based on experience from their most recent virtual software project in which they had played a management role. Use of an actual project was requested to reduce answers based solely on opinion, and projects needed a completion date no older than the prior 4 years to reduce retrospective bias.

In order to utilize a valid survey instrument, a foundational survey used by peer-reviewed studies was adopted and enhanced to improve both content and context validity for this research (Reed & Knight, 2010). The original version of the survey was based on prior research and several peer-reviewed publications, thus providing validity to the original survey instrument (Wallace & Keil, 2004; Wallace, Keil, & Rai, 2004). The added questions investigated for this research were determined by gaps found in the review of literature, face-to-face interviews with project management practitioners, and a focus group of

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IS/IT practitioners. The updated survey with the additional questions was piloted with a small group of project management practitioners, and minor adjustments made. Reliability analysis was performed to measure the internal consistency of the survey, yielding a Cronbach's Alpha value of 0.88, considered very well (DeVillis, 2003).

The survey participant pool consisted of members of a regional PMI Information Systems Community of Practice, a LinkedIn project management group, the survey page from the PMI website, and a mailing list purchased from PMI containing a list of general members. A survey link was emailed to the participant pool; the survey took approximately 20 minutes to complete. The instrument began with pre-survey questions to screen the participants to ensure that they played a managerial role within the previous four years for a virtual IS project. The survey then collected information about the project itself, including budget, duration, and actual or estimated end date. Next, project performance measures were collected for time, cost, and functionality. The final section was devoted to measuring usage of risk management practices. The core risk management questions asked respondents to rate the degree of impact on project outcome from each of fifty-five risk factors, which included the following key attributes derived from the literature review (Reed & Knight, 2010):

- Company politics and/or lack of integrity
- Hidden agendas impact the project
- Cost overruns
- Poor decision-making process
- Project scope too limited or vague
- Conflict among team members
- Cultural or language differences
- Developed application or product doesn't satisfy requirements
- Project manager replaced during project

RESULTS AND DISCUSSION

A total of 557 participants across various industries completed the survey; summary results are found in Table 1, Research Study Demographics. 82% of information system work was represented by projects for development, upgrade, or package installation. Company size varied widely, with about 25% of companies having less than 1,000 employees, but no individual company size was dominant. To underscore the applicability of project risk management expertise, approximately 92% of respondents were certified PMI Project Management Professionals (PMPs).

Risk management utilization is discussed first. The survey collected data to determine if the three core risk management practices as defined by Boehm (1991) were executed: 1) risk identification, 2) risk assessment, and 3) risk monitoring and control. Next, Likert Scale data rating "how" risk management practices were utilized was compared to project success attributes with correlation analysis to determine the relationship between levels of risk management use and project outcomes.

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Table 1. Research Study Demographics

Application Category	Count	Percentage
Strategic application	206	37%
Transactional application	284	51%
Informational application	67	12%
Application Type		
Development of software application	217	39%
Upgrade of existing application	139	25%
Install new software application package	101	18%
Other	100	18%
Work Locations		
2 to 3 locations	170	31%
4 to 5 locations	163	29%
6 to 10 locations	109	19%
>10 locations	115	21%
Employees in Company or Division		
1 to 100	45	8%
101 to 1,000	101	18%
1,001 to 5,000	82	15%
5,001 to 20,000	57	10%
> 20,000	61	11%
Unknown	211	38%
Project Manager Years of Experience		
0 to 5 years	169	30%
6 to 10 years	194	35%
11 to 15 years	99	18%
16 to 20 years	51	9%
21 to 40 years	42	8%
Final Project Completion Status		
In-progress	144	26%
Partially Installed	60	11%
Completed	329	59%
Cancelled without installation	12	2%
On hold	12	2%
Project Cost		
$0 to $100,000	105	18%
$100,001 to $500,000	156	27%
$500,001 to $1,000,000	82	14%
$1,000,001 to $5,000,000	142	25%
> $5,000,000	92	16%

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Risk Management Usage Results

As part of the first question about risk management, survey participants were given a brief definition of risk management and risk assessment (which includes identification of risks). Then they were asked if risk assessment was performed on their project. The majority of participants (76.6%) answered "Yes," while only 23.4% of the participants answered "No." This large positive response was not surprising since the risk management knowledge area outlined in the PMBOK includes risk assessment and a majority of the survey participants were certified PMI Project Management Professionals (PMPs). This finding is consistent with research by Raz, et al. (2001) who believed risk identification was common for organizations even if they had no related processes in place.

The second risk management question asked if risk control processes were used on the project. An explanation of risk control preceded this question, and indicated a "plan of action" must be a deliverable of the risk control phase. A majority of the participants (72.5%) answered "Yes," and only 27.5% answered "No." Again, these results are consistent with the results from the first question and were not surprising. Risk control is generally conducted as part of the monitoring and controlling of risk.

Participants were then asked if a "documented risk management plan" was created for their project. The risk management plan defined in the PMBOK includes items such as methodology, roles and responsibilities, and a probability and impact matrix (PMI, 2013). More importantly, the risk management plan is created in the project planning phase and outlines the type of risk management needed on the project. The plan can range from an elaborate document to a simple bullet-point list. Completing all risk management components is expected in order to reduce the impact of risk on a project effectively. Slightly more than half (55.9%) of the respondents answered "Yes," while 44.1% of the respondents answered "No."

Overall, the results of all three questions combined showed that 18% of participants did not use any of the three major risk management processes, 12% of participants only used one of the three processes, 18% used two of the three processes, and 52% used all three of the processes. These numbers are relatively weak considering that only those claiming a management role were allowed to participate in the study, and certified PMPs made up 92% of the participants.

The results from the first two questions are consistent with results from the 2012 PMI Pulse of the Profession survey, a global annual survey of practitioners and project management leaders with more than 1,000 participants. In that PMI survey, 72% of the participants indicated they always conduct risk management (PMI, 2012). The third risk management question, regarding a documented risk management plan, revealed surprising results given the high percentage of affirmative answers to the first two questions. Given the extremely high percentage on the first two steps, the lack of follow-through for the third step to create a plan was somewhat disappointing.

Analysis of Correlation Results

This section first presents results and discussion for each of the three hypotheses, and then discusses results for completed and in-progress projects. Usage on "how much risk management practices were employed" was determined from seven-point Likert scale questions, where "1" represented "not used at all" and "7" represented "fully incorporated into the project." Each success attribute was divided into six status levels. For example, final budget status consisted of six levels: 1=under budget; 2=on budget; 3=over budget; 4=in-progress, expected to complete under budget; 5= in-progress, expected to complete on budget; 6= in-progress, expected to complete over budget.

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The chi-square test matrix for each success attribute was very large (six by seven) and had too many cells with zero or low counts. To resolve this issue, the seven Likert scale groups were merged. The resulting ratings were as follows: 1 remained unchanged and represented "Risk Processes Not Used," ratings of 2 and 3 were combined to represent "Low Usage;" ratings of 4 and 5 were combined to represent "Moderate Usage," and ratings of 6 and 7 were combined to represent "High Usage." A Fisher's exact test was used for each of the three-project success measure matrices to evaluate the three hypotheses separately.

Relationship Between Risk Management and Budget Success

The first project success attribute to be analyzed was the final project budget/cost, and used a null hypotheses for H1, stated as:

- **Ho_1:** No statistical relationship exists for virtual IS projects between risk management usage and project cost attributes.

Fisher's exact test provided a significant p-value less than 0.001. Therefore, we fail to reject Ho_1 that no relationship exists on virtual IS projects between the level of risk management usage and success in meeting project budget. Table 2 shows the in-progress projects and usage percentage of study projects represented in each category. For the 26% of study projects that were "in-progress" for survey respondents, participants were asked to estimate final project performance results. This type of estimation is regularly accomplished by project managers through the use of current data and earned value techniques.

Budgetary data for completed projects is shown in Figure 2. A low usage of risk management processes shows no notable improvement in budget success compared with doing no risk management at all. However, both moderate-usage and high-usage are associated with improved budget success, with the greatest improvements coming at the highest level of risk management. Note that 53% of projects where risk management was not used completed either on-budget or under-budget, and a similar 54.4% of projects with low risk management usage completed either on- or under-budget. In contrast, projects with moderate risk management usage completed on- or under-budget 64.2% of the time. Those with high levels of risk management usage completed on- or under-budget 78.0% of the time.

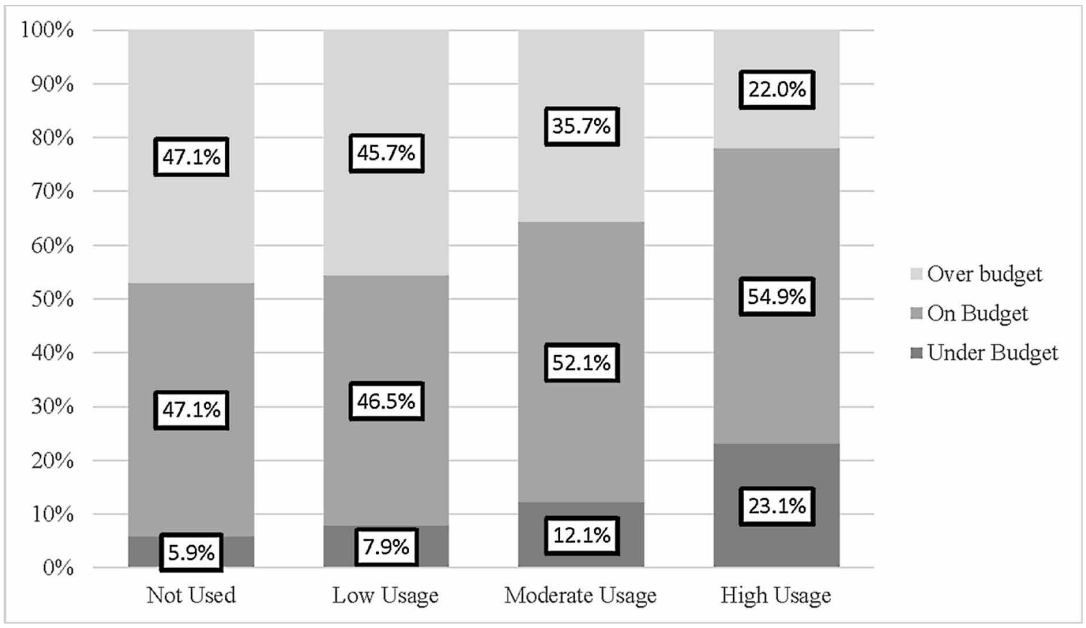
Compared to completed projects, the results for in-process projects, shown in Figure 3, are less clear, although some interesting patterns do emerge. In the 75% of projects where risk management was not used, 64.7% of projects with low risk management usage, 78.7% of projects with moderate risk management usage, and 90.0% of projects with high risk management were projected to complete either on- or under-

Table 2. Percentage of projects by final budget completion status

Projects	Complete Projects			In-Progress Projects, Expected Results		
	Under Budget	On-Budget	Over budget	Under Budget	On-Budget	Over Budget
Total	9%	37%	27%	2%	19%	6%
Completed	13%	50%	37%	n/a	n/a	n/a
In-progress	n/a	n/a	n/a	7%	69%	24%

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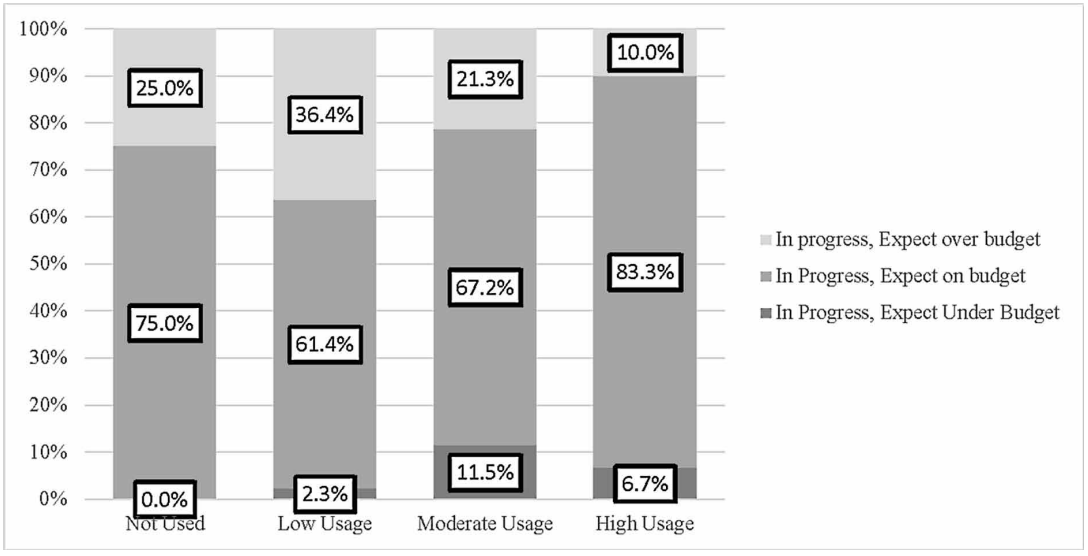
Figure 2. Budget success related to levels of risk management for completed projects



budget. Thus, perception varied with project managers using low levels of risk management being more pessimistic about their projects than those using no risk management at all. Conversely, project managers using the highest levels of risk management were the most optimistic about the project's future outcome.

Finally, completed projects came in on-budget 50% of the time, while their in-progress counterparts were projected to come in on-budget much more often, 69% of the time. This suggests that project manager projections on meeting budget are not as reliable as project manager reports of actual budget on completed projects.

Figure 3. Budget success related to levels of risk management for in-progress projects



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Relationship Between Risk Management and Schedule Success

The second project success attribute to be analyzed was the final project schedule, and used the null hypotheses for H2, stated as:

- **Ho_2:** No statistical relationship exists for virtual IS projects between risk management usage and project schedule attributes.

Fisher's exact test provided a significant p-value less than 0.001. Therefore, we fail to reject Ho_2 that no relationship exists on virtual IS projects between the level of risk management usage and success in meeting project schedule. Table 3 contains data showing the percentage of study projects represented in each category for both completed and in-progress projects. Completed projects came in on-time 50% of the time while their in-progress counterparts were expected to come in on-time 62%.

Figure 4 shows there is no substantial improvement in schedule success (defined as being either on time or early) for low or even moderate usage of risk management processes. However, high usage of such processes is associated with markedly improved schedule success. As Figure 4 shows, 45.1% of projects where risk management was not used completed either early or on-time, 46.1% of projects with low risk management usage completed early or on-time, and 49.6% of projects with moderate risk management usage completed early or on-time. However, a full 72.4% of projects with high levels of risk management usage completed early or on-time.

Compared to completed projects, the results for in-progress projects, shown in Figure 5, show a pattern reminiscent of that for projected budget success on in-progress projects. Project managers using little risk management appeared more pessimistic than those using none, and project managers using the most risk management appear to be the most optimistic.

Relationship Between Risk Management and Functionality Success

The third project success attribute to be analyzed was the final project functionality and used the null hypotheses for H3, stated as:

- **Ho_3:** No statistical relationship exists for virtual IS projects between risk management usage and meeting functionality requirements.

Fisher's exact test again provided a significant p-value less than 0.001. Therefore, we fail to reject Ho_2 that no relationship exists on virtual IS projects between the level of actual risk management usage

Table 3. Percentage of projects by final schedule completion status

Projects	Complete Projects			In-Progress Projects, Expected Results		
	Early	On-time	Late	Early	On-time	Late
Total	2%	36%	34%	1%	17%	10%
Completed	3%	50%	47%	n/a	n/a	n/a
In-progress	n/a	n/a	n/a	3%	62%	35%

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Figure 4. Schedule success related to levels of risk management for completed projects

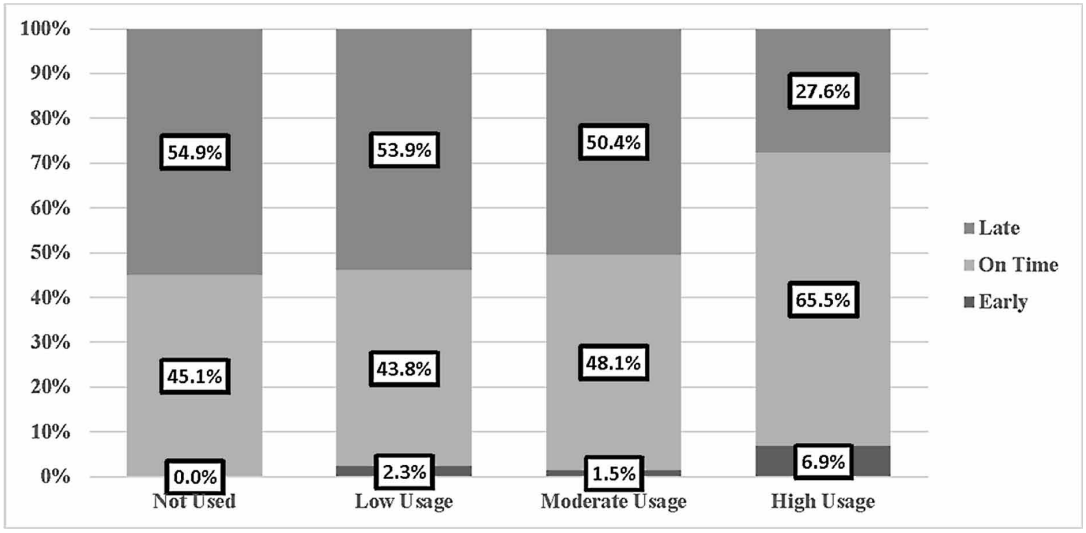
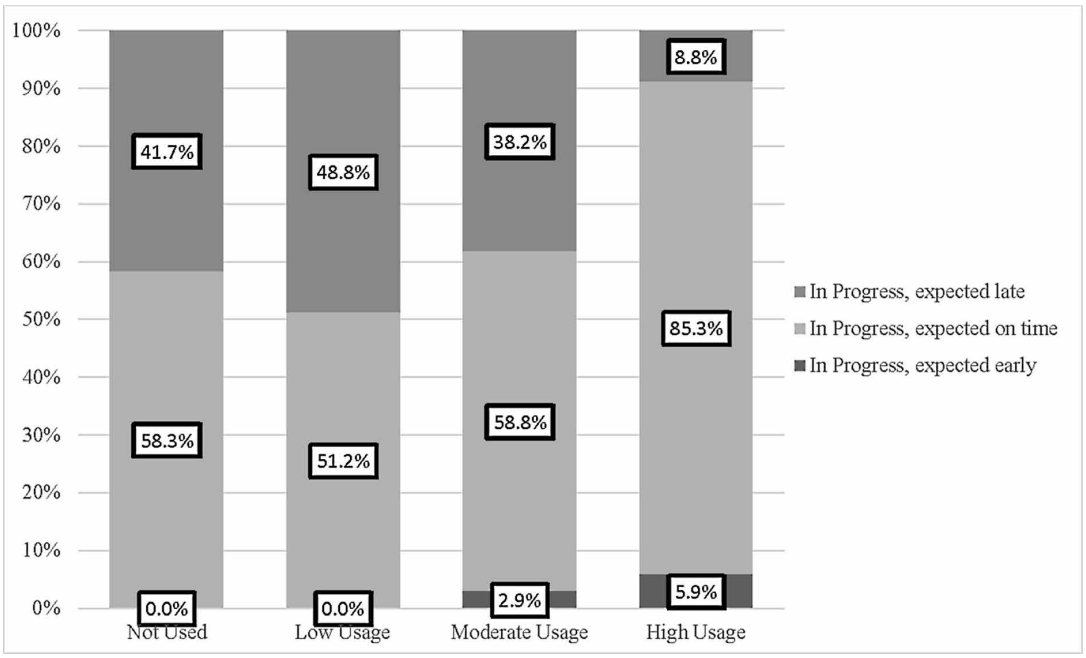


Figure 5. Schedule success related to levels of risk management for in-progress projects



and success in meeting project functionality. Table 4 provides functionality data on the percentage of study projects represented in each category for both completed and in-progress projects.

As shown in Figure 6, low usage of risk management processes caused no substantial improvement in functionality, compared with doing no risk management at all. However, both moderate usage and high usage are associated with improved functionality, with the greatest improvements coming at the highest level of risk management. 91.3% of completed projects with moderate risk management usage, and 96.5%

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Table 4. Percentage of projects by final functionality completion status

Projects	Complete Projects, Functionality			In-Progress Projects, Expected Functionality		
	Exceeded	Met	Less	Exceeded	Met	Less
Total	16%	45%	8%	10%	18%	3%
Completed	24%	65%	11%	n/a	n/a	n/a
In-progress	n/a	n/a	n/a	32%	57%	11%

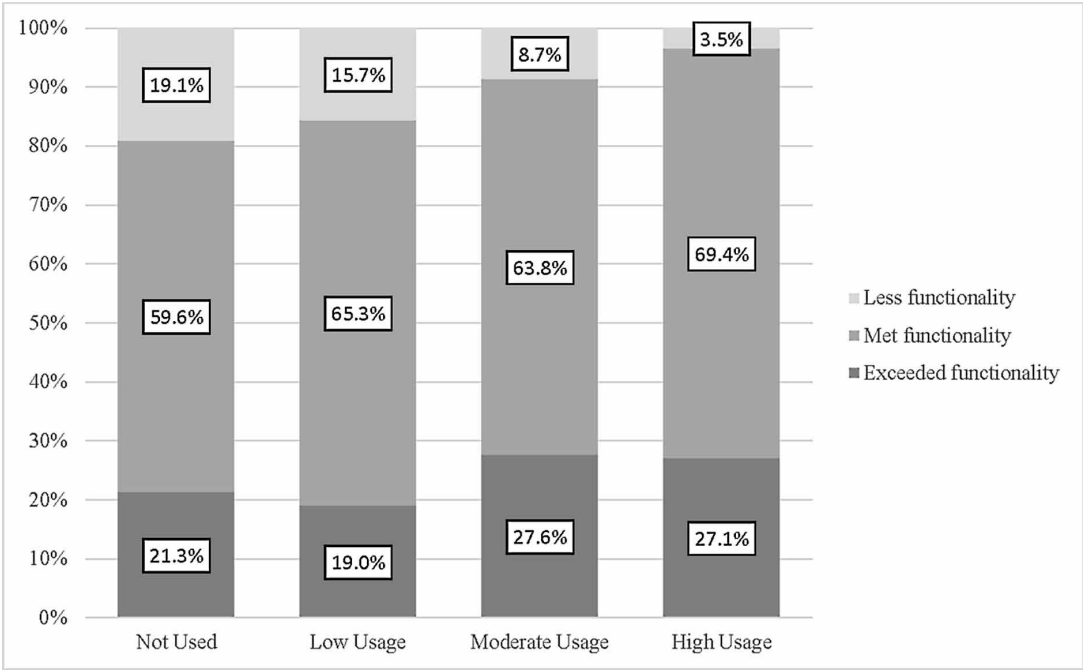
of completed projects with high risk management usage exceeded or met functionality. These findings indicate success with functionality is highly likely when high levels of risk management processes are employed on virtual IS projects.

Functionality results for in-progress projects, shown in Figure 7, follow a pattern similar to that of in-progress project results for budget and schedule.

Completed Projects

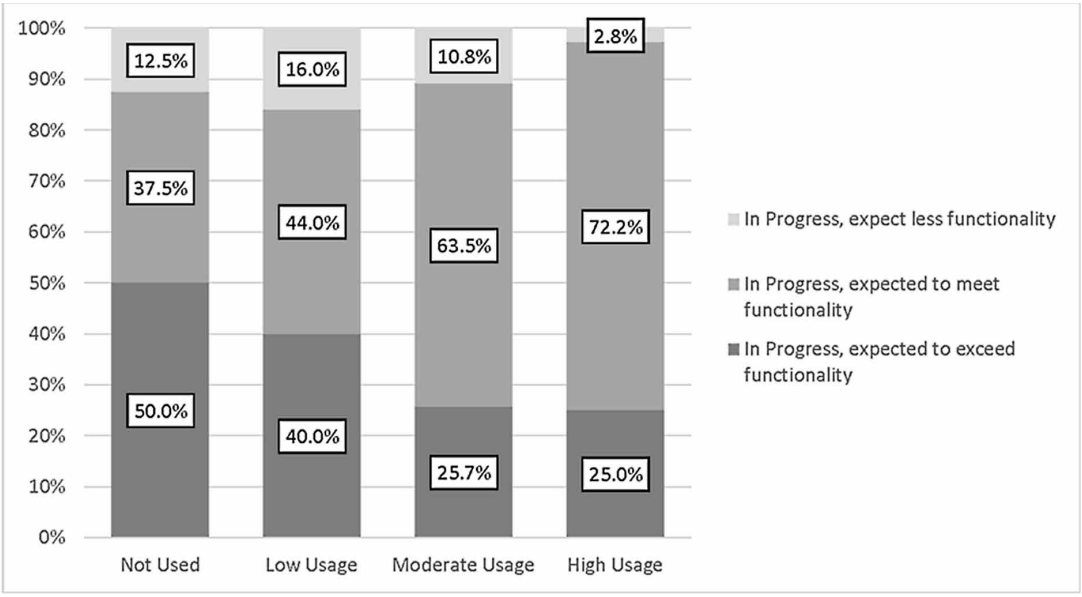
Positive associations between risk management usage levels and project success measures have been identified on completed projects. In particular, both moderate and high levels of risk management appear to be associated with greater budget and functionality success, while high levels of risk management appear to be associated with greater schedule success. While it is tempting to attribute increases in project success directly to increased use of risk management, association is not causality. There are

Figure 6. Functionality success related to levels of risk management for completed projects



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Figure 7. Functionality success related to levels of risk management for in-progress projects



other plausible explanations for increased success being associated with greater risk management. For example, this relationship may be the result of project teams that actively use risk management practices being more likely to have included a contingency fund in their budget as part of the risk management process. Such a contingency fund could not only cover budget shortfalls, but could also be used to hire additional help when a schedule is in trouble or when functionality goals are not being met. Also, projects that utilize risk management at higher levels are likely to be better managed in a multitude of ways, and this fact, rather than specific increases in risk management processes, may be more closely tied to improved results.

In-Progress Projects

Positive associations have been identified here on in-progress projects between risk management usage levels and expected project success. It appears as though those managers whose projects use low levels of risk management are actually more pessimistic about budget, schedule, and functionality outcomes than those who use no risk management at all, a situation that may be rooted in increased knowledge of risk by those with at least some direct involvement in risk management. It also appears as though managers on projects employing higher levels of risk management are more likely to anticipate positive budget, schedule, and functionality results. Possibly, the very usage of risk management gives project managers a greater sense of optimism than our results for completed projects would indicate is warranted.

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CONCLUSION

Data from 557 project management practitioners determined that while risk assessment and risk control are performed by a majority of project management practitioners, only 52% of participants performed all three processes. Further, a much smaller percentage of participants expend additional energy to create an all-encompassing risk management plan after completing the first two steps. These percentages indicate that the more well-known and easier processes are commonly used, but that a detailed advance plan for how risks will be monitored and managed is less commonly developed. These findings are in line with those of Fabricius and Buttgen (2015) who found project managers' risk management practices focused more on one smaller aspect, the probability of risk occurrence which they found to be insufficient.

Project management practitioners, who are generally pressed for time, may feel that this part of the process can be eliminated or pared down dramatically without a negative effect. It is also possible that the Theory of Reasoned Action applies to project managers resulting in their perception or belief that some risk management practices have low value in contributing to project success. However, when risks do occur, such an approach puts the project manager in a reactive rather than proactive state. The PMBOK suggests that reactive risk management can lead to project failure, while proactive risk management reduces the impact of a realized risk (PMI, 2013). Therefore, failing to create a risk management plan is likely to affect the way risk is handled and subsequently the impact of those risks. The disconcerting finding in this study indicates that many well-trained project managers are short-cutting risk management and not performing all of the core practices.

This finding is particularly significant in light of the second set of findings, which substantiated a relationship found by Papke-Shields, et al. (2010) and Raz, et al. (2002). A correlation analysis indicated that a strong relationship does exist between the level of risk management practices used and successful project outcomes, irrespective of whether successful is measured by budget, functionality or schedule. In addition, findings indicated that the highest levels of risk management usage were consistently characteristic of successful project outcomes for completed projects.

Research by Raz, et al. (2001) indicated practices beyond initial risk identification would be required, such as for risk analysis, monitoring and control. Therefore, an assumption can be made that project managers who perform risk assessment and risk control processes would also create an overall risk management plan; however, this research study found this is frequently not the case. Due to the many components of risk management, it is not surprising that every possible aspect of risk management is not addressed on each project. The incomplete risk management practices not being employed by some practitioners likely lessen the expected positive effects of risk management. This may not only lead to less than optimal project outcomes, but also renders the first two action an inefficient use of resources.

Generalization of these results may be limited due to the use of a sample of convenience, in that a large percentage of participants were associated in some way with PMI. That being stated, the positive side of this PMI association is that it is likely that such participants were more knowledgeable about definitions of risk processes, allowing them to answer the questions more accurately. A further limitation is due to participants' self-selecting to take the survey and then self-reporting on their own actions within a project. Bias may have been introduced both in terms of over-estimating the use of risk management and in terms of over-estimating the success measures for the projects managed by survey participants.

While it is possible that projects are more successful because they employ risk management more fully, it is also possible that better project managers, perhaps as a result of greater project management education and training, are more likely to use risk management more fully and effectively. There is also

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a need for additional research into the perceptions of project managers with respect to appropriate risk management practices. These issues provide fertile ground for future studies into the nature of the relationship between risk management and success identified here. Also, an avenue for future research is a tangential result of this study related to the three classic measures of project success, budget, schedule, and functionality. Interestingly, functionality goals were met far more often than budget or schedule goals. This may be because budget and schedule are more concrete, while functionality is more easily redefined or deferred. However, the success rate is so much greater for functionality than for budget or schedule, that this is not likely to be the whole explanation. Perhaps when a project is in danger of not meeting all three types of goals, schedules and budgets are more likely to be adjusted than functionality. The process of weighing the three success factors when some aspect of a project must be adjusted is another area ripe for future study.

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Chapter 56
Intermediating Crowdfunding: A Foundational Assessment

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ABSTRACT

The principals in business finance transactions most typically are the focus of commentaries and studies. Intermediaries often are forgotten—or at least are of secondary concern. The growing academic and popular literature on crowdfunding exemplifies these larger trends. This chapter focuses broadly on a description of crowdfunding intermediation in a preliminary effort to address this imbalance. Specifically, the chapter focuses most closely on (a) identifying and categorizing the types of intermediaries involved in crowdfunded financings of businesses and projects and (b) making related observations. This exploration of crowdfunding intermediaries: isolates expertise, standardization, and disclosure as key values in crowdfunding intermediation; exposes the central role and critical nature of the crowdfunding platform as a crowdfunding intermediary; and notes certain resulting concerns and considerations. Ultimately, additional research is needed to provide better information and guidance to potential and actual crowdfunding participants, policymakers, and enforcement agents.

INTRODUCTION

The media and academic literature pay close attention to the ventures seeking funding and the funders in capital-raising transactions. This is logical. Without a willing and able seller and buyer, there would be no capital formation.

Yet, in most cases, business ventures and those who finance them cannot (and do not) proceed with financings on their own. For instance, offerings of securities may involve many different kinds of intermediaries—transaction participants that, as conduits or otherwise, bridge gaps between and among transaction principals. Securities transactional intermediaries include stock exchanges and other securities markets, underwriters or placement agents, dealers, research analysts, proxy advisors, rating agencies, financial advisors, lawyers, and accountants. These intermediaries may play vastly different, yet some-

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times overlapping, roles in the offering process. Their work is recognized as important in various aspects of corporate finance and securities regulation. In fact, intermediaries may be critical to the success of a particular securities offering. Yet, they may be marginalized in new market studies and popular press accounts. Perhaps, then, it is relatively unremarkable that intermediation in crowdfunding campaigns (some, but not all, of which involve the offer or sale of a financial instrument classified as a security) has received little sustained public attention.

Crowdfunding is, after all, a relatively new method through which a venture—a business or a project—may be financed. Crowdfunded financings are described and may be conducted in a variety of ways. However, at the heart of all crowdfunding models is the solicitation of funding from the undifferentiated masses (i.e., the public at-large), typically over the Internet.

Although some forms of Internet-based financing are labeled crowdfunding, they may target their offers or sales to only a portion of the overall crowd. Examples of U.S. funding campaigns of this kind are so-called "intrastate crowdfunding" (in which offers and sales of securities are fundamentally local in nature—made wholly within the state of organization of the issuing firm) and "506(c) crowdfunding" (private placements of securities in which offers may be made publicly but sales may only be made to accredited investors—investors with a certain level of sophistication or wherewithal that justifies less regulation of the offering process). For purposes of this chapter—which addresses crowdfunding broadly to include securities offerings (whether involving debt, equity, or other securities) conducted through crowdfunding as well as other types of crowdfunding (e.g., donation, pre-sale, and reward-based crowdfunding)—these more limited campaigns are considered to be crowdfunding.

The overall definition of crowdfunding used in this chapter is broad; however, the chapter focuses on depicting crowdfunding in a specific context—financing businesses and projects through campaigns conducted over the Internet using a crowdfunding website, commonly referred to as a "platform" (or sometimes a "portal"). More specifically, this chapter addresses types of crowdfunding intermediation present in that kind of financing, noting the actual and possible ways in which crowdfunding platforms and other intermediaries participate in crowdfunding and the implications of that participation for the future of crowdfunding. Among other things, these descriptions and observations offer insights to participants, policymakers, and enforcement agents and suggest future research directions.

In light of the descriptive nature of this chapter, the research method relies almost exclusively on an analysis of secondary sources. Because crowdfunding is a comparatively new form of financing with relatively fluid market entrances and exits, the observations in the chapter rely on the analysis of existing scholarship from other areas of corporate finance as applied to observed crowdfunding practices documented in the emerging literature on crowdfunding. The results of this previous research are then distilled and interpreted and several open research questions are identified.

Accordingly, the chapter progresses through several distinct succeeding parts. It begins by providing a review of relevant extant literature on crowdfunding and corporate finance intermediation. Next, the bulk of the chapter explains the nature of intermediation, describes and illustrates a number of different ways in which crowdfunding involves intermediation, identifies and categorizes the roles that may be played by intermediaries in crowdfunded financings, and makes observations about crowdfunding intermediation based on theory and practice. Then, the chapter articulates solutions and recommendations. Finally, the chapter pinpoints future research directions.

The need to fill gaps in the descriptive literature on crowdfunding intermediaries is becoming increasingly vital as crowdfunded financings and crowdfunding research continue to grow and innovate. This chapter begins to undertake that gap-filling assignment. This contribution to the literature is designed to

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help frame the vocabulary and attributes of intermediation in crowdfunding in a way that fosters better decision-making in the emergent crowdfunding environment and enables more targeted empirical theoretical and empirical scholarship and industry research on crowdfunding intermediation. For instance, the chapter may facilitate a more complete understanding of the types of intermediaries involved in crowdfunding and the roles they play, enabling crowdfunding participants to better determine whether (and, if so, which) crowdfunding opportunities best meet their needs. Along similar lines, policymakers may be able to use the information in this chapter to begin to identify possible areas for regulation, enforcement agents may find the information in this chapter useful in spotting lapses in legal compliance, and researchers may choose to found their research in the observations made in this chapter. Much remains to be done, but the information provided in the chapter is a start.

LITERATURE REVIEW OF CROWDFUNDING AND FINANCIAL INTERMEDIATION

Having reportedly been identified and labeled by Jeff Howe in a 2006 magazine article and 2008 book, Internet-based crowdfunding has not yet completed its first decade of verified public existence as a business financing method. Consequently, the literature is still relatively undeveloped as a whole (Danmayr, 2014, p. 2). While first-generation studies and analyses—among them, Agrawal, Catalini, & Goldfarb (2011, 2013), Belleflamme, Lambert, & Schwienbacher (2010, 2013), Harms (2007), and Hemer (2011)—have not altogether ignored the role of intermediation in crowdfunding, they have focused primary attention on three general topics:

- The venturers (principals or promoters) seeking funding for businesses or projects (often referred to, for ease of reference, as "crowdfunders" or "entrepreneurs," regardless of the stage of development and risk level of their business or project);
- The prospective and actual funders of those businesses and projects (often referred to as "backers," a term used as a label for funders in a number of early crowdfunded financings); and
- The overall phenomenon of crowdfunding.

Early academic work on crowdfunding has provided an important foundation for industry innovation, regulation, research, and further analysis. These academic contributions offer reviewers many (sometimes conflicting) typologies of crowdfunding and provide preliminary data and case studies that illustrate aspects of the industry, its principal players, and specific crowdfunded financings (individually and in the aggregate).

Less has been said in academic and popular circles about crowdfunding intermediation (Hass, Blohm, & Leimeister, 2014, p. 2). To the extent that the extant academic literature has been attentive to intermediaries in crowdfunding, the principal emphasis has been on crowdfunding platforms—the websites through which crowdfunding often is conducted (Agrawal et al., 2011, 2013; Bradford, 2012a; Danmayr, 2014; Hemer, 2011; Heminway, 2013; Moritz & Block, 2014). Yet, even the literature on crowdfunding platforms is under-developed generally and as compared to the literature on businesses and projects seeking crowdfunding and prospective and actual providers of crowdfunding (Belleflamme & Lambert, 2014; Moritz & Block, 2014). Popular literature on crowdfunding also emphasizes the role of platforms in describing crowdfunding intermediation (Lennon, 2014, Chapter One; Neiss, Best, & Cassady-Dorion, 2013, Chapter 7; Young, 2013). Heminway (2014) has provided but a brief accounting of the activities of legal counsel in crowdfunded offerings.

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Overall, scholarly work on intermediation in crowdfunding (like accounts in the popular press) is relatively narrowly focused and begs for expansion. Lehner (2013, pp. 301-02), for example, notes the need for more scholarly work on the role of crowdfunding platforms in light of existing explorations of networking theory in the crowdfunding context. Danmayr (2014, pp. 104-05) follows suit by offering many avenues for future research on crowdfunding platforms.

There certainly is room for growth in the study of crowdfunding intermediaries. Although some early commentators do mention other intermediaries in their work, these references are fleeting and there are few of them. Moritz & Block (2014, pp. 15-16, Table 3) provide a summary of identified research on crowdfunding intermediation. Hemer (2011, p. 10, Figure 3), for example, recognizes the platform's role in engaging micro-payment providers and banks in crowdfunding. Moreover, in explaining the exclusion of certain web-based initiatives from his sample of crowdfunding platforms, Danmayr (2014, p. 78) notes the existence of "crowdfunding related services" outside the realm of these specialized crowdfunding websites. "It is an interesting insight," he observes, "that there are already evolving new business models, based upon a likewise revolutionary concept like crowdfunding." He suggests future research in this area as the market for crowdfunding intermediaries expands (2014, p. 105).

The lack of literature on crowdfunding intermediaries other than platforms, while unfortunate, is to be expected. The visibility and centrality of the platform's role in crowdfunding make it a major subject for academic study and commentary. The overall youth of the crowdfunding industry, the less central roles of non-platform intermediaries, and the underdeveloped nature of the related literature combine to render the study of secondary intermediaries a lower-priority (yet still important) task.

Fortunately, intermediation in securities offerings and other capital-raising transactions has been broadly addressed in academic literature and the popular press. Scholarship from a variety of areas of academic pursuit provides a series of lenses through which crowdfunding intermediaries can be viewed. These lenses help contextualize intermediation in financing transactions and provide useful frameworks for a broad-based analysis of crowdfunding intermediation.

Legal scholarship on financial intermediation, for example, focuses most closely on the agency roles played by, and fiduciary relationships involving, financial intermediaries (Barnett, 2012; Choi, 2004; Choi & Fisch, 2003; Laby, 2006; Orcutt, 2005). Reputational intermediaries have received specific attention in the law literature (Coffee, 2002; Laby, 2006). Very little has been done to apply this work to crowdfunding intermediation (Heminway, 2013).

Business administration (e.g., finance, accounting, management) and related economics scholarship on financial intermediation spans a wide range of methodologies and issues. Financial economists commonly address, among other things, intermediation's power to correct information asymmetries in transactions. Thus, the focus is on the capacity of intermediaries to play an informational role based on their superior knowledge and experience (Lizzeri, 1999; Pacces, 2000). Other important work in this area has concentrated on two-sided network theory (in which the "money side" values the attraction of contributors from the "subsidy side") and related questions (Eisenmann, Parker, & Van Alstyne. 2006). This work has begun to be considered in analyses of crowdfunding intermediation (Hass et al., 2014; Salomon, 2014; Tomczaka & Brem, 2013).

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INTERMEDIATION IN CROWDFUNDING

Intermediation is a broad concept susceptible of many definitions. The term most often is used to describe "a middleman, a conduit, or a go-between." (Heminway, 2013, p. 179). *Black's Law Dictionary*, for example, defines an intermediary as "[a] mediator or go-between; . . . . Cf. FINDER." (Garner, 1999, p. 820). Types of intermediaries and ways of classifying intermediaries differ based on, among other factors, the relevant industries, transactions, and academic traditions of the observer. This chapter takes a broad view of intermediation consistent with the definitions offered in this paragraph.

Based on that broad definition, this part of the chapter describes a variety of significant intermediaries involved in crowdfunding. It proceeds in three subparts. First, it labels and briefly describes these key crowdfunding intermediaries. Next, it identifies the roles played by them in crowdfunded financings and classifies them consistent with labels used in the literature on securities intermediation. Finally, this part of the chapter makes basic observations deriving from the described crowdfunding intermediation landscape. Solutions and recommendations, as well as future research directions, follow.

Types of Crowdfunding Intermediary

Crowdfunding intermediation has developed organically to include a number of distinct participants. Some are new and unique to crowdfunding. For example, as described below, U.S. law has established a new form of regulated intermediary in securities crowdfunding called a "funding portal." (Securities—or investment—crowdfunding typically involves the openly public offer or sale to the crowd of equity, debt, or other investment interests that constitute securities under applicable law.) Some crowdfunding intermediaries are standard transactional intermediaries in business finance transactions. These include professional advisors like lawyers, accountants, investment advisors, and insurers. Crowdfunding intermediaries comprise those with central roles—positions that are essential to the crowdfunding enterprise—as well as those with subsidiary, discretionary functions and responsibilities. As crowdfunding develops, the market is likely to welcome new intermediary entrants on a regular basis to serve the market's emerging needs.

Set forth below is a brief description of existing (and, in some cases, anticipated) crowdfunding intermediaries. In each case, the portrayal of the particular intermediary includes information about its actual or anticipated roles in crowdfunding a business or project. Examples of each type of intermediary (including website urls for specific websites, as applicable) are offered to illustrate the various intermediation attributes. Because of the distinctive nature of the services provided by some intermediaries and because of variations among crowdfunded financings, not every intermediary described below plays a role in every crowdfunding campaign. In addition, the description of crowdfunding intermediaries set forth below omits a separate, individual description of certain applications and tools (including social media websites like Facebook and Twitter and weblogs) that have intermediation roles in crowdfunding when used with or in substitution for crowdfunding platforms. As a key component of Web 2.0, social media websites have been described elsewhere and do not require additional explanation here. Suffice it to say, these and other social networking sites do not provide unique services in the context of crowdfunding.

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Platforms/Specialized Websites

The most obvious, central intermediation in a significant crowdfunding involves the interposition of a platform (a facilitating website) between the venture for which funding is sought and prospective and actual funders. "Crowdfunding platforms match projects owners (or proponents), who seek capital for their proposition, and supporters (investors or contributors), who decide to provide funding." (Viotto, 2015, p. 2) They have been identified as multisided platforms through which business or project principals and promoters, on the one hand, and potential funders, on the other hand, each mutually dependent for its success on the others, connect to conduct transactions more efficiently than may be achieved through bilateral relations (Belleflamme & Lambert, 2014, pp.8-9).

Although firms can (and do) seek funding from the crowd through their own proprietary websites and through weblogs and social media websites, Danmayr (2014) observed that 20% of crowdfunded businesses and projects use third-party platforms constructed for the purpose of hosting crowdfunding campaigns. Other estimates indicate that platform-based crowdfunding now is the rule rather than the exception (Belleflamme & Lambert, 2014, p. 3), and the growth in crowdfunding through platforms is significant. "[A]cademic interest is motivated by the steep growth in the volume of financial transactions on crowdfunding platforms: according to the most recent estimations, around US$5.1 billion were transacted on crowdfunding platforms in 2013, a 240% increase from 2011." (Viotto, 2015, p. 2).

Crowdfunding platforms provide a standardized template through which venturers can broadly solicit funding for their business or project. "In addition to providing a standardized process, platforms act as an information, communication and execution portal." (Moritz & Block, 2014, p. 15) They typically host funding pitches for a large variety of ventures and serve as key transactional intermediaries in soliciting financing from the crowd. Crowdfunding platforms typically conduct their operations through specialized websites that combine features of social media websites (commonly referenced as a core element of Web 2.0) and ecommerce websites in a business finance context Platforms also may use third-party social networking tools (for example, social media websites and weblogs) as adjuncts to their own websites.

The crowdfunding market has been actively and rapidly developing to include a number of different kinds of platforms built to serve the needs of businesses and projects seeking funding through donation, reward, pre-sale, securities, and other types of crowdfunding. Some exclusively promote or specialize in particular kinds of ventures (profit or non-profit, music, film or other creative arts, software applications, etc.). For example, CrowdRise (www.crowdrise.com) and JustGiving (home.justgiving.com) are charitable donation platforms, PledgeMusic (www.pledgemusic.com) helps music projects to obtain funding, Slated (www.slated.com) offers a financing platform for films, and AppsFunder (www.appsfunder.com/us) connects application developers with funders. Some perform or contract for other forms of pre-screening of the businesses and projects that seek funding through them. Kiva (www.kiva.org) and Quirky (www.quirky.com) are examples of this kind of platform. Some engage in individualized promotion of ventures featured on the platform. The "staff picks" on Kickstarter (www.kickstarter.com) and the "trending" and "featured" projects on Indiegogo (www.indigogo.com) are notable examples of this aspect of a platform's business model.

In all, the attributes of the individual platforms vary from firm to firm (Danmayr, 2014), although each crowdfunding website typically includes certain key features. These include:

- Separate specialized webpages that outline the benefits, rights, and responsibilities of the venturers and funders;

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- Designated webpages or areas for each venture's "pitch" to funders;
- An "About Us" page that highlights key information about the platform's history and operations;
- Website use policies; and
- Help and other similar user information pages, including portions of the website devoted to frequently asked questions (FAQs) and instructions on how to reach someone from the platform to answer a question (e.g., a "Contact Us" page).

Some platforms also offer a user rating or comment system, one or more weblogs, and other communitarian features. Perhaps unsurprisingly, many of the features on crowdfunding websites borrow from and mimic social media and ecommerce websites.

Categorizing crowdfunding platforms has been a challenge given the lack of standardization. Danmayr (2014, pp. 96-98) classifies platforms based on the type of crowdfunding conducted on the platform. He notes that the approaches of the platforms in these different settings vary significantly. He concludes that 'it seems too early to suggest archetypal crowdfunding platform settings." (Danmayr, 2014, p. 99) Hemer (2011, pp. 15-17) identifies five basic categories of platform business model:

- **"Threshold Pledge":** I.e., "all-or-nothing," in which a crowdfunded business or project must reach a targeted minimum level of funding before any funds are released to the promoters;
- **Micro-Lending:** In which small loan commitments and repayments are processed;
- **Investment:** I.e., equity, in which the platform collects processes the sale and purchase of profit-sharing interests in businesses or projects;
- **Holding:** In which the platform sets up subsidiaries for each business or project seeking funding and offers shares of those subsidiaries to putative funders; and
- **Club:** In which groups of investors prequalified as investors.

Hemer (2011) notes that the threshold pledge model can be (and often is) combined with one of the other business models, that certain crowdfunding platform business models may trigger the application of securities regulation in some countries, and that the club business model is a reaction to that undesired regulatory effect—designed to avoid the application of this regulatory regime.

The identity and attributes of crowdfunding platforms may respond to various legal requirements. For example, under the Capital Raising Online While Deterring Fraud and Unethical Non-Disclosure Act (2012), known as the "CROWDFUND" Act, in the United States (Title III of the Jumpstart Our Business Startups Act (2012)), crowdfunding websites must be registered securities brokers or funding portals. Both types of regulated entity must meet certain regulatory requirements, and their functions are limited. For example, under the CROWDFUND Act, funding portals cannot "offer investment advice or recommendations," "solicit purchases, sales, or offers to buy the securities offered or displayed on its website or portal," "compensate employees, agents, or other persons for such solicitation or based on the sale of securities displayed or referenced on its website or portal," or "hold, manage, possess, or otherwise handle investor funds or securities." These and other applicable legal constraints shape the business model for and potential profitability of these platforms.

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Payment Processors for Crowdfunding Platforms

Platforms typically commit to collect, hold, and distribute funds provided to businesses and projects in crowdfunded financings. Most platforms do not have their own proprietary payment processing systems. They contract for these services from others. Applicable regulation may dictate whether platforms can process funds. For example, under the CROWDFUND Act, funding portals (a specific kind of registered platform for securities crowdfunding covered under that law), by definition (15 U.S.C. § 78c(a)(80)(D) (2012)), cannot accept funds from crowdfunding investors.

Perhaps the most well-known payment processing business used in U.S. crowdfunding is PayPal (www.paypal.com). Other examples in the United States include WePay (www.wepay.com) and Amazon Payments (payments.amazon.com/home). MangoPay (www.magopay.com) is a popular multi-currency European payment processor for crowdfunding. Because financial transactions are regulated on a country-by-country basis, payment systems can vary from country to country.

Payment systems may all look alike to the uninitiated, but they have different attributes and have built-in optional capabilities from which crowdfunding platforms can choose. These attributes and capabilities may be more or less advantageous to different types of platforms and different types of crowdfunding. The use of online payment processing systems may require customized software solutions to integrate the payment system into the crowdfunding website in a manner that provides the desired functionality. As a benefit to crowdfunding platforms, payment systems may undertake some or all of the legal compliance services associated with the acceptance, retention, and distribution of funds committed to crowdfunding campaigns.

Due Diligence Service Providers

Venturers may desire or need to have (and may determine to disseminate) specific information about themselves—their principals, operations, finances, plans, etc.—in order to incentivize funders to offer them financing dollars. Funders will not invest without receiving the type and level of information they desire before making the decision to fund. And intermediaries want to ensure they are paid for their work and create and sustain a good reputation in the market. Applicable law may mandate or incentivize the disclosure of facts by and to specific crowdfunding participants. For example, provisions of the CROWDFUND Act (2012) mandate various disclosures by securities issuers and intermediaries. All of this involves generating or assembling and interpreting information. Although venturers, funders, and intermediaries may perform their own investigations or reviews of the operations and finances of each other before engaging in crowdfunding transactions with each other, they may lack the internal expertise or resources to accomplish some or all of that work.

As a result, independent providers of due diligence services have begun to emerge to provide services to principals and intermediaries in the crowdfunding space. Crowdfunding participants that desire to get tailored information about crowdfunded offerings may be willing to retain the services of a third-party expert to get that information for them where contracting for those services is cost-effective. For example, those investing larger amounts in long-term profit-sharing or interest-producing instruments presumably would be more likely to engage a due diligence provider than funders providing small amounts to fund the next album for their favorite indie band. Moreover, the wisdom of the crowd itself may provide enough assurance to its members to forestall the need for funders to obtain due diligence assistance. In any event, those crowdfunding participants desiring the due diligence services (e.g., entrepreneurs, funders, platforms, etc.) contract for them directly with the provider of their choice.

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CrowdCheck (www.crowdcheck.com) is one such firm. The services provided by CrowdCheck can be customized to serve entrepreneurs, funders, or intermediaries in crowdfunding and other online financings. Founded by a former staff member of the U.S. Securities and Exchange Commission and managed and staffed by, among others, a team of experienced securities lawyers, CrowdCheck was an early entrant into the crowdfunding intermediary marketplace in the United States.

Business models for due diligence providers vary based on the crowdfunding markets and participants they serve and the types of services they provide. For instance, a service provider that caters its business to helping securities crowdfunding intermediaries meet their legal compliance obligations is likely to provide different services and assume different levels of responsibility for the accuracy and adequacy of its procedures than a firm providing legal compliance due diligence services to principals and promoters engaged in reward-based crowdfunding to finance their businesses or projects. The responsibility of platforms under applicable securities laws and those of business principals and project promoters under consumer protection laws differ significantly. Accordingly, the diligence needed for legal compliance in these circumstances also differs, as does the need for guaranteed or otherwise verifiable quality control in the research methods and output.

Industry Research Suppliers

Due diligence providers are not the only crowdfunding intermediaries seeking to locate, generate, compile, and distribute information about crowdfunding campaigns and participants. Crowdfunding constituents and commentators are thirsty for information about the crowdfunding market. This information might include, for instance: attributes of particular sites and campaigns (including what works and what doesn't work); general trends; relevant political, economic, and social conditions; statistical summaries of market activity. While the crowd may be able to identify, assemble, and process information on its own to some degree in crowdfunding's Web 2.0 environment, it is likely that traditional research suppliers will continue to play an important role for at least some crowdfunding participants.

Market research firms exist for almost all industries, and crowdfunding has spawned its own set of specializer researchers. These researchers may not serve individual clients as to individual offerings. Rather, they more typically serve a larger populace—specific market sectors or product or service industries engaging in crowdfunding, association members, or even the public at-large. Some of this general research is widely available on the Internet free of charge. However, the most sophisticated research typically is conducted on a customized basis by consulting firms using proprietary data.

The public face of crowdfunding industry research is largely characterized by organizations focused on crowdfunding research as the core of their operations. The CrowdfundingCentre (thecrowdfundingcentre.com), which incorporates the Crowd Data Center, exemplifies this type of intermediary. Geared to many different audiences (including, by the organization's own accounting, government regulators and policymakers, as well as crowdfunding principals and intermediaries), the CrowdfundingCentre authors and publishes data-driven periodic reports and schematics and offers information about relevant regulatory news and initiatives. In addition, the CrowdfundingCentre produces daily and weekly charts featuring popular crowdfunding campaigns. Another example of a crowdfunding industry research provider is TheCrowdCafe (www.thecrowdcafe.com), which boasts a research-oriented resources page, news pages, and a list of platforms hosted around the world. Crowdsurfer (www.crowdsurfer.com) essentially bridges the gap between due diligence providers and industry research providers by offering proprietary analyses of broad-based data to individual clients.

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Platforms and general crowdfunding-oriented websites also may conduct and report research (themselves or through others) on a less formal or routine basis. Kickstarter reports basic data and statistics relating to the campaigns conducted on its site (www.kickstarter.com/help/stats). Shopify (www.shopify.com), an ecommerce site, hosts ecommerce university (ecommerce.shopify.com), which has produced *Crowdfunding 101: Insights from 400k Kickstarter and Indiegogo Campaigns*, as well as *The Ultimate Guide to Crowdfunding*, as free, online research and information resources. Crowdfund Insider (www.crowdfundinsider.com) is a general crowdfunding news and information site that reports research data generated by others.

As illustrated by these examples, crowdfunding industry research suppliers have the potential to cover a broad array of topics, methodologies, and dissemination channels. These suppliers may range from think tanks generating proprietary databases using established academically tested research methods to specialized journalists and even bloggers. Wide-ranging research from a variety of perspectives and sources is likely to generate, in the aggregate, a more accurate and complete picture of the emergent crowdfunding industry. However, having said that, crowdfunding research activity is likely to provide uneven coverage in the short term.

Good data is hard to come by. There is little required disclosure in the crowdfunding industry, with notable exceptions existing in, e.g., the CROWDFUND Act (2012), as referenced previously; none has been mandated on an international level. Moreover, a detailed, uniform, voluntary public disclosure regime is unlikely to take hold in the near future (if at all). As a result, standardized, broad-based publicly available data on crowdfunding is scarce. Although some researchers in private industry have been able to compile proprietary data sets and employ them in their work, they are unlikely to make this data widely available except to fee-paying clients. Some of these private industry researchers even may be reluctant to share their research methodology in any great detail. This makes generalized, public consumer-oriented research on crowdfunding almost impossible unless academic research can fill the void. Rigorous, peer-reviewed academic studies may have the capacity to generate a high quality of information for consumers and others, but academic researchers will be plagued by data deficiencies without the benefit of mandatory disclosure or proprietary data, and their work, in any case, may not be widely available to or accessible by those outside their field of endeavor.

Industry Standard Certifiers

As crowdfunding grows, the demand for heuristics-based decision-making—in which market participants rely on short-cuts to overcome information deficits in their struggles to determine whether, when, and how to participate in crowdfunding—likely will increase. Certifiers, commonly referred to in relevant literature as certification intermediaries, have begun to emerge in the crowdfunding services market to serve that need. They specialize in assessing and verifying the compliance of an industry participant with applicable industry standards. The classic example of a certification intermediary cited in many commentaries on the subject is UL—formerly known as Underwriters Laboratories and founded in 1894 as Underwriters' Electrical Bureau, the Electrical Bureau of the National Board of Fire Underwriters. This organization tests and certifies the safety of consumer products.

Given the relative lack of transparency of Internet-based business models and a shortage of uniform comparative data on crowdfunding participants and crowdfunded ventures, crowdfunding certifiers have begun to proliferate. Their claims at expertise and reputational advantage are many and varied. Crowdsourcing.org (www.crowdsourcing.org), an industry resource providing information and support for both crowdsourcing and crowdfunding, offers certification to crowdfunding platforms. The certification

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provides crowdfunding websites with Crowdfunding Accreditation for Platform Standards based on an interview and review process. The certification is intended to promote and signal crowdfunding platform best practices. Both crowdfunding venturers and funders are the asserted audience for and beneficiaries of this certification. There also is a Crowdfunding College (www.crowdfundingcollege.com) that markets itself as providing education, training, and certification as a crowdfunding professional.

Other certifiers are in the process of organizing their programs as this chapter is being completed. The Crowdfunding Professional Association (www.cfpa.org), a membership organization for crowdfunding professionals, announced late in 2014 that it would provide two certifications: one for crowdfunding investors—designed to address compliance with the CROWDFUND Act (2012)—and one for professionals providing education and other services to crowdfunding participants. The National Crowdfunding Association (www.nlcfa.org), a trade association serving crowdfunding industry professionals, has announced its intention to offer Certified Crowdfund Advisor certification through an examination process. In addition, the Crowdfund Intermediary Regulatory Advocates (www.cfira.org) has been formed to work with "governmental and quasi-governmental entities to help establish industry standards and best practices" for U.S. securities crowdfunding. This organization also may evolve to play a certifying role.

The utility, credibility, and overall benefit of the endorsements provided by these certification programs will remain to be seen. The overall industry is, as noted throughout, in its early stages of development. Moreover, if one believes that the crowd has the capacity to vet the accuracy and adequacy of information available to market participants and, in general, to regulate the crowdfunding market (as many crowdfunding proponents assert), there may be a reduced need for crowdfunding certifiers.

Professional Advisors

Crowdfunding, like other business finance transactions, may involve traditional professional advisors in various capacities. Most crowdfunding platforms will engage professional advisors. Fewer entrepreneurs and other venturers will do so. Very few funders will deem it necessary or advisable to engage professional advisors in connection with their crowdfunding participation.

The types of professionals that may participate in crowdfunding, depending on the nature and size of the crowdfunding campaign undertaken, include auditors and other financial accountants, legal counsel, investment advisors, and insurers. These intermediaries are considered gatekeepers—providers of trustworthy assessment, observation, and (sometimes) disclosure or support for disclosure. Their presence in securities crowdfunding is ubiquitous; their engagement in other types of crowdfunding is more episodic.

Accountants may be a required or desired part of crowdfunded financings, especially securities crowdfunding. As a general rule, crowdfunded financings (registered securities offerings being among the most notable) do not require that a venturer or promoter furnish financial statements audited by a certified public accountant as part of the funding process. However, under the CROWDFUND Act (2012), to obtain an exemption from federal registration of the offering, issuers in crowdfunded offerings of securities in the United States valued in excess of $500,000 are required to present audited financial statements to investors, and issuers in offerings of securities exceeding $100,000 are required to produce and disseminate financial statements reviewed by an independent public accountant in accordance with specified professional standards and procedures. Moreover, other businesses desiring to crowdfund their operations also may voluntarily engage accountants as auditors to prepare or review financial statements summarizing their financial condition and results of operations. Funders seeking advice regarding their finances also may ask for that assistance from accountants.

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Venturers seeking financing through crowdfunding and crowdfunding platforms are always wise to seek legal advice in connection with their crowdfunding activities. Moreover, in certain circumstances, funders may engage lawyers to advise them in committing funds to crowdfunding campaigns. Legal advisory assistance most commonly is sought in securities crowdfunding, but also occurs in other crowdfunding contexts. Legal services requested may include counsel in connection with securities regulation, entity formation, contract drafting and negotiation, intellectual property protection and use, consumer protection, and other matters relating to legal status and compliance.

Participants in securities crowdfunding also may include investment advisors. Although funding portals are not permitted to offer investment advice under the CROWDFUND Act (2012) and crowdfunding websites, in general, may not be allowed to provide those services under other legal regimes, absent regulatory constraints, crowdfunding platforms may be free to offer funding guidance of this kind in other crowdfunding contexts. Independent investment advisors, including government-regulated service providers in the securities industry, also may be engaged to provide information and guidance on or in connection with crowdfunded financings, although this is most likely to occur in larger securities crowdfunding.

Insurers began to realize they would have an important role in crowdfunded financings. By assuming some of the risk of crowdfunding participants through insurance contracts, they could incentivize participants to become involved in crowdfunding. Venturers, platforms, other intermediaries, and even some investors all are or may be in a position to purchase insurance—either in the form of a new policy or as a rider to an existing policy—to cover risks of losses created by crowdfunding. In fact, these insurance policies may be mandated in some crowdfunding circumstances. Proposed rules under the CROWDFUND Act (2012) would have required platforms to purchase a fidelity bond of at least $100,000 (Sec's and Exch. Comm'n, 2013). The final rules omit this requirement (Sec's and Exch. Comm'n, 2015). Most crowdfunding insurance would be optional, however. Venturers may seek insurance to cover potential legal actions arising out of the failure of the business or project for which crowdfunding is sought. Crowdfunding websites would be well advised to consider insurance or to establish adequate reserves to self-insure, given the multifaceted risks of their operations (which would include everything from embezzlement and other employee-related activities to fraud claims made by funders). Innovative delivery systems for insurance are being tested. At the end of 2014, for example, Indiegogo announced a pilot program to provide optional insurance to funders participating in a particular campaign (Newman, 2014).

Categorizing Intermediation in Crowdfunding

Crowdfunding intermediaries may serve a number of different functions in providing their services. The roles played by these intermediaries in crowdfunded financings may be mapped to existing classifications that have been employed to label financial intermediaries. This part of the chapter identifies a number of the functional roles provided by crowdfunding intermediaries and categorizes them in accordance with a four-part classification system derived from legal scholarship on securities transaction intermediation.

Intermediation Functions

The distinct types of crowdfunding intermediary described above each serve—or may serve in the future—many functions in crowdfunded financings. Thoughtful consideration of the nature of the services various crowdfunding intermediaries may provide (either alone or together with other crowdfunding intermediaries) reveals functions, most of which are identified in various ways in the literature, that include:

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- **Interconnection:** Linking transaction principals with each other and with additional transaction partners; acting as a middleman for money and information;
- **Expertise:** Contributing specialized, tested know-how or experience;
- **Standardization:** Supplying a predictable, uniform, off-the-rack set of processes and tools;
- **Aggregation:** Coordinating or consolidating information for, or exercising responsibilities or rights of and for, crowdfunding participants;
- **Curation:** Verifying, vetting, or selectively endorsing businesses and projects seeking funding;
- **Disclosure:** Mitigating information asymmetries;
- **Promotion:** Marketing or publicizing businesses and projects listed on the site;
- **Actualization:** Conveying venturers' vision to the crowd;
- **Attraction:** Drawing the crowd to the crowdfunding website and, as a result, the featured businesses or projects; and
- **Safeguarding:** Shielding investors from harm and providing business and projects relief from liability.

Some of these functions overlap. For example, interconnection may involve disclosure, and some forms of curation may constitute promotion. A number of the functions comprise embedded sub-functions. For instance, curation may include verifying, vetting, and endorsement and may require expertise. Moreover, an individual crowdfunding intermediary may serve in one or more of the roles represented by these functions. The list of functions is no doubt incomplete and some of the labels may be unfamiliar or are inapt, but the inventory serves as a useful touchstone for key crowdfunding intermediary activities.

Intermediary Classification by Type

Classifying crowdfunding intermediaries presents challenges. However, because their functions in financing transactions are most like those of intermediaries involved in securities offerings, it seems appropriate to use labels from securities intermediation as a guide. Over time, scholars and other commentators have classified these intermediaries and their intermediating roles in securities transactions into key categories (Barnett, 2001; Choi, 2000, 2004; Choi & Fisch, 2003; Coffee, 2002; Gilson & Kraakman, 1984; Heminway, 2013; Laby, 2006). These classifications, when compiled, can be reduced to a simple, useful, taxonomy featuring four categories of intermediary: distributional conduits, information intermediaries, collectivizing intermediaries, and reputational intermediaries (Heminway, 2013). As with the list of functions set forth above, these categories of intermediation are somewhat fluid. Intermediaries may fit into more than one category. Nevertheless, this taxonomy provides a useful framework for the classification of crowdfunding intermediaries.

Distributional conduits, information intermediaries and collectivizing intermediaries are classifications based on the functional role played by the intermediary in its market-related operations. Distributional conduits serve as middlemen between transaction principals. They may convey cash, securities, or other assets or information between or among transacting principals. Public offering underwriters are a classic example of a distributional conduit.

Information intermediaries also represent a functional category of intermediary. They supply information to or interpret information for use by transaction participants and others. Information intermediaries need not be formal go-betweens for the transaction principals. Rather, they may provide services to one or more of the transaction participants (principals or intermediaries). They may, but need not, be certifiers. Proxy advisors and rating agencies are typical examples of information intermediaries.

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Collectivizing intermediaries serve the aggregated interests of a particular class of transaction participant by acting as agents, monitors, or knowledge repositories. In one or more of these roles they may, for example, consolidate action on behalf of transaction participants or conduct inquiries for, and provide guidance to, segments of transactional constituents. These aggregation efforts may resolve or limit collective action problems. Institutional investors typify collectivizing intermediaries. A purchaser representative for unsophisticated investors in a private placement of securities also would be classified as a collectivizing intermediary.

Reputational intermediaries lend their status and appearance of trustworthiness—their reputational capital—to the transaction. This means that it often is more *who they are* than *what they do* that impacts crowdfunding transactions. They also are commonly referred to as gatekeepers and can be divided into dependent and independent reputational intermediaries. A dependent intermediary is an agent or servant of its clients' interests who owes a fiduciary or fiduciary-like duty to the client. An independent reputational intermediary acts in a unbiased fashion—more for its own benefit or the benefit of transactional participants as a whole than in a selfless way for and on behalf of a client.

Table 1 classifies crowdfunding intermediaries based on these categories.

Table 1. Classifying crowdfunding intermediaries

Intermediary Classification	Function/Role	Example
Distributional Conduit	• Interconnection • Expertise • Standardization • Disclosure • Promotion • Actualization • Attraction	• Platform/Website • Payment Processor
Information Provider/Interpreter	• Expertise • Standardization • Curation • Disclosure	• Platform/Website • Due Diligence Service Provider • Industry Research Supplier • Certifier
Collectivizer	• Interconnection • Expertise • Standardization • Aggregation • Disclosure	• Platform/Website • Industry Research Supplier
Reputational Intermediary • Independent	• Expertise • Standardization • Aggregation • Disclosure • Safeguarding	• Platform/Website[1] • Certifier • Auditor • Insurer[1]
• Dependent	• Expertise • Standardization • Aggregation • Disclosure • Promotion • Safeguarding	• Platform/Website[1] • Legal Counsel • Insurer[1]

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This summary demonstrates the importance of certain intermediary functions. Table 1 shows that expertise, standardization, and disclosure play significant roles in crowdfunding intermediation because these functions may be common to all four categories of intermediary—distributional conduits, information providers/interpreters, collectivizers, and reputational intermediaries—depending on the particular intermediary and the context of its participation in the crowdfunding space or a specific crowdfunded financing. Accordingly, these functions evidence core roles played by crowdfunding intermediaries.

Table 1 also illustrates that crowdfunding platforms may provide any or all of the identified intermediating functions, depending on the circumstances. As such, they may find themselves serving various crowdfunding participants in a number of different capacities. They are conduits that provide information and a consolidated approach to issues involving venturers, funders, and other intermediaries. In addition, a platform may lend its reputation (which reflects, among other things, the platform's attentiveness to its legal responsibilities and its operating track record) to the campaigns featured on its site.

Preliminary Observations about Intermediation in Crowdfunding

A more complete understanding of the type and functions of crowdfunding intermediaries, when viewed through the lens of legal scholarship on financial intermediation, allows for the classification of those intermediaries into categories based on their role in crowdfunding—what they do for or crowdfunding participants from a transactional perspective or how they impact participation in crowdfunded financings. The overall picture substantiates intuitions about the significance of certain intermediating functions and reveals that, absent regulatory constraints, platforms have the capacity to provide comprehensive intermediation in crowdfunding.

These findings are significant to crowdfunding participants. They can use this information to better understand the types of intermediaries that contribute to crowdfunding and the roles they may serve. Their enhanced ability to differentiate among intermediaries and their functions should help determine the crowdfunding partnerships that best meet their needs.

For instance, a better knowledge of the benefits—and especially the core common values of expertise, standardization, and disclosure—offered by different forms of crowdfunding intermediation may assist a venturer in deciding whether to use crowdfunding to finance his or her business or project and, if crowdfunding is a viable financing option, to guide that venturer in the choosing whether to use a platform or other intermediary in its financing (and if so, which one or ones). Similarly, a funder may use information about the types of crowdfunding intermediaries and the roles they play to be better understand the risks of his or her participation in particular crowdfunding campaigns. And a platform or other intermediary may find the information provided in this chapter helpful, for instance, in establishing its business model and in deciding which services to provide itself and which to contract for from third parties. In particular, platforms may be incentivized, in recognition of their capacity to fill myriad roles in crowdfunding, to use the information provided in this chapter to differentiate themselves from competitors and create unique market niches based on the nature of the services they provide.

Policymakers and enforcement agents, including government regulators, also should find this information of value. Too often, calls for regulation come from self-interested or otherwise biased sources. Government officials may be under pressure to take action and be unfamiliar with the crowdfunding industry and those who take part in it. Well-developed factual information about the nature of crowdfunding intermediation should enable the development of more nuanced, targeted regulatory objectives,

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interpretations, and actions. Informed governance is more likely to result in the exercise of sensible regulatory power and enforcement discretion that supports an efficient, fair crowdfunding industry.

Intermediaries commonly are conceptualized as risk-reduction mechanisms in transactions. They "typically exist in a transaction as a means of increasing its overall efficiency; the benefits an intermediary offers to transaction participants or the markets in which they operate are expected to exceed the aggregate costs of their participation. In financial transactions, intermediaries often serve to address or balance informational asymmetries that may negatively impact the market in which those transactions occur. They do this in various ways, depending on the circumstances in which the intermediation occurs. For example, intermediaries may supply, construe, or confirm information, or they may serve a signaling function" (Heminway, 2013, p. 180). Yet, the costs and benefits of crowdfunding intermediation are difficult to determine at this early stage in the market's development. New players in the crowdfunding game continue to be introduced as the market innovates. And the two-sided nature of the crowdfunding market is not yet well understood.

As a result, the description of crowdfunding intermediation provided in this chapter is a preliminary assessment, and it is very general. For some, it may not be specific enough to provide guidance or support. A static identification of different types of intermediaries and what they do provides a necessary, yet likely insufficient, basis for making essential judgments about crowdfunding participation and regulation. This information does not, for example, permit a qualitative judgment to be made about intermediaries or their services. Intermediaries serving in the same roles may provide skills or support of varying quality, and in an emerging industry with a nascent set of intermediaries, quality may be especially hard to benchmark and determine. And the perceived quality of a particular intermediary may differ based on factors endemic to the individual crowdfunding participant accessing its services. These are real challenges for crowdfunding intermediation and those who study it.

SOLUTIONS AND RECOMMENDATIONS

To better inform and facilitate decision making by crowdfunding participants, policymakers, and enforcement agents, it would be beneficial if crowdfunding intermediation could be described with more clarity and precision. Specifically, it would be useful to understand the circumstances in which the benefits of crowdfunding intermediation exceed its costs. This would enable us to benchmark intermediary success and failure as a means of determining the efficiency and effectiveness of various intermediaries and forms of intermediation. In addition, the identification or development of quality metrics for the various types of crowdfunding intermediaries would be a worthy objective. If we understand what quality is in various intermediation functions, then we can assess, foster, and signal it.

Defining crowdfunding intermediation in a more consequential way along these lines requires both creativity and planning. The foundational descriptive matrix provided in this chapter isolates expertise, standardization, and disclosure as core values in crowdfunding intermediation and highlights the capacity of platforms to play a commanding role in crowdfunding intermediation. These discoveries provide food for further thought.

One type or level of expertise, standardization, or disclosure in crowdfunding intermediation may be more beneficial or costly than another. Pinpointing the relative and interactive costs and benefits of these intermediation functions therefore may be significant. Particular attention to the capability and desirability of engaging a crowdfunding platform to deliver the required type or level of expertise, stan-

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dardization, or disclosure also should be useful. This type of information could help us to describe and predict intermediary success and failure, and take action to promote the former and prevent the latter.

Similarly, the notion of quality—what constitutes quality intermediation—as across the various types of intermediary and their functional roles may be susceptible of definition. Expertise, standardization, and disclosure provide focal points for analysis. These functions, properly defined, might constitute and, if promoted effectively, signal intermediary quality to the market. Each role that an intermediary plays and the way the intermediary carries out that role are likely to be material to understanding quality crowdfunding intermediation.

Understanding what makes for efficient, effective crowdfunding intermediation is at the heart of ensuring the success of the crowdfunding industry. Of course, further academic research also is essential to a better appreciation of crowdfunding intermediation and the development of a healthier, better informed market for crowdfunded finance. The foundational typologies and taxonomy provided in this chapter afford us basic information from which we can work. The next part of the chapter explores how to use that knowledge and salient observations made in legal and business scholarship to approach some of the unresolved questions in crowdfunding intermediation.

FUTURE RESEARCH DIRECTIONS

The challenges associated with describing crowdfunding intermediation in a way that gives it meaning in a practical context are palpable. Yet, there are possible paths forward. Successful progress in surmounting the challenges will require significant amounts of further academic and non-academic research—theoretical and empirical.

The need for continuous engagement by scholars and other researchers will be critical given the rapidly developing crowdfunding industry. As a preliminary matter, it will be vital that academics and others be in a position to continue to identify and catalog new intermediaries as they emerge. Sustained attention to the functions provided by the various crowdfunding intermediaries also will be needed. These research tasks will enable expansion of the model provided in this chapter and the suggestion of alternative models to illustrate distinct market attributes.

These ongoing changes in crowdfunding intermediation make the task of designing a research agenda in the area complex. The centrality of expertise, standardization, and disclosure to crowdfunding intermediation and the important role played by crowdfunding platforms as intermediaries are key touchstones based on the depiction of crowdfunding intermediation in this chapter. Grouped research questions emanating from those touchstones include the following:

- What makes a platform or other crowdfunding intermediary efficacious as a distributional conduit, information intermediary, certifier, or reputational intermediary in the two-sided crowdfunding market? What does expertise mean in this context? What level of standardization is desirable? What level of disclosure is optimal?
- How many roles should a platform serve? Is crowdfunding better off if other intermediaries are crowded out or supported? What do theories of financial intermediation (the potential for conflicting interests, the application of fiduciary principles generally, and the operation of cognitive biases) and two-sided markets have to say about those questions?

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- What is the optimal combination of intermediation activities for different types of crowdfunding? How should these activities be allocated among different types of crowdfunding intermediaries capable of performing the relevant functions? Should regulators or the market make these determinations?

In addition, the roles and benefits of intermediaries other than platforms are an important area for future research. This area has barely begun to be explored. Yet each type of crowdfunding intermediary and the clients it serves can be expected to be interested in better understanding—and motivated to better understand—the advantages and disadvantages of providing and using services in the crowdfunding environment.

In fact, actual and potential crowdfunding participants, policymakers, and enforcement agents all can be expected to be engaged by these questions and to rely on the related research in their decision making. This research can and should be approached by academics from a number of different scholarly traditions using a variety of methodologies. Moreover, private research firms are likely to engage in the analysis of issues relating to crowdfunding intermediation to serve their clients who are interested or engaged in crowdfunding. Danmayr (2014) aptly concludes that "ongoing scientific discourse will help to clarify the crowdfunding picture…[C]rowdfunding deserves greater attention, both in science and society."

CONCLUSION

This chapter (1) describes and categorizes crowdfunding intermediation based on salient teachings from the generalized academic literature on intermediation in financial transactions, (2) offers solutions and recommendations arising from that commentary, and (3) suggests further relevant avenues for research relevant to crowdfunding participants, policymakers, and enforcement agents. The resulting picture is an incomplete one, but provides a foundation for further analysis and testing. As the crowdfunding market further develops and matures, this analysis and testing will become both more possible and more important.

This chapter agrees with the assessment of Hass et al (2014, p. 2) when they offer: "In order to understand the dynamics of crowdfunding, one has to understand how crowdfunding today actually works, and what the constituent parts are, as well as how crowdfunding intermediaries differentiate. Without this knowledge, the dynamics in this context cannot be traced. Information systems are responsible for enabling crowdfunding and an in-deep understanding about this topic helps to develop better solutions for the effective and efficient utilization of this new way of funding."

The extant literature has only begun to explore the depths and richness of crowdfunding, which is (as an emergent approach to financing ventures) becoming a deeper, richer area for research with each passing day. Although the ventures seeking financial backing from the crowd and the funders constituting that crowd are, themselves, deep, rich subjects for further study, the intermediaries are critical lynchpins in better understanding the crowdfunding phenomenon.

Despite its relative youth and modest manifestations, crowdfunding intermediation is more complex than it would first appear—and than many scholars and other commentators have admitted to date. Although crowdfunding platforms have received some attention from researchers and theorists, that attention has been relatively recent and limited. However, crowdfunding platforms—while central to the enterprise and of critical importance—are not the only intermediaries that serve (and promise to serve) important roles in crowdfunded financings of businesses and projects. Crowdfunding participants partner

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with a variety of intermediaries to incentivize their participation in crowdfunded finance. Moreover, the landscape of crowdfunding intermediation is constantly changing. Market innovations bring new players and roles to the industry, including especially new intermediaries and forms of intermediation.

Thus, crowdfunding intermediation is in flux at present. While certain observations and claims can be made that aid crowdfunding participants, policy makers, and enforcement agents in understanding the current and possible future crowdfunding intermediation landscape, these reflections are a mere beginning. Expertise, standardization, disclosure, and the fulcrum-like role played by crowdfunding platforms all appear to be important pieces in the crowdfunding intermediary puzzle. When viewed through the lens of existing scholarship on intermediation, these factors may help solve the puzzle, affording us a clearer, more comprehensive picture of optimized intermediation in crowdfunded finance. That optimization may involve regulation or be driven by market forces (including, for example, agreement on and compliance with industry best practices). More research is required to determine whether and how attention to these considerations may provide a partial or complete solution.

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KEY TERMS AND DEFINITIONS

Certifier: An individual who or entity that assesses and verifies the compliance of a business, product, or service with industry or other applicable standards.

Financing: A solicitation of funding; the process of soliciting monetary backing for a business, project, or transaction.

Intermediary: An individual or entity serving as a go-between, distributor, or other agent in a transaction between or among principals.

Offering: A transaction in which funding is solicited for business activities; a financing transaction, especially (but not exclusively) one involving a proposal to sell, or the solicitation of a proposal to buy, a security or other investment or financial instrument.

Platform: A website through which crowdfunded financing campaigns are conducted over the Internet; a website that connects investors with businesses or projects needing funding.

Portal: Synonymous with a platform; used in U.S. federal securities law in the term "funding portal" to refer to one of two kinds of regulated intermediaries (the other being brokers) that must participate in securities (investment) crowdfunding.

Venture: A business or project, whether or not conducted through a legal entity or firm.

Venturer: A founder, creator, entrepreneur or other principal who undertakes or participates in the establishment or execution of a business or project; an individual who or entity that bears the fundamental burden in launching and carrying forward a for-profit or not-for-profit business or project.

ENDNOTE

[1] Platforms and insurers may be deemed to have duties to their clients in some contexts. Accordingly, they may be classified, depending on the circumstances, as either independent or dependent reputational intermediaries.

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Chapter 57
Proactive Law as Competitive Advantage in Crowdfunding

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ABSTRACT

This chapter explains how the paradigm of proactive law as competitive advantage can help entrepreneurs succeed in crowdfunding campaigns. Business law scholars have developed theories of "proactive law" and "law as competitive advantage" to show how law can be transformed from an obstacle into a strategic business advantage. This chapter analyzes the evolving crowdfunding landscape through the lens of proactive law as competitive advantage. The chapter proposes several types of innovative securities designed to create competitive advantages in crowdfunding offerings. For example, one type would give crowdfunding investors long-term equity interests while simultaneously eliminating short-term corporate governance challenges for small crowdfunded companies. Apart from securities, the chapter also describes how a proactive approach to law can enhance crowdfunding campaigns in multiple areas, from intellectual property to tax efficiency. To conclude, the chapter suggests expanding the theory of proactive law as competitive advantage to additional areas of entrepreneurship, beyond crowdfunding.

INTRODUCTION

Despite encountering regulatory obstacles, crowdfunding continues to emerge as a viable business model for funding early-stage entrepreneurial ideas. This chapter proposes a theoretical construct to aid entrepreneurs in carrying out crowdfunding offerings in the face of legal uncertainty. Specifically, this chapter investigates a concrete research question: How can the legal theory of proactive law as competitive advantage help entrepreneurs succeed in crowdfunding campaigns?

The chapter is organized as follows. It first briefly explains the legal landscape that different types of crowdfunding offerings confront. Then Part I develops a conceptual framework of viewing law proactively as a competitive advantage in crowdfunding campaigns. Part II applies the framework to provide specific examples of how entrepreneurs can leverage law to succeed in crowdfunding offerings.

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To conclude, the chapter moves beyond crowdfunding to suggest how further research should develop the theory of proactive law as competitive advantage in the broader context of the disruptive innovation that entrepreneurship breeds. The chapter focuses on US law, though the principles of proactive law as competitive advantage are broadly applicable anywhere.

BACKGROUND: REGULATORY LANDSCAPE OF CROWDFUNDING OFFERINGS

The origins of online crowdfunding were not auspicious. Initially, crowdfunding resulted in more cease-and-desist letters than business success stories. But over time, the creative force of entrepreneurship continues to propel crowdfunding models to break free from the antiquated legal shackles that have restrained crowdfunding's development. Accordingly, today's legal panorama for strategic management of crowdfunding campaigns is vastly improved—and significantly more complex—than just a few years ago.

From a legal perspective, entrepreneurs must choose one of two types of crowdfunding offerings: the fork in the regulatory road is whether the crowdfunding campaign will offer securities (e.g., stock, interest-bearing loans, or another form of profit-sharing interests) or something other than securities (e.g., a pre-purchased product, token rewards, or donative support of a nonprofit enterprise, including non-interest bearing loans). Laws treat crowdfunding offerings of *securities* differently from *non-securities* (Fallone, 2014). Of course, entrepreneurs may also develop hybrid crowdfunding campaigns that offer a combination of a security and a non-security.

The evolution of laws on crowdfunding of *securities* has differed markedly from that of *non-securities*. Both paths, though, epitomize the disruptive interplay between law and entrepreneurship. Innovative entrepreneurship can be a two-edged sword that both creates new business opportunities and simultaneously challenges, and even destroys, stagnant legal regimes. In crowdfunding, the unique paths that *securities* and *non-securities* forms of crowdfunding have traversed can be likened metaphorically to tree roots in both their power and resourcefulness.

Laws on Crowdfunding of Securities

The history of crowdfunded securities exemplifies how the disruptive force of entrepreneurship can topple regulatory obstacles to build new industries—like tree roots that undermine the foundation of a cement wall, causing the wall to collapse. At crowdfunding's inception, a regulatory wall prevented entrepreneurs from offering equity securities through crowdfunding in the US (Hazen, 2012; Heminway & Hoffman, 2011; Pope, 2011). In 2010, for instance, a US crowdfunding company named ProFounder Financial invited entrepreneurs to sell stock in start-up companies to the general public over the Internet. Such a seemingly innocuous business model was in fact a direct assault on the regulatory wall that barred crowdfunding offerings of securities. As a result, ProFounder was forced to shut down its website and cease all crowdfunding activities (Bradford, 2012).

Another prominent challenge to the regulatory wall in the US occurred in 2011 through the online BuyaBeerCompany crowdfunding campaign. The crowdfunding initiative to buy Pabst Brewing Company enjoyed phenomenal viral success in social media. In six months it attracted over $200 million in online pledges from more than five million people. But the BuyaBeerCompany campaign offered an

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"investment certificate" to crowdfunding contributors in a way that violated US securities laws, so government regulators shut down the illegal campaign before the company could collect investment funds and purchase the target beer company (Bradford, 2012).

In view of these legal setbacks to crowdfunding offerings of equity securities in the US, a broad coalition of social media activists, business leaders, scholars, and politicians banded together to advocate legal reform (Wroldsen, 2012). And by 2012, the crowdfunding seeds planted by entrepreneurs and watered through social media had spawned invasive tree roots. The roots burrowed under the cement wall of legal obstacles that outlawed crowdfunding offerings of securities, causing the wall to crumble. The CROWDFUND Act was signed into law in the US on April 5, 2012. The Act creates, and directs the Securities and Exchange Commission (SEC) to implement, a limited channel for small or start-up companies to sell up to $1 million of securities per year to the general public through crowdfunding (Bradford, 2012).

The entrepreneurial victory is tempered, though, because the Act has yet to become operational, as the SEC has not yet published final regulations. In addition, the Act is fraught with legal requirements that may add excessive costs that limit the Act's usefulness for start-up companies (Bradford, 2012; Hurt, 2015). Nonetheless, the Act represents an important step forward in efforts to legalize US crowdfunding campaigns that offer securities to investors.

As discussed in Part II below, by creating the possibility of online crowdfunding for securities, the CROWDFUND Act lays the groundwork for entrepreneurs to seize competitive advantages in crowdfunding offerings. And though this chapter addresses US crowdfunding laws specifically, laws in other countries (e.g., the U.K., Nordic countries, France, Italy, Germany, Hong Kong, Australia, Egypt) are moving in a similar direction (Weinstein, 2013). Thus, all over the world opportunities are opening up for entrepreneurs to create competitive advantages through crowdfunding.

Quasi-Crowdfunding Offerings to Wealthy Investors

Before proceeding to a more detailed discussion of how entrepreneurs can use law proactively in crowdfunding campaigns, it is helpful to sketch briefly two other emerging trends in online securities offerings. The first is online stock sales made exclusively to wealthy investors. The second is online peer-to-peer lending.

Apart from the CROWDFUND Act, securities in start-up companies can also be sold online in quasi-crowdfunding offerings to wealthy investors, known in the US as Rule 506 offerings. The JOBS Act of 2012 made it legal in the US for start-up companies to advertise stock sales to the general public over the Internet, so long as the companies only sell stock to so-called accredited investors. In brief, accredited investors are investment companies (e.g., private equity firms) and wealthy individual investors (e.g., people having over $1 million in net worth or $200,000 in annual income) (Parsont, 2014).

Hence, the tree roots that toppled the regulatory wall barring crowdfunding offerings also destroyed the barrier that prevented entrepreneurs from openly advertising their stock offerings to wealthy investors. Though selling securities only to accredited investors can hardly be characterized as true *crowd*funding—a group of wealthy investors is not the same as the diverse crowd that makes up the general public—the regulatory barriers are significantly fewer than those guarding crowdfunding offerings. Predictably, online stock offerings that are only available to wealthy investors are a common business strategy of private companies in the US and many other countries (Parsont, 2014; Pollman, 2012).

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Peer-to-Peer Lending in Crowdfunding

Another form of securities crowdfunding that has thrived even before passage of the CROWDFUND Act is peer-to-peer lending of interest-bearing notes. Under US securities laws, interest-bearing crowdfunded loans typically qualify as securities subject to regulation. But where crowdfunding of equity securities required a new law (the CROWDFUND Act), the crowdfunding business model of interest-bearing peer-to-peer lending managed to fit within the existing regulatory framework. In short, crowdfunding websites that facilitate interest-bearing peer-to-peer loans (such as Prosper and Lending Club) register the loans with the SEC to avoid violating securities laws (Chaffee & Rapp, 2012; Verstein, 2011).

Laws on Crowdfunding of Non-Securities

Beyond *securities* offerings, entrepreneurial creativity also triumphed with respect to crowdfunding of *non-securities*. The triumph, though, was of a dramatically different character than the development of legal opportunities for crowdfunding of *securities*. The development of the crowdfunding market for non-securities shows how entrepreneurs exploit small cracks in the regulatory minefield to grow thriving new industries—like a tree sprouting from amidst the rocky, arid terrain on a rugged mountain top.

Some of the first green shoots were websites that deftly avoided the heavily-regulated world of securities offerings. These websites prohibited crowdfunding offerings of stock, or any other security (such as interest-bearing loans). Instead, the sites sought to nurture innovative crowdfunding business models in the regulatory fissures where securities laws do not apply. For instance, several sites facilitated crowdfunding campaigns that offered online contributors a variety of rewards (like a collector's edition T-shirt, or insider access to a movie production) or the opportunity to pre-purchase innovative products (like a smartwatch, or a new video game). Other sites avoided securities laws by soliciting donations or offering non-interest bearing loans (such as micro-lending to small-business owners in developing countries). In these ways, the non-securities form of crowdfunding capitalized on an unregulated market niche and quickly expanded into a multi-billion dollar industry. Hundreds of websites have proliferated under the non-securities crowdfunding model, including sites like Kiva, Kickstarter, IndieGoGo, and SellaBand.

PART I: PROACTIVE LAW AND COMPETITIVE ADVANTAGE

Progressing from this brief background of the entrepreneurial emergence of both securities and non-securities crowdfunding models, the remainder of the chapter explains how crowdfunding laws can be leveraged as an opportunity rather than lamented as a hindrance. The chapter's research method is a strategic review of business law scholarship on "proactive law" and "law as competitive advantage." The former stems primarily from European scholars and the latter from US researchers.

Methodologically, Part I provides a conceptual overview of the two theories. Previous research has developed the theories in the broad context of business management and executive decision making generally. But the theories have not been tested specifically in the entrepreneurial context of strategic management of crowdfunding campaigns. Accordingly, Part II applies the theories to the emerging regulatory schemes covering crowdfunding campaigns to assess their viability in the crowdfunding environment.

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Then, the conclusion interprets Part II as a first step in a larger project. Crowdfunding can be viewed as an example of disruptive innovation where new technologies (aided by new laws) give rise to new business models that can threaten traditional businesses. If theories of proactive law as competitive advantage yield insights for crowdfunding entrepreneurship, as Part II contends, then future research should expand the theories to encapsulate disruptive innovation in all of entrepreneurship, not solely entrepreneurship expressed through crowdfunding.

Conceptual Framework: Proactive Law

In Europe, the Nordic School of Proactive Law (2015) has advanced the perspective that law should be embraced as an asset, not avoided as a liability. Instead of reacting to legal problems that are forced upon a company, often in the form of *ex post* litigation, a proactive law approach considers *ex ante* how to use laws and structure business decisions to avoid legal disputes altogether. Proactive law is thus preventive rather than reactionary, analogous to healthcare treatment that aims to avoid disease (e.g., vaccinations) and foster well-being (e.g., exercise and nutritious diet) instead of cure sickness after the patient is already ill (Siedel & Haapio, 2010).

Beyond simple prevention of legal problems, proactive law also promotes legal strategy as a core component of business strategy. Proactive law invites insights from other business disciplines in order to guide legal decisions towards accomplishing business goals, not merely avoiding negative outcomes. For example, from its inception the proactive law movement has found natural synergies with information technology (Siedel & Haapio, 2010). And synergies abound in many other business disciplines, such as marketing, sales, finance, management, and accounting. Proactive law is a forward-looking approach to law, integrating legal strategy into business goals before any legal problems arise.

Conceptual Framework: Law as Competitive Advantage

In the US, a similar theoretical approach to proactive law has developed, but with different terminology. Viewing law as a competitive advantage in business, US scholars apply to the legal field the competitive advantage paradigms from strategic management research (Bagley, 2010; Bird, 2008, 2011; Siedel 2002; Siedel & Haapio, 2010, 2011). One prominent strand of this research defines a firm's sustainable competitive advantages vis-à-vis the firm's rivals as including only those resources of the firm that meet four criteria (Barney, 1991). First, a resource must provide value. Second, it must be rare or unique. Third, the resource must be difficult for competitors to copy. And fourth, there must not be equivalent substitutes for the resource.

Applying the four-pronged strategic management paradigm, legal scholars have demonstrated that a firm's legal environment is an intangible resource that can function as a sustainable competitive advantage (Bagley, 2010; Bird, 2011). The four attributes that strategic management research mines for competitive advantage can be applied to law as follows. First, strategic management of a firm's legal environment undoubtedly creates value for the firm. Whether the value springs from mere avoidance of costly legal violations or arises from revenue-generating activities such as patent protection, a firm's legal strategy (or lack thereof) has the unambiguous potential to contribute positively or negatively to the firm's bottom line. Especially in the Internet age, where social media can impact a firm's public image so quickly and powerfully, crafting a legal strategy that leads to a favorable public reputation can be vital to maintaining goodwill and promoting business opportunities.

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Second, though laws themselves are obviously not rare, a firm's own particular mix of legal issues is often unique. The uniqueness arises from a host of different decisions that firm management makes to position the company to confront certain laws and not others. For example, a firm incorporated in one jurisdiction (say, France) faces different corporate laws than a firm in another jurisdiction (say, Delaware). Further, a firm that relies on many part-time or contract workers encounters different employment laws than a firm with a predominantly full-time workforce, and in either case the labor laws vary greatly if workers unionize. Similarly, if a firm defends its intellectual property through closely-guarded trade secrets (such as Coca-Cola's renowned but confidential recipe), then its legal concerns vary enormously from a company that pursues an active patent portfolio (such as Apple or Samsung). In sum, through a multitude of small and large managerial decisions, a firm positions itself to confront its own unique, or rare, blend of legal and regulatory issues.

Third, a firm's strategic decisions with regard to certain legal issues can be difficult for competitors to copy. In the first place, imitating a competitor's legal strategy requires knowing what the competitor's legal strategy is. But legal advice is usually confidential and privileged. And to the extent legal advice is discerned through a company's observable actions, the cause and effect relationship can be ambiguous. Legal strategy can also be difficult to imitate when it is embedded in company relationships, whether relationships with regulators, employees, customers, or suppliers. For example, legal contracts form the basis of commercial relationships, but the relationships are more complex than what can be reduced to contractual provisions. Therefore, even if a firm could copy a competitor's contract verbatim, the contract's words stand for a much more nuanced social relationship that is not easily cloned. Relational aspects such as trust, shared plans and goals, cooperation, and opportunism—though represented and memorialized through legal contracts—in practice transcend the documents themselves. Legal contracting strategy, then, can only be mimicked through complex interpersonal behavior and performance, not mere reproduction of words on a page (Bird, 2011; DiMatteo, 2010).

The fourth component of resources that offer sustainable competitive advantages—lack of substitutes—is also true of a firm's legal environment. In the modern economy, there are no complete substitutes for the rule of law. Companies cannot opt out of the legal regimes that mandatorily apply in their jurisdictions. Even though some firms and individuals operate at the margins of the mainstream economic and legal system (e.g., the informal or extralegal economy) or establish alternate means of transacting business (e.g., close-knit communities that engender trust among members), ultimately the activities are still subject to laws that apply in the location where the activities take place. Furthermore, in the long term, commercial activities that seek independence from the formal legal system are difficult to scale into the mainstream economy without also integrating into the formal legal system.

Firms do have flexibility in determining which substantive laws apply to them most directly (as discussed above with respect to the rarity component of the competitive advantage analysis), but a company would be hard-pressed to develop a substitute legal environment to govern its affairs in place of the existing legal system. Accordingly, if a firm achieves a competitive advantage through use of laws and the legal system, a rival firm will not easily erode that competitive advantage by substituting an equivalent legal system, notwithstanding marginal competitive threats from extralegal transactions or close-knit communities.

In sum, law can function as a sustainable competitive advantage. A firm can leverage law to create value and cultivate its own unique mix of legal issues. And a firm's creative use of law can be difficult for competitors to copy or design around with equivalent substitutes.

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Conceptual Framework: Crowdfunding Offerings

So, strategic management of a firm's legal environment can be conceptualized through the related theories of proactive law and law as competitive advantage. Next, the theories can be deployed to further the purpose of this chapter: how can entrepreneurs use crowdfunding laws proactively to foster competitive advantage in crowdfunding offerings? As an initial step, a proactive law approach integrates legal strategy with business strategy from the outset. In crowdfunding, failing to involve legal strategy can be disastrous because an otherwise successful crowdfunding effort could be entirely derailed by regulatory violations. For instance, had the organizers of the BuyaBeerCompany crowdfunding campaign consulted legal counsel before launching the campaign, they could have structured the offering to comply with securities laws. The difference could have meant going down in history as one of the most successful crowdfunding efforts ever ($200 million from five million participants!) instead of being remembered as a vivid illustration of failed legal (and thus failed business) strategy.

Beyond avoiding calamity, a proactive law approach is driven by affirmatively achieving business goals. To apply proactive law in the crowdfunding context, then, it is a necessary first step to identify the business priorities that the crowdfunding offering is designed to achieve. Once the company's priorities are identified, legal requirements can be brought to bear on deciding how best to achieve the business goals.

For example, is the primary objective of the crowdfunding offering to deepen the public's awareness of a company through social media (a marketing objective), or simply to raise money (a finance objective)? If marketing goals are preeminent, then what kinds of incentives are most effective at attracting attention in the online, social media environment? For example, would the target market be more interested in buying shares of stock, pre-purchasing a creative product, lending money to the company, engaging in a creative contest, or participating in an online dialogue within a select community? Perhaps the business goals would coalesce around a desire to increase social media exposure, create an online community of like-minded people, and invite ideas for future product development, for example. In that case, a proactive approach to crowdfunding laws might suggest a non-securities crowdfunding offering in order to lessen legal hurdles without sacrificing company objectives.

In contrast, say the business goals of the crowdfunding offering were primarily to raise money, with less emphasis on the marketing objective of broad public exposure through a wide crowdfunding campaign. In that situation, a proactive legal approach might develop a legal strategy involving a securities offering to wealthy investors in order to most effectively achieve business goals. There would be no legally-imposed limit on the amount of money the company could raise, so long as only accredited investors purchased stock in the offering. The legal strategy would therefore achieve the business goal of raising as much investment capital as possible. But such an approach is not without business risk: if the offering appealed to the general public, then a company could squander potential goodwill because non-wealthy investors would be legally barred from participating. For this reason, legal strategy should follow business priorities in designing crowdfunding campaigns that target essential business objectives.

PART II: CROWDFUNDING LAWS AND COMPETITIVE ADVANTAGE

Entrepreneurs are well served by proactively uniting legal strategy with business objectives at the beginning of a crowdfunding offering. Doing so not only helps prevent future legal problems but also works to

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achieve business goals. Part II deepens the analysis and describes more specifically how entrepreneurs can cultivate competitive advantages by using law proactively in crowdfunding offerings.

The first suggestions are made with respect to crowdfunding campaigns that offer *securities*: entrepreneurial companies should offer innovative crowdfunding securities that cater to the strengths of crowdfunding investors while simultaneously eliminating corporate governance problems associated with crowdfunding offerings of securities. Afterwards, the chapter highlights how entrepreneurs can use law proactively in crowdfunding offerings that include *securities* or *non-securities* in order to prevent future legal problems and maximize the value of crowdfunding efforts.

Corporate Governance and Crowdfunded Securities

As described above, a resource that functions as an enduring competitive advantage creates value, is unique (or rare), is difficult to imitate, and lacks substitutes. Especially because laws related to crowdfunding of securities are so new and remain in flux, substantial opportunities exist to develop competitive advantages. But the opportunities to seize competitive advantage in crowdfunding offerings of securities are often masked by the challenges that crowdfunding poses for traditional stock offerings. Typically, start-up companies seek a small number of investors who each invest a relatively large amount of money, often either angel investors or venture capitalists. Start-up companies have limited resources and therefore justifiably want to avoid the logistical difficulties and corporate governance concerns involved with managing relationships with many investors. In addition, start-up companies value the advice and connections that sophisticated investors (like experienced angel investors and venture capitalists) provide to fledgling operations.

For the most part, crowdfunding of equity securities runs completely counter to all of these natural impulses of start-up company founders. Understandably, then, there are multiple reasons why entrepreneurs might hesitate to embrace stock offerings through crowdfunding. Traditionally, company founders would be crazy to accept hundreds, or thousands, of small investors, yet in a crowdfunding offering a company would seek exactly that. Furthermore, many crowdfunding investors would likely not have extensive investment experience with start-up companies. Coupling a lack of investment experience with the inherent uncertainty of start-up businesses is a combustible recipe for crowds of disgruntled shareholders.

And many disgruntled shareholders in a start-up company presents numerous corporate governance concerns for management. For instance, shareholders have the right to vote, whether for directors on the board, amendments to the company's governing documents, or fundamental changes to the company's business, such as a merger or large acquisition. For a small company, managing shareholder votes when hundreds or thousands of investors are involved can be an excessive cost and intrusive distraction. In addition, shareholders, as partial owners of the company, can demand to see the company's books and records, which can be not only time-consuming and inconvenient but also the impetus behind shareholder lawsuits (Schwartz, 2013).

Apart from voting rights and requests to inspect books and records, shareholders can also propose shareholder resolutions for management's consideration. Resolutions can be a powerful tool for shareholders to spread complaints or bad press about the company, especially in crowdfunding's social media environment. More aggressively, and depending on a variety of factors, shareholders can launch proxy contests and tender offers in an effort to oust company management and take control of the company (Schwartz, 2013).

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Finally, the company's directors and officers can have personal liability to shareholders for breach of fiduciary duties. Potential personal liability for entrepreneurs can be a huge disincentive to offering stock to the general public, especially in view of the high uncertainty and unpredictability of start-up companies. Companies may purchase directors' and officers' (D&O) insurance to protect management against personal liability, but it would be yet another cost and distraction for a small company to deal with as a result of having shareholders. In sum, the costs, logistical complications, and legal risks associated with having hundreds or thousands of small shareholders could be enough to scare an entrepreneur away from selling stock through crowdfunding (Schwartz, 2013).

Transforming Concerns into Opportunities

With so many potential negatives, it is fair to ask why any rational start-up entrepreneur would dare to offer securities through crowdfunding (Dorff, 2014). And precisely in that question lies the opportunity for entrepreneurs to use crowdfunding laws proactively to develop competitive advantages. The unsettled landscape of securities crowdfunding affords the opportunity to create value through a differentiated, unique stock offering that would be difficult for rival firms to imitate. And a value-creating, unique, and inimitable resource without clear substitutes is the essence of a competitive advantage.

To accomplish such a feat, a proactive approach to law must transform obstacles into opportunities. The primary obstacles to a crowdfunding securities offering, beyond the potential costs of preparing the offering, are ongoing corporate governance obligations owed to a large number of shareholders, and the concomitant risks that arise from such obligations. A proactive approach must ameliorate the corporate governance concerns without sacrificing the reasons investors would want to participate in a crowdfunding offering of securities. Those reasons might vary in some situations, but in large part rational investors would be motivated to invest in crowdfunded equity securities offerings in order to be ground-floor owners of a company that could grow and produce a sizeable return on investment.

Surely the motivations of backers of *non-security* crowdfunding offerings might differ. In that situation, backers often have motivations that are not purely financial. Maybe they believe in the social mission of the crowdfunding initiative. Perhaps they are fans of the creative work that the crowdfunding sponsor is developing. Or they are simply pre-purchasing a product they find appealing.

But the primary reason for offering securities through crowdfunding is to give backers a share in the upside potential of the business idea. When developing a proactive approach to a securities crowdfunding offering, then, it is important to keep investors' interests in focus. At the same time, entrepreneurs must avoid the numerous downsides of a start-up company having hundreds or thousands of small investors, especially in relation to corporate governance complications.

Securities Designed for Crowdfunding

One creative solution is to design unique securities that are specifically tailored to crowdfunding. And scholars have put forth at least three proposals that entrepreneurs could fine tune and implement to create a competitive advantage. The three possibilities relate to using the flexibility of contracts to avoid the burden of shareholder rights, including 1) future rights to own stock, with no short-term shareholder rights (O'Connor, 2014; Wroldsen, 2012), 2) short-term profit sharing, known as "unequity," instead of long-term stock ownership (Heminway, 2012), and 3) debt securities instead of equity securities

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(Schwartz, 2013). If crowdfunding is to evolve as a new form of investing in start-up companies, entrepreneurs should not shy away from experimenting with novel forms of securities that are uniquely tailored to crowdfunding's strengths and weaknesses.

First, entrepreneurs could design securities that give investors a share of any long-term stock appreciation but remove shareholder rights in the short-term. A similar approach would be to sell initially only the *right* to purchase a future security—with the actual security to be issued at a later date—so as to ensure that crowdfunding investors do not have shareholder rights unless and until the start-up company becomes a success. Either way, the goal would be to give investors what they want (i.e., a chance to share in the long-term upside potential of a promising start-up venture) while also letting small companies avoid the corporate governance downsides of having excessive numbers of small shareholders. Crowdfunding investors would lose the voice associated with shareholder rights, but many crowdfunding investors might view the sacrifice of formal shareholder rights as an acceptable trade-off because crowdfunding investors could be more focused on expressing their voice through social media than through exercise of traditional shareholder rights.

Non-Voting Convertible Preferred Stock

More specifically, one way to structure the securities would be similar to non-voting convertible preferred stock that early-stage investors already frequently purchase, outside of the crowdfunding context. The approach is born out of the venture capital community where non-voting convertible preferred stock has become a complex investment instrument that reflects the requirements of venture capital investors. In brief, preferred stock is a flexible contractual instrument that allows investors to specify particular rights that are appropriate for particular investments. When investing in start-up companies, for example, venture capitalists typically negotiate control rights and representation on a start-up company's board of directors, along with numerous other investor protections contained within the preferred stock instrument, such as preemptive rights, anti-dilution protection, and registration rights (Gilson, 2003; Smith, 2005).

To work effectively in crowdfunding, non-voting convertible preferred stock would likely need to be modified from the form used in venture capital investment transactions (Wroldsen, 2013). An innovative entrepreneur could offer crowdfunding investors a simplified version of non-voting convertible preferred stock. The stock could be sold without any voting or other corporate governance rights. Then, upon a future triggering event, such as an acquisition of the company or an initial public offering (IPO), the non-voting preferred stock would convert into common stock, giving the investor an equity ownership position in the company (see example below under "Competitive Advantage: The Case of Oculus Rift").

From the investors' perspective, the key components of the preferred stock must ensure that investors are protected against dilution of the value of the shares and have the right to continue investing in future crowdfunding offerings. From the company's perspective, the key component would be that the crowdfunding shares cannot convert to common stock until the company is large enough, and successful enough, to manage the logistics of a large stock conversion and the corresponding rise in corporate governance obligations. For an enterprising entrepreneur, the field is ripe for offering crowdfunding investors a simple equity instrument that provides upside potential for investors while simultaneously not overwhelming the start-up company with corporate governance headaches.

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Future Rights to Equity Ownership

Another way to accomplish a similar goal would be to crowdfund solely a *right* to purchase securities in the future instead of selling the securities themselves in the crowdfunding campaign. This approach provides more certainty that crowdfunders do not have any shareholder rights because initially they do not even own non-voting preferred stock. Instead, they own a contractual right to either a future number of shares or a future percentage ownership of the company. But that future ownership would only spring into existence if the company reached certain milestones, such as specified revenue figures, an acquisition event, or an IPO. In addition, granting future rights to equity avoids the notoriously acrimonious haggling over the speculative valuation of an early-stage venture because the valuation need not be fixed until a later stage in the company's development.

For instance, the company could set aside a certain number of shares, or a certain total ownership percentage (e.g., up to 10 percent of the equity interests of the company, on a fully diluted basis), as a pool that would be available to crowdfunding investors only if a future qualifying event occurred. Akin to pools of shares available only to employees, this approach would provide certainty as to the company's total commitment to crowdfunding investors (e.g., up to 10 percent, or some other percentage, of the company's total shares would be earmarked for crowdfunding investors). The company could then engage in multiple rounds of crowdfunding offerings as the value of the company increased, while still retaining the cap on total equity available to crowdfunding investors. And past crowdfunding investors could hold pre-emptive rights to participate in subsequent crowdfunding offerings. Pre-emptive rights would allow crowdfunding investors to continue to invest in the company's crowdfunding offerings, thereby avoiding substantial dilution of their positions when additional crowdfunding offerings occur.

Compared to specifying the contractual terms of non-voting convertible preferred stock in advance of the crowdfunding offering—when uncertainty about the company is at its highest and firm resources are at their lowest—selling rights to future ownership holds the advantage of greater simplicity. Of course, complexities would inevitably arise if the company reached its growth milestones and issued the shares that were previously promised to crowdfunding investors. But at that point the company would have more resources to address a complex stock offering. The approach would allow crowdfunding investors to realize long-term profits if the start-up company turned out to be successful. Simultaneously, the approach would postpone the corporate governance problems that arise when a small company has many shareholders until after the company became successful, if ever.

Outside of crowdfunding, the venture capital community has recognized the need for simplified early-stage investment contracts (Coyle & Green, 2014; Janofsky & Loten, 2015). For instance, the influential Silicon Valley business accelerator, Y Combinator, developed a Simple Agreement for Future Equity (or "SAFE") in December 2013 (Graham, 2013). The SAFE is a "deferred equity investment" that avoids the inherent difficulties of establishing a valuation of an early-stage venture and "prioritize[s] accessibility over comprehensiveness" (Coyle & Green, 2014). The creator of the SAFE, Carolynn Levy, stressed that she developed the innovative contracts "for a community rather than for a client," which fits crowdfunding's social and interconnected ethos perfectly (Coyle & Green, 2014). Conceptually, then, the SAFE could be a harbinger of what crowdfunding investment contracts that promise future equity ownership may look like someday.

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Competitive Advantage: The Case of Oculus Rift

Beyond the specifics of how the crowdfunding offering is structured, in principle entrepreneurs can achieve competitive advantage by offering crowdfunding investors a long-term profit-sharing interest that is decoupled from traditional shareholder rights. In place of shareholder rights, the company could encourage frequent social media interaction and be transparent about its operations in order to authentically involve investors in the company, even though the investors have no formal shareholder rights to enforce against the company. Such a strategy grows out of crowdfunding's native social media character and celebration of the wisdom of the crowd.

To date, though, crowdfunding communities lack access to an investment interest in the company's long-term prospects, particularly in the US. A company that seized the opportunity to provide such a long-term profit-sharing interest (once legally permitted), along with the existing community aspects of crowdfunding, would immediately distinguish itself from the hordes of firms clamoring for social media followings based solely on crowdfunders' affinity for the company, its product, or its mission. The strategy would be an ideal application of proactive law's emphasis on designing a legal solution (i.e., long-term ownership interests for crowdfunders but without short-term shareholder rights) to further a business goal (i.e., a more cohesive social media community unified through mutual profit incentives).

For example, the Oculus Rift crowdfunding campaign and subsequent sale to Facebook is illustrative. In 2012, the US virtual reality company Oculus VR raised approximately $2.4 million from over 9,500 people through a rewards-based crowdfunding campaign on Kickstarter to further its development of a virtual reality gaming headset known as the Oculus Rift. Then, in 2013, Oculus raised $91 million in traditional venture capital equity financing. In 2014, less than two years after the Kickstarter campaign, Facebook purchased Oculus for $2 billion—before Oculus had even shipped a retail product (Mitchell, 2014; Gara & Kolodny, 2014).

Though the Oculus founders and the venture capitalist investors hit the jackpot financially, many of the crowdfunders who had supported Oculus in the Kickstarter campaign were livid. The Kickstarter supporters received nothing when Oculus was acquired, and some viewed the transaction as a betrayal. They were not shy about voicing their displeasure on social media, "raging" against the Facebook sale and "flooding the Kickstarter page with negative comments" (Makuch, 2014). A statement summing up much of the frustration was, "I backed Oculus Rift on Kickstarter and all I got was this lousy T-shirt" (Berman, 2014). Had Kickstarter backers received equity for their contributions, estimates for the return on investment ranged from 145x to 200x (Barnett, 2014; Jeffries, 2014).

If a start-up company sold long-term equity interests to crowdfunding investors—instead of merely providing rewards, like T-shirts—then crowdfunders could share in celebrating an exit event for $2 billion as a tremendous success. Social media would buzz with glowing testimonials about the company. Instead, the exit event for Oculus embittered some of the company's own supporters and ignited a firestorm of criticism on social media. Learning from the Oculus example, entrepreneurs should proactively create long-term equity interests for crowdfunding investors, even while eliminating shareholder rights prior to an exit event. This approach can cultivate a mutually-beneficial relationship in which crowdfunders do not feel used but instead are welcomed as long-term participants in the company's success.

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Competitive Advantage: Equity Ownership for Crowdfunders

The strategy of providing crowdfunders with long-term equity interests without shareholder rights in the short term could meet the four criteria for turning a company resource into a lasting competitive advantage. First, it has the potential to create value in the form of cash investments that the company receives from crowdfunders in exchange for long-term equity interests in the company. Presumably, the company could raise more funds by selling equity interests than it could by using a non-securities form of crowdfunding. Even more importantly, the company could avoid alienating the crowdfunding backers who supported the company in its start-up phase. By sharing a portion of the upside potential in the company with crowdfunding supporters, the company could build value by crafting a long-term relationship of trust and mutual benefit.

Second, the strategy would be unique, at least initially, because crowdfunding laws have historically prevented such an approach. Once legal, though, the strategy would still require rare executive foresight, combining marketing acumen, financial creativity, operational dexterity, and legal complementarity. Third, in part due to the rarity of the offering, the strategy would be difficult to imitate. It would be an organic strategy that would define the organization itself rather than a simple contract that could be copied. All departments of the company would need to focus on the crowdfunding community, so competitors would need to emulate an entire organizational form in order to imitate the strategy.

Fourth, there are not any simple substitutes. One of the main reasons equity crowdfunding is in a nascent stage is that laws historically prohibit the practice. Apart from new crowdfunding laws (such as the CROWDFUND Act), there are no other legal methods for small, non-public companies to sell profit-sharing interests to the general public (registered stock offerings typically only make sense for large companies).

Short-Term Profit-Sharing

An additional method for using law proactively to create innovative securities that capture competitive advantages in crowdfunding include "unequity" interests. Unequity interests are short-term profit-sharing securities stripped of corporate governance rights (Heminway, 2012). They are securities because they have a profit-sharing (or revenue-sharing) component, but they do not give investors any shareholder rights or long-term ownership interests. A start-up company might find unequity interests attractive for a time-bound sales opportunity: in exchange for crowdfunding contributions that the company would use to manufacture its innovative product, crowdfunding contributors would receive a percentage of the revenue from sales of the product, through a pre-determined date.

For instance, in exchange for a contribution of $50, a crowdfunding backer could receive $.10 for each product sold prior to the end of the year. The crowdfunding backer would break even once 500 items were sold (500 x $.10 = $50). Any additional items sold during that year would result in profit for the crowdfunding backer who helped facilitate the company's creation of the product. At the end of the year, though, the crowdfunding backer with an unequity interest would have no ongoing rights to the company's business or revenues.

Advantages of unequity interests begin with their simplicity. Crowdfunders do not obtain shareholder rights or even enter into a long-term contractual relationship with the company. Instead, crowdfunders participate only in the risk that a new product might not sell as well as anticipated. But if the product succeeds, then crowdfunders share in the immediate benefit of the product's sales, through a certain

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date or until a certain amount of the product is sold. The company avoids any long-term entanglements and complications with crowds of investors, but at the same time the crowdfunding contributors do not receive any of the future upside if the company goes on to great success. Unequity interests also offer attractive marketing and branding opportunities to build goodwill because supporters of the product receive a tangible reward (cash) in exchange for their support of the company's product, all within a short period of time.

Crowdfunding Debt Securities

A third option for entrepreneurs to consider is crowdfunding of debt securities instead of equity securities (Schwartz, 2013). Debt securities typically do not grant shareholder rights. Crowdfunding lenders would receive only the contractual rights specified in a loan agreement, such as the right to collect unpaid debts.

From the company's perspective, the benefits include avoiding any corporate governance obligations to shareholders and retaining all of the company's equity ownership. But the company must repay the debt; whereas, when *equity* interests are sold, the company has no repayment obligation to meet, and when *unequity* interests are sold, the company simply pays a portion of its sales revenue to the crowdfunding supporter for a limited period of time. From the crowdfunding investor's perspective, a debt security offers a return in a specified amount over a defined time period, but the crowdfunding investor does not share in any upside potential of the company beyond repayment of the debt at the specified interest rate. Where securities laws already accommodate crowdfunded offerings of debt securities more readily than in the US (in the UK, for instance), small companies have already begun offering so-called "mini bonds" through crowdfunding (Espinoza, 2015).

Competitive Advantage: Unequity and Debt

With respect to both crowdfunded unequity interests and debt securities, entrepreneurs have the opportunity to capture competitive advantages by using law proactively. Both types of offerings create value for the start-up company and would be unique crowdfunding campaigns in today's market (especially in the US). Both approaches offer a financial return to crowdfunding investors, so they go beyond current crowdfunding models that only provide a social media community, a reward, a donation opportunity, or a product pre-purchase.

As for inimitability, unequity interests, despite their short-term character, can be transformative of an organization's structure and thus difficult to replicate, especially if an organization carries out multiple short-term unequity campaigns over a long-period of time. Crowdfunding offerings of debt securities, though, would likely be easier for competitors to copy simply because debt is a well-understood, traditional form of financing. Neither type of campaign has an easy substitute because securities laws make it difficult for small companies to sell unequity or debt securities to the general public in ways other than crowdfunding.

Crowdfunding Securities or Non-Securities

Apart from how a company might design innovative securities for crowdfunding, entrepreneurs can also use law proactively to enhance other aspects of crowdfunding offerings. Companies that offer a product or a reward (or nonprofits that solicit donations or facilitate non-interest bearing loans) through

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crowdfunding confront fewer direct regulations than when crowdfunded securities are offered. But as non-securities forms of crowdfunding mature, best-practices and downside risks are emerging; hence, the remainder of the chapter alerts entrepreneurs to particular issues in crowdfunding where a proactive approach to law is vital. The recommendations below focus on *non-securities* crowdfunding campaigns, but most of the recommendations apply to *securities* crowdfunding, too. Seven potential concerns are highlighted, in the areas of intellectual property, litigation risk, corporate formation, and tax law.

Intellectual Property: Making Ideas Public

A proactive approach to intellectual property laws can mitigate at least three legal risks. First, disclosing an innovative idea online without proper patent protection can diminish or destroy the value of the idea (O'Connor, 2014). A similar dynamic exists under trademark law with respect to company and product names and logos. Before launching a crowdfunding campaign, therefore, entrepreneurs should determine whether filing for patent and trademark protection are worthwhile for their inventions, names, and logos.

For example, if the company has patentable ideas, filing for patent protection in advance of public disclosure can be important. In the US, a patent application must be filed within one year after an idea is made public. After one year, the idea enters the public domain and ceases to be patentable. Furthermore, the US is a first-to-file jurisdiction, so during the one-year period after public disclosure, others can file a patent application on the idea, potentially before the original inventor. At a minimum, filing a provisional patent application before public disclosure of the idea can be a low-cost way to set a pre-disclosure filing date and reserve a one-year period to decide whether to file a full patent application.

Outside the US, the timing of patent filings is often an even more pressing matter: many countries require patent filings to precede public disclosure of the idea. In those jurisdictions, ideas that are made public before a patent filing is submitted cease to be patentable at all. Accordingly, start-up companies with patentable inventions (or valuable trademarks) are wise to move proactively to protect intellectual property rights before publicizing a crowdfunding campaign.

Intellectual Property: Infringing the Rights of Others

A second risk under intellectual property laws that can be proactively managed relates to lawsuits alleging that a crowdfunding campaign infringes the intellectual property rights of others. Publicizing an idea online through a crowdfunding campaign can expose a start-up firm to trademark-, copyright-, and patent-infringement lawsuits from more established competitors before the start-up is equipped to defend itself. For example, trademark infringement would involve using a company or product name or logo that is too similar to another company's trademark-protected name or logo. Vetting proposed names and logos before launching a crowdfunding campaign is a simple proactive step that entrepreneurs can take to avoid unnecessary legal conflicts and expensive rebranding efforts.

Copyright infringement can arise if the crowdfunding campaign uses third-party images, videos, music, or other content without first obtaining permission (usually in the form of a license). If a company fails to take the proactive step of obtaining a license to use third-party content, or creating its own proprietary content, then the company's crowdfunding campaign can be stopped in its tracks, even before the company collects any of the crowdfunding contributions that were pledged. Crowdfunding sites typically disable campaigns immediately after receiving a simple notice that alleges copyright infringement. Under the Digital Millennium Copyright Act (DMCA), failing to disable the campaign can

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subject the crowdfunding site itself to liability for permitting alleged copyright infringement to continue. Entrepreneurs, therefore, should use copyright laws proactively to prevent having an otherwise successful crowdfunding campaign abruptly shut down for an entirely avoidable reason.

Patent infringement lawsuits can be even more detrimental to crowdfunding success. Patent infringement allegations can distract management for extended periods of time and potentially cripple a company's business model. For example, FormLabs, a start-up company in the US that makes three dimensional printers, raised nearly $3 million from over 2,000 backers through a 30-day crowdfunding campaign on Kickstarter in 2012. The campaign allowed FormLabs to successfully create its first product, but the campaign also attracted the attention of an established competitor, 3D Systems, which sued FormLabs for patent infringement. The lawsuit alleged that FormLabs' product infringed the designs 3D Systems had previously patented (Woodward, 2014).

In December 2014, after two years of legal filings and negotiations, the parties reached a settlement. Fortunately for FormLabs, despite the two-year distraction for company management, its business was profitable enough to allow it to defend against the patent infringement lawsuit and continue to grow (Brewster, 2014). But the same cannot be said for many cash-hungry start-ups. The best bet for entrepreneurs is to proactively examine the potential for patent infringement before exposing promising inventions to the world through a crowdfunding campaign.

Intellectual Property: Incorporating the Wisdom of the Crowd

A third intellectual property risk in crowdfunding campaigns can arise when companies incorporate product suggestions from crowdfunding backers. Without proper legal protections, incorporating the ideas of others into a product can lead to legal disputes over ownership rights. For example, if a crowdfunding contributor suggests a new product feature on the company's crowdfunding message board, and the company integrates the feature, is the crowdfunding contributor entitled to any compensation or ownership? From a legal perspective, it would be helpful to draft, in advance, clear terms that definitively assign to the company all ownership rights in any suggested features or modifications posted in connection with the crowdfunding campaign.

And from a marketing and public relations perspective, it would be wise to integrate legal strategy into business goals by proactively communicating with crowdfunding backers and expressing gratitude for the crowd's suggestions. After all, crowdfunding backers who feel appreciated and included as part of a community are less likely to spread bad press or pursue legal claims. Consequently, entrepreneurs should plan proactively to use intellectual property laws to their advantage by integrating crowdfunding marketing strategy with legal objectives to ensure company ownership of products that incorporate suggestions from the crowd.

Crowdfunding Litigation

Beyond intellectual property risks, a proactive approach to law is also central to avoiding two primary litigation risks in crowdfunding. If the crowdfunding campaign fails to deliver what is promised, disgruntled contributors can potentially band together to file a class-action lawsuit. Alternatively, as at least one state attorney general has already done, government regulators can sue the sponsors of crowdfunding campaigns for violating consumer-protection laws (Gross, 2014). In the business planning phase, therefore, entrepreneurs should realistically assess the company's capabilities, including product specifications

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and supply chain flexibility to meet demand spikes that can result in the wake of popular crowdfunding campaigns. Bold innovation that overcomes seemingly insurmountable obstacles is a hallmark of the entrepreneurial spirit. But in crowdfunding, overpromising and failing to deliver not only alienates backers and customers, it is a recipe for fraudulent misrepresentation lawsuits or other unsavory allegations.

Corporate and Tax Laws

Finally, entrepreneurs who take a proactive approach to crowdfunding laws should not overlook two straightforward legal issues in crowdfunding that relate to basic corporate and tax law. Raising capital as an entity instead of as an individual can shield crowdfunding entrepreneurs from personal liability. Launching a crowdfunding campaign may be a personal decision to give creative voice to a dream. But raising money is a business activity, so establishing a business form for the business activities is usually a wise decision. Establishing a limited liability company or corporation is typically a simple and inexpensive task to complete online. Once the company is created, it is a good idea to obtain an employer identification number (EIN), open a bank account in the company's name, and conduct business in the company's name, while following applicable corporate formalities.

Lastly, strategic tax planning can help mitigate the effects of receiving significant crowdfunding income before incurring offsetting expenses. When raising money through a non-securities form of crowdfunding, such as Kickstarter's reward or pre-purchase model, the contributions a company receives are typically treated as income (not capital contributions, as in equity crowdfunding for securities) (Dietz, 2014). So, for example, if a start-up company with minimal income or expenses raises $1 million in a 60-day crowdfunding campaign, the cash influx can change the company's tax situation dramatically. If the company's tax year closes soon after receiving the income, there might be little opportunity to incur expenses to deduct against the $1 million crowdfunding income. Treating tax laws that apply to crowdfunding proactively, entrepreneurs can develop a plan in advance for handling crowdfunding contributions in a tax-efficient manner.

CONCLUSION

This chapter demonstrates that the "proactive law as competitive advantage" theoretical paradigm yields valuable insights for entrepreneurs to execute crowdfunding offerings successfully. Incorporating a proactive, *ex ante* approach to law when planning the business aspects of a crowdfunding offering affords at least two benefits. First, like preventive medicine, companies can avoid crowdfunding's legal pitfalls altogether instead of being forced to treat legal maladies after they occur.

Second, using laws proactively can create competitive advantages in crowdfunding offerings. Developing a competitive advantage goes far beyond simply managing a company effectively. Competitive advantage grows out of a transformative culture that embraces law as a proactive opportunity and overcomes the natural tendency to view law as an obstacle. Entrepreneurs can create value by linking their legal strategy to their business goals, developing unique crowdfunding offerings, and cultivating a favorable public image through social media. The uniqueness, or rarity, of the crowdfunding campaign should complement a company's very identity, making the strategy difficult to imitate or replace with similar substitutes because of its intimate connection to a company's particular mission, organizational structure, or other foundational principle.

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Beyond crowdfunding, the theoretical approach of "proactive law as competitive advantage" has much to contribute to further research at the intersection of law and entrepreneurship. This chapter demonstrates the viability of the theory in one area of entrepreneurship (crowdfunding). The next step in the research is to develop the theory in relation to entrepreneurship more broadly. For example, additional analysis should reveal how the paradigm of proactive law as competitive advantage applies in the context of disruptive innovation versus sustaining innovation. The former encapsulates new technologies that threaten existing market leaders, whereas the latter includes incremental improvements that existing market leaders make to their products.

Research on proactive law as competitive advantage should further illuminate the dichotomy between disruptive and sustaining innovation. For example, where first-mover advantage is high, as in disruptive innovation, does proactive law as competitive advantage serve as an even greater entrepreneurial incentive? Or is proactive law as competitive advantage an equally beneficial approach in the context of sustaining innovation?

This chapter takes an initial step towards uniting the study of entrepreneurship with theories of proactive law as competitive advantage. Crowdfunding, though, is only one example of entrepreneurial innovation in the modern economy. In view of the fundamental importance of entrepreneurship and innovation to international economic competitiveness, a greater understanding of the links between legal strategy and entrepreneurial success would be beneficial.

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KEY TERMS AND DEFINITIONS

Competitive Advantage: A company's ability to provide unique, long-term value in a superior way than its rivals.

Corporate Governance: How a company is managed and controlled, including, for example, rights to vote at company meetings, participate in board meetings, and receive periodic updates on performance.

Debt: Securities that offer the holder a pre-determined rate of return over a specified time period and typically do not give the holder corporate governance rights.

Disruptive Innovation: New technologies or business models that threaten status-quo market leaders.

Equity: Long-term, profit-sharing securities that give the holder corporate governance rights along with an ownership interest in the company.

Preferred Stock: Securities that specify particular rights and preferences, often combining elements of debt and equity securities and typically including corporate governance rights.

Proactive Law: A forward-looking approach to law that integrates legal strategy into business goals before legal problems arise.

Securities: Investment instruments that the Securities and Exchange Commission regulates (in the US).

Unequity: Short-term, profit-sharing securities that do not give the holder corporate governance rights.

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Chapter 58
Does Crowdfunding (Creatively) Disturb the Conventional (Banking) Alliances with Support Networks for Financing (Micro-)Entrepreneurs?

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ABSTRACT

Microentrepreneurs need financial capital as well as human and social capital. Banks prefer refinancing microfinance institutions and capacity building organizations rather than dealing with microentrepreneurs directly. In this chapter, we examine if the advent of crowdfunding could disturb such relations. Our research question is "what is the perception of people working in support networks on the changing of the relations between banks, support networks and crowdfunding platforms?" In this chapter, we first provide a background on entrepreneurship and coaching in France, emphasizing the role of the entrepreneurial support networks. Thereafter, we present our research methodology based on semi-structured interviews with managers in these support networks. The findings from these interviews are presented in the third section. We find that while the support networks are aware of crowdfunding initiatives, they do not think it will make a major change to the existing relations. This finding is original because most other research seems flabbergasted by the dramatic speed of development of crowdfunding sites. In the fourth section, we analyze the discourse using Nvivo software. The recommendations that emerge from this analysis point to using crowdfunding more as a tool of image building and communication.

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INTRODUCTION

Crowdfunding has come up in a big way during the last few years. It has the potential to be a disruptive innovation in the field of project financing and fundraising. Should this potential for disruption cause any fear to the conventional financing channels for supporting entrepreneurs? This is an important subject because in the wake of unemployment and stagnation in many developed countries in Europe, entrepreneurship is often viewed as a way out. So, any financing that could impact entrepreneurship merits study.

Of course, much of crowdfunding is being used to finance consumption, entrepreneurial, and non-entrepreneurial projects of an artistic nature on platforms such as indiegogo and kickstarter. However, these same platforms also have some projects which could be using innovative finances such as advanced payment for sales for both commercial and not commercial projects. The Peebles watch, which raised ten million dollars, is an example.

Therefore, all crowdfunding platforms, not just the part which is directly providing loans or equity, have the potential to disrupt existing banking practises. Researchers have extensively explored the rivalry between conventional banking and non-conventional channels of financing micro-entrepreneurs. For example: Balkenhol and Gloukoviezoff (2015), have identified three disruptive scenarios for the microfinance sector:

1. Industrialization and the takeover of the sector by the banks;
2. Professionalization of the microfinance sector supervised strategically by the government; and
3. Autonomy of the microfinance sector from the banks.

This research is, to our best knowledge, one of the first on the destructive creation force of crowdfunding and its impacts on the traditional channels of firm financing. This inquiry is therefore important for banks and conventional institutions because all creative destruction may lead to destroying existing jobs and firms before creating new ones.

Our research analyzes one area in which crowdfunding could have an impact: the partnerships between banks and entrepreneurial support networks, which together provided financial, social and human capital to entrepreneurs and project leaders. Our research field is France.

In this chapter, we first provide a background on entrepreneurship and coaching in France, emphasizing the role of the entrepreneurial support networks. Thereafter, we present our research methodology based on semi-structured interviews with managers in these support networks. The findings from these interviews are presented in the third section. In the fourth section, we analyze the discourse using Nvivo software and we provide recommendations based on this. Finally, we conclude.

BACKGROUND: ENTREPRENEURSHIP AND COACHING IN FRANCE

The traditional models of entrepreneurial finance found in the literature include equity investment such as founders' money, love money (family, friends and fools) (Szerb et al. 2007, Riding 2008, Ashta et al. 2013), business angels (Morrissette 2007, Ramadani 2009, Wong et al. 2009, Lahti 2011), venture capital (Zider 1998, Nadeau 2010) and large financial institutions. Some of these institutions may also provide debt along with banks and financial institutions. The essential role of most of these investors may be to provide finance, but being private investors, they are keen on getting good returns on investment, and

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they complement it by sharing their business acumen and their networks to increase the probability that the target investment makes profits (Rogers et al. 2002, Silva 2004, Barber & Goold 2007). The literature also provides a multi-stage model for different sources of finance (Eckhardt et al. 2006, Metrick 2007).

However, for micro-entrepreneurs, business angels and venture capital are not forthcoming because the size of the investment is too small. Similarly, banks are not willing to confer other people's deposits to microenterprises because they are considered too risky. Therefore microcredit organizations have come in to provide finance to the microentrepreneurs. Complementarily, support networks organizations have come in to provide human capital and social capital.

Non-financial motives may motivate some investors such as public funds providing seed money to encourage industry; family and friends who may be motivated by altruism or bonds; and some social-minded micro-angels who want to encourage local investments in socially desirable fields (Ashta et al. 2012a, Estapé-Dubreuil et al. 2012). It is considered that such micro-equity could be a good way of balancing the stress of entrepreneurs who are otherwise over-dependent on micro-credit; however, these movements have not developed significantly (Ashta et al. 2012b).

The only hope for the future seems to be based on the recent development of crowdfunding which has been examined in the literature (Assadi & Ashta 2009, Johnson et al. 2010, Assadi & Ashta 2012, Assadi & Ashta 2014, Attuel-Mendes 2014, Ley & Weaven 2011, Mollick 2014). Crowdfunding is developing not only in the developed world (Ashta & Assadi 2010a), but also in the developing world (Ashta & Assadi 2010b). This new development may provide competition to the existing platforms as suggested by the five forces model of competitive analysis suggested by Porter (1979). Our research question is therefore based on whether the support networks consider crowdfunding as a threat to their relationship with banks and microcredit organizations.

1. The Development of Entrepreneurship and the Need for Coaching

In the current context of increasing unemployment, entrepreneurship emerges as an important lever for revitalizing the economy in France. In 2013, support for business creation was the main theme of an entrepreneurship conference and subject of a report by the Court of Auditors, which advocates better targeting and professionalization of coaching teams (Verzat et al, 2014). Thus, entrepreneurship appears as one of the ways to borrow for renewed growth and reduce unemployment.

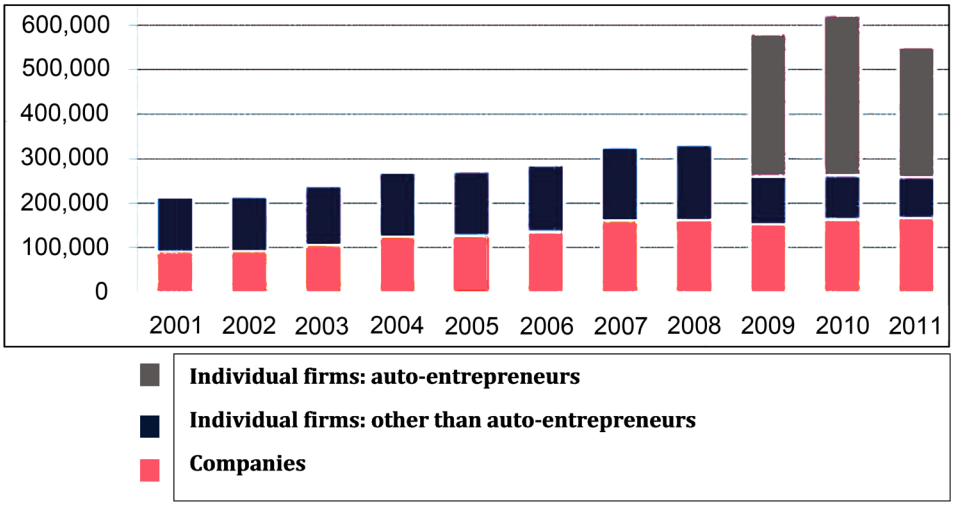
The issue is crucial for the whole economy. According to Hayat (2012), the creation and development of enterprises are two basic responses to the multiple challenges we face: growth, employment, innovation, reduced deficits and debt, safeguarding social systems, integration in the suburbs.

According to a note of the strategic analysis center of the French Ministry of Economic Recovery released in October 2012 (CAS 2012), France has a real entrepreneurial potential. The desire for entrepreneurship is present in France and the image of the entrepreneurs is generally positive: Entrepreneurs are perceived as job creators, according to nearly 90% of respondents; and creators of new products and services to benefit all, according to 73% of the respondents (CAS 2012).

The same report also shows that since the last ten years, the creation of businesses grew strongly in France from about 210,000 units per year in the early 2000s to 330,000 in 2008 to 550,000 in 2011, largely as a result of the introduction of the auto-entrepreneur status in 2009. Figure 1 shows the increase in the number of individual firms that have been launched by auto-entrepreneurs compared to other types of enterprises between 2001 and 2011.

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Figure 1. Evolution of business creation in France by legal category (2001-2011)
Source: INSEE, 2012, companies and establishments (SIRENE).



In a recent report on entrepreneurship in France, Nziali and Fayolle (2012) pointed out that many French have the desire and intention for entrepreneurship and more and more individuals perceive entrepreneurial opportunities. Several obstacles limit the desire and ability for entrepreneurship, among them the lack of adequate support for these entrepreneurs.

The increasing number of individual enterprises has led to several problems. Entrepreneurship is not limited to the act of creating enterprises but refers to more complex and multidimensional phenomena. Strengthening entrepreneurial skills and developing a positive perception become imperative to exploit the French entrepreneurial potential and reduce the gap between desirability and feasibility. According to Arlotto et al. (2012), despite the strong development of facilities for sheltering and support since the 1980s in France, support for entrepreneurs still suffers from multiple deficiencies. For this, there are associative networks dedicated to the support of entrepreneurs. This support enjoyed by the creators across networks constitutes, according to some authors, a specificity of French microcredit (Bumacov et al. 2012).

Support networks have three types of missions: training and monitoring for business creation, financing activities and hosting the company. But these support networks are not systematically open to all creators. Each network targets a certain class of clients or beneficiaries.

2. Entrepreneur-Support Networks in France

Phillipe Mathot (2010) observed that many entrepreneurs evoked strong support needs for administrative paperwork, information and orientation, counseling, project planning, management, financing and legal, fiscal, social, and psychological assistance. Project leaders expressed their need for knowledge on legal, tax and social security aspects of project management.

The accompaniment was started in France by the network "Boutiques de Gestion" in the early 1970s and has been imitated gradually in different contexts by all actors working in the field of entrepreneurship. According to Duquenne (2014), the term "support" (accompagnement, in French), appeared in

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France in the early 80s to characterize assisting candidates for starting a business in a particular context. Many support networks have been created in this context with the objective of providing the necessary support to young entrepreneurs. Large networks have developed some internal modules to train the newcomers, but these are usually very short duration training and aim to inform and integrate the recruits in the network rather than training them (Duquenne, 2014). Other constraints weigh on the accompanying process: for example, the problem of training the guides. According to Verzat et al (2014), at least 4,000 to 5,000 persons are playing this role in France without having received specific training since neither the practices are shared nor there is a recognized certification. The other constraint is the multiplicity of actors involved in the delivery, among which are the support networks. These networks have a major concern of improving their impact on the accompanied entrepreneurs. While some of these networks are addressed to all project creators (Table 1 for examples), others specialize in supporting newly created businesses (Table 2 for examples).

Support networks have an undoubted utility, which is found particularly in improving the survival rate at three years of "accompanied" business (Chapel & Catoire, 2011). These support networks are trying to coach the project developers and provide various resources needed to ensure the success and sustainability of their projects. In general, 65.8% of enterprises survive after three years of creation and 51.5% after five years, according to a study by SINE (INSEE Résultats, 2013). However, if they are coached and supported by a network, the survival rate increases to 77% and this may even increase to 82% if the enterprise receives financing and specific pre-creation advice (Balkenhol & Guézennec, 2014).

Several problems and difficulties surround the activities of support networks in France. According to Pluchart (2014), despite the density of networks in place, entrepreneurial support in France suffers from various deficiencies.

Table 1. The main support networks addressing all project leaders

Network	Brief Description
Boutique de Gestion des Entreprises (BGE)	BGE supports entrepreneurs at all stages of a business, since the emergence of the idea to the construction of the business plan, fundraising and supporting the development of the new companies, and regardless or the personal situation of the promoters (job seeker, employee, recipient of the RSA ...) and whatever the nature of their project. Some BGEs offer specific support for women entrepreneurs, such as workshops, debates, competitions, trainings.
Chambers of Crafts	Chambers of crafts accompany the craftsmen at every stage of their professional life: preparing for installation, SPI, monitoring and support in various formalities of creation and development. With appropriate tools, they support the transfer of businesses, support the buyers in assembling records and obtain subsidies and aids. Some chambers of trade manage Clubs of entrepreneurs and organize competitions dedicated to the creation of crafts by women.
Chambers of Commerce and Industry (CCI)	For commercial, industrial or service activities, the CCIs help entrepreneurs in their project to create or transfer enterprises, auto-entrepreneurship and in all business creation formalities.
Copea and Coopérer pour Entreprendre	Copea and Coopérer pour Entreprendre are the two national networks of cooperatives of activities and employment (CAE). These CAE permit entrepreneurs to test their activities. After the test, entrepreneurs can start their own business or sustain their activity within the cooperative.
Incubators	An incubator is a place in which creators can test their activity and confirm the economic feasibility of their project: • In the context of a secure context • Benefiting from professional guidance, • And all this before the creation of their company.

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Table 2. The main financing networks proposing accompaniment to a newly created company

Network	Brief Description
ADIE	Adie finances and supports entrepreneurs who do not have access to bank credit and especially helps unemployed job seekers and beneficiaries of social minima. Its website, Adie Connect offers online support, and directly enables entrepreneurs to apply for funding.
France Active	France Active, through its territorial funds, acts to put finance at the service of people, jobs and territories. It offers an accompaniment and solidarity financing that allow them to make their projects viable and to access banking and financial systems. France Active funds studies the applications of women's initiative Guarantee Fund (FGIF). Some funds also offer specific support, animate creating clubs and organize competitions dedicated to women entrepreneurs.
France ANGELS	France Angels is the National Federation of Business Angels networks. France Angels promotes business angels in the economic, social and legal areas to establish their usefulness, their positive effect on the economy and legitimize their action. The business angel is an individual who wishes to invest a portion of his own money in an innovative business project. They are involved in capital and enter at the seed stage in the enterprise creation.
Women's Business Angels Network	The Network of Women Business Angels is the only network of female "business angels". It is the first such network in Europe. It brings together a hundred women who personally invest in high potential start-ups and help them to emerge and develop.
France Initiative	The France Initiative platforms all share a common mode of intervention based on two ideas: • They provide unsecured loans without interest and without collateral, • Support services for new entrepreneurs throughout the duration of the loan. The France Initiative network is involved in promoting women's entrepreneurship through advocacy. Nationally, France Initiative develops the gender approach in its actions and in its research studies. In addition, some platforms study the applications on the initiative of the Women Guarantee Fund (FGIF).
Réseau Entreprendre	Network's mission is to contribute significantly to the success of entrepreneurs and to bring jobs and wealth. At the heart of Réseau Entreprendre, is the accompaniment by entrepreneurs of entrepreneurs. Since 1986, the association Réseau Entreprendre accompanies creators aand transferees of projects that create job significantly. They offer includes: • A free personalized support for 2 to 3 years by an experienced entrepreneur, • An unsecured loan from 15 to 50 000 Euros and easy access to banks. • A forum for exchange and mutual assistance among entrepreneurs, • Access to a local network, national and international business leaders.

3. Alliances Between Banks and Support Networks: The Case of Banque Populaire and Support Networks

Support networks have the support of their partner banks (which are eager to promote the cause of entrepreneurship) to facilitate the act of creating or transferring enterprises and contribute to the development of these networks.

Banque populaire was started 1878 to support artisans and businessmen. It is anchored on the values of cooperation, solidarity, sustainability, local development and innovation. Committed to entrepreneurship in all its forms, the Banque Populaireis a key partner of the main support structures for the creation of companies through platforms of local initiatives such as ADIE, France Initiative, BGE, the Réseau Entreprendre and France Active. According to the latest report from the National Federation of Banque Populaires published in 2014 under the title "Cooperative Assessment and Corporate Social Responsibility of the Banques Populaires network", 1200 loans for a total of more than 34 million euros were granted in 2013 through the networks to entrepreneurs, benefiting from the support and the guarantee of France Active.

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RESEARCH METHODOLOGY

The Banque Populaire of Bourgogne Franche Comté (BPBFC) and the Microfinance Chair of the Burgundy School of Business conducted a joint study to analyze the perception of support networks with regard to their partnerships with banks, the adaptation of the banks to the current market and the possible impact of crowdfunding to their partnership. A semi-structured interview guide was prepared in order to conduct interviews with key support networks which were the Bank's partners in the region. This interview guide had three main themes:

The first topic was to understand the perceptions and expectations of support networks vis-à-vis partner banks. The second theme was to understand and analyze the evolution of the needs of the accompanying networks with recent market developments. The last topic of the interview guide treats the perception of crowdfunding as a new funding mechanism and as an alternative project funding mechanism.

In the end, five interviews were conducted with the support networks selected by the BPBFC. These interviews were conducted by a trainee of the Microfinance Chair of ESC Dijon during June and July 2014. The interviews lasted between 35 and 80 minutes. At the respondent's request, their identities and those of the network they represent are not disclosed. These findings are presented in the next section.

These interviews were analyzed using NVivo software and the results are presented in the Analysis section. Content analysis is defined as a set of techniques for dealing with linguistic materials (Henry & Moscovici, 1968; Bardin, 2013). In our case it is a semantic and thematic analysis, which takes into account contextual and frequency of certain occurrences identified using NVivo software. The relationships between the elements are characterized according to logical principles (non-contradiction and complementarity). The identified recurring themes were categorized according to two basic themes: objectivity and subjectivity. These axes were determined on the basis of the ordinary distinction between a transactional approach and a relational approach to marketing and customer relationship management (Marion, 2001), particularly in the financial sector (Crié 2006; Kimmy Wa Chan et al. 2010).

FINDINGS

To analyze these interviews, we organized them by theme. Each theme covered several issues.

1. Perception of Existing Relationships with Banks

The first theme concerns the perception and expectations of support vis-à-vis partner banks networks. The first question was whether or not a partnership of support networks and banks existed at the time of interview. The response was positive for all respondents for support networks. But this partnership differs from one network to another. It may be at the regional level (between the regional level of the support network and regional subsidiary of the Bank). It can be also a partnership for action, program or for a specific project (that is, the Bank may finance an activity or a definite line of activity as it can hold training sessions for new project managers on specific modules).

Some officials emphasized that there are several forms of cooperation and coordination between the support networks and banks, and sometimes despite the absence of formal signed partnerships and cooperation agreements. All these actions aim to mentor and support project creators.

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Regarding the evaluation of these partnerships, the officials of the support networks were satisfied with the majority of these partnerships while highlighting the possibility of improving them. Thus, one manager has stressed the need for structuring more this partnership with banks (particularly the BPBFC) to add more value to the path adopted by the project leader. Along the same lines, another official expressed his wish to organize events closely with the bank to better support entrepreneurs.

For the last question of the first theme, which addresses the perception of support vis-à-vis networks of banks after the 2008 crisis, opinions were divided. Some have denied the existence of impact of the 2008 crisis on their partnerships with banks in general and the financing of new projects in particular. Others have found that this crisis has had a negative impact on the rate of new projects funded by banks that have imposed restrictions on obtaining credit.

2. Perceptions of the Adaptation of Banks to the Crisis

For the second theme, which focuses on understanding the bank's adaptation to the market, the questions were centered on the needs of support networks and project developers, which are numerous.

Most officials interviewed, have expressed their need for labor (administrative staff, specialized in supporting staff, experienced people who can help project leaders in the design and implementation of projects). The need for funding the network is also necessary according to the officials. This funding may be provided by banks, by companies or by local authorities.

For commercial needs, the support networks want to improve their image with the help of banks. "Banks should educate and inform their agents so they can send us micro-clients", according to one of the managers interviewed. Support networks staff should also be trained and informed about the expectations of banks and their credit standards. The need for a communication strategy and a permanent exchange of data and statistics were indicated also by the support networks.

The staff of support networks needs to be trained in several areas: accounting, administrative organization and taxation, to better satisfy their customers. Information about the new banking products must also be provided to support networks.

At the end of the second theme, the following recommendations were provided by officials of support networks:

- The involvement of banks with support networks in training of project developers.
- More cooperation and coordination in the orientation of promoters.

3. Perceptions on the Impact of Crowdfunding on the Partnership

The third theme of our interview guide discusses the link between support networks and crowdfunding. The objective behind this third part of the interview is to know the view of support networks on crowdfunding: How do they regard crowdfunding?

The first question raised in this theme was on the existence of relationships between the support networks and crowdfunding platforms at the national or regional levels. Only two have already launched partnerships in this sense, one with the platform Babylon and another with My Major Company. Other support networks had not yet launched such partnerships.

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The nature of the partnership of the first network is to provide finance. The accompanying network provides funding to the entrepreneur and tries to have it refinanced through crowdfunding. However, refinancing takes time. "Project leaders are made aware of crowdfunding through the support network" according to the respondent. The second respondent has mentioned that crowdfunding is based on the personal network of the entrepreneur.

Among the advantages of crowdfunding cited by officials support networks are having new funding sources, lowering financing cost (sometimes for free), and co-financing or refinancing a loan granted by the accompanying network or a bank loan.

However, two limitations of crowdfunding have been identified by the accompanying network managers. Such limitations can constrain the functioning of credit to project leaders. The first is the duration of the procedure (90 days), which is considered too long. The second limitation is partial and not complete project financing achieved by this method.

A final question was asked about the prospects of crowdfunding and its impact on the activity of support networks. Our respondents have clearly indicated that they offered tailored services that are more adequate to the needs of project managers, in addition to offering personalized support. All this is not presented by the crowdfunding platforms. Therefore, although crowdfunding remains complementary and important, it does not in any case replace conventional financing.

It is interesting to note that Belkenhol and Gloukoviezoff (2015) also consider that crowdfunding will not be a threat to microcredit activity for different reasons. First, the projects financed by crowdfunding are either high-technology or artistic. Such sectors are not usually microfinanced. Second, crowdfunding sites such as Kiva, Babyloan or Veecus, are only re-financing the MFI and not the entrepreneur. Third, crowdfunding websites such as FriendsClear are only an intermediary between the Bank and the borrower and they charge service fees. Fourth, sites such as Prêt d'Union use savings of investors to finance projects that are owned by a Bank. Finally, none of them provide support to guide the entrepreneurs.

DISCOURSE ANALYSIS

We adopted the method of content analysis to identify the key elements on which the interviewees focused in the communications collected from the five institutions. A sixth analysis was done of the combined corpus of all the interviews.

We used NVivo10 qualitative analysis software. NVivo facilitates the organization and analysis of texts. This software helps in discovering logics that might be hidden by the amount of words used in the text and the subjectivity of the reader. Examples of research using NVivo for analyzing interviews corpora can be found in many studies (Jones, 2012; Smith et al., 2010; Auger & Reynaud, 2011; Gehrels, 2007).

Content analysis usually is conducted through the following steps: collecting data (in our case through interviews), preparing the corpus (transcribing the interviews), coding the corpus (finding the codes is facilitated by NVivo text research tools), analyzing the content of the corpus (through the discovered codes), and finally the results are presented.

In our study, for each of these six corpora, two analyses were made. The first treatment considered all the text. However, since the subject matter of the study influenced the responses of the interviewees, a second treatment was done without the specific keywords related to the subject matter. These keywords are: "accompagnement", "reseau", "banque", and "crowdfunding".

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The transcribed interviews were prepared for analysis by removing prepositions, conjunctions, articles, and fillers (such as "je pense"). The software helped us to produce clouds that graphically represent the frequency of the most used words in each corpus. These clouds are presented below in Figures 2 to 6 as well as in Figure 10.

In a second step, we used the prepared corpus for analyzing the position of some words with respect to other words. For this, we chose the most frequently used words as the central words in the trees to examine which words tend to precede these words and which follow.

Thereafter, we interpreted the results in five steps.

1. Intuitive interpretation of the graphics generated by the second treatment (without the keywords);
2. Positioning speeches of all five players based on perceived degree of subjectivity or objectivity;
3. Creating a mapping combining the positions of the five players, their funding and their support;
4. Correlation of this mapping with graphics containing all the keywords (unfiltered clouds);
5. Relating all this with different types of crowdfunding.

In the remainder of the study, the choice of these steps is justified and the results presented.

Step 1: Intuitive interpretation of the graphics generated by the second treatment (without the keywords).

Three successive readings of the filtered clouds were done by three co-authors, in order to achieve the most neutral reading as objectively as possible. Three complementary academic skills were mobilized finance, microfinance and marketing. A synthesis of these different interpretations allowed us to reconstruct the message of each interview from the present keywords, semantic relationships between words, the identified associations and connotations, and understanding of each co- author.

Figure 2. Word cloud of the first interview



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Keywords highlighted in Figure 2 are: activity, loan, public, our, project financing, company. The overall tone remains on an objective register and refers to the idea of control, hierarchy, and directing. The choice of words in a speech sets the institutional and professional logic.

In Figure 3, there is a frequent presence of the words: companies, creators, doing, need, popular, money, agree and time. These words suggest a double projection in the entrepreneurial future: one based on advanced projects (existing in the company) ready to be implemented (in the short - term); and a second based on the idea of a new business creation (in a longer-term).

For Figure 4, it is the word "project" that clearly stands out. The other words that are present are: need, creator, funding interesting, approach, another, creation, enterprise, perspective, could. Again, we find the idea of business creation, financial support and potential needs. The speech appears oriented towards the future (words "perspective" and "could") and suggests certain dynamism.

In Figure 5, we find the words: enterprises, training, funding, our, project, partnership, popular, nursery, and region. The concept of nursery, so the notion of supporting projects and their creators, appears for the first time. This reflects a stronger involvement and proximity in relationship. The overall message also subsumes a potential of an assumed hierarchical relationship, based on expertise and local skills development (words: region, territory, department).

Finally, Figure 6 mainly lists the words: guaranty, financing, tools, well, project, employment, cash, committee, betting, banking, seekers, finance, France, rate, loan. Note the appearance of new words like "guaranteed", "tools", "employment", "cash". We can advance the idea of a more constructed speech, more pragmatic and more functional. The tone is more neutral and professional (lack of personal involvement), suggesting cooperation based less on close relationships, and more on business efficiency.

Figure 3. Word cloud of the second interview



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Figure 4. Word cloud of the third interview



Figure 5. Word cloud of the fourth interview



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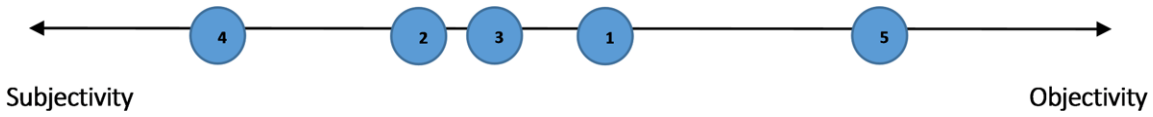
Figure 6. Word cloud of the fifth interview



Step 2: Positioning speeches of all five players based on perceived degree of subjectivity or objectivity.

The analysis of word clouds allows us to position differently the five speeches, ordering them in a line drawn between objectivity (functional speech) and subjectivity (relational discourse). Based on the analysis of the words used and connotations selected in step 1, we plot these positions in Figure 7. At the left end, we place the actor 4, whose speech has the most subjective connotations (high involvement and relational proximity, expertise, assumed hierarchical relationship. At the right end, we are positioning the actor 5, who values the most objective connotations (pragmatic, functional, professional, business efficiency). Between the two ends, there are three other players with similar speeches, valuing both objective and subjective factors at the discursive level (institutional logic, financial support and potential needs, projects, business creation).

Figure 7. Positioning of the five word clouds



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Step 3: Creating a mapping combining the positions of the five players, their funding and their support.

Remember that our research question focuses on three essential elements that are funding, support and crowdfunding. The first two elements are connected logically to the activities and interests of the actors interviewed (we used the answers of the managers interviewed in the preceding section). To better understand the dynamics and changes in speech based on the business model of the interviewed networks, we propose a mapping that adds new elements to the finding of step 2. The bi-dimensional Figure 8 illustrates more elaborately the positioning.

Step 4: Correlating the mapping with graphics containing the keywords (unfiltered clouds)

The analysis presented in steps 1, 2, and 3 used only filtered clouds. We now include in Figure 9, as specified in the methodology, the clouds with the most frequent keywords used by the interviewees, appearing next to each of the clouds.

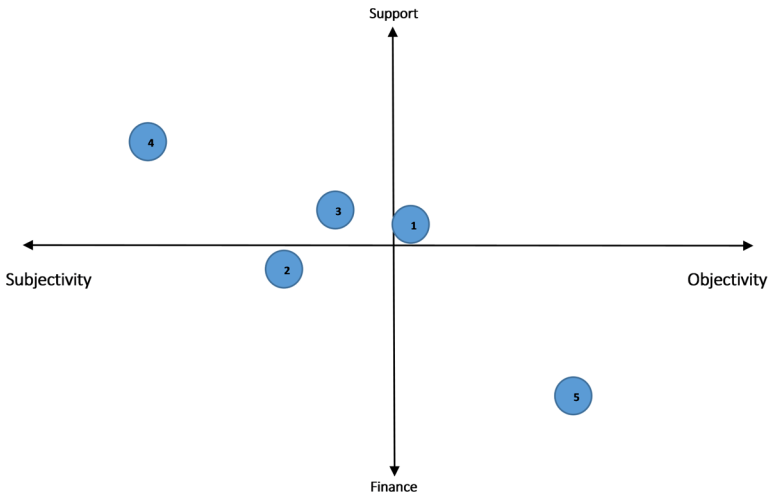
As Figure 9 shows, the proposed positioning in step 2 and 3 is validated and reinforced.

The keywords do not always appear with the same consistency in the speeches of all the players as shown in the unfiltered clouds presented below (Figure 10).

Step 5: Relating the mapping with different types of crowdfunding.

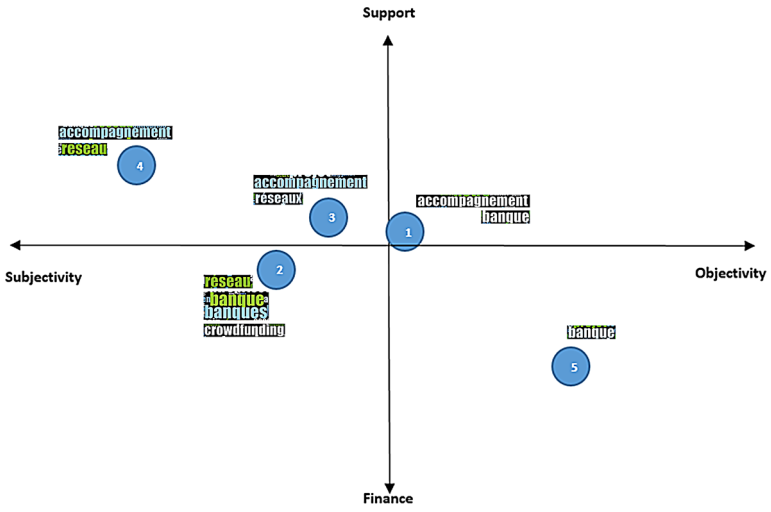
To go further in reflection, we now offer a reconciliation between the five positions of the mapping and the four forms of crowdfunding: gift-based, reward-based, credit-based, and investment-based. Figure 11 shows this comparison.

Figure 8. Mapping of the five word clouds



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Figure 9. Mapping of the five word clouds including the keywords



CONCLUSION

Our findings show that actors of support networks are very aware of crowdfunding and its advantages for micro-projects. However, they do not perceive crowdfunding as a factor that may impact the relationship between these networks and their partner banks. The primary reason is that they feel that microentrepreneurs need handholding which online platforms cannot provide. Thus, they tend to see crowdfunding as complementary seed capital rather than a competitor which would substitute their work. This comforts both the banks and the support networks as they do not need to perceive crowdfunding as a threat.

The discourse analysis confirms that the word crowdfunding did not really appear as an important part of the interview. Only in one interview, it seems to stand out. However, if we look at the right side panels, where the words such as crowdfunding were deleted, we should have found words such as "technologie", "ligne" or "participative". However, we do not.

Of course, this is a qualitative study based on perceptions of a small number of respondents, and this perhaps is the main limitation of this study. Future research may need to multiply the interviews in other regions of France and with more respondents. But this would be more time-consuming and costly. In addition, future research is required for investigating the suggested mapping on the potential relations between the different models of crowdfunding platforms and the support networks.

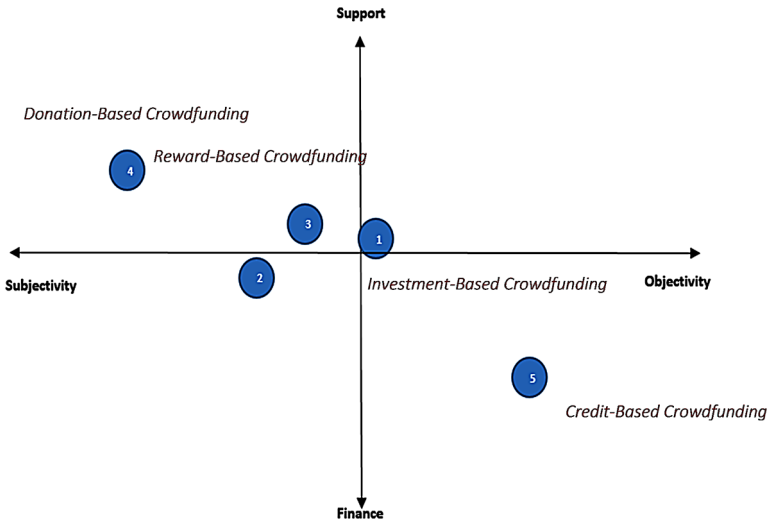
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Figure 10. The five unfiltered clouds



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Figure 11. Mapping of the five word clouds including the different forms of crowdfunding



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KEY TERMS AND DEFINITIONS

Content Analysis: A set of methods for treating and analyzing linguistic materials. It includes manual and computer-assisted techniques. Many qualitative data analysis softwares facilitate content analysis and text mining. Such softwares offer word frequency queries, contextual search, in addition to various visualization tools.

Customer Relationship Management (CRM): A complex process of managing the relationship with customers and partners, using data collected from databases and processed using efficient systems/software.

Microfinance: The provision of financial services to the financially excluded, usually very poor people. A wider range of financial services includes microcredit, microsavings, microinsurance, microequity, microtransfers, micropayments, etc. These financial services are for very small transactional amounts: hence the word micro.

Relationship Marketing: The process of constructing partner loyalty (banks, support networks, entrepreneurs and project initiators) by building sustainable and profitable relationships based on trust, accessibility and proximity.

Support (*Accompagnement*, in French): The word "Accompagnement" appeared in France in the early 80s to characterize assisting candidates for starting a business in a particular context. It includes coaching, training, mentoring, guiding entrepreneurs.

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Support Networks: Networks of organizations who provide mentoring the support services. They could be federations of independent local organizations, but they could also have one organizational form with local agencies in each region or department.

Transactional Marketing: A functional view of trade, reduced to monetary transactions, which mainly targets the immediate financial benefits and minimizes the quality of relationship over time.

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Chapter 59
Understanding and Adoption of E-Finance in Small and Medium Enterprises (SMEs) in Developing Countries:
A Study of Bangladesh and South Africa

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ABSTRACT

The lack of access to finance is hindering growth and development to small and medium enterprises (SMEs), particularly in developing countries. Access to finance can be facilitated by ICT and e-finance, which can reduce the cost of financial services and increase access to international markets. However, in spite of the potential benefits of e-finance, developing countries have been reported to be lagging behind in terms of e-finance adoption as compared with developed nations. The reason for non-adoption could be due to barriers such as lack of ICT infrastructure, data privacy and security concerns. The purpose of this chapter is to investigate the extent of understanding and adoption of e-finance by SMEs. A survey of SMEs in two developing countries, South Africa and Bangladesh, was conducted. The results of the survey revealed that access to financial products and services was the highest rated benefit of e-finance to respondent SMEs, whereas regulatory environment and policy was the highest rated barrier.

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INTRODUCTION

Small and medium enterprises (SMEs) play a vital role in the development of developing countries by raising employment and rational allocation of scarce resources (Srivastava, 2014). However, the growth of these SMEs in developing countries such as Bangladesh are constrained by a lack of capital (Khan, 2014; Su & Yuan, 2013). Access to finance has also been reported as a vital factor for SME sector development in Bangladesh (Bangladesh Bank, 2016; Hoque, Saif, AlBar & Bao, 2015). Access to finance can be facilitated by Information and Communication Technologies (ICTs), which can improve the probability of an organization's success (Bughin & Manyika, 2016) and in particular SMEs (Hoque *et al.*, 2015; Modimogale & Kroeze, 2009). ICT can enhance services and expand services beyond geographic boundaries (Gumbi & Mnkandla, 2015; Srivastava, 2014). The emergence of internet-based technologies such as social networks, cloud computing and mobile payments have resulted in a gradual shift in the paradigm of the financial sector (Agwu & Murray, 2014; Ping & Chuanwei, 2013). It is predicted that this paradigm shift will lead to a narrowing of the digital divide as basic financial services to a greater number of people will be provided as opposed to only a small group of elite wealthy individuals. However, in a study of SMEs in Bangladesh, it was revealed that ICT adoption has been lower than expected (Hoque *et al.*, 2015). One of the factors hindering this adoption was a lack of awareness of the benefits of ICT. According to Agwu and Murray (2014) the majority of SMEs in developing countries are lagging behind in the use of ICTs and the internet, especially for making transactions. One reason for this lag is perceived security issues by customers (Dewan & Nazmin, 2008).

The widely accepted definition of e-finance according to Allen, McAndrews and Strahan (2002:7) is: *The provision of financial services and markets using electronic communication and computation.* E-finance includes all financial products and services which are available to the consumers and businesses over the internet and includes online brokerage, banking, insurance, and other financial services. According to Agwu and Murray (2014), e-finance enables businesses and ordinary citizens to conduct various financial transactions on the internet, meaning greater availability of financial services. E-finance is classified as one type of e-service. Sorooshian, Onn and Yeen (2013) assert that services such as communication, financial, cultural and recreational that can be delivered with the aid of the internet and computerized systems, such as the web, information kiosks and mobile devices can be regarded as e-services. Whilst internet banking or online banking is one type of e-finance, it has also been classified as a category of e-commerce (Mohiuddin, 2014).

The adoption and use of e-finance can lead to a multitude of potential benefits for SMEs, such as reduced cost of services and transactions (Riyadh, Bunker & Rabhi, 2010; Srivastava, 2014), as well as increased access to products and services in international markets through PCs and mobile devices (Riyadh *et al.*, 2010; Srivastava, 2014; Su & Yuan, 2013). Another benefit of e-finance is improved access to financial information (Mubaraka, Momanyi & Jibia, 2013; Riyadh *et al.*, 2010; Shahrokhi, 2008; Srivastava, 2014).

In spite of the potential benefits of e-finance, the adoption of e-finance by SMEs in developing countries has been slow when compared with larger businesses or SMEs in developed countries (Riyadh *et al.*, 2010; Su & Yuan, 2013). Internet usage naturally impacts e-finance adoption and therefore it can be deduced that ICT and internet issues related to data privacy, security and safety are also barriers to e-finance adoption (Dewan & Nazmin, 2008; Koskosas, 2011; Nasri, 2011; Raza & Hanif, 2013; Susanto, Lee & Zo, 2013). ICT infrastructure (Agwu & Murray, 2014; Narayanasamy, Rasiah & Tan, 2011; Riyadh *et al.*, 2010) and the regulatory environment and policy can influence the adoption of e-finance

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by customers (Dewan & Nazmin, 2008; Narayanasamy *et al.*, 2011). A regulatory environment includes various rules, policies and regulations related to e-finance. Lastly the lack of ICT skills (Dewan & Nazmin, 2008) and insufficient training can negatively impact e-finance adoption (Riyadh *et al.*, 2010).

In most developing countries like Bangladesh there are problems with ICT infrastructure such as internet access (Ashta & Assadi, 2009), availability and speed (Dewan & Nazmin, 2008), as well as power shedding, which can negatively impact the growth of ICT and ultimately e-finance (Riyadh *et al.*, 2010). In the developing countries in Africa power shedding has also been reported as a barrier to adopting or implementing ICT and e-finance (Agwu & Murray, 2014).

The rapid increase of ICT use by SMEs across the globe has also led to an increase in research on how to utilize ICT in the provision of financial services and the performance of financial transactions (Agwu & Murray, 2014). A review of literature revealed that online financial services and e-finance for SMEs has received limited attention by researchers and that more studies are needed to understand the impact of technology adoption on the financial industry (Han, 2008; Tsai, Huang, Fan & Liu, 2006). In South Africa, research has been done on e-commerce (Kona, 2014), internet usage (Gillwald, Moyo & Stork, 2012), electronic banking also referred to as e-banking (Maduku, 2013; Masocha, Chiliya & Zindiye, 2011), as well as mobile phone banking (Maduku, 2013). In South Africa the adoption rate of certain e-banking services has been reported to be not as good as initially hoped for (Maduku & Mpinganjira, 2012). Whilst e-finance is a relatively new and emerging field of research it has gained great impetus in the business world, particularly in developing countries such as India, China and Brazil (Srivastava, 2014). However, in spite of the enormous growth in technology, the adoption rate of e-finance and in particular e-banking is low in many developing countries, including Pakistan (Khurshid, Rizwan & Tasneem, 2014). Whilst Pakistan is rich in technology adoption, with 20 million internet users and 100 million mobile phone users, e-banking adoption in Pakistan is reported to be still in an infant stage.

The purpose of this chapter is to report on the understanding and adoption of e-finance by SMEs and the types of e-finance currently being used by SMEs. The study investigated e-finance adoption in two developing countries, South Africa and Bangladesh. To give effect to the primary objectives of this study, the following secondary research objectives were formulated:

- To identify the most commonly used types of e-finance by SMEs;
- To establish the benefits of adopting e-finance by SMEs; and
- To establish the barriers to the adoption of e-finance by SMEs.

The structure of the chapter is as follows. The first section discusses the background to the adoption and benefits of ICT, particularly in SMEs and also introduces the concept of e-services. This is followed by an analysis of the benefits and barriers to e-finance adoption as identified by literature. In the next section, the characteristics of SMEs in two developing countries, South Africa and Bangladesh, are described. These two countries are used as participants in a survey and an analysis of these results are then provided. The chapter then highlights some issues encountered in the study and then presents some conclusions and recommendations.

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BACKGROUND: ADOPTION OF ICT AND E-SERVICES IN DEVELOPING COUNTRIES

ICT makes a significant and meaningful contribution to economic growth since ICT in various forms, such as e-commerce and other tools, is known to boost productivity by improving the efficiency of individuals, businesses, and the economy as a whole. ICT adoption has recently been identified and recognized as one of the mechanisms that have the potential to stimulate the development and growth of SMEs (Gumbi & Mnkandla, 2015; Hoque et al., 2015; Modimogale & Kroeze, 2009). Those SMEs that are able to leverage and take advantage of ICT to achieve high levels of efficiency and effectiveness will be in a greater position than those that do not. Due to the accelerated global growth in internet and ICT usage, many businesses as well as governments around the world have made huge strides in transforming their services from traditional contact services to electronic means (Alanezi, Kamil & Basri, 2010). Many businesses, financial institutions in particular, have embraced e-services in order to make service accessibility easier for their customers.

In addition to ICT and internet usage, mobile device usage has grown radically and in 2014 reached 75 billion users globally (eMarketer, 2014). Africa has been reported to have the second largest mobile market worldwide after Asia (Phillips et al., 2011). In Sub-Saharan Africa smart phone usage is forecast to grow the most and it is predicted that by 2020 more than half of the connection base will have smart phones by 2020 (GSMA Intelligence, 2014).

However, in spite of the increase in ICT usage in some countries, Hoque et al. (2015) and Dewan and Nazmin (2008) identified several barriers to ICT adoption encountered by SMEs in developing countries such as Bangladesh. These barriers included attitude towards ICT, poor infrastructure, insufficient information and non-customized software. Several factors that could ultimately become barriers to adoption have been reported and of these, trust (Casaló, Flavián & Guinalíu, 2010) and quality (Alanezi et al., 2010) are the most commonly cited. E-service quality can be described as a user's perceptions of the outcome of the service delivery as well as service recovery perceptions should service fail. According to Alanezi et al. (2010), it includes dimensions such as security and privacy, design, reliability, responsiveness, information and ease of use or usability.

Singh and Chauhan (2012) reported that internet presence in remote areas remains a barrier to the adoption of any online service. Additionally, poor bandwidth and lack of trust compromise positive attitudes towards e-services. Conversely, trust, high bandwidth and broadband connectivity play a crucial role in delivering e-services to multiple users. Ashta and Assadi (2009) argue that in poorer countries, web-based lending is more difficult to implement and operate since most poor people are illiterate and have very limited access to the internet on a computer. In such countries, mobile financial applications are considered as an alternative. An Indonesian study revealed that perceived security was a primary factor for influencing trust towards internet banking services (Susanto et al., 2013). In a South African study (Maduku, 2013), low levels of trust in the system of banking through the use of mobiles, was revealed. However, in spite of these low trust levels, customers still have a positive attitude towards mobile banking. It is therefore important that banks investigate the factors that influence a customer's attitude to mobile banking or e-banking.

The focus on this chapter is on the adoption of e-finance by SMEs in developing countries. In particular, two countries South Africa and Bangladesh are investigated in more detail and reported on. The next section investigates the literature on the different types of of-finance and the benefits and barriers to e-finance adoption with a particular emphasis on developing countries such as South Africa and Bangladesh.

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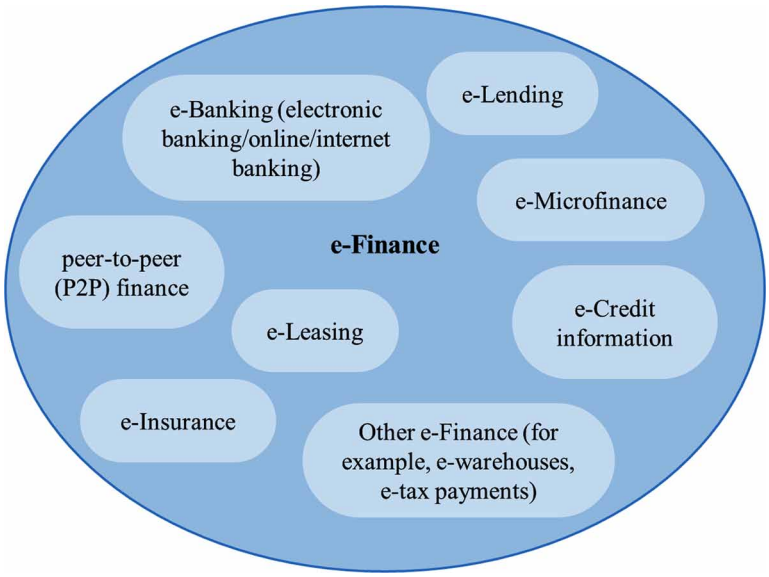
BENEFITS AND BARRIERS TO E-FINANCE ADOPTION

Benefits of E-Finance Adoption

The growing consumer demand and a fear of losing market share has driven banks to invest heavily in personal computer banking technology, mobile banking and internet banking (Murari & Tater, 2014). There are various types of e-finance and each of these has specific benefits (Figure 1). E-banking is an umbrella term that is used to describe the different types of services through which customers can request information and carry out most retail banking services such as balance reporting, inter account transfers and bill-payments with the use of technology (Daniel, 2000). Internet or online banking is the most prominent example of e-banking and allows SMEs to manage their current accounts, pay debts, collect credit as well as transfer funds over the internet (Maduku, 2013). The adoption of e-banking has resulted in cost savings (Riyadh *et al.*, 2010), reaching new population segments and enhanced reputation (Agwu & Murray, 2014).

Mobile banking is a technology that benefits banks and customers by allowing people to perform banking transactions anytime and anywhere, promoting efficiency and improved service quality (Malaquias & Hwang, 2016). However, as several studies surveyed by Malaquias and Hwang (2016) have shown, the adoption of mobile banking has been generally low despite the widespread adoption of mobile devices. A survey of banking customers in South Africa revealed that mobile banking was not as popular as expected; however customers still had a positive attitude towards mobile banking and positive intentions to start/continue using the service (Maduku, 2013; Maduku & Mpinganjira, 2012). Wireless internet is the main type of broadband connectivity at household level in South Africa (World Wide Worx, 2013). According to Arthur Goldstuck, managing director of World Wide Worx, *the rapidly growing penetration of smartphones and the increased ease of use of the internet on feature phones has changed the way South Africa communicate.* The use of apps mobile phones in South Africa has

Figure 1. Types of e-finance



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increased to more than half (51%) of adult cellphone users in cities and towns in late 2013 from 24% in mid-2012. In rural areas, the growth has increased to a 27% usage level, surpassing the overall market of 18 months before and is still increasing rapidly. Both mobile network data use and internet access via hotspots is expected to boom.

According to a report produced by InfoDev, 71% of all South African internet users use a mobile phone in their individual capacity to browse the internet (Calandro, Gillwald, Deen-Swarray, Stork & Esselaar, 2012). This report also revealed that mobile phones are the primary method used for accessing information or for communicating by people at the base of the pyramid (BoP). The mobile phone is therefore the preferred medium to provide electronic ICT services to users at the BoP. Users at the BoP can be identified as private users or informal businesses. The report also stated that the majority of non-users of the internet state that they do not know how to use the internet, indicating that there is a need for initiatives that raise awareness of the benefits provided by internet access as well as of the various possible uses of the internet. Letsie, Kabanda and Chigona (2015) also argue that in disadvantaged families, mobile devices played a significant role, especially for communication.

E-lending is another type of e-finance and entails lending to entities using the internet and allows SMEs to apply for credit online or via mobile phones (text and voice) with reduced application costs and faster turnaround on loan approvals or rejections (Riyadh *et al.*, 2010). E-credit information allows businesses to have access to an online database of SMEs' credit histories for risk assessment purposes thus contributing to the reduction of information asymmetry and reducing collection costs for the business (Martinez Peria & Singh, 2014). Internet or other ICT mediated leasing is referred to as e-leasing and is known for the reduction of application costs and easy payments, ultimately providing SMEs with access to production assets at lower costs.

Research has shown that customers like to shop online for insurance products (Cata & Lee, 2006). Insurance companies are therefore moving more and more to "paperless" insurance and to doing business on the internet. E-insurance is the application of the internet and other ICT for the production and distribution of insurance services. The narrow definition refers only to the provision of insurance cover online (Sapa, Phunde & Godbole, 2014). A key benefit of e-insurance to the customer is the improved communications and marketplace information. Other benefits relate to increased transparency and the reduction in transaction costs (Grossman, McCarthy & Aronson, 2004; Odoyo & Nyangosi, 2011; Sapa *et al.,* 2014). The benefits of e-insurance to the country are the economic benefits associated with increased employment opportunities, improvement of local entrepreneurship as well as improved skills and awareness creation. E-insurance can provide customers more easily with information about new products and special offers (Mubaraka *et al.*, 2013).

Microfinance is a *type of banking service that is provided to unemployed or low-income individuals or groups who would otherwise have no other means of gaining financial services* (Ashta & Assadi, 2009). E-microfinance is the use of the internet and ICTs for designing micro-credit initiatives and is beneficial for SMEs because it reduces the costs to access microfinance and widens sources of finance. Peer-to-peer (P2P) lending platforms have been defined as online platforms where borrowers place requests for loans online and then private lenders can bid to fund these loans in a type of auction (Klafft, 2008). Online P2P lending has gained significant interest and relevance in recent years (Bachmann *et al.*, 2011; Klafft, 2008), even in developing countries like China (Su & Yuan, 2013). One of the main benefits of P2P platforms is the elimination of banks as intermediaries, thus resulting in a reduction in transaction costs. There are many other e-finance types such as e-tax payments and e-warehousing (Riyadh *et al.*, 2010). These are all beneficial to SMEs because they expand the sources of finances available.

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E-finance has greatly transformed financial structures all over the world, and even more so in the context of developing and transitioning countries. E-finance delivers a wider selection of financial services and products to more individuals and SMEs in a speedier and timelier manner through (Shahrokhi, 2008):

- Real time access to financial services;
- Convenient access to financial services;
- Provision of sophisticated financial services to geographically remote areas; and
- Increasing number of financial services available at the retail level.

The primary benefits of e-finance to SMEs can be summarized into three categories (Table 1). The impact of e-finance on SMEs is that it allows them to have convenient access to finances and low cost financial services and this is beneficial in environments where resources are scarce and financial information is limited (Srivastava, 2014). Shahrokhi (2008) argues that e-finance delivers convenience to SMEs to enable them to access and perform financial transactions from anywhere at any time. The adoption of e-finance therefore provides access to a wider range of financial products and services (Mubraka, *et al.*, 2013; Riyadh *et al.*, 2010).

Su and Yuan (2013) state that e-finance may lead to lower costs and greater competition in financial services, through both new entries from outside the financial sector, and greater competition among institutions within the financial service sector. According to Riyadh *et al.* (2010) e-finance has made it easier for SMEs to access finance by lowering transaction costs and improving the quality of the financial service. Using e-finance is said to reduce costs of brokerage services as well as provide increased access to international securities markets.

One of the major problems for SMEs is the lack of reliable and validated business-related information, which is required for good investment decisions, efficient management and for gaining a competitive advantage (Raihan, 2001). Information that is required relates at least to the following areas: the procedure of business, legal issues, cost and process of products and services, market and industry average information and sensible business contact information. According to Shahrokhi (2008) e-finance has become a powerful medium for entrepreneurs in search of venture capital and for venture capitalists looking for investment opportunities. It is now possible to acquire data on the majority of venture firms and firms that are seeking new businesses to invest in. Agwu and Murray (2014) assert that SMEs have access to extensive online information including information that can be utilized to make financial decisions. This information should be highly accurate, current and easy to understand in order to aid quality decision making.

Table 1. Benefits of e-finance to SMEs

Benefit	References
Improved access to financial products and services	Agwu and Murray (2014); Ashta and Asadi (2009); Mubaraka *et al.* (2013); Riyadh *et al.* (2010); Shahrokhi (2008); Srivastava (2014)
Decrease in transaction costs	Maduku (2013); Odoyo and Nyangosi (2011); Riyadh *et al.* (2010); Sapa *et al.* (2014); Srivastava (2014); Su and Yuan (2013)
Improved access to financial information	Agwu and Murray (2014); Mubaraka *et al.* (2013); Nasri (2011); Raihan (2001); Raza and Hanif (2013); Shahrokhi (2008)

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In a study of internet banking in Pakistan, it was reported that customers believe that internet banking provides believable information, real time information, relevant information and at the right level of detail (Raza & Hanif, 2013). The increased information available regarding internet banking products, services and benefits has impacted the adoption rate of internet banking by customers (Nasri, 2011).

Banks therefore need to make customers aware of the availability of internet banking products and the benefits and value to the customer in comparison to competitive products. Improved marketing of these products and the provision of information regarding products and services can have a positive effect on the adoption of internet banking by customers.

Barriers to Adoption of E-Finance

Whilst there are several benefits to e-finance for both large organizations and SMEs, e-financing is not without its flaws and there are barriers to the use and adoption of e-finance. In a study done of banking customers in South Africa, only half of respondents were users of mobile phone banking (Maduku & Mpinganjira, 2012). Dewan and Nazmin (2008) found that ICT issues are the greatest perceived barriers for SMEs not to adopt e-finance. Three of the most commonly reported ICT issues that have been reported as barriers to the adoption of e-finance by customers are data privacy, security and safety (Dewan & Nazmin, 2008; Koskosas, 2011; Nasri, 2011). Dewan and Nazmin (2008) found that security issues (viruses & hackers) are the greatest perceived barriers for SMEs not to adopt e-finance. According to Raihan (2001) SMEs seek guarantees that they are protected against cyber-attacks and all other risks associated with transacting online that could lead to financial losses. Koskosas (2011) argues that security and safety are key concerns for both users and providers of e-finance. Safety and security issues include authentication of counterparts, no accountability transactions, inadequate customer support, guaranteed business continuity, data integrity and confidentiality. These issues are a reality for e-finance users and providers alike, and as such users need to safeguard against fraudulent service providers. Service providers on the other hand need to guarantee data integrity as well as the confidentiality of their customers' private information and user information needs to be protected from unauthorized parties. A study in Indonesia revealed that security and privacy impacted a customer's level of initial trust in internet banking. The results also showed that initial trust impacted a user's usage intention of internet banking (Susanto *et al.*, 2013). Initial trust was shown to be positively correlated with a user's usage intention of internet banking. From these studies it can be deduced that security and privacy are possible barriers to the adoption of e-finance by SMEs.

Another barrier to the adoption of e-finance is ICT infrastructure. In Bangladesh, like other developing countries, high speed broadband internet is not available in rural areas (Riyadh *et al.,* 2010). In addition, computer hardware and software costs are high and load shedding is a regular phenomenon (Mohiuddin, 2014). This lack of ICT infrastructure hinders the growth of e-business and e-finance. Integration of the economy to the global market, scale of business operations and technological developments are dependencies for the delivery of e-finance. According to Narayanasamy *et al.* (2011) there is a positive relationship between ICT infrastructure and growth of e-finance, which means that countries with a weaker ICT infrastructure (defined as organizations, personnel, procedures, facilities and networks used to transmit and receive information by electronic means) tend to experience slow e-finance growth. In most developing countries a basic internet network exists; however, high speed broadband internet is not available in rural areas. Slow internet speeds in developing countries are a barrier to e-finance adoption. Most SMEs, especially those in rural areas, do not have a computer or access to the internet

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or related software in order to benefit from e-commerce (Dewan & Nazmin, 2008). According to the study of Gillwald *et al.* (2012), few informal businesses in South Africa maintain a website (estimated at four percent), with even fewer employees having access to an email address (estimated at three percent). Most informal businesses employ mobile phones more than any other ICT devices. Mobile phones are therefore more commonly used to conduct small business and make use of a combination of voice and internet services. This study also reported that availability of services on internet-enabled mobile phones was one of the biggest challenges faced by informal businesses. A Nigerian study of challenges and barriers to e-commerce adoption by SMEs revealed that small and medium scale online presence is unknown (Agwu & Murray, 2014). Technical skills were identified as some of the barriers to e-commerce adoption. In Malaysia, bad technology architectures were also a concern to e-finance customers and affected the growth of e-finance (Narayanasamy *et al.,* 2011). In Indonesia, even though there has been limited improvement in the ICT infrastructure situation, the existing infrastructure has created opportunities for the introduction of e-businesses, which are already being explored by many companies (Janita & Chong, 2013).

Telecommunications has been a high priority for the South African government and there have been ambitious goals set in this regard (Gillwald *et al.*, 2012). Although public access to the internet is increasing in major cities and metropolitan areas, affordable and reliable internet access remains poor amongst the rural areas of South Africa. The government has sought to create employment for citizens by creating opportunities with ICT. However, the cost of broadband access remains prohibitively high for most South Africans. In spite of this there has been a growth in data services whilst voice service usage in has declined. It is reported that the total number of broadband internet users in South Africa is 34% of the 15 years and older age group population.

Regulatory environment and policy is an additional barrier to e-finance adoption. According to Allen *et al.* (2002) legal risk arises from a violation or non-conformance with laws, rules and regulations and legal risks can further occur when the legal rights and obligations of the parties to a transaction are not well established. When SMEs adopt e-finance some rules and regulations must be in place; for example, Online Dispute Resolution, electronic signatures and e-business legislation. In developing countries the regulatory environment is more critical than in developed countries regarding the adoption of innovation (Riyadh *et al.*, 2010). A study of e-business in SMEs in Indonesia identified that regulation and policies are an important factor in influencing adoption (Janita & Chong, 2013). A regulatory environment for e-banking is usually provided by government. Another study in Indonesia revealed that the perceived level of government support influenced customers' initial trust in internet banking (Susanto *et al.*, 2013). Since initial trust was shown to be positively correlated with a user's usage intention of internet banking, a lack of perceived government support can be a barrier to e-finance adoption. The results of a Pakistan study confirmed the influence of government on internet banking adoption, since they encourage and promote the usage of internet banking and provide laws and regulations for internet banking (Raza & Hanif, 2013).

A lack of understanding, awareness or knowledge of the benefits of e-finance is another barrier to e-finance adoption (Nasri, 2011; Riyadh *et al.*, 2010). Awareness and training regarding the use and potential of ICT for profit enhancement, cost reduction and access to finance is important and should be provided to the community. Internet knowledge or skills can also influence a customer's adoption of e-banking, therefore improving training and skills and ultimately can improve adoption rates (Mohiuddin, 2014; Nasri, 2011). The barriers to e-finance for SMEs can therefore be summarized into four categories (Table 2).

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Table 2. Barriers to e-finance for SMEs

Barrier	Literature References
ICT privacy, security and safety	Dewan and Nazmin (2008); Koskosas (2011); Nasri (2011); Raza and Hanif (2013); Raihan (2001); Susanto *et al.* (2013)
ICT infrastructure	Agwu and Murray (2014); Dewan and Nazmin (2008); Narayanasamy *et al.* (2011); Riyadh *et al.* (2010); Singh and Chauhan (2012)
Regulatory environment and policy	Janita and Chong (2013); Murari and Tater (2014); Riyadh *et al.* (2010)
Training and skills	Janita and Chong (2013); Mohiuddin (2014); Nasri (2011); Raza and Hanif (2013); Riyadh *et al.* (2010)

SMEs IN DEVELOPING COUNTRIES (SOUTH AFRICA AND BANGLADESH)

In South Africa SMEs, also known as SMMEs (Small, Micro and Medium Enterprises), are defined as businesses that employ less than 200 full-time employees (Ndayizigamiye, 2014). Furthermore, the size of an SME (in terms of the number of full-time employees) differs according to the business sector it falls under. With the exception of the agricultural sector, it is noted that in all other sectors the limit to be classified as an SME is 200 full time employees, where the agricultural sector prescribes a limit of 100 full time employees. Small enterprises capture the upper end of the micro-enterprise market, and are often registered. Of these small businesses, 9% of them claim to have received or utilized some form of formal credit. The SME sectors in South Africa can be categorized as follows:

- A micro enterprise has up to 5 employees,
- A small enterprise has up to 50 employees, and
- A medium enterprise has from 51 to 200 employees.

According to Hoque *et al.* (2015), in Bangladesh the definition varies slightly from the South African definition in that small enterprise refers to a business which is not a public limited company and the limits with regards to employees are as follows:

- A micro enterprise has less than 10 employees,
- A small enterprise has up to 25 employees, and
- A medium enterprise from 50 to 100 employees.

Historically, banks and other formal financial institutions have avoided serving those in poverty since these institutions do not have practical solutions to overcome problems of high transaction costs, adverse selection and the risk of not being able to screen entrepreneurial projects effectively. Additionally, managing the disbursement of small loans efficiently is also problematic as proven methodologies for microfinance lending tend to be labor intensive (Bangladesh Bank, 2016; Centre for Inclusive Banking, 2013). In South Africa and Bangladesh, like most developing countries, micro-enterprises are underserved when it comes to the provision of microfinance. Some of the constraints for the provision of microfinance reported in Bangladesh (Bangladesh Bank, 2016) are:

- Transaction costs associated with processing loans are fixed,

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- Difficulty in adopting new lending technologies;
- Microfinance institutions have not adopted innovative lending methodologies, and
- The high cost of obtaining credit information on micro-enterprises.

The estimated failure rate of SMEs in South Africa is between 70% and 80% (Adeniran & Johnston, 2011). Adcorp (2016) reported that around 440,000 small businesses in South Africa have closed in the last five years and that the reported number of new business start-ups is at an all-time low. Over the last decade, the number of small businesses in the country has stagnated. This situation needs addressing as SMEs are critical for large-scale job creation in South Africa. One of the obstacles when starting up a business is access to finance (Grundling & Kaseke, 2010). South Africa as a country exhibits characteristics of a developed and developing economy with regards to its technology accessibility trends. The country has been seen to adopt the advanced use of technology in research and educational institutions as well as in the private sector. It is noteworthy, however, that more than 25 million citizens in the country live below the poverty line. Millions of South Africans rely on social grants for their livelihood. A large portion of South Africans have low education levels and lack general skills and even more so computing skills, which leads to low employability (Calandro *et al.*, 2012).

E-FINANCE ADOPTION SURVEY

Methodology

In order to address the objective of this chapter, and to investigate if the literature surrounding e-finance adoption could be validated, a survey was undertaken of SMEs in two developing countries, Bangladesh and South Africa. A non-probability convenience sampling technique was used, based on the purposive sampling method (Saunders, Lewis & Thornhill, 2009). SMEs in the contact lists of the respective researchers in the two countries were contacted and invited to participate.

The survey questionnaire was designed to answer the following questions:

- What is the level of adoption of e-finance by SMEs?
- What are the most commonly used types of e-finance by SMEs?

Respondents could take either complete the questionnaire online of on paper. The majority (86%) of the Bangladesh respondents were employees, whereas only 36% of South African respondents were employees. The remaining respondents in South Africa were owners of SMEs (61%) or contractors (3%). In Bangladesh the remaining minority of respondents were owners of SMEs (13%) and contractors (1%). The main industries represented by respondents from the two countries were manufacturing, construction and tourism and catering. The business operations of the respondents' SMEs were a mixture of urban, rural, peri-urban and international.

Respondents were asked to rate the extent of their agreement regarding their experience with e-finance. It must be noted that the questionnaire was coded with five being Strongly agree and one being Strongly disagree. The results were analyzed in terms of mean ratings and frequency distributions. Seven e-finance factors of e-finance adoption were investigated, which consisted of the three benefits identified in literature (Table 1) and the four barriers (Table 2). In reporting on the analyses the Strongly agree and

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Agree categories will be referred to as "agreed" and the Disagree and Strongly disagree categories were combined into one category "disagreed" to make the analysis more meaningful. Furthermore, the mean ratings were categorized and interpreted as follows: Negative: $\mu = [1 - 2.6)$; Neutral: $\mu = [2.6 - 3.4]$ and Positive: $\mu = (3.4 - 5]$.

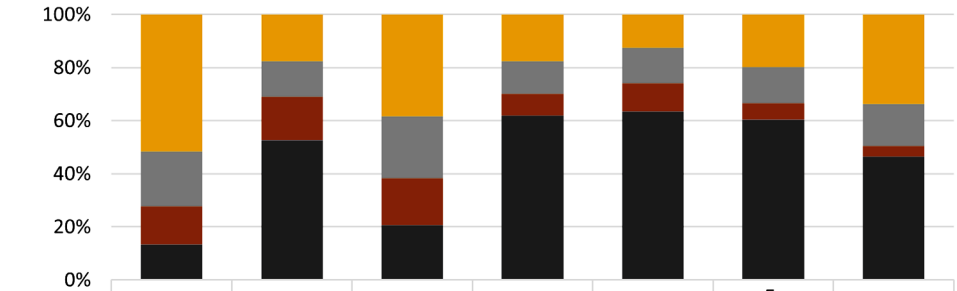
Results: E-Finance Usage

The survey results revealed that out of the respondents, e-banking (72%) and e-credit information (62%) are the most highly adopted types of e-finance in Bangladesh, when considering weekly or monthly usage (Figure 2). Conversely it should be noted that e-leasing (64%), e-insurance (62%) and e-microfinance (60%) have the lowest level of adoption when considering the response to e-finance types that are never used by SMEs.

The level of adoption of e-finance in South Africa (Figure 3) indicates that e-lending (51%), e-insurance (51%) and e-banking (30%) are the most highly adopted e-finance types when considering use on a weekly or monthly basis. It should be noted that all 100% of the South African respondents indicated that they use e-banking. E-microfinance (91%), other e-finance (85%), e-credit information (82%) and e-leasing (79%) have the lowest adoption levels in South Africa considering the e-finance types that are never used.

An analysis of the adoption patterns of the two developing countries reveals that, whilst South Africa has varied adoption levels (Figure 3), Bangladesh has more evenly distributed adoption levels (Figure 2). South Africa has a high adoption level for e-banking, however, there is very little adoption for other types of e-finance, whereas in Bangladesh the high adoption levels for the other types of e-finance are observed. The majority of the respondents in South Africa (100%) and Bangladesh (86%) stated that they have adopted e-banking (Figure 4). However, only 61% of South African respondents and 47% of those in Bangladesh (54% average) have adopted e-lending. The greatest difference (61%) can be observed for e-credit information, since a larger percentage (79%) of Bangladesh respondents stated that they had adopted e-credit information than South African respondents (18%).

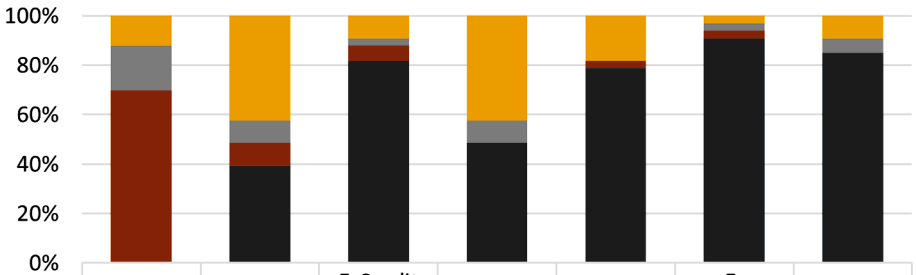
Figure 2. Ranking of adopted e-finance types in Bangladesh (n = 105)



	E-Banking	E-Lending	E-Credit Information	E-Insurance	E-Leasing	E-Microfinance	Other E-Finance
Monthly	51%	18%	38%	18%	13%	20%	34%
Weekly	21%	13%	24%	12%	14%	14%	16%
Seldom	14%	16%	18%	8%	10%	6%	4%
Never	13%	53%	21%	62%	64%	60%	47%

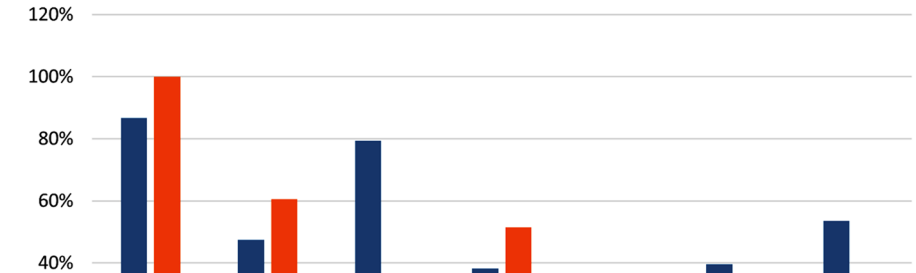
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Figure 3. Ranking of adopted e-finance types in South Africa (n = 33)



	E-Banking	E-Lending	E-Credit Information	E-Insurance	E-Leasing	E-Microfinance	Other E-Finance
Monthly	12%	42%	9%	42%	18%	3%	9%
Weekly	18%	9%	3%	9%	0%	3%	6%
Seldom	70%	9%	6%	0%	3%	3%	0%
Never	0%	39%	82%	48%	79%	91%	85%

Figure 4. Ranking of adopted e-finance types (n = 138)

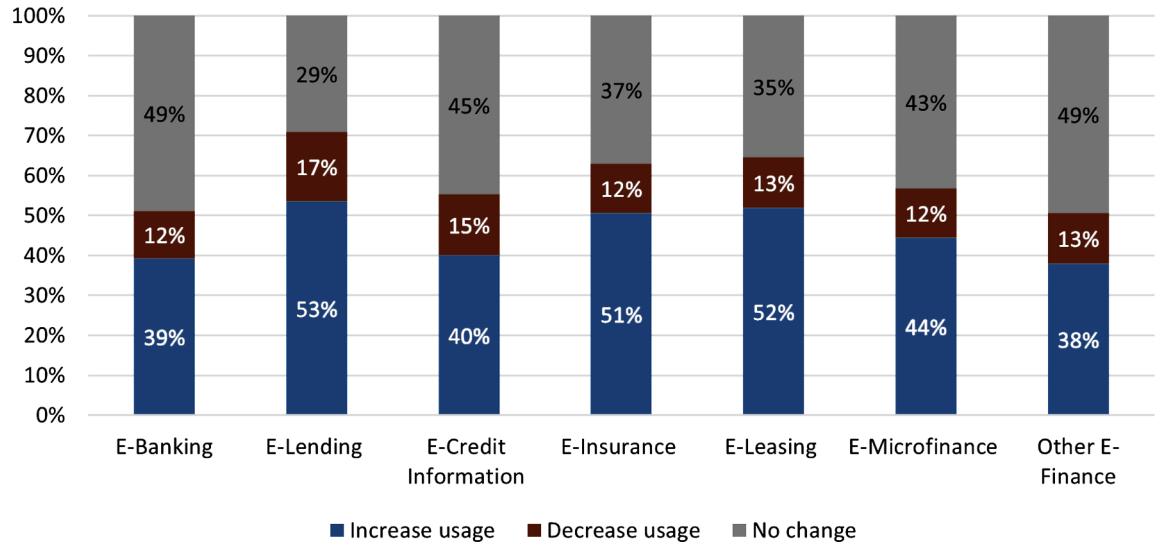


	E-Banking	E-Lending	E-Credit Information	E-Insurance	E-Leasing	E-Microfinance	Other E-Finance
Bangladesh	87%	47%	79%	38%	36%	40%	53%
South Africa	100%	61%	18%	52%	21%	9%	15%

The respondents that were not using e-finance on at least a weekly basis were asked to indicate their future intentions to use the different e-finance types. In Bangladesh, 49% of respondents indicated that they had no intention to change their usage of e-banking in the future, while 39% indicated that they would likely increase their usage of e-banking (Figure 5). Similarly, for the other e-finance types, respondents indicated either maintaining their current usage or increasing their usage. E-lending showed the largest number of respondents wanting to decrease their usage (17%) but also the largest number of respondents wanting to increase their usage (53%).

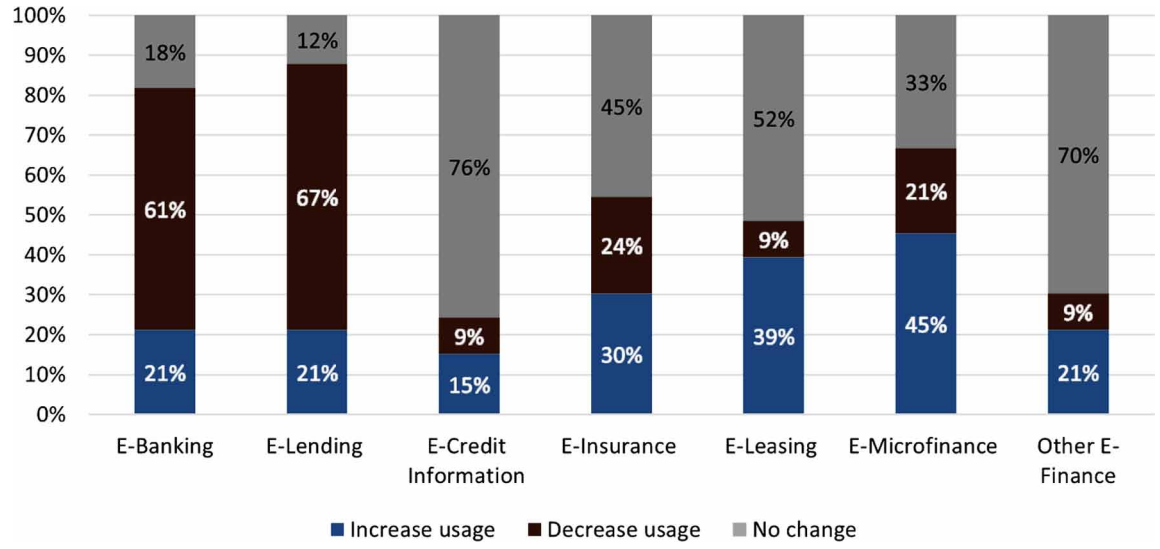
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Figure 5. Bangladesh SMEs' future intentions to use e-finance (n = [81,86])



South Africa shows an opposite trend (Figure 6), where 61% of the SMEs want to decrease their usage of e-banking and 67% want to decrease their usage of e-lending. South African SMEs would like to increase their usage of e-microfinance (45%) and e-leasing (39%), while remaining largely unchanged in the adoption of e-credit information (76%) and other e-finance (70%). E-credit information and other e-finance types remain services that South African SMEs are not interested in based on current adoption (Figure 3) and future adoption (Figure 6). The general trend depicted in Figure 5 shows that Bangladesh SMEs have greater intentions to increase their usage of different e-finance types in the future compared to South African SMEs (Figure 6). This difference in intention is evidenced by the proportionally lower average of South African SMEs that intend to use e-finance in the future.

Figure 6. South African SMEs' future intentions to use e-finance (n = 33)



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Results: Benefits of E-Finance Adoption to SMEs

Two of the three benefits listed in the questionnaire had a mean rating in the positive range (Table 3). The benefit that had the highest rated mean (μ = 4.34) for adopting e-finance was "Access to financial products and services". The lowest rated reason for adopting e-finance was "Reduced transaction costs", which was in the neutral range. This could be seen to contradict literature stating that the reduced cost of transactions is a primary benefit of e-finance adoption. Each of these benefits were analyzed in terms of secondary benefits (Table 4, 5 and 6).

All the mean ratings were in the positive range for the access to financial products and services benefit, meaning that respondents agree that e-finance provides better access to financial products and services (Table 4). At least 91% of the respondents confirm that e-finance enables their businesses to perform financial transactions from anywhere, during any time of the day on a computer or mobile device that is connected to the internet. The respondents also "agree" that e-finance enables the business to perform financial transactions required by the business (86%) without having to leave the business (79%).

All the mean ratings were in the neutral range for the transaction costs benefit (Table 5), indicating that respondents were generally neutral regarding the statement that e-finance lowers the cost of financial products and services. The standard deviations indicate that there was much variation in the responses for all statements, as most exceed the value of one. Respondents were evenly split regarding the transaction costs benefit of e-finance with 41% that "disagree" and 43% that "agree" that e-finance enables the business to pay less for financial transactions completed online.

The majority (78%) of the respondents "agree" that e-finance enables their businesses to access information on improving their finances online (Table 6). Most of the respondents (68%) also "agree" that e-finance enables them to access information on funding their business online, with a further 71%

Table 3. Benefits of e-finance (n = 138)

Benefit	Mean (μ)	Agree and Strongly Agree (%)	Category
Access to financial products and services	4.34	90.33	Positive
Access to financial information	4.00	71.00	Positive
Transaction costs	2.83	37.66	Neutral

Table 4. Access to financial products and services benefit (n = 138)

E-Finance Enables the Business to Perform Financial Transactions…	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean (μ)	Standard deviAtion
From anywhere on computer/mobile with internet.	2%	1%	3%	38%	55%	4.43	0.81
Any time of the day on a computer/ mobile with internet.	1%	1%	7%	41%	50%	4.38	0.74
Required by the business on a computer/ mobile with internet.	1%	4%	9%	43%	43%	4.25	0.83
On a computer/mobile with internet without having to leave the business.	3%	4%	14%	39%	40%	4.09	0.99

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Table 5. Results of the transaction costs benefit (n = 138)

E-Finance Enables the Business to Pay Less…	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean (μ)	Standard Deviation
For financial transactions completed online	26%	15%	15%	27%	16%	2.92	1.46
In fees for a loan completed online	23%	26%	19%	15%	17%	2.77	1.40
In interest for a loan completed online	22%	28%	13%	23%	14%	2.80	1.38

Table 6. Results of the access to financial information benefit (n = 138)

E-Finance Enables the Business to Access Information on…	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean (μ)	Standard Deviation
Improving my finances of the business online	1%	5%	17%	43%	35%	4.06	0.89
Funding my business online	1%	7%	22%	36%	34%	3.96	0.96
Other financial products and services online	1%	7%	21%	33%	38%	4.02	0.96

confirming that e-finance enables access to information on other financial products and services online. The mean scores of the respondents regarding the benefits of access to financial information are all positive ($3.96 \leq \mu \geq 4.06$).

Results: Barriers to E-Finance Adoption for SMEs

Table 7 shows that the barrier to the adoption of e-finance that had the highest rated mean was "Regulatory environment and policy" ($\mu = 3.8$). The second rated barrier to e-finance based on the mean value was "Training and skills" ($\mu = 3.8$). However, in terms of percentage agreement, more respondents "agreed" with the privacy, security and safety barrier than with the training and skills barrier. The barrier with the lowest mean is ICT infrastructure.

The mean ratings for all items in the privacy, security and safety barrier were all positive, which indicates that respondents tend to agree with the statements with regards to privacy, security and the safety barrier (Table 8). The standard deviations indicate there was much variation in responses for all

Table 7. Barriers of e-finance (n = 138)

Barrier	Mean (μ)	Agree and Strongly Agree (%)	Category
Regulatory environment and policy	3.80	63.66	Positive
Training and skills	3.60	52.33	Positive
Privacy, security and safety	3.59	57.75	Positive
ICT infrastructure	3.58	56.80	Positive

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Table 8. Results of the privacy, security and safety barrier (n = 138)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean (μ)	Standard Deviation
Unauthorized parties could access financial information	4%	14%	13%	34%	35%	3.83	1.16
No guarantees should the business lose money during a financial transaction	7%	8%	19%	31%	36%	3.81	1.19
Little support is provided for e-finance	10%	13%	32%	30%	16%	3.28	1.17
Uncertainty about the continuity of e-finance	7%	13%	31%	23%	25%	3.45	1.21

statements, as all values exceed one. It can be seen that the highest rated barrier of respondents was that unauthorized parties could access their financial information (μ = 3.83) and that there are no guarantees should there be associated financial losses during a financial transaction (μ = 3.81). Respondents are less concerned about the limited support for e-finance and the uncertainty of the continuity of e-finance.

The overall mean rating for the ICT infrastructure barrier is positive (μ = 3.59) and all of the five items in this barrier had mean positive ratings, which indicates that the respondents were on average all in agreement with regards to the ICT infrastructure barrier (Table 9). The highest rated barrier in the ICT infrastructure category was *"Power cuts interrupting access to online financial services*" (μ = 3.83). The standard deviations indicate there was much variation in responses for all statements, as all values exceed 1.20. The mean ratings for the regulatory and policy barrier were all in the positive range (Table 10). The positive ratings indicate that the respondents were on average mostly in agreement with this barrier, with most of the respondents agreeing or strongly agreeing with the statements. Both barriers in the training and skills category had mean positive ratings, indicating that respondents supported this barrier to e-finance (Table 11).

Ranking of E-Finance Factors

The mean ratings of the factors (benefits and barriers) identified for e-finance were ranked in descending order (Table 12). It is evident that that the two factors that respondents ranked the highest are the two highest ranked benefits. These are followed by the barriers, with regulatory policy being the highest ranked

Table 9. Results of the ICT infrastructure barrier (n = 138)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean (μ)	Standard Deviation
Poor internet access	5%	13%	22%	26%	34%	3.71	1.21
High internet costs	7%	12%	29%	25%	27%	3.51	1.22
Power cuts interrupting access to online financial services	4%	15%	13%	28%	39%	3.83	1.23
Software to access online financial services is too expensive	7%	18%	22%	28%	25%	3.46	1.24
Hardware to access online financial services is too expensive	9%	17%	22%	27%	26%	3.44	1.28

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Table 10. Results of the regulatory and policy barrier (n = 138)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean (μ)	Standard Deviation
Lack of laws that protect consumers	5%	8%	27%	31%	29%	3.71	1.12
Laws, regulations and policies regarding online finance that are uncertain and ambiguous	1%	4%	26%	33%	36%	3.99	0.95
Online contracts are hard to enforce	5%	5%	26%	38%	26%	3.74	1.06

Table 11. Results of the training and skills barrier (n = 138)

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean (μ)	Standard Deviation
Lack of knowledge about some of the online financial services available	3%	8%	45%	26%	18%	3.49	0.98
The business has adequate skill to perform online financial transactions	2%	7%	35%	30%	25%	3.70	1.00

Table 12. Ranking of e-finance factors

Factors	Mean	Std. Deviation
Access to financial products and services benefit	4.35	0.65
Access to financial information benefit	4.00	0.71
Uncertain regulatory and policy barrier	3.80	0.81
Low ICT training and skill barrier	3.60	0.74
Low ICT privacy, security and safety barrier	3.59	0.80
Low ICT telecommunications infrastructure barrier	3.58	1.03
Improved transaction costs benefit	2.83	1.21

barrier. Finally, the respondents rated the benefits of decreased transaction costs when using e-finance lowest in terms of mean rating. It must be noted that both transaction cost and IT telecommunications infrastructure had the most variation in responses based on the standard deviation, indicating that some respondents had agreed more than others for these issues.

Issues and Problems

Several types of e-finance have been adopted in developing countries. In South Africa e-banking, e-lending and e-insurance were the top three types of e-finance adopted, whereas in Bangladesh it was e-banking, e-insurance and other e-finance. Whilst 100% of the South African respondents used e-banking, only 87% of respondents in Bangladesh. However, one must consider that the profile of respondents between the two countries were possibly not the same and therefore direct comparisons may not be accurate reflections. Future studies could investigate this phenomenon further.

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The reviewed literature reported that the adoption of e-finance has the potential to provide many benefits to an SME in a developing country. The main benefits reported in literature are decreased transaction costs as well as improved access to financial information, products and services. The survey results confirmed the literature reporting that e-finance can improve access to financial information that is useful for SMEs. This information can be used to facilitate growth and/or sustainability for the SME. However, regarding the benefit of reduced transaction costs, the respondents were neutral. This is an unexpected result and it is not evident what the reasons for this could be. One reason could be that perceptions could be different to the real cost of e-services compared to traditional services. This study did not examine actual cost incurred by the SMEs, but rather perceptions of SMEs. Future research could examine this in more detail and possibly investigate if decreased transaction costs are experienced as a benefit in other developing countries as compared with South Africa and Bangladesh.

The benefits of e-finance adoption cannot be achieved to their full potential due to several barriers that are encountered by SMEs, particularly in poorer countries. The literature reviewed identified four categories of barriers to e-finance adoption, namely: privacy, security and safety; ICT infrastructure; regulatory environment/policy and training. All four of these barriers were confirmed by the survey results, implying that these barriers are experienced by SMEs in both South Africa and Bangladesh. The results from the survey confirms that privacy, security and safety in the online environment is a barrier for SMEs using and adopting e-finance. The survey results also confirm studies (Agwu and Murray, 2014; Dewan and Nazmin, 2008); Riyadh *et al.*, 2010) which argue that a low ICT infrastructure is a barrier to e-finance use and adoption. It was found that developing country populations do not have easy access to affordable and reliable internet services. Furthermore, power supply issues as well as expensive hardware and software to access financial services are a major issue for SMEs. The regulatory environment and training categories were also both supported as a barrier to e-finance adoption by respondents. It is evident that government and other policies need to be put into place to support the adoption of e-finance. Training and awareness campaigns should be conducted in order to improve the understanding of the benefits of e-finance adoption. In order to improve e-finance adoption governments, the banking community and other stakeholders need to investigate these barriers and find ways to address them.

The limitations of the study relate to the relatively small sample size and uneven distribution of owners and employees in the respondents. There was also an uneven number of respondents between the two countries, thus making it difficult in most cases to do a direct comparison. It is also important to note therefore that the sample may not be representative of the population. The analysis of results revealed that further investigation is required with additional countries and larger sample sizes. More detailed qualitative research should also be undertaken in order to reveal a more in depth understanding of SME perceptions and behavior with regards to e-finance.

SOLUTIONS AND RECOMMENDATIONS

The following recommendations are suggested for government, employees or owners of SMEs and other stakeholders:

- Governments of developing countries need to urgently prioritize ICT infrastructure so as to ensure lower internet costs and better connection to the web as well as provision of a consistent supply of energy for SMEs.

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- Hardware and software that is used to access e-finance should be made more affordable for SMEs. This can be made possible by a collaboration between e-finance providers and respective government through subsidies.
- Guarantees should be made for SMEs in the event that they lose money during a financial transaction.
- The laws governing ICT should be strengthened in order to restore the confidence of the SMEs as well as protecting them from potential exploitation.
- Any and all ambiguities should be explained to SMEs with regards to online contracts, such that the rights and the responsibilities of each transacting party are well understood.
- SME employees or owners should access financial information online in order to improve operational finances; funding growth or expansion of their businesses and to seek suitable financial products and services.
- Greater emphasis should be placed on ensuring that unauthorized parties cannot access financial information of SMEs. This should not only be done in the background but highly publicized in order to alleviate negative perceptions.

CONCLUSION

The survey results revealed that e-banking is adopted widely amongst the respondents in both Bangladesh and South Africa. However, other types of e-finance such as e-leasing had much lower levels of adoption. The results also revealed that access to financial products and services was the highest rated benefit of e-finance to SMEs, whereas regulatory environment and policy was the highest rated barrier. Awareness of the different types and uses of e-finance were also found to be low. The literature reviewed and the survey results both revealed that government and stakeholders need to improve education around the benefits of e-finance as well as the available types and uses of e-finance. In addition, ICT infrastructure needs urgent attention and improvement in developing countries. It is also critical that the digital divide be narrowed. If governments and banking stakeholders prioritize on improving the underlying ICT infrastructure and make education and awareness around e-finance and the benefits thereof a priority, SMEs will be better equipped to adopt e-finance. This adoption of e-finance by SMEs can ultimately improve their access to finance and SME sector development.

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KEY TERMS AND DEFINITIONS

Developing Country: A country with a slow rate of industrialization and lower per capita income than a developed country.

E-Commerce: Economic transactions using the internet or electronic means to conduct business. Transactions include business-to-business, business-to-consumer, consumer-to-consumer and consumer-to-business.

E-Finance: The provision of, implementation and allocation of financial services and resources using electronic means such as the Internet.

E-Services: Delivery of services using ICT.

Finance: Money used for funding a business, project or purchase.

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ICT: Information and Communications Technologies (ICT) consist of the hardware, software, network and media used to collect, store, process, transmit and present information in the form of text, images, data and voice.

Mobile Banking: Using mobile devices such as smartphones, tablets and laptops to perform banking activities from anywhere at any time. Smartphones and tablets may have specific mobile banking apps installed.

Online Banking: Use of the Internet to perform banking activities is called online banking, also known as Internet banking or Web banking.

Small and Medium Enterprises (SMEs): A small to medium-sized business which is small by nature in terms of either employees, capital or turnover when compared to larger businesses. SMEs are also single owner or single product enterprises which are generally located in a specific area of business. Different countries may have their own definition of SMEs based on number of employees and annual turnover.

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APPENDIX

Table 13. Cronbach's alpha for survey items

Items	E-Finance Enables the Business to Pay Less…	Cronbach's Alpha after Deletion
COST1	for transactions completed online	0.82
COST2	in fees for a loan completed online	
COST3	in interest for a loan completed online	
Items	**E-Finance Enables the Business to Perform Financial Transactions…**	**Cronbach's Alpha after Deletion**
PERF1	from anywhere on computer/mobile with internet.	0.76
PERF2	any time of the day on a computer/mobile with internet.	
PERF4	required by the business on a computer/mobile with internet.	
ACCS1	E-finance enables the business to access information on improving my finances of the business online	0.76
ACCS2	E-finance enables the business to access information on funding my business online	
ACCS3	E-finance enables the business to access information on other financial products and services online	
SECU1	Unauthorized parties could access financial information	0.63
SECU 2	No guarantees should the business lose money during a financial transaction	
SECU 3	Little support is provided for e-finance	
SECU 4	Uncertainty about the continuity of e-finance	
INFR1	Poor internet access	0.89
INFR2	High internet costs	
INFR3	Power cuts interrupting access to online financial services	
INFR4	Software to access online financial services is too expensive	
INFR5	Hardware to access online financial services is too expensive	
LAWS1	Lack of laws that protect consumers	0.67
LAWS2	Laws, regulations and policies regarding online finance that are uncertain and ambiguous	
LAWS3	Online contracts are hard to enforce.	
SKLL1	Lack of knowledge about some of the online financial services available	0.58
SKLL2	The business has adequate skill so perform online financial transactions	

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Chapter 60
Factors Driving Firms from Emerging Countries into the Global Market:
The Case of Chinese SMEs Entering the North East of England

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ABSTRACT

The purpose of this chapter is to identify the key factors that explain the decision of Chinese small and medium sized enterprises' (CSMEs) investment into the North East of England. The authors conducted 23 semi-structured interviews with key decision makers of Chinese SMEs that have business operations in the North East of England. It has been found that there are four major categories of factors that drive Chinese SMEs' investment into the North East of England: 1) resource-based factors; 2) home and host institutional factors; 3) network factors; and 4) international entrepreneurial factors. The findings have policy implications for both the governments of the UK and China, as well as managerial implications for future Chinese investors. This chapter provides fresh explanation of Chinese SMEs' investment into a developed economy.

INTRODUCTION

The UK has a long history of attracting East Asian investment (Garrahan & Ritchie, 1999). Within the UK, the North East England is ranked the second largest region in terms of the volume of inward foreign direct investment after London (Burghart & Rossi, 2009). Research on the phenomenon of Chinese out-

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ward foreign direct investment is still at infancy stage. While the motives of large Chinese state-owned enterprises entering developed markets are becoming clear (asset seeking and home government support), why Chinese small and medium-sized enterprises (SMEs) expand their business into developed markets is not yet known. The literature is primarily developed on the basis of two theoretical frameworks: resource-based view and institution-based view. There are two limitations of the existing Chinese outward direct investment literature. First, most studies have focused on Chinese state-owned enterprises, such as Lenovo, Huawei, TCL and Haier. Despite the rapid growth of Chinese Small and Medium-sized Enterprises (SMEs) and their business activities in the international markets (Anderson et al., 2003; Clegg & Voss, 2012; Liu, Xiao, & Huang, 2008), only a few empirical studies have examined Chinese SMEs' overseas business venturing (Boisot & Meyer, 2008; Liu et al., 2008). Very little research has been conducted on Chinese SMEs' investment in the developed economies (Liu et al., 2008). Second, much of the literature is dominated by the theoretical approaches based on resource-based view and institution-based view with limited attention given to other key international management theories such as network and international entrepreneurship theories. This is surprising because network ties play a significant role in facilitating Chinese firms to venture overseas markets, particularly for Chinese SMEs (Lin, 2010; Zhou, 2007) and international entrepreneurship has also been identified as an important factor influencing Chinese SMEs' entry to international markets (Liu et al., 2008).

The aim of this chapter is to explore the factors that drive Chinese SMEs to invest in the Northeast of England. Specifically, the chapter uses a qualitative research method by interviewing business leaders from Chinese SMEs operating in the Northeast of England to explore potential driving factors such as resources, social network, institution, and international entrepreneurship. In the following sections, a review of the literature was conducted on the extant theories of firm internationalisation and international entrepreneurship. The next section outlines the methodology. Thereafter, research findings were presented. Finally, the chapter provides the managerial implications and suggestions for future research.

BACKGROUND

The extant international management literature is dominated with studies of mature multinational corporations, whereas research on the internationalisation of SMEs is only a recent endeavour (Ruzzier, Hisrich, & Antoncic, 2006). To build a holistic theoretical framework, a review of the major theories explaining firm's motivation for internationalisation was conducted: resource-based view, institution-based view, network theory, followed by a review of the international entrepreneurship theory, which is particularly relevant for the internationalisation of SMEs.

Resource-Based View and Social Network Theory

Resource-based view suggests that firms that possess resources that are valuable and rare would attain a competitive advantage (Barney, 2001). To sustain its advantages over time these resources must be inimitable and non-substitutable. It is the firm's distinctive competence in making better use of its resources that create competitive advantage (Mahoney & Pandian, 1992).

From resource-based view, Dunning (2001) advocates that ownership advantages (O-advantages) determine firms' internationalisation. These O-advantages, such as unique resources, can be exploited when entering foreign markets to support the firms' international activities. Based on the mainstream

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Western multi-national enterprises (MNEs)-based foreign direct investment (FDI) literature, four motivations can be identified: natural resources, market, efficiency and strategic asset seeking (Fetscherin, 2010). Firms' international capabilities, including knowledge accumulation, financial and physical resources and organisational capabilities are believed to be the main drivers of a firm's primary motivation of internationalisation. However, SMEs generally lack of these resources and suffer from liability of smallness, resource constrains and lack of ownership competences when venturing to developed economies (Boisot & Meyer, 2008), in addition to liability of foreignness (Yamakawa, Peng, & Deeds, 2008).

Networks provide additional ownership advantages, particularly for Chinese SMEs (Deng, 2012; Lin, 2010; Zhou, 2007). A network can be used as a mechanism to facilitate information exchange and resource flow between members of the network (Jean, Sinkovics, & Cavusgil, 2010). Different types of networks have been widely studied, including political network (connection with government) (Peng & Luo, 2000), business network (relationship with business partners) (Tang, 2011), and social network (interpersonal relationship) (Ellis, 2011). For resource-constrained SMEs, networks are essential in helping them to overcome barriers of lacking foreign market information and knowledge (Zahra, Korri, & Yu, 2005), and networks perform the role of substituting for external markets (Khanna & Palepu, 2004; Peng, 2003). For example, home country network ties are found to facilitate firms' internationalisation endeavours (Yiu, Lau, & Bruton, 2007), institutional networks help SMEs to better cope with the change of institutional environment (Zhou, 2007) and social networks help SMEs to successfully venture abroad early or quickly (Lin, 2010; Zhou, 2007).

Previous research has shown that Chinese firms investing abroad is both asset exploiting and asset augmenting (Luo & Rui, 2009). Boateng, Qian, and Tianle (2008) indicated that the major motives are market development, diversification, and seeking foreign advanced technology and other resources. Rui and Yip (2008) revealed that the main motives are to obtain strategic capabilities and to leverage unique ownership advantages. Mathews (2006) suggested that Chinese firms' international expansion is driven by resource linkage, leverage and learning. While Chinese MNEs are largely driven by acquiring strategic assets overseas (Rui & Yip, 2008), Chinese SMEs are usually driven by seeking relational assets to redress competitive disadvantage at home (Rugman & Li, 2007; Sethi, 2009).

Institution-Based View and International Entrepreneurship

Institution is defined as macro-level of 'rules of the game' (North, 1990, p. 7). It is 'the cultural-cognitive, normative and regulative elements' of a market (Scott, 2001, p. 48). Institutional theory emphasises the roles of institutional components in shaping a firm's behaviour (Peng, Wang, & Jiang, 2008). It is argued that imposed regulatory (formal) and social constrains (informal) have significant impact on firms' strategic decisions and managerial practices (Child & Tsai, 2005; Meyer et al., 2009). Previous studies have largely focused on host country institution factors (Peng et al., 2008), while firms' internationalisation from emerging economies to developed economies is influenced by 'two institutional frameworks' in both home and host countries (Yamakawa et al., 2008).

One of the well-known home institution factors for the firms in emerging economy are the centrally controlled political and economic systems (Meyer & Nguyen, 2005). Despite progress made in recent years, imposed regulatory constrains in many developed countries still are considered to be barriers for firms' growth which influence their internationalisation strategies (Meyer & Peng, 2005). Legal origin, investor protection and judicial efficiency (such as discrimination against SMEs) and government misbehaviour (such as state intervention in industrial policy, Luo, Xue, & Han, 2010) may push emerging

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economy-based firms to venture into developed countries (Child & Tse, 2001; Meyer & Nguyen, 2005) in order to transcend home-based limits to growth (Deng, 2012). In recent years, Chinese government has encouraged Chinese state-owned enterprises to 'go global' by providing cheaper finance at home (Buckley, Clegg, & Wang, 2007; Voss, Buckley, & Cross, 2010). Furthermore, market liberalisation in China may also provide stimulus for Chinese state-owned enterprises to pursue outward foreign direct investment (Yang et al., 2009). But for Chinese SMEs, investing into foreign countries is more likely to be driven by the motive of escaping the restrictive business environment in China than by state's financial stimulus (Child & Rodrigues, 2005; Wang, 2002).

Examining host country institutions, a number of studies revealed that Chinese firms are more likely to seek business opportunities in an environment that is similar with their home country (Alden & Davies, 2006). Buckley et al. (2007) suggest that similarities and familiarities of the host culture motivate Chinese firms entering foreign markets. This helps to explain why Chinese firms enter other emerging markets, but it cannot explain Chinese SMEs' investment into a culturally distant country and a developed market such as England. Liu et al. (2008) indicate that 'entrepreneurship' may play a role in determining Chinese SMEs' internationalisation into developed markets.

International entrepreneurship is defined as the process of creatively discovering and exploring new opportunities outside of entrepreneurs' home country (Zahra & George, 2002). International entrepreneurship research focuses on both new and established ventures that 'engaged in cross-border value-exchange processes' (Peiris, Akoorie, & Sinha, 2012, p. 287), from born global (Knight & Cavusgil, 2004) to international new venture (Oviatt & McDougall, 1994). The two core areas of the international entrepreneurship research are opportunity-seeking and entrepreneurial orientation (Chandra, Styles, & Wilkinson, 2009; Oviatt & McDougall, 2005). The extant international entrepreneurship literature suggests that entrepreneurs start their international expansion to exploit international opportunities (Oviatt & McDougall, 2005). Entrepreneurs' right mind-set (e.g. pro-activeness and learning orientation) and prior knowledge (e.g. education background) help them pursue business opportunities across national borders (Kyvik et al., 2013; Zahra et al., 2005). Several factors that influence the formation of a global mind-set, including international work experience, prior international knowledge, and personal characteristics in terms of propensity to interdisciplinary collaboration, cognitive flexibility, and networking capability (Kyvik et al., 2013). Yamakawa et al. (2008) argue that a high level of entrepreneurial orientation will motivate new ventures to internationalise from emerging markets to developed markets. However, many Chinese entrepreneurs, as Liu et al. (2008) indicate, have low levels of education and foreign linguistic capability and they lack of international experience, thus their entrepreneurship is 'bounded' when making international investment decisions. They tend to use domestic mind-sets to scan international opportunities (Deng, 2009).

METHODOLOGY

The study adopts a qualitative, interpretive methodological approach due to the exploratory nature of the research. Chinese SMEs' outward investment is a relatively new phenomenon and suitable secondary data is not available. Key decision makers of Chinese SMEs operating in the Northeast of England were recruited to participate in semi-structured interviews. The reason for choosing the UK as the host country is because the UK accounts 40% of all Chinese investment in Europe (Ernst and Young European Investment Monitor, 2007) and the Northeast of England has the second largest number of

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Chinese-invested firms, just behind Greater London (Burghart & Rossi, 2009). The sampled Chinese SMEs are all small-sized, privately owned firms (with fewer than 250 employees) and cover a wide range of industries, including the jewellery industry, textile industry, food industry, computer industry (accessories and software design), as well as Chinese medicine and consultancy services. The period of time the sampled Chinese SMEs had been operating in the Northeast of England varied from 2 to 8 years. The length of interviews lasted from 60 to 120 minutes.

Thematic template analysis was used for coding and interpreting the interview data (King, 2004). As recommended by Ghauri and Grønhaug (2005) and Bryman (2004), the authors followed the four steps of ensuring high quality interview data: preparing interview (e.g. contact the interviewees, revise interview questions); pre-interview (e.g. plan the time, rehearse and practise); main interview (e.g. start small talk; time control; avoid leading-directing manner etc.) and post interview (e.g. send 'thank-you' letter and write interview memo etc.).

FINDINGS

The analysis revealed the categories of: 1) resource-based factors; 2) home and host institutional factors; 3) network factors; and 4) entrepreneurial factors.

Resource-Based Factors

In responding to the question '*Why did you decide to invest your business in this region',* some informants put more weight on firms' strategic objectives internally rather than concerns of external factors. For them, investing in the Northeast of England was to leverage their ownership capabilities via developing their marketing and managerial knowledge in the UK.

Manager Z expressed that he wanted to gather first hand market information when he decided to invest in the Northeast of England. He explained that:

Gaining efficient market knowledge of England can help us understand the Western business better and enhance our international business performance in other Western, developed European countries.

For other informants, they claimed that their initial intentions were to build up their international expertise for further international expansion from a long-term perspective. In his reflection, Manager M noted that

Setting business venture in England could improve and enhance our international knowledge and practical experience that reinforces our foreign customer services for now and in the future.

Manager M indicated that currently they had more than 400 employees in China, last year they recruited two foreign jewellery designers, one from Italy and another from South Korea. Their products, as manager M stated, have a great potential to sell well in the European markets.

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We just moved a small step in our international business expanding at the moment. Invading the Western markets is one important goal for us. We want to prepare our own international expertise in a long-term commitment by investing in the North East of England markets. (Manager M)

According to informants' narratives, it became apparent that 'lack of ownership advantages' is a major concern for Chinese SMEs' growth in the future. Entering developed markets, like UK, helps them develop their market knowledge. Thus, strategic-asset seeking can be concluded to be an important motive in this case.

Institutional Factors

Home Country

Three home institutional factors emerged from Chinese SME managers' narratives: 1) relaxation of government control, 2) Chinese government supports and incentivise 'going abroad', 3) avoiding pressures of competitions from both Chinese and foreign companies in China.

Informants highlighted how important and powerful the role of the Chinese government plays in Chinese SMEs' international business activities. In order to control and govern Chinese SMEs' international activities, relevant regulations and policies are rigorously regulated. Managers' narratives reflected on their experiences of how the Chinese government interventions largely constrained Chinese SMEs' international activities. Although informants negatively recalled their experiences with the Chinese government's control of Chinese SMEs' internationalisation, they further suggested that the Chinese government has gradually moved from 'over-intervention' to 'liberalisation'. The Chinese government has relatively (not completely) relaxed some controls with respect to Chinese SMEs' international business activities. These managers indicated that this change has inspired their initial intention of 'going abroad' and they highlighted the motives of 'government incentives'.

Owner Manager T indicated that support from the Chinese government was a key factor that drove him to seek business opportunities overseas. He commented that the Chinese government launched a number of favourable foreign investment regulatory policies not only for inward FDI but also outward investments. For example, Manager T recalled, in 1999, the Chinese government carried out the 'going global' strategy to encourage both large Chinese firms and Chinese SMEs to integrate their business into international markets. By doing this, the Chinese government released a policy that reduced control over foreign currency exchange restrictions. Agreeing with Manager T, three other managers all asserted that tightly controlled foreign currency by the Chinese government had formerly been a large constraint factor for Chinese SME managers involved with international business in the past, especially the 'non-neighbour' countries (refer to the Western developed countries). Although some rules and regulations that constrain growth of Chinese SME's still exist, the incremental support and incentive of the Chinese government cannot be denied.

Another highly emphasized motive factor is 'competition pressure'. Every interviewee strongly addressed their concerns of fierce competitions from both foreign (mainly from developed countries) and domestic companies in China. This situation was described by informants as "*a nightmare*". They reinforced the necessity of going abroad for Chinese SMEs, especially entering developed countries as their China-based foreign competitors are mainly from developed countries (like USA, France, Germany, and the UK). To win the battle, they must be equipped with certain competitive advantages (e.g. higher quality products and services).

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Host Country

While Chinese government supports are emphasized when investigating motives of Chinese MNEs in developed markets, host institutional effect is highlighted by informants in this study. British government support, as six informants described, especially from One North East, the regional development agency, is the main host country institutional factor that attracts Chinese SMEs' investment in the Northeast of England. Manager P confirmed, to attract more Chinese companies investing in the Northeast of England, One North East established their offices in Beijing and Shanghai, organised a series of workshops in China to introduce business environment and favourable FDI policies in the Northeast of England to potential Chinese investors. Importantly, One North East emphasised that, as a regional development agency, they would provide comprehensive supports to Chinese investors (e.g. cheaper rent, free business advice, even help with visa applications). These supports truly encouraged Chinese SME managers' intentions of investing in the North East of England. In early of this interview, manager P explained:

Before attending Mr. X's presentation (from One North East), we really debated over the choices between going abroad or staying…we made our decision knowing we would have comprehensive supports from One North East, they have an office in China so we can communicate with each other, this is crucial for us.

Three other managers from the manufacturing sector expressed their comments from same point of view:

For me, 'One –stop shopping' supports from One North East was true encouragement…for many Chinese SME managers, language and cultural barriers are obvious, these barriers affect many aspects of doing business overseas. Consider this, One North East assigned an alliance manager, who speaks both mandarin Chinese and English. From initial marketing investigation to business proposal, from accommodation to office rental, this manager provided us with great supports. (Owner Manager T)

Moreover, One North East works jointly with International Departments of local city councils to provide Chinese SME managers free basic legal and consultant services. In the early market investigating stage, the alliance manager gave us many supports and valuable advice. These 'superb services' from One North East really built up our confidence to pursue further investments in this region. (Owner Manager Q)

The majority of the interviewees confirmed that the better institutional environment in the UK did attract them to invest in UK markets, for example more transparent polices, and business-friendly enhancement procedures with clearer appeals mechanisms. Some managers studied at British universities and others confirmed that they had visited UK several times to conduct their pre-entry research. By learning about the UK business environment, they confirmed that in comparison to China, the investment conditions in the UK are more fair and show more transparency (e.g. policies).

Network Factors

Chinese SMEs entering the Northeast of England was a result of network relationship. Manager F from a Chinese textile company strongly expressed the 'trustful' personal relationship and emphasized that their company would not appear in the UK markets without the personal connection. In addition, other

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informants disclosed that their investments in the North East of England were driven by their business networks in the UK. Manager G indicated that to seek out more business opportunities in DE countries, in addition to attending international trade fairs in China, they also go to 2 large international trade fairs every year: the Frankfurt Trade Fair in Germany and the Birmingham Trade Fair in the UK. Via these trade fairs, these managers built up their business contacts and further developed their relationships to become business partners.

Manager G narrated:

… attending trade fairs abroad cost us money, but it was worth it… we built up our networks in the foreign countries (Germany and UK), and some of them became our customers later … being closer to them enabled us to provide them with better services.

The manager's story from the jewellery company also illustrated how his international business activities triggered by their business networks in the UK.

The political network via personal ties (government official) was also discovered in motivating Chinese SMEs entering UK. During the interviews, an Asian liaison manager from One North East was mentioned a several times. This liaison manger, a native Chinese speaker, was mainly in charge of Asian companies' foreign investment in the Northeast of England. More than half of the interviewees knew him because he organised some 'investment in the Northeast of England' workshops in China on behalf of One North East. These managers called him a 'Chinese political actor'. Influenced heavily by Chinese 'Guanxi' business culture, these Chinese SME owners believed that building up a good relationship with the government is essential as firm-government networks can bring benefits for them, such as funding for development, licences and approvals for some business activities. One interviewee explained:

He (the liaison manager) is a nice person. I feel comfortable investing in the UK with his help. It is also very important that he works for the government…he speaks Chinese and understands the Chinese culture.

The interviewees widely believed that they could be proactive participants in the political system in the host country through this personally linked political network. This seemed to be a critical motive for Chinese SMEs entering the UK market because this trustful political actor can be a vehicle for information (political knowledge of the host country) and communication with the local government. This firm-government network driven by a political actor, particularly one speaking their native language, is regarded as a 'reliable external resource' helping them to overcome the liability of foreignness and mitigate various political hazards in the host country.

International Entrepreneurship Factors

Regarding entrepreneurship factors, several informants claimed that Chinese SME managers' strong personal preference (entrepreneurial orientation) of internationalising developed economies, like UK, was a key internal motivating factor. Manager T emphasised that external motives may lead Chinese SMEs to consider the possibility of launching business abroad, but they are not necessary conditions for entrepreneurs to entering the developed markets. Manager T's story clearly illuminated that Chinese SME managers may not consider investing their business at developed economies, even when a foreign business opportunity arises, if they have no intention of going abroad at all. Comparing the two

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generations of managers, entrepreneurs' risk-taking attitudes, owners/managers' personal visons and goals have significant influence on DE entry choice. Manager W's narratives also indicate that Chinese SMEs entering UK were not limited by liabilities of foreignness. To reinforce manager T and W's points, manager B affirmed that

I did not deny that some external forces do drive Chinese SME managers thinking about doing business internationally. However, you can take a horse to the water, but you cannot make it drink.

Another emerged theme is managers' intention of seeking entrepreneurial freedom combined with their Western education background. Manager P used to study in Switzerland. Her experience of living in the Western European country widened her view and made her feel that 'being an autonomy', not just institutionally but also socially, was of great significance for the new generation of entrepreneurs. She believed that the UK provides such an atmosphere. Manager W held same opinion. He also confirmed that doing business overseas gives him more opportunities to gain entrepreneurial freedom than in China. It is important to note, among these interviewed Chinese SME managers, more than half of them had previously either worked or studied in Western developed countries, such as the UK and Switzerland. Three managers obtained their business management degrees from foreign universities. According to a few informants, via studying at Western universities, they were not only able to absorb the knowledge of local social and business cultures and improve their English language ability, but they also developed their international mind-set. Their orientations (towards autonomy, innovativeness and risk taking) and spirit of 'true' entrepreneurship were changed after completing their studies in developed countries. Their knowledge acquired at developed countries offers a cognitive bridge for Chinese SMEs entering the UK market.

DISCUSSION

The main objective of this chapter is to investigate the motivations driving Chinese SMEs to enter the Northeast of England. Building upon the interview data, a set of factors are identified which can be categorised into resource-based factors, institutional factors, network factors and international entrepreneurship factors.

Resource-Based View and Strategic-Asset Seeking

Many existing Chinese outward FDI studies reveal that Chinese MNEs lack of ownership-advantages (apart from the state-ownership), moving to developed markets, for them, is to strengthen their ownership advantages (Buckley et al., 2007; Voss et al., 2010). In the context of Chinese SMEs, the study's findings are in line with the motives of Chinese MNEs. In general, Chinese SMEs are resource-constrained and lack managerial knowledge. With massive FDI inflows in China, cost-leadership strategy does not work profitably for Chinese SMEs in the long-term compared to their neighbours like Vietnam and the Philippines. To survive, they must prepare themselves to improve their competitive advantage by *leveraging* their ownership advantages *via learning* in developed markets (Mathews, 2006). Clearly, these Chinese SMEs have a focus on 'strategic-asset seeking' to strengthen their ownership advantages. It was found

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that the only difference between Chinese MNEs and Chinese SMEs in seeking strategic-assets, is that Chinese SMEs attempt to familiarise themselves with UK market behaviours and managerial practices rather than obtaining advanced technology (Buckley et al., 2007; Child & Rodrigues, 2005).

Institutional-Based View

Both home-country and host-country institutional factors motivate Chinese SMEs internationalising UK markets. On one hand, the study's findings corroborate Rugman and Li's (2007) argument that economic changes, government power and market liberation play important roles in motivating both SMEs and MNEs' foreign investments. Although some Chinese government interventions still exist, many hurdles of foreign investments have been eliminated. Relaxation of control and support provide a favourable condition and create more opportunities for Chinese SME managers to invest in the Northeast of England. However, the level of support Chinese state-owned enterprises and Chinese SMEs received differs. Many Chinese MNEs, particularly state-owned enterprises, gain strong government support, such as substantial monetary support (Luo et al., 2010). Chinese SMEs' internationalisation appears as an outcome of 'changed policy' at the macro-level. Financial supports from the Chinese government are limited, and private sources are necessary for Chinese SMEs when entering overseas markets (Cardoza & Fornes, 2011). On the other hand, Chinese SMEs' business activities are still intervened by the government as China is an extreme case of a 'central government controlled' country (Buckley et al., 2007; Li, 2007; Meyer & Peng, 2005). Although one of the important Chinese economic reforms is to increase the autonomy of Chinese enterprises, inheritance from the planned economy makes it hard for Chinese SME managers to act entrepreneurially (Child & Tse, 2001).

Competition from foreign international companies in home markets is a push factor for SMEs to seek new markets. The competition from both foreign and domestic companies in China made it difficult for Chinese SMEs to survive. As this research exemplified, price-war and intensive competition in China make SMEs operate in a hostile environment, thus pushing them to consider other means of survival and look for foreign investment opportunities (Tang & Hull, 2012) in different regions in the world, such as the Northeast of England.

Finally, friendly institutional environment and formal institutional supports provided by One North East in the UK play a significant role in attracting Chinese SMEs to the Northeast of England. There are two main reasons for this. First, institutional environment in many emerging countries, like China, is a combination of social legacy, high context culture and transition economy (Peng & Luo, 2000). Institutional rules are often incomplete and ambiguous (Gibb & Li, 2003). The friendlier regulative environment in developed countries is more attractive for emerging country-based SMEs. Second, entering a new market, managers face tremendous uncertainties and challenges due to cultural and institutional differences. Government support, One North East in this case, appears highly important to lower the level of institutional and country risks when entering foreign countries (Welter & Smallbone, 2011). Host government support made Chinese SME investors feel well protected.

Networks

Networks have a central figure in triggering Chinese SMEs entering the Northeast of England. Networks shown in this study include entrepreneurs' interpersonal ties, professional networks and political network. All three types of networks are believed by Chinese managers to be able to help Chinese SMEs overcome

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the liability of foreignness. In line with existing theories, dealing with resource restrains is inevitable for SMEs, especially when internationalising non-homogeneity markets. Networks not only benefit SMEs from synergistic effect of pooled resources (Chetty & Holm, 2000), by exchanging values of market knowledge and experiences, but also help SMEs reduce uncertainties, particularly by exposing more business opportunities (Ellis, 2011). The political network established via the political officer in One North East seems crucial. In the case of this study, the officer from One North East (the Asian liaison manager) played a crucial role in motivating Chinese SMEs entering the UK market. Based on the notion of Chinese high context culture (Peng, 2005), Chinese SMEs decision makers deeply believe that connection with the local government, due to its legitimate position in the host country, can help them gain more support. Here, links can be made between networks and the Chinese Guanxi culture. Finally, the study's network findings extended findings of the Fujita (1995) study suggesting that SMEs may be pulled into foreign markets by their business partners who are in larger firms. Indeed, different types of networks have positive impact on Chinese SMEs' investment in the Northeast of England.

Entrepreneur Factors

Evidence in this research suggests that entrepreneurs' attitudes towards risk-taking is a key driver which reflects Buckley and Casson (1998) who argue that investing in a foreign country is a result of entrepreneur foresight. Given the extraordinary liability of foreignness of Chinese SMEs, venturing from emerging market to developed market is a risk. Without risk-taking attitude, Chinese SMEs would stay in China and ignore international business opportunities. A numbers of scholars have claimed that internationalisation is preceded by opportunity recognition by entrepreneurs in order to exploit international opportunities (Oviatt & McDougall, 1994; Zahra et al., 2005). These opportunities may not be profit-seeking but rather knowledge and managerial skills seeking (Liu et al., 2008; Mathews, 2006). Seeking business opportunities is heavily influenced by the owner/founder's entrepreneurial attitudes, such as autonomy orientation. Moreover, seeking entrepreneurial freedom is considered important for Chinese SME managers. Although the Chinese government is gradually reducing control of Chinese SMEs activities, it seems that Chinese SME managers did not enjoy the entrepreneurial freedom as much as Western SME managers do in the developed markets.

Chinese SMEs decision makers' Western education background is factor to invest in a foreign country. Entrepreneurs of the older-generation Chinese SME founders/managers differ significantly from the young-generation in terms of entrepreneurial orientation (e.g. risk-taking). After three decades of adopting open door policy by the Chinese government, large number of Chinese students study in Western universities. In most cases, many of them possess cross-cultural communication skills and a global perspective. These entrepreneurial-advantages have caused young Chinese SMEs managers to have different entrepreneurial orientations in comparison with entrepreneurs who have not been educated in the Western countries (old-generation). To reach a deeper understanding of Chinese SMEs entrepreneurial impact on internationalisation, changes of entrepreneurial characteristics over time must be considered. Thus, context matters in studying entrepreneurs' internationalisation behaviour as 'it provides the basis for the subtext to operate'(Garud & Giuliani, 2013).

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SOLUTIONS AND RECOMMENDATIONS

This study has several policy and managerial implications. First, from the home country's perspective, the Chinese government should realise the necessity of further reducing restrictions and obstacles, and providing more tailored support to Chinese SMEs' internationalisation (e.g. offer sufficient information of particular countries and international business training programs). For policy makers at the host country, a clear understanding of nature characteristics of emerging market-based SMEs (e.g. importance of political networks) is required. Second, this study strongly suggests that Chinese SMEs managers should not only account external factors but also consider entrepreneurial factors when venturing DE markets, and have a clear understanding of how their personal strengths or biases (attitude towards risk-taking, pro-activeness, etc.) affect their internationalisation process.

FUTURE RESEARCH DIRECTIONS

There are several limitations of this study which introduce opportunities for further research. First, the outcomes of this study are not generalizable to all Chinese SMEs' overseas investment, but are rather specific and context oriented. Thus the authors suggest further research could verify this study's findings to other contexts using large scale quantitative study. Second, due to the relatively small scale and availability of sampled Chinese SMEs in the Northeast of England, this study did not compare manufacturing firms with service ones. Researchers may consider investigating motives of Chinese SMEs investing into other European regions in a specific industry or sector. Finally, regarding the important role of decision makers' Western education background, greater specification of this certain group of entrepreneurs' international behaviours would be valuable and worth paying extra attention to in the future studies.

CONCLUSION

Previous research has shown that institutional-based theory and resource-based theory can be used to explain Chinese MNEs' motives of entering developed markets (Buckley et al., 2006; Voss et al., 2010; Mathews, 2006). In the Chinese SMEs context, this study adds to the understanding of the impact of networks and entrepreneurial factors on Chinese SMEs' motives of entering a developed market. This outcome is in line with Peng's (2006) argument that no single perspective is to be strong enough to explain SMEs internationalising from emerging markets to developed markets, it is a combination of different insights. In addition, the study made methodological contribution to existing studies. To the best of the authors' knowledge, this study is among the first conducting primary research in the context of Chinese SMEs investing in a particular developed market. Previous studies are largely based on secondary data that may lack of authenticity and include measurement error (Bernard & Ryan, 2009). Studies in the context of Chinese SMEs internationalisation (Cardoza & Fornes, 2011) do not differentiate specific country the investigated Chinese SMEs entered. This study moves the existing research forward by investigating Chinese SMEs' motives of entering particular developed market supported by valuable, first-hand qualitative data.

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KEY TERMS AND DEFINITIONS

Guanxi: A Chinese term that describes a social relationship and network. Guanxi is an informal relationship that is based on interpersonal reciprocal exchange of favors. The idea is widely accepted in Chinese society.

Institution-Based View: A theoretical perspective that emphasizes the roles of institutional components in shaping a firm's behavior. It is argued that imposed regulatory (formal) and social constrains (informal) have significant impact on firms' strategic decisions and managerial practices.

International Entrepreneurship: The process of creatively discovering and exploring new opportunities outside of entrepreneurs' home country. The key characteristics of entrepreneurship include innovativeness, proactive-ness, and risk-seeking.

Liability of Foreignness: The costs or difficulties that firms experience when they operate in a foreign market. These costs include the firm's limited knowledge of host market's political, socio-cultural and economic environments; the discriminatory attitudes from host country's institutions, competitors and consumers; and the difficulties of managing between headquarters and subsidiaries which are located in different countries.

Network Perspective: A theoretical perspective that sees markets as networks of relationship between firms. A network can be used as a mechanism to facilitate information exchange and resource flow between members of the network. For resource-constrained small and medium-sized companies, networks are essential in helping them to overcome barriers to enter a foreign market.

Ownership Advantages (O-Advantages): One of the three important factors of OLI-Model of foreign direct investment, originally proposed by John Dunning in 1979. The other two are location (L) and internalization (I) advantages. Ownership advantages refer to the unique resources that a firm can

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exploit when entering foreign markets, including resources such as patent, technology know-how, brand reputation, entrepreneurial skills and others.

Resource-Based View: A theoretical perspective that focuses on resources for creating and maintaining competitive advantage. It is believed that valuable and rare resources help a firm to attain a competitive advantage, but to sustain its advantages over time these resources must be inimitable and non-substitutable. Firm's competence in making use of resources is essential in the process of creating and maintaining competitive advantage.

Strategic Asset Seeking: A motive that drives a firm to expand to a foreign market. Strategic assets are those resources that enhance a firm's competitiveness, such as advanced technology, managerial know-how, brand equity and others. Other internationalization motives include: natural resource seeking, market seeking, and efficiency seeking.

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Chapter 61
Information and Communication Technology Adoption in SMEs in Sri Lanka: Current level of ICT Usage and Perceived Barriers

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ABSTRACT

Information communication technology (ICT), considered as one of the major impacts of organizational performance and small and medium enterprises (SMEs), plays a significant role in the Sri Lankan economy as a strategic partner. Thus, the article examines current levels of ICT usage and perceived barriers to ICT adoption in SMEs in Sri Lanka. The findings revealed that despite the majority of respondents using IT for essential functions, they lacked proper internal IT infrastructures, personal motivation, had internet connection issues, trust issues, and lack of knowledge. These factors were identified as the perceived barriers to ICT adoption in SMEs in Sri Lanka. Data was collected from 67 SME owners from Sri Lanka, except the North province, in November 2016. The findings offer valuable insights to policy makers in general and to the SME owners. The methodology, implications, and suggestions are also discussed.

INTRODUCTION

Information and communication technologies (ICT) have influenced almost all sectors including education, health, bank and entertainment to name a few. Business organizations are rapidly investing in ICT because, there so many advantages attached to it. Many researchers have proven that there is a significant impact on ICT and business performance (Hajli & Sims, 2015; Melville, Kraemer & Gurbaxani, 2004; Halachmi, 1988).

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Small and medium enterprises (SMEs) play a major role in any economy. They generate employment, introduce new business methods and products, reduce poverty, inflation and income inequality and solve the balance of payment problem (Prasad, Tata & Guo, 2012; Zeinalnezhad, Mukhtar and Sahran, 2011; Singh, Garg and Deshmukh, 2010; Tambunan, 2008, as cited in Priyanath & Premarathne, 2014).

ICT helps particularly in SMEs to create business opportunities and to compete profitably. According to Parida et al. (2010) Information technology (IT) helps to eliminate cost by improving internal processes, providing faster communication with SMEs' customers and better promoting and distributing their products via online. The value chain concept developed by Michel Porter views the firm as a series, or a network which consists of basic and secondary activities and particularly basic activities that add value to its products and services and ultimately leads to achieve competitive advantages (Porter & Michael, 2001). Hence this framework provides an image of a company to achieve competitive advantage by implementing competitive strategies through the value chain. According to Obrian and Marakas (2010) implementing IT through the value chain adds value to a company's products and services consequently enhance the overall business value of the company.

Many SMEs implementing IT for their business and enjoy many benefits attached to it. Enhancing productivity and effectiveness of certain activities or functions, assist in the adoption of new organizational, strategic and managerial models that enable access to new environments, as well as the generation of new markets and business model (Brady et al., 2002; Kahn, 1996, 2001; Javalgi & Ramsey, 2001; Corbitt, 2000; Johnston & Lawrence, 1998 as cited in Barba-Sánchez, 2007).

SMEs play a major role in the Sri Lankan economy. The SME sector in Sri Lanka has been identified as an important strategic partner and growing partner of social development (Small and Medium Enterprise Sector Development Programme, 2002). SMEs cover broad areas of economic activities including agriculture, mining, manufacturing, construction and service sector industries in Sri Lanka.

Even though SMEs play a major role in Sri Lankan economy, they are facing greater challenges in the modern business world due to intense competition, rapidly changing new technologies and globalization of products and services (Kanagasingam, 2012). Further, according to the Action Plan for 2016, the National Policy Framework for SME development has identified "Access to Technology" as a key factor in sustainable SME development. Furthermore, it has been identified that SMEs account for more than 90% of the total enterprises in Sri Lanka and for 45% of employment. Thus, it is considered the backbone of the economy. Even though an interesting and growing number of research studies have focused on the barriers to implementing ICT in SMEs (Parida et al., 2010; Tan et al., 2009; Barba-Sánchez et al., 2007), owing to the above mentioned unique characteristics, Sri Lanka is different from other developing countries and it is worthwhile identifying the barriers to ICT adoption and the current level of ICT usage in SMEs in Sri Lanka. Furthermore, rapid socio-economic and cultural changers may render the previously identified factors obsolete. Therefore, it is important to explore factors inherent in the current society in order to achieve the aforesaid sustainable development. Thus, this paper aims to fill this gap by understanding the level of ICT adoption and identify the factors that hinder the implementation of ICT in Sri Lankan SMEs.

The paper is divided into five parts. After the introductory section on the background of SMEs in Sri Lanka, the relevant literature is reviewed and barriers to adopting ICT in SMEs are discussed in the second section. Section 3 presents the methodology while Section 4 presents the analysis and findings of the study. The final section presents the theoretical and practical implications, limitations of the study and recommendations for future research.

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LITERATURE REVIEW

This section deals with the diffusion of innovation theory as well as the relevant research findings relating barriers to ICT adoption in SMEs.

SMEs in Sri Lanka

SMEs play a significant role in Sri Lanka's economy, accounting for 80 percent of all businesses, including primary, secondary and tertiary while providing employment for skilled, semi-skilled and unskilled categories in Sri Lankan labor force and as a percentage, it is 35 percent of employment (NHREP, 2012). Sri Lankan SMEs in the agri-business sector, engaged in growing spices, fruits and vegetables and in the manufacturing sector engaged in numerous industrial activities, thereby contributing to 20 percent of industrial establishments and in the service sector accounting for more than 90 percent of business establishments (NHREP, 2012).

Different countries use different parameters to define SMEs, such as indicating the number of persons employed, amount of capital invested, and amount of turnover or nature of the business. According to the European Commission (EC) a small enterprise is defined as one which has less than fifty employees and turnover or a balance sheet total of not more than €10 million. Micro enterprise is defined as, having less than ten employees and turnover or balance sheet total of not more than €2 million (Priad et al., 2010).

In Sri Lanka, according to Kapurubandara and Lawson (2006) the National Development Bank (NDB), the Export Development Board (EDB), and Industrial Development Board (IDB) use value of fixed assets as the criterion for definition. Whereas the Department of Census and Statistics (DCS), Small and Medium Enterprise Development (SMED), and the Federation of Chambers of Commerce and Industry (FDCCI) use the number of employees as the criteria for defining SMEs.

Sri Lanka's, "SME Policy Framework" defines SMEs based on the number of employees and the annual turnover. Table 1. presents the facts in detail.

Barriers to IT Adoption in SMEs

According to Kapurubandara and Lawson (2006) there is a vast difference between ICT adoption in developing and developed countries. The problems of SMEs in developing countries are distinct to them. Compared to large organizations, SMEs face many barriers within and outside the organization. The problems encountered within the organization are called internal barriers and the problems which occur outside of the organization are called external barriers. To successfully adopt IT in the enterprise, these two barriers need to be addressed successfully (Kapurubandara & Lawson, 2006).

Table 1. Defining SME in Sri Lanka

Size Sector	Criteria	Medium	Small	Micro
Manufacturing Sector	Annual Turnover	Rs. Mn. 251 - 750	Rs. Mn. 16 - 250	Less than Rs. Mn. 15
	No. of Employees	51 - 300	11 - 50	Less than 10
Service Sector	Annual Turnover	Rs. Mn. 251 - 750	Rs. Mn. 16 - 250	Less than Rs. Mn. 15
	No. of Employees	51 - 200	11 - 50	Less than 10

Source: National Policy Framework for Small and Medium Enterprises (SMEs) Development (2016, p.18)

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According to Akkeren and Cavaye's study (1990), owner/manager characteristics, firm characteristics, and costs and return on investment are the major barriers for ICT and e-commerce adoption. Further, Owner's lack of awareness of technology, perceived benefits, lack of knowledge on how to use technology and low computer literacy are other contributory factors for not adopting e-commerce. Mistrust of the IT industry and lack of time are another two barriers for adoption.

Organizational characteristics also affect IT and e-commerce adoption in SMEs. Organizational readiness, external pressure to adoption, customer/supplier dependency, structural sophistication of the firm, size, sector, status and information intensity are factors identified in Akkeren and Cavaye's study (1990). Lack of awareness, uncertainty about the benefits of electronic commerce, concerns about lack of human resources and skills, set-up costs and pricing issues, and concerns about security are also seen as the most significant barriers to e-commerce for SMEs (Panagariya, 2000, as cited in Kapurubandara & Lawson, 2006).

According to Priad et al. (2010) the following are the identified barriers of ICT adoption in SMEs.

- Type of business (owner perception, customer preference)
- Limited level of ICT skills or competence of owner and employees (perception of the owner/manager, lack of skilled employees)
- Lack of standardized ICT related applications (common platform, complexity of tools, cost, suitability)
- Cost factors (budget constraints, continuous updating and maintenance, logistics costs)
- issues with access to ICT (slow internet connections and data transfer, availability of different internet connection, less sure about adaptability)
- Lack of trust (image of the small firm, prior experience, level of trust, collaborative setting with other firms),
- Legal uncertainties (issues on currency levels, differences legal uncertainties concerning contracts, terms of delivery and guarantees)

According to OECD's study (2004a, as cited in Priad et al., 2010) competence factors (management attitudes, skill levels, training), Technology factors (interoperability with different e-commerce systems, network reliability and flexibility), Cost factors (cost of reaching customers, cost of engaging in e-commerce, telecommunication costs), and Confidence factors (brand image, transaction security, legal structures, IPR issues) are the identified challengers for ICT adoption in SMEs.

According to Tan et al. (2009), has stated that security is the major barrier for internet-based ICT adoption in Malaysian SMEs. Findings of the study conducted by Asare et al., (2012), show that frequent power disruption is an interruption to ICT adoption in SMEs in both Botswana and Ghana. Nevertheless, that SMEs do not consider lack of technical knowledge as a barrier in ICT adoption. According to Simmons et al. study (2007) lack of marketing ability and negative industry norms are seen as the barriers prevalent within developed economy agri-food industries to internet adoption and utilization.

According to Wolcott et al. (2008) individualized technology-related assistance, customized training, context sensitivity, are strongly-perceived needs of the businesses studied at community of Omaha and Nebraska. According to Chuang et al. (2009) the average age and the level of education of top management team in small businesses are significant predictors of the extent of IT adoption. However, group heterogeneity (gender, ethnicity), has a negative impact on the extent to IT which is adopted in SMEs.

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According to Tan et al. (2010) results reveal that the SMEs would adopt internet-based ICT regardless of years of a business start-up and internet experience. Some significant differences are spotted between manufacturing and service SMEs in terms of their demographic characteristics and internet-based ICT benefits, barriers, and adoption intention. Both of these industry types express intention to adopt internet-based ICT, with service-based SMEs demonstrating greater intention.

Lack of awareness basically computer literacy, cost of Internet, equipment and e-commerce implementation, inadequate telecom infrastructure, unstable economy, political uncertainty, lack of time, channel conflict, lack of information about e-commerce and lack of access to expert help are identified barriers for e-commerce adoption in developing countries (Kapurubandara & Lawson, 2008).

According to Evangelista et al. (2013) findings highlighted that lack of technology skills in the workforce is a major constraint on ICT adoption in small and medium-sized logistics providers.

According to Shiels et al. (2003), findings show that characteristics of the firm and industry sector have an effect on the adoption and use of ICT to support business processes in SMEs. Lack of proper knowledge, education and skilled owner managers and employees within the enterprise are the identified barriers to better utilization of ICT and e-Business in European SMEs (Arendt, 2008). According to Apulu et al. (2011), lack of electricity supply, lack of financial resources, lack of government support, poor service from ISP providers, corruption, lack of support from banks, poor infrastructural facilities and lack of skills are the eight key factors that affect the effective utilization and adoption of more sophisticated or advanced ICT solutions in Nigerian SMEs.According to Chatzoglou and Chatzoudes (2016) firm size, firm scope, IT infrastructure and internet skills (being the most important e-business adoption drivers in SMEs and CEOs knowledge), adoption cost, and competitive pressure do not seem to play an important role in e-business adoption decision in Greek SMEs.

METHODOLOGY

Most research associated with identifying barriers of ICT adoption in SMEs has used different methodologies. The majority has used questionnaire-based survey (Asare et al., 2012; Ahuja et al., 2010; Tan et al., 2009; Simmons et al., 2007) and several other researchers have used face-to-face interviews (Moriones et al., 2013; Chibelushi & Costello, 2009; Marasini et al., 2008) and multi measures along with both quantitative and qualitative measures (Bhaskaran, 2013). Matlay and Addis' (2003) study has used multiple methods such as telephone survey, in-depth interviews and case studies.

By using convenience sampling method, 70 entrepreneurs were selected from those who registered for Diploma Course in Small Business Management at the University of Colombo, Sri Lanka. In a four weeks period, entrepreneurs answered the survey questions, but three of them were excluded because they had been answered in an inappropriate manner. Thus, the final sample contained 67 SMEs.

The questionnaire consisted of three parts; owner details, current level of IT utilization and potential barriers. Eight questions were used in the first part to identify the demographic background of the owner and six questions in the second part to identify the current level of ICT usage. The final part, consisting of 19 questions was used to identify the barriers to ICT adoption by SMEs. In designing the questionnaire, questions and ideas were obtained from previously validated questionnaires (e.g., Wang et al., 2004; Chatzoglou & Chatzoudes 2016; Apulu et al., 2011; Priad et al., 2010). All the variables were measured with five point interval scales similar to previous researchers. Each item in the questionnaire allowed for indicating the extent to which the item limited the adoption of information technology in

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their organizations. A five point Likert scale ranging from 1 (to a very little extent) to 5 (to a very great extent) was used. Sinhala medium was used for the questionnaire since that was the surest way to receive responses. A pilot test relating to 30 SME owners was carried out prior to the survey. Cronbach's alpha values were used to check the reliability of the study and all the values showed high reliability exceeding value 0.7 (Nunnally, 1978).

RESULTS AND ANALYSIS

The study was dominated by manufacturing-oriented SMEs representing 70% of the sample. Most owner/managers were males (85.1%) and Advanced Level (A/L) was the highest education qualification for a majority (73.1%). Most of the owners' birth place was rural (50.7%) and sample were dominated by Sinhalese (97%) married (68.7%) owners. Computer literacy of the majority of the respondents was on an average level (38.8%).

The majority of the respondents had started their business by themselves (74.6%) and by inherited (23.9%) and only 1.5% bought the business. 79.1% SMEs are registered as sole-proprietorship and 6%, and 19.4% are registered as partnership and limited liability company. The majority of the business had 6-10 number of years of operation (32.8%) and 26.9% had more than 15 years of performance. Most of the SMEs had less than 10 employees and as a percentage that was 71.6%.

The majority of the respondents had acquired technical knowledge from self-studying (49.3%). Alternatively, a majority of the respondents acquired management and administrative knowledge and skills through themselves (46.3%). Most of the respondents received vocational or special training for running the enterprise from government-SME supportive organizations.

Level of ICT Usage

Eleven variables were used to identify the current level of IT usage in the business including, operating a web site, customer relationship management, supply relationship management, logistics, security, privacy, information systems, environment scanning, e-mail, searching and research.

Figure 1 indicates that the majority of the respondents used e-mail (89.6%) for their business and 50.7% used IT for privacy. However, only 14.9% used IT for logistics operations. In addition to that 37.3% used Information systems for their business.

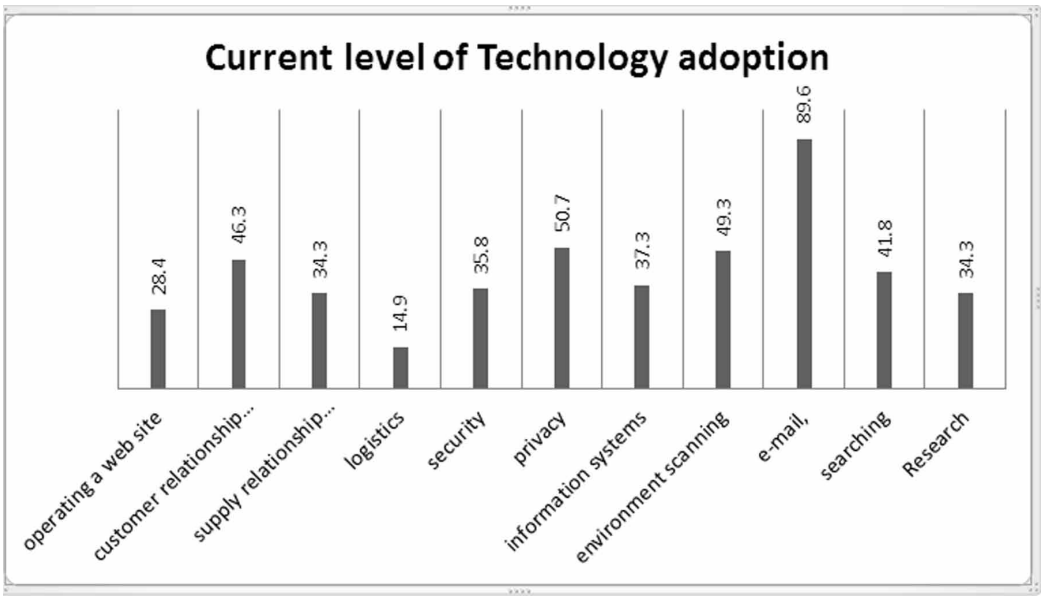
Factor Analysis Results of Perceived Barriers for ICT Adaptation

Responses to the perceived barriers were analyzed by principal component factor analysis with varimax rotation. Five factors, accounting for 66.24 percent of the variance explained, were used in this study. Communality, rotated factor loadings and identified factors are presented in table 2, along with the eigenvalues, variance explained, and factor means.

Eight items were identified under Factor 1 with loading ranging from 0.532 to 0.759. Analysis of this statement was interpreted as items related to lack of proper internal IT infrastructure (Cronbach's alpha = 0.84). Specific items loading on Factor 1 included: poor support from staff; lack of technology orientation; employees' low ICT literacy; poor support for strategy implementation; poor networking; lack of knowledgeable employees; poor knowledge on shift time on technology and lack of money.

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Figure 1. Current level of technology adoption Source: Survey data (2016)



Consistently findings of researchers (Kapurubandara & Lawson, 2006; Cloete, 2002) in several studies shows that lack of proper IT infrastructure as primary causes for ICT adoption in SMEs.

Factor 2 identified factor loadings ranging 0.688 to 0.835 (chronbach's alpha = 0.79). These items related to lack of personal motivation which included: no intension to expand; dissatisfaction about returns; lack of courage; lack of support from the organizational culture. These findings also support the work of Priad et al. study (2010). It has been shown that ICT perception of owner/manager is a key determinant of adoption on ICT in SMEs. Furthermore, Herbert and Benbasat (1994) study has been measured self-efficacy as a key determinant of ICT adoption in SMEs.

Factor 3 is interpreted as internet connection issues. The variables with high loadings in this factor include internet inaccessibility, lack of alternative connections, and dissatisfied with internet service providers (Cronbach's alpha = 0.75). Poor service from ISP providers and corruption were the factors that affected effective utilization and adoption of more sophisticated or advanced ICT solutions in Nigerian SMEs (Apulu et al., 2011). Consistently Asare et al., (2012) findings, has shown that frequent power disruption is an interruption to ICT adoption in SMEs in both Botswana and Ghana.

Factor 4 addressed the lack of trust. Specific items were: lack of trust on internet payments and lack of trust on ICT transactions. Factor loadings ranged from 0.516 to 0.758 (Cronbach's alpha = 0.71). Parida et al. study (2010) has discussed the lack of trust and level of trust on online transactions in SMEs. Factor 5 considers the lack of knowledge. The variables with the greatest loadings on this factor were lack of knowledge on benefits and poor ICT knowledge (Cronbach's alpha = 0.66). Table 2 Summated scales of factors related to perceived barriers for ICT adoption. The summated scale is the average score of the items in that factor. These findings are also consistent with Akkeren and Cavaye's study (1990), Owner's lack of awareness of the technology, perceived benefits, lack of knowledge on how to use technology and low computer literacy are other contributory factors for not adopting e-commerce in SMEs. Furthermore, similar with findings, lack of proper knowledge, education and skilled of owner

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Table 2. Factor Analysis Results on Perceived Barriers for ICT Adaptation

Perceived Barriers	Factors					Communalities
	1	2	3	4	5	
Poor support from staff	**.759**	.273	-.101	.307	-.016	0.755
Low ICT adaptation	**.713**	.120	.070	.222	.199	0.617
Employees' low ICT literacy	**.698**	.048	-.076	-.172	.210	0.569
Poor support for strategy implementation	**.676**	-.109	.312	.160	.003	0.592
Poor networking	**.650**	.134	.353	.151	-.306	0.681
Lack of knowledgeable employees	**.641**	.078	-.311	.004	.165	0.541
Poor knowledge on shift time on technology	**.632**	.258	.234	-.010	-.135	0.539
Lack of money	**.532**	.015	.422	-.381	-.237	0.663
No intention to expand	.037	**.835**	.049	-.099	.164	0.739
Less happy about returns	.188	**.834**	.020	-.042	.078	0.740
Lack of courage to change	.096	**.725**	.280	-.126	.098	0.639
Lack of support from the organizational culture	.140	**.688**	-.134	.250	-.169	0.601
Difficult to connect to internet	.085	.020	**.843**	.046	.269	0.793
Lack of alternative connections	.011	.149	**.722**	.045	.391	0.699
Dissatisfied with internet service providers	.065	.090	**.595**	.473	-.036	0.592
Lack of trust on internet payments	.101	-.086	-.048	**.807**	.247	0.732
Lack of trust on ICT transactions	.136	-.018	.254	**.763**	-.117	0.680
Lack of knowledge on benefits	-.009	.243	.130	.079	**.825**	0.764
Poor ICT knowledge	.188	-.073	.338	.046	**.703**	0.651
Eigen value	4.767	2.438	2.303	1.654	1.424	
Proportion of Variance Explained %	19.401	14.156	12.925	10.143	9.619	
Cumulative Variance Explained %	19.401	33.557	46.481	56.624	66.243	

managers and employees within the enterprise are the identified barriers to better utilization of ICT and e-Business in European SMEs (Arendt, 2008).

As shown in table 3, 'lack of proper IT infrastructure' is the main perceived barrier for ICT adoption (Mean=2.724). It indicates that among the five reported factors, Sri Lankan entrepreneurs believe that a lack of IT infrastructure including poor support from staff, low ICT adaptation, employee's low ICT literacy, poor networking and lack of money affect as barriers for ICT adoption. The second highest mean score is recorded by the 'lack of trust'. It implies that owner-managers of SMEs in Sri Lanka are still reluctant to use e-commerce. 'Lack of personal motivation of the owners' is the third highest perceived barrier and it highlighted the lack of intention for expanding the businesses. 'Internet connection issues' emerged as the fourth most crucial barrier reporting a mean of 2.049 with 0.789 SD. The next barrier for ICT adoption is 'lack of knowledge' which reported a mean of 1.918 (SD = 0.699).

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Table 3. Mean scores of perceived barriers for ICT adoption

Summated scale	Mean	SD	No. of variables	Rank
Scale1- Factor 1: Lack of proper internal IT infrastructure	2.724	.711	8	1
Scale 2-Factor 2: Lack of personal motivation	2.127	.709	3	3
Scale 3-Factor 3: Internet connection issues	2.049	.789	2	4
Scale 4-Factor 4: Lack of trust	2.537	.836	4	2
Scale 5-Factor 5: Lack of knowledge	1.918	.699	2	5

Source: Survey data (2016)

CONCLUSION AND IMPLICATIONS

SME have been accepted as an important segment of any economy and is considered the backbone of economic development of many economies throughout the world (Chong & Lin, 2008). Based on the present study, it is possible to draw some conclusions from the initial findings of this research study and this study provides policy recommendations for SMEs. The findings of this study indicate that the characteristics of owner/managers of small firms play an important role in the adoption of decisions concerning ICT on SMEs in Sri Lanka. The finding is consistent with the findings of Akkeren and Cavaye's study (1990). Furthermore, lack of proper IT infrastructure is the main perceived barrier for ICT adoption in SMEs. In order to develop infrastructure facilities, there is a clear role for government and industry bodies to step up their efforts to encourage ICT adoption on small business. It is essential to improve the telecommunication infrastructure to cut down the cost of connecting to the internet as well as staying online for business purposes. These findings would suggest that there is a need to improve IT knowledge among small business owners and to provide proper training regarding that. Consistent with the findings of Akkeren and Cavaye (1999) in order to improve knowledge on ICT and establish trust on online transactions, transforming proper knowledge on ICT is an important task. Further, this study provides useful insights on the knowledge gap in understanding ICT adoption among the SMEs. Another important practical implication is that the training agencies, responsible for providing ICT training to adults, especially for SME owners, are able to understand the level of IT knowledge and the obstacles that they usually face. Simultaneously, the government has to increase its effort to create awareness programs among SMEs regarding the potential benefits of ICT. Additionally to improve the knowledge and awareness among SMEs, private and public sectors need to come together to establish a joint forum that will encourage SMEs to attend educational workshops and seminars for nominal fees. This could address some of the shortages of technical knowledge on ICT. Further, Sri Lankan government should enforce compulsory training or provide some reinforcement to encourage SMEs to improve ICT knowledge among them. In order to overcome financial problems governments should make provisions for soft and easy accessible loans for SMEs.

Limitations and Future Research

The data of the study was obtained from Sri Lankan SMEs except the Northern Province. Therefore, the current findings may not be generally applicable to Sri Lanka. Thus, it is imperative for future studies to

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consider SMEs throughout the country. Another potential limitation is related to the use of perceptual measures provided by the person who could be biased and could lead to halo effect. ICT adoption on SMEs bounded with organizational culture, cross-cultural studies are also possible in the future. It is also interesting to include more variables such as benefits and barriers, social relationships, types of ICT applications, environmental characteristics such as government policies for future studies.

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Chapter 62
An Exploratory Study of the Impact of Government Policies on the Development of Small and Medium Enterprises in Developing Countries: The Case of Nigeria

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ABSTRACT

This paper explores the effects of government policies on the development of Small and Medium Enterprises in developing countries through the examination of the case of Nigeria. Many research studies reported that SMEs in Nigeria have not benefited from the policies formulated by the government. This paper investigates the impediments to manufacturing SMEs growth and the needed pre-requisite environment for SMEs to benefit from government specific policies. The study adopted a qualitative methodology depending on face to face interviews with 20 SME owners and/or managers in five of the six geographical arears of Nigeria, 20 bank managers in the capital city of Lagos and 20 government officials located in the federal capital city of Abuja. The study unveils unique contextually novel insights, including particularly the distinctive processes and different relationships related to lenders decision. The research findings are consistent with those reported by other scholars in the field, and confirm that government policies and support in the areas of technology, infrastructure and finance affects the performance of SMEs to a great extent in Nigeria.

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INTRODUCTION

The importance of small and medium enterprises (SMEs) for any country cannot be over-emphasised, but despite their internationally recognised importance, SMEs still face major challenges in many developing and emerging countries (Ayalew & Gashu, 2015; Eniola, 2014; Fatoki & Odeyemi, 2010). However, the challenges of business entry, survival and growth are often substantial (Adaramola, 2012). Sequel to this, financial resources and the inability to handle complex business management issues in a complicated and bureaucratic environment present major obstacles. Therefore, the need to improve the different elements that make up a good business climate should be carried out expeditiously (OECD, 2004).

This article sets out to critically evaluate the effect of government policies in developing the small and medium enterprises (SMEs) in Nigeria, in order to gain an insight into how it affects their business performance. We seek to engage the perspective of the major stakeholders in the development of SMEs which are the government institutions, the banks and the SMEs owner/managers.

LITERATURE REVIEW

Small and medium enterprises (SMEs) play a very vital role in every economy both in successful developed countries and developing countries (El-Gohary & El-Gohary, 2016; Khan & Khalique, 2014; El-Gohary et al., 2013; El-Gohary, 2012a, 2012b, 2011, 2010a, 2010b, 2009; El-Gohary et al., 2009a, 2009b, 2009c; Ariyo, 2008; Wiklund & Shepherd, 2005; Wong & Aspinwall, 2004). They perform some important roles like job creation (Farouk & Saleh, 2011; Deakins et al., 2001; Stanworth & Purdy, 2004), wealth creation which increases the economy size (Birch et al., 1993). Furthermore, SMEs utilises their limited resources efficiently and develop entrepreneurial skills (Karmel & Bryon, 2002; NIPC, 2003; Hussain, Millman, & Matlay, 2006; Poutziouris, 2003; Deakins, Logan, & Steel, 2001). Studies carried out by various authors, see Matlay and Westhead, (2005); Porter, (2006); Hussain, Millman, and Matlay, (2006); Harvic and Lee, (2002), suggests that SMEs contribute significantly to the social-economy and political infrastructure of developing and developed countries. However, the Nigeria government has been according little attention to this all-important sector for so long despite its numerous benefits (Adjebeng-Asem, 1998).

In the last decade, this trend has changes as the Nigerian government within its capacity is now according all necessary attention to the development of SMEs for accelerated economic growth and empowering its citizen for entrepreneurship and technology innovation (Oyelola, 2013). The major reason for the inadequate attention as suggested by SMEDAN (2011) emanated from the unavailability and paucity of credible and reliable database. This has fraught the major stakeholders to eve sustainable intervention strategies for the development of SMEs in Nigeria (SMEDAN, 2011). As a result of this, it has constrained the government and the policy makers to set an entrenched policy and have a baseline for meaningful comparison (Toby, 2007). This was corroborated by Brevoort and Hannan (2006) in their study that without comprehensive information on SMEs, very little will be known about their contribution to the economy.

In an effort to reposition and create efficient and sustainable SME sector in Nigeria, the government commissioned a collaborated survey report on MSME in 2010 between the national bureau of statistics (NBS) and the small and medium enterprises development agency of Nigeria (SMEDAN). This was one of the concerted responses to the challenges of building a credible and reliable SME database which

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is a basic requirement to strategically reposition and develop the sector SMEDAN, 2010). Therefore, relevant information will be available and will be useful in grasping the level of contribution of SMEs to the development of the economy (IFC, 2001).

Meanwhile, other factors have been identified constraining the development of this all important sector which includes high production costs emanating from the provision of inadequate infrastructure by the government, inefficient technology use by SMEs relating to processing, preservation and storage of commodities, lack of access to international market, nonexistence of succession plan by the operators, poor access to vital information, inability to keep adequate financial records, and absence of Research and Development to mention a few (Ogbo, & Nwachukwu, 2012; Obokoh, 2008; Adaramola, 2012; Eniola, 2012). The absence of these facilities has instigated higher overheads cost for the SMEs which has impacted on their profitability and growth because they were responsible to obtain such facilities at their own expense (Mambula, 2002). However, these problems have been on the vanguard of every new government in power to tackle. However, little results have been achieved except the telecommunications sector which is contributing immensely to the development of the economy (Sanusi, 2010; Evbuomwan, et al, 2013).

Government Policy and Small and Medium Enterprises

In Nigeria, the recognition of the importance of SME sector has prompted the Government to continue designing and implementing a number of policies and programs to support the development of the sector since independence (NIPC, 2002). The various economic reforms by successive government have been on the horizon since independence in 1960. The benefits of these reforms have not translated into welfare improvements for the citizens because the domestic business activities have not improved due to the significant challenges under the programs (Ojo, 2003; Tumkella, 2003; Mambula, 2002). This has handicapped the SME sector fulfilling its full potential of contribution to the growth and development of the economy from its GDP. However, the economic reforms on SMEs which was introduced as part of World Bank structural adjustment programs is alleged to have a good impact on the development of SMEs (Cook, 1996). This evidence is found in a relatively small number of studies that attempt to measure the impact of economic liberation on the SMEs sector see Boeh-Ocansey, 1994; Dawson, 1994; Steel, 1994; Vachani, 1994; Zake, 1994; World Bank, 1995.

The structural reforms before 2003 were aimed at improving the domestic business climate to enhance business competitiveness by deregulating and reducing government activity in various economic sectors to address various structural constraints to growth. This includes privatization, civil service reform, banking sector reform, and trade policy (Okonjo-Iweala, & Osafor-Kwaako, 2007). However, some impeding factors in these reforms can be traced to inconsistencies in government policies, poor infrastructures, limited access to finance, disparaging legal and regulatory framework, unavailable support for business development services, ineffective and poorly coordinated institutional support framework, enabling environment, capacity building and corporate governance (Steel & Webster, 1992; Lightfoot, 1998; Jarvis et al., 1996; Gibb, 1998). Therefore in 2003, the federal government of Nigeria took a big leap by formulating policies for the development of SMEs to address the constraints and to tap the full potential of the sector. The SME Policy takes into account the special constraints and opportunities faced by this sector and aims at strengthening institutions which will address these constraints and maximise exploitation of the opportunities.

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This led to the establishment of the Small and Medium Enterprises Development Agency of Nigeria (SMEDAN) vide the small and medium scale industries development agency (establishment) act 2003 with the responsibility of promoting and facilitating the development programs in the SMEs sub-sector. The vision and mission of the agency under the direct supervision of the federal ministry of trade and investment is to establish an efficient SMEs sector that will enhance sustainable economic growth in Nigeria and facilitate the access of SMEs to all the resources required for their development. The agency has the mandate of stimulating, monitoring and coordinating the development of SMEs sub-sector, initiate and articulate policy ideas for SMEs growth and development, reducing poverty, creating jobs, serving as vanguard for rural industrialization and enhanced livelihoods. It is also saddle with the responsibility of linking SMEs to internal and external sources of finance, intermediating between SMEs and government (SMEDAN, 2007).

Government Intervention Programmes to Develop SMEs in Nigeria

In order to further develop and support the SMEs and other identified sectors of the economy, the Nigerian government changed trend from the classical orthodox method of leaving the allocation of financial resources to the market forces to a developed tailored and direct intervention to support and promote growth in these sectors (Sanusi, 2011). Some of the key interventions in the real sector by the Nigeria government according to Sanusi (2011) includes, the =N=200 Billion Commercial Agricultural Credit Scheme (CACS), the = N = 300 Billion Power and Aviation Intervention Fund, the = N = 200 Billion Restructuring and Refinancing to the Manufacturing Sector/SME, the = N = 200 Billion Small and Medium Scale Enterprises Guarantee Scheme (SMEGS), the establishment of Small and Medium Enterprises Developing Agency of Nigeria (SMEDAN) to replicate the duties of small business services in the UK and the small business agency in the USA.

In addition, the consolidation of banks through merger and acquisition by increasing the capital base of banks from = N = 2 billion to a minimum of = N = 25 billion. This has reduced the number of banks from 89 to only 24 which have ease bank supervision as a result of the merger. Also, the creation of some agencies like the National Economic Empowerment and Development Strategy (NEEDS) and State Economic Empowerment and Development Strategy (SEEDS), are also some of the measures taken by the Nigerian government to ameliorate the SMEs (Sanusi, 2011). The aim of these schemes is to support the real economy growth by providing long term credit or specialized services to the SMEs as banks only give short term credit. Unfortunately, these schemes often failed to address the problems hampering the development of the SME sector as a result of poor implementation (Eniola & Etebang, 2015). However, the over reliance of banks on public sector funds is a matter of concern to the government because the private sector is often short changed as a result of the high interest rate paid on bank loans (Soludo, 2004). The public-sector fund is very cheap to the banks even though the motive of government officials to deposit the funds in banks is the unofficial money 'bribe' paid to them. This makes the banks profiteer more on this which makes them expand at the expense of the real economic sectors.

Government Efforts

Some of the policies and programs identified by Eniola, (2014); Sanusi,(2003); Abdullahi et al. (2015) that has been put in place by different governments in power at various times aimed at promoting SMEs includes the creation of the Small Scale Industries Credit Scheme (SSICS) in 1971, the establishment

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of Nigerian Bank for Commerce and Industries (NBCI) in 1973, Nigerian Industrial Development Bank (NIDB) in 1964, SME desk in all banks including the CBN, National Economic Reconstruction Fund (NERFUND) 1989, the African Development Bank, the World Bank SME II loan scheme 1990, Nigerian Export Import Bank (NEXIM), Industrial Development Co-ordinating Centre (IDDC), Community Banks, People's Bank, Family Economic Advancement Programme (FEAP), State Ministry of Industry SME Schemes, Small and Medium Industries Equity Investment Scheme (SMIEIS), emerging of Bank of Industry (BOI) in 2002 with the merger of NERFUND and NIDB with mandate of providing credit at 10% to the industrial sector and SMEs, Small and Medium Enterprises Developing Agency of Nigeria (SMEDAN) and the Credit Guarantee Scheme for SMEs. Others are the fiscal incentives such as tax relief to all new SMEs in their first six years of operation, pioneer status involving non-renewable tax relief for five years and periodic downward adjustment of tariffs to reduce production costs. All these points out that successive government in power since independence have made efforts one way or the other to revamp the SME sector but little success has been achieved.

Research Methodology and Design

In this study, qualitative method approach was employed for various reasons. Firstly, it will help gain knowledge about emerging issues that can help to understand the effect of government policies towards the development of SMEs (Denzin & Lincoln, 2005). Secondly, the qualitative method will generate the perspectives of the government agencies involved in the promotion of SMEs, the financial institutions as they are conduit of finance for the development of SMEs through lending and the SMEs owners/managers as well (Creswell, 2003). Thirdly, in-depth interviews and analysis will enable a closer link with the participants thereby capturing their real perceptions with their involvement on the occurrence of events in this context (Sousa and Castro, 2010). Fourthly, it will help to secure rich descriptions of the social world of the SME operations which is valuable in understanding the meanings people have constructed (Easton, 2010). This idea was initiated in order to obtain cross- referencing data and obtain range of opinions from different sources (Cunliffe, 2011). Inputs were solicited from these three stakeholders namely, the government officials, bank officials and SME owners/managers.

The Primary data on the perceptions, thoughts and feelings of the major stakeholders were collected mainly through individual face-to-face, in-depth interviews. All of the interviews took place in the various offices of the respondents and were all recorded. The recorded interviews were reviewed and transcribed with NVivo. We identified specific or general issues from the transcriptions which the participants proposed as relevant to the challenges of the development of SMEs. In total, sixty in-depth interviews were conducted with SME owners/managers (20), bank officials (20) and government officials (20). The semi-structured open-ended interview used as the survey instrument was for understanding the rationale behind the effect of various policies towards the development of SMEs (Creswell et al, 2007). We elicited their views by asking broad questions about the various policies they are aware of, how effective the policies are and ideas on how to strengthen the SMEs sector to contribute to the economic growth of the country. The Small and medium enterprises (SMEs) considered in this study were those that fulfilled the criteria of employing between 10 and 199 people according to the definition by (SMEDAN, 2007). Our sampling plan was to get representatives of each of the major stakeholders involved directly with the development of SMEs in Nigeria (Robson and Bennett, 2000).

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ANALYSIS AND FINDINGS

The interviews were first conducted with officials of SMEDAN agency because they have the main responsibility of developing SMEs sector in Nigeria. Then a list of other government agencies with direct or indirect relationship with the growth and development of SMEs were obtained from the agency. The nature of the research was explained to each respondent and confidentiality was guaranteed. Each interview lasted between 45 and 60 minutes and was semi-structured, conducted between January and March 2014. All the interviews were recorded and detailed notes were taken during each meeting and fully transcribed with NVivo. Three main key questions relating to policies and contribution of SMEs to the economy were the main themes of this study. The three questions were asked across board from the three stakeholders identified. Thematic analysis was used to uncover the themes which require further interpretation and involvement of the researcher. This approach helps to identify and describe the issues of policies implementation by the government and its effectiveness towards the development of SMEs in Nigeria through the stakeholders' practical ideas and beliefs. The following key interview questions were asked to address the research questions as a guide to probe into the activities of the various stakeholders involved in the development of SMEs (Smith & Elger, 2012).

1. Questions informing the respondent perspectives about the policies they will recommend to the government towards the development of SMEs in Nigeria.
2. Questions about the impact the recommended policies will have towards the development of SMEs in Nigeria.
3. Questions eliciting the respondents' perspective on the contributions of SMEs to the economy if these policies are effective.

Theme One

Policies recommendation. The views of the three stakeholders are almost similar as they all agreed that there are policies in place but the implementation is the major problems. Some of the policies recommended by the bank officials include female entrepreneurship policy targeting women to be empowered and contribute to the household income. Also, young entrepreneurship policy targeting young people to start their own business was suggested which will reduce the social menace in the country such as robbery, kidnapping etc. This is because most of the youths are not engaged in employment. Others are policy that will give room for sectorial allocation for SMEs which will allow special prices for their output and help get their products and services beyond their local environment. Another recommendation by a bank official is that government should formulate import policy that will protect the local factories. This will discourage people from importing and help the local factories to be engaged in production hence employing more people. Others are policy on poverty elevation, agricultural loan policy, policy on infrastructure, policy on taxation, technology and policy on manpower. One of the bank officials express further that,

I won't recommend any new policy now but they should implement all the reforms and policies already in existence. If they implement even half of the existing policies, Nigeria will be in a better position. We don't need more policies but we need proper implementation…

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The perspectives of government officials and SME owners/managers surprisingly also indicate that there are policies in place but implementing is bad. One of the directors recommended fiscal policy which is needed to boost the SME performance in the country. Other policies can be geared towards capacity building programmes for the SMEs, peer mentoring programme as a strategic to grooming up people, collateral reform and registry where SMEs can access loans from the banks without heavy collateral, policy to boost infrastructure support, policies for fund for women, policy for work space and funding.

Government should review the existing policies to make them friendly. The policies should be harness for people to understand it. People know there are policies but they don't understand those policies. Government should make tax system that is accommodating (Government official, 2013)

One the part of the SME owners/managers, emphasis was laid on one important policy which is privatisation policy. Others are regulatory policy through the financial institutions, SME funding and grant policy, policy to give SMEs loan without collateral and then derive a way of recovering the loan, backward integration policy and tax holiday policy for five years, One SME owners said,

I know that there are policies for fund for women but I tell you the bureaucracy that one undergoes to access such funds is too much. When I was making popcorn, we were made to register with access bank as they have funds for women, but up till now nothing was done for women. They requested for business plans and feasibility studies, and at the end of the day nothing was done. All the energy you put into doing the business plan is too much which I could have used to attend to my business. I will suggest they should remove some of the bottleneck in accessing funds for the Nigerian women…

Theme Two

Impact of these recommended policies. The banks were of the opinion that it will boost the internally generating income for the economy and increase the number of small business which is the engine room for economy development. It was suggested further that it will impact on the employment rate and government will realise more potentials from the business. This will revamp the SME sector leading to economic growth because more entrepreneurs will emerge which means more jobs for the people. It will also bridge gap between SMEs and large companies which will increase the investment level of the country. One banker explains further that,

If these polices are implemented, I feel that the SMEs will grow because they will have easy access to fund, easy access to intellectual knowledge, technical knowhow in place, then the SME will be able to improve their businesses and grow to the next level. These policies should be written as a law. Every government comes in with its own policy and strategy. There is no consistency and it is very rigid making it difficult to change…

The perspectives of the government officials postulate that SMEs will open up the space and more people will begin to migrate into that sector thereby creating more jobs. This will alleviate poverty and general economic development. Others suggest that SMEs will have large access to market and this will encourage them to produce more and lead to more employment. It was also suggested that it will help to

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shift focus from oil revenue which has killed innovative capacity of Nigerians and has defocused Nigerian leaders. Furthermore, it will reposition SME Sector, open and increase business and investment opportunities which in turn create access to finance and business development. One government officials said:

Definitely the policies will have a lot of impact on the development of SMEs in Nigeria. I would say that Nigeria is so lucky to have started thinking about the development of SMEs long time ago. We have an agency which is exclusively meant to promote the growth and development of SMEs in Nigeria which is the SMEDAN. They are set up to ensure that they come up with policies and programmes that encourage the growth and development of SMEs. I think they already have a number of incentives for SMES and if the SMEs themselves come together to begin to engage SMEDAN in terms of what their requirements are, it will help SMEDAN to come up with propose policies that will substantially help to address the issues. SMEDAN cannot know what the problems are with SMEs because they are the operators. The contributions from the SME operators themselves will substantially help to broaden policies and improve policy formulation that will help to develop the sector…

Theme Three

Contribution of SMEs to the Nigerian economy. The SME owners/managers are of the view that apart from turning the economy into a production one rather than being the consuming one will create a lot of jobs for the economy. Other contributions of SMEs according to the owners/manages is that it will galvanise the economy activity in the system by creating employment for the people. Also, there will be less dependent on import because so many goods will be produced within the system, thereby foreign exchange will be properly managed and will not be filtered away. SMEs will contribute to the economy by Job creation and improve skilled labour force which will reduce criminality through gainful employment. One SME owners suggests that:

It will make the economy to grow in the sense that it gives room for other people from other countries to come in and have business and good business relationship with the country which will grow the economy. It will give room for a lot of things to start coming in. When you talk of employment, it will increase the rate of employment. In a nutshell, it will enhance the growth of the Nigerian economy…

The perspective of the bank officials supports the contribution of some other respondents as they suggest it will reduce the social menace like kidnapping, robbery because more people will be highly engaged in employment. There will be enabling environment which will attract foreign investment. Some suggests that it will make the economy more vibrant which will increase the GDP of the country, hence reduce poverty level. This will improve the general wellbeing of the nation and security will improve. One of the bankers said,

I think SMEs can contribute greatly to the economy if these policies are properly implemented and other needed infrastructures are made available to them. Let me tell you example of Dangote who is now known all over the world. He started small and he did not get his funds from the banks but from a rich uncle who helped him to start. That is an example of SMEs becoming something big. The proportion of Dangote contribution to the GDP in Nigeria at the moment is very sizeable but I think SMEs can contribute to the economy of Nigeria. SMEs can create employment opportunity, reduce crime rate and foster the economy of the nation…

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Lastly from the government perspective, it will create a lot of entrepreneurs which will also increase the revenue potentials of the country and provide a lot of employment opportunities. It will also reduce poverty rate in the country in terms of the economic and SME will re-engineer and transform the economy by creating more employment. One government officials said:

If we want to grow our economic sustainably, the way to go is to promote the growth and development of SMEs because they will contribute more than 70% to the GDP of our various economic. We should be able to encourage our SMEs to specialise. Once they specialise, they will also contribute to earning foreign exchange because when they export their goods or services, they earn foreign exchange for the country and help to increase foreign reserves of the country. These are the contribution SMEs can do once they are given the push…

CONCLUSION

The study has demonstrated that policy implementation is the major problems with the development of SMEs in Nigeria rather than policy formulation which is in line with the findings of Eniola and Etebang, (2015). Various policies have been formulated in an effort to develop this all-important sector as it is the bedrock of every economy. As demonstrated above, if SME is properly managed, it will create employment. The people who are gainfully employed will pay tax thereby increase the income generation capacity of the nation. It was also identified from the interview that there has been inconsistency in the implementation of government policies for SMEs development due to inadequate data on the operational difficulties of SMEs by the government agencies responsible for the design and implementation of SME development programmes. In most cases, these government agencies do not consider the peculiar nature of the SME operators while designing these policies. This is in line with the findings of Obokoh, (2008) who postulates that the level of education of SME operators is not considered when formulating policies. Hence, the beneficiaries will be unable to benefit from the policies due to their level of understanding.

The conclusions of this study are consistent with the study undertaken by Abdullahi et al (2015) which stressed that the government should provide enabling environment and adequate basic infrastructures in terms of electricity supply, water supply, effective telecommunication system, good road network and better transportation system. This will go a long way to encourage investors to invest more in SMEs and the existing entrepreneurs will use the surplus resources into the operations of their business. Eniola and Entebang, (2015) in their study found that relationship exist between government policies and SME firm performance and have a major impact on the competitiveness of SMEs. This shows that with the right set of policies for SMEs in Nigeria, the sector will contribute a lot to the economy as postulated from the interview.

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Chapter 63
Handling Uncertainty in Project Management and Business Development: Similarities and Differences

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ABSTRACT

This chapter reports a study into the management of uncertainty in the disciplines of business development and project management. The first part of the chapter analyses the disciplines by looking at the process, the planning, uncertainty and risk and the measurement of success. Based on our analysis of these two disciplines, we conclude that they differ substantially in the perception and handling of uncertainty and how this is included in the overall process. We found that business development uses additional methods, for example scenario planning, to manage the uncertainty that is inherent to the business development process. The second part of the chapter reports an explorative study into the potential application of scenario planning in project management. This study shows that scenario planning may benefit project management in creating a shared understanding of the project as well as the provision and consideration of different information. In the planning processes of the project, this information is considered useful in risk management and milestone planning.

INTRODUCTION

Project management and business development have some similarities. PMI defines a project as a "temporary endeavor undertaken to create a unique product, service or result" (Project Management Institute, 2013, p.3) and Blank defines the development of a new business as a "temporary organization in search

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for a scalable and repeatable business" (Blank and Dorf, 2012, p.xvii). Hence both can be seen as temporary and both have similar steps from initiation, planning, executing and closing. However, despite these similarities, business development and project management are considered as different disciplines in both research and practice.

One of the similarities between project management and business development is that both disciplines need to cope with uncertainty. Projects are traditionally seen as structured activities aimed at realizing an in advance agreed objective. The uncertainties surrounding this objective, or the process of realizing it, are treated as risks and coped with in risk management processes which are a subset of project management (Perminova et al., 2008). However, with project being performed in an increasingly uncertain environment, the traditional project risk management methods and techniques are considered insufficient for coping with this increased uncertainty (Perminova et al., 2008; Cleden, 2012; Krane et al., 2014). Therefore, better methods and techniques are needed in order to manage today's level of uncertainty in projects. One of the disciplines that could provide new insights on how to cope with uncertainty, is business development. When searching for, or developing, new products, services or business ventures, there is no certainty about the outcome of the process. Still, business development needs to make decisions in this process that is filled with uncertainties.

The study reported in this paper studied the way business development copes with uncertainty and asks the question "How can the techniques of business development for dealing with uncertainty be used in project management?".

The remainder of the paper is structured as follows. The next paragraph will discuss the disciplines of project management and business development along the dimensions of 'process', 'planning methods', 'risk and uncertainty' and 'success'. The paragraph following this one will provide a comparison on the two disciplines in order to identify similarities and differences. In this paragraph we will also discuss Scrum, as an approach to project management that has borrowed some concepts from business development.

The next paragraph will introduce the research strategy we deployed in the empirical part of this study, followed by a presentation of the findings of our empirical exploration. The final paragraph of the paper provides our conclusion and an outlook on further research.

THE DISCIPLINES OF PROJECT MANAGEMENT AND BUSINESS DEVELOPMENT

This paragraph presents an overview of the disciplines project management and business development, and a comparison of the two. As our focus is on the handling of uncertainty, we will also discuss this in both disciplines. We'll describe each discipline along the dimensions of 'process', 'planning methods', 'risk and uncertainty' and 'success'. This structure enables us to compare the two disciplines on the four dimensions.

Project Management

A project is defined by PMI as a "temporary endeavor undertaken to create a unique product, service or result" (Project Management Institute, 2013, p.3). Hence, project management is defined as "the

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application of knowledge, skills, tools and techniques to project activities in order to meet the project requirements" (Project Management Institute, 2013, p.5).

Process

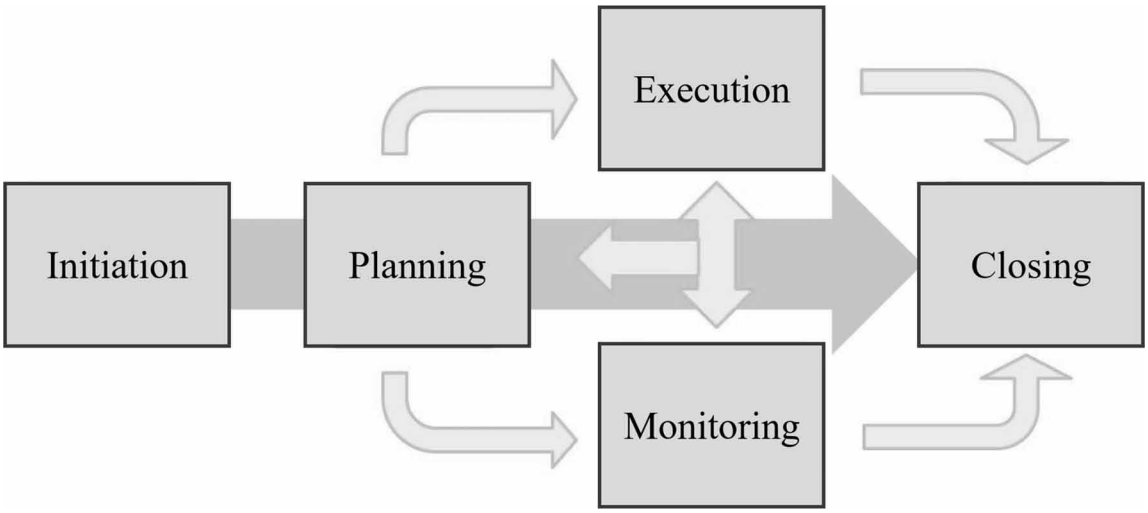
A core-element of project management is stage-gate process (Kerzner, 2009). The stage-gate process was created because the traditional hierarchical command and control structures were not effective for temporary processes that imply a 'horizontal' work flow across organizational boundaries, such as projects. For this stage-gate process of project management, several standards have been developed that provide guidance on how to execute project management. A broadly used standard of project management processes is described in the Project Management Institute's project management body of knowledge (the PMBOK Guide). In this guide, five project management process groups are identified:

- Initiation,
- Planning,
- Executing,
- Monitoring and controlling, and
- Closing (Project Management Institute, 2013).

Figure 1 presents these process groups.

The level of uncertainty for a project declines along the project process. Nevertheless, uncertainty can be found in all stages. A project starts with an initial investigation into an idea (Zwikael & Smyrk, 2011). This phase is called conceptualization and aims to recognize the idea as a potential project and to define the idea as an investment opportunity. Hence the "conceptualization should be a short, simple and relatively spontaneous process" (Zwikael & Smyrk, 2011, p.138). One issue that arises is that often the output of the project is discussed in the conceptualization phase. The more important question is

Figure 1. The project management process groups
Based on Project Management Institute, 2013.



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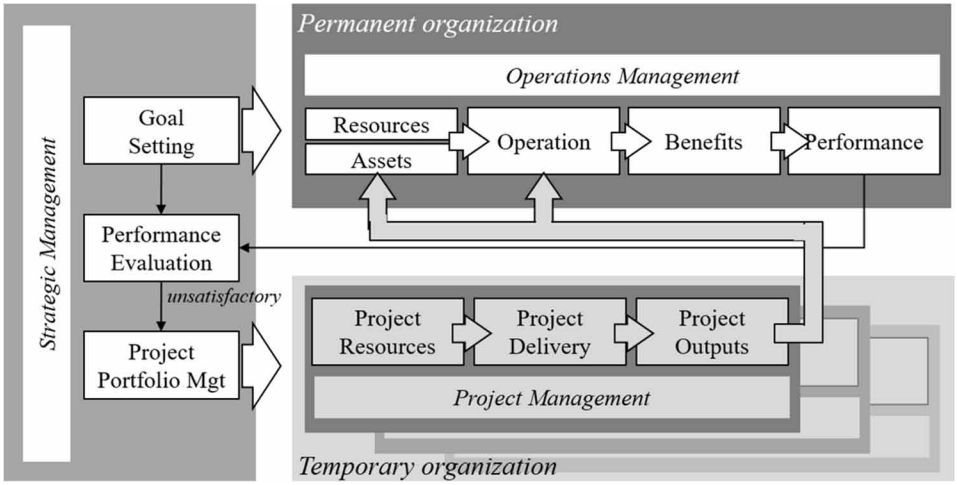
related to the outcome. “Why are we doing the project?” “Thinking of the ’why’ will lay the foundation for a much more formal treatment of target outcomes.” (Zwikael & Smyrk, 2011, p.139).

The project specification is often related to the development of a business case (for the project). The business case specifies if the expected outcome is worth the effort. Hence the business case must specify the target outcome of the project. “The target outcome will determine the outputs that are to be produced” (Zwikael & Smyrk, 2011, p.139) by the project. For the specification of the target outcome and the related outputs of the project it is necessary to specify scope, stakeholders, risks, issues, schedules, resources and governance for the project. These specifications will determine the effort necessary for the project. The definition of the target outcome will determine the worth of the project.

The developed business case is the foundation of the judgement whether to start the project or not. The judgement must answer the question “Do I believe that the project defined by the business case represents an appropriate investment?” (Zwikael & Smyrk, 2011, p.175). If the business case and hence the project specifications are accepted the project can shift further to the project planning where the detailed project plans are developed. If the business case is rejected no further afford will be spent on the initial project idea.

One potential issue in project management is that the output of the project is not utilized. Only by the utilization of the outputs of the project, the business case can be realized. The traditional perspective on projects, in which the project is a structured process that transforms inputs into outputs (Smyrk, 1995, p.2), often lacks this focus on the utilization the output. Without the utilization of the output the project cannot be beneficial for the underlying organization. Hence in the project, the transformation of input into outcomes (instead of output), should be considered. (Zwikael & Smyrk, 2011, p.23). The outcome of the project is “focusing on the end-effect generated as a consequence of the implementation of those outputs.” (Zwikael & Smyrk, 2011, p.17), It logically focuses on the long term results and can be described as the purpose of the project. The purpose of a project is not only to develop a new product or service. The important question is. “Why do we produce this product or service?” and “What do we want to achieve with this product or service?”. This difference between the ‘output’ and the ‘outcome ‘of a project is illustrated by Silvius et al. (2012) with Figure 2.

Figure 2. Project as temporary organizations that deliver changes to the permanent organization
Silvius et al., 2012.



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In this figure, projects are positioned as temporary organizations that deliver (any kind of) change to organizations, products, services, business processes, policies or assets. The output of the project is the collection of artefacts that define the change to the assets, resources, products/services, processes and/or policies of the permanent organization. The outcome of the project is the effect that this change has in terms of changed behavior and, resulting from that, improved performance through the creation of benefits.

Usually, the project manager is not responsible for the utilization of the output to generate the target outcome, as this logically takes place after the close down of the project. Hence the responsibility of the utilization is in other hands. But without integrating the project manager into the process of the utilization, the benefits of the output might not be realized.

Planning

The execution of a project can be seen as a process. Hence there are tasks and activities that have to be done. Project planning describes "how that work is to be performed." (Zwikael & Smyrk, 2011, p.181). The areas of planning can be seen as the detailed description of the work, the environment in which the work should be performed and the underlying funding of the environment and work. A decent project planning can also be seen as a major success factor for projects, but "planning not necessary guarantee success" (Dvir et al., 2003, p.389). "Project managers who manage high-risk projects tend to make much more of an effort in performing the planning process" (Zwikael & Sadeh, 2007, p.760), but on the other hand "when uncertainty is significant planning is difficult and project plans are of somewhat limited value." (Zwikael & Smyrk, 2011, p.183) The output of the planning phase is the project plan. Together with the formulated business case it is the baseline for the implementation of the project. "Everything that is done on the project must be carried out in accordance with these documents." (Zwikael & Smyrk, 2011, p.184)

There are several areas where planning is necessary for a project. The areas not only contain the 'iron triangle' of scope, time and cost, but also the quality of the project, the communication, the human resources, the risks, the procurement and the stakeholder management. The PMBOK guide defines 10 'knowledge areas' and 23 planning processes to structure the actions that have to be done (Project Management Institute, 2013).

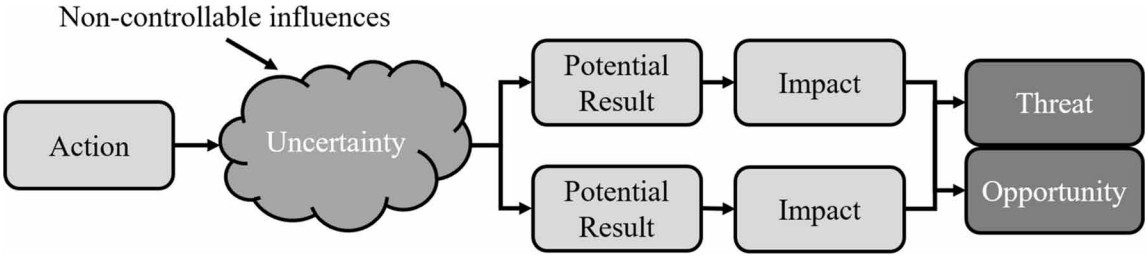
Key for the success of the project is to collect and define the requirements of the different stakeholders. The requirements that have to be collected must represent the following areas:

- Business requirements,
- Stakeholder requirements,
- Solution requirements,
- Transition requirements,
- Project requirements, and
- Quality requirements.

With this defined scope the work breakdown schedule (WBS) can be created. The WBS represents the total scope in a hierarchical decomposition. Once the scope is defined, the activities to enable the realization must be defined. The activities are clustered in work packages. Hence, "the work packages are the quantitative and qualitative descriptions of the scope" (Gareis, 2005, p.211) and must be ordered

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Figure 3. Influence of uncertainty on projects



to establish a sequence of work. After the resources and the time necessary for the performance of an activity is estimated the project schedule can be developed. The schedule defines when a specific activity should be started and at which point in time it should be finalized. It defines the overall timing of the project and includes also the overall project start and project end. The planned resource requirements enables to derive the estimated costs for each work package. The overall budget can be determined by the costs estimation. The total project budget determines the "funds necessary to execute the project." (Project Management Institute, 2013, p.209).

Uncertainty and Risk

One key aspect of projects is risks and its management. A risk is "an uncertain event or set of events that, should it occur, will have an effect on the achievement of objectives" (Office of Government Commerce, 2010). Risk is related to uncertain events and therefore often used synonymously to uncertainty. But there is a difference between uncertainty and risk. For a distinction between uncertainty and risk they are better described as "cause and consequences" (Perminova et al., 2008, p.74).

Figure 3 shows the influence of uncertainty on project risk, both opportunities and threats. The influences can be either from different sources or different types. Based on the sources, uncertainty in projects can be categorized into three categories:

- "Uncertainty from organizational complexity,
- Uncertainty from environment and
- Uncertainty form the individual project." (Martinsuo et al., 2014, p.734).

Organizational uncertainty may be caused by uncertainty in resources (Engwall & Jerbrant, 2003), project governance (Müller et al., 2008) or changes in the organizational processes, structures, budget or strategy (Petit & Hobbs, 2010). Environmental sources for uncertainty can be seen in the technological environment (Petit, 2012) or changes in the overall market or supply chain (Petit & Hobbs, 2010). At the individual project level uncertainty deals with the uncertainty of the project planning and hence with uncertainty of scope, schedule and budget (Petit & Hobbs, 2010).

Besides the sources there are different types of uncertainty:

- Technical,
- Market,
- Organizational, and

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- Resource (Rice et al., 2008, p.55).

Technical uncertainty "relates to the completeness and correctness of the underlying scientific knowledge." (Rice et al., 2008, p.55). The technical specification is question here. Is it possible to implement it? Another uncertainty comes from the market. Here it is asked if the customer is understood. Market uncertainty includes the uncertainty that the needs and wants of the customers are not clear. The third type of uncertainty is related to the organization. The organizational uncertainty describes the uncertainty that arises between the project and its included internal and external organizations. The fourth type deals with the uncertainty that lies within the resources. "Project teams continually struggled to attract the resources they required." (Rice et al., 2008, p.56) Resources are all resources a project needs for a successful performance. Examples for resources that can create uncertainty are competences, finance or infrastructure.

Creating something new always contains a portion of uncertainty and hence projects can be seen as risky. Risks in a project can be derived from all sources of uncertainty and therefore project risk can be included in all parts of the project starting from the scope, schedule and budget. But there is also a risk to achieve the projects objectives. Following the definition of PMI a risk can be seen not only negative like a threat but also positive. A positive risk is an opportunity that arises if the uncertain event happens. It has a positive impact on the project. Also risks can be categorized into two categories, the "risk in the project" and "the risk from the project." (Hillson, 2014, p.283). The major concerns of project management is about the risk in the project. How to handle individual risks within the project? The other question is more related to the underlying organization.

The different standards on project management and risk management, define project risk management in a sequence of different processes. These four project risk management processes are (Silvius, 2016):

1. Identify risks (and opportunities),
2. Analyze and assess risks (and opportunities),
3. Develop risk response strategies and plan,
4. Implement the risk response plan and control the risks.

As "it is not possible to address all risks with the same intensity" (Hillson, 2014, p.293), the question is often 'how much uncertainty or risk is acceptable?'. On the other hand, removing uncertainty takes a lot of effort and hence can be very expensive. The trade-off is that the protection from uncertainty must be affordable.

In order to analyze the risks of a project, typically the identified risks are assessed on two dimensions,

- 'Impact' and
- 'Probability'.

The impact describes the effect on the project objectives while the probability describes the likelihood that the effect arises. Table 1 shows the resulting 'probability/impact matrix', that is the visualization of the project risk assessment. The risk assessment aims to "analyze the combined effect of risks on project outcomes." (Hillson, 2014, p.295).

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Table 1. Example of a probability/impact matrix

			Impact				
			Very Low	**Low**	**Medium**	**High**	**Very High**
			0.05	0.10	0.20	0.40	0.80
Probability	**Very High 71-90%**	0.90	*0.05*	0.09	**0.18**	**0.36**	**0.72**
	High 51-70%	0.70	*0.04*	0.07	0.14	**0.28**	**0.56**
	Medium 31-50%	0.50	*0.03*	*0.05*	0.10	**0.20**	**0.40**
	Low 11-30%	0.30	*0.02*	*0.03*	0.06	0.12	**0.24**
	Very Low up to 10%	0.10	*0.01*	*0.01*	*0.02*	*0.04*	0.08

Source: (Based on Project Management Institute, 2013).
Legend: Bold = High risk; Normal = Medium risk; Italic = Low risk.

After the identification, categorization and analysis of the risks the next step is to plan responses for each of the risks. The strategy should be first developed for each individual risk and at the end summed up to an overall risk response strategy. Generally, the responses can be categorized into four different strategies. Depending on the direction of the risk (negative or positive) the response strategies are:

- Avoid/exploit,
- Transfer/share,
- Reduce/enhance, and
- Accept.

After implementation of the risk response plan, the risks are being monitored during the project's execution and the risk response strategies managed. If the risk or opportunity is over, the review ensures that the taken actions have had the expected effect on the risk. As last step in the risk management process, after the finalization of the project the overall project risk management plan, the process of risk management and the risk responses in general should be reviewed.

It may be concluded that risk management is a major topic in project management that deals with the question of uncertainty in projects. "Risk arises from all sources of uncertainty." (Hillson, 2014, p.284). It can have positive or negative impact on the project and hence be either a threat or an opportunity. In addition, risk can be on the individual level of a task, activity or process or on the overall project level. The project management standards offer a sequence of processes as a framework for handling risks, but following these processes seems to be too little to be able to cover all sources of uncertainty.

Success

Projects are done because they are expected to have benefits for the organization or a stakeholder. A benefit can be defined as "an outcome of change which is perceived as positive by a stakeholder." (Bradley, 2010, p.23). The benefits should fill the value gap that is existing between the current situation and the

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target future situation (Kaplan & Norton, 2008; Serra & Kunc, 2015, p.55) hence benefit realization, starts with projects and ends with the achievement of business objectives. (Serra & Kunc, 2015, p.55).

To realize the benefits from a desired change an organization must establish a process for enabling it. Benefits realization management is "the process of organizing and managing so that potential benefits, arising from investment in change are actually achieved." (Bradley, 2010, p.29). Due to the fact that benefits realization management is a process it is not done only at one single point in time. Hence "benefits management is a process that runs throughout the project life cycle." (Jenner, 2009, p.10). The objectives of benefits realization management are to ensure that investment decisions are made on the basis of a robust and clear understanding of the potential benefits, to capture all forms of value created and to realize benefits and create value. (Jenner, 2009, p.11-12).

Overall project success is dependent on performance and success and a project can be defined as successful if "the project meets the technical performance specifications and/or mission to be performed, and if there is a high level of satisfaction concerning the project outcome among key people on the project team, and key users or clientele of the project effort." (Baker et al., 2008). The overall project success is usually measured on two dimensions:

- Project management success, and
- Project success (Baccarini, 1999, p.25).

Project management success focuses on the process of project management while the focus of project success is on the output and outcome of the project. The distinction is important because "how success is to be defined for a project is a necessary precursor to the establishment of appropriate methods for managing the project life cycle and for the selection of suitable measurement techniques." (Bryde, 2005, p.120).

The three components of the measurement of the project management success are

1. Meeting the baseline,
2. Process performance, and
3. Stakeholder satisfaction.

The success on the baseline can be measured against the golden triangle of the initial project plans:

- Scope,
- Budget, and
- Schedule.

How good is the project against the planned schedule? How good is the project against the planned costs? Is there an overrun of the budget? The measurement of the scope can be done against the initial technical specifications. Is the provided functionality in line with the planned functionality? These criteria can be categorized as objective and direct. The measurement can be done between a planned and a performed value. The second component on what the process management is judged is the process performance. It measures "how efficient the project has been managed." (Baccarini, 1999, p.28). The third component stakeholder satisfaction measures how satisfied the stakeholder was with the process

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of project management. It hence deals with the process of project management and not with the output or outcome of the project.

The project success is measured on three components:

1. Achieving the project goal,
2. Realizing the project purpose, and
3. Stakeholder satisfaction (Baccarini, 1999, p.29).

The project goal measures if the project and its outcome meets the strategic objectives of the organization that benefits from the project. Second, the project purpose is successful if it satisfies the user's needs. The stakeholder satisfaction - in this case - is related to the results of the project and hence to the output or outcome. Different to the stakeholder satisfaction as measurement on project management the question here is if the stakeholders are satisfied with the end result of the project.

Baccarini (1999) describes that the two dimensions of measuring success are not always related to each other. Even if the process is perceived as a success the product can be a failure, and vice-versa. More critical for the underlying organization is if the output and the outcome of the project is a failure. This indicates that the company cannot realize the expected benefits.

The measurement of success is also a matter of timing. Different success criteria are measured different at different time intervals. The shortest dimension is 'project efficiency' (scope, budget and schedule). It measures "What factors are critical to project management success" (Cooke-Davies, 2002, p.185) and it can be assessed immediately but does not include any information on the long-run benefits. The 'impact on the customer' can be seen as the second dimension. It indicates the satisfaction of the customer with the deliverables of the project. As the customer will utilize the deliverables on a period of time this measurement can be seen as medium-term. The 'business success' dimension measures "the immediate and direct impact the project may have on the organization." (Shenhar et al., 2001, p.715). It hence measures the impact of the project on the medium to long term business results. As a fourth dimension 'preparing for the future' can be seen. The fourth dimension is important because "projects at the higher end of uncertainty dimension build new capabilities and create opportunities for the future." (Shenhar et al., 2001, p.713). It hence relates the project to the future business of the underlying organization and therefore it is based on the long-term time frame.

Business Development

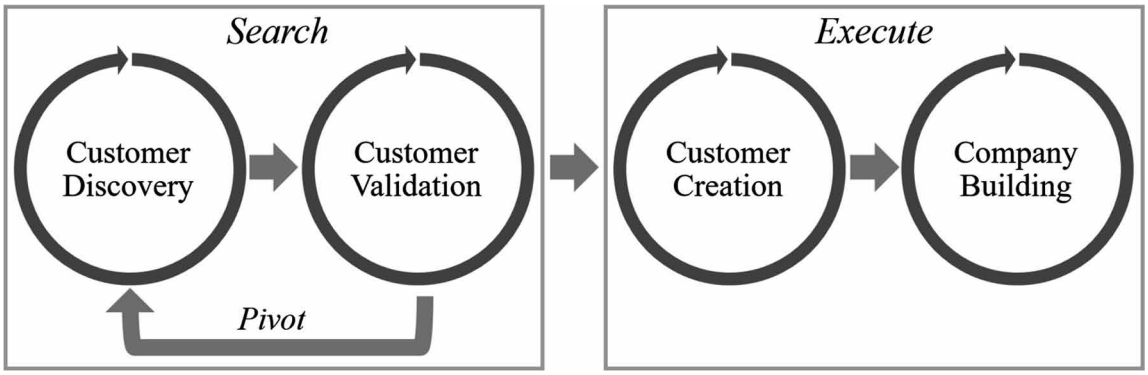
In this section, the discipline of business development is described. Similar as for project management, the description focuses the process of business development, with the focus on the initiation phase, the planning of a new business, uncertainty and risk in business development and the criteria for the success of business development.

Process

Business development is the discipline that aims to develop 'new business'. New business development distinguishes itself from the development of a product or a service, by searching for "a scalable, repeatable, profitable business model." (Blank & Dorf, 2012, p.xvii). Whereas classical product development is done in a sequential approach, "uninterrupted by changes or new ideas no matter how good they might

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Figure 4. The business development process
Blank & Dorf, 2012, p. 23.



be for the business." (Blank & Dorf, 2012, p.5), this approach is most likely to fail in the case of new business development because "both the customer and the product are unknown" (Blank & Dorf, 2012, p.8). The development of a new business must be more iterative to include the high level of uncertainty. Blank and Dorf (2012, p.22) propose a four-step model at which each step is an iterative process. As the development of a new business should focus on customers the four steps are customer oriented. It all starts with 'customer discovery' where the visions are turned into business model hypotheses and these hypotheses tested on the customer reactions. The second cycle is the 'customer validation' "which tests whether the resulting business model is repeatable and scalable." (Blank & Dorf, 2012, p.22). The third step is the 'customer creation' where the end-user demand is created and the sales started. At the end of the process the 'company building' is located. It focuses on the transformation of the temporary organization that was in search for the repeatable, scalable and profitable business to a permanent organization that "executes the validated business model." (Blank & Dorf, 2012). Figure 4 shows the four steps of Blanks Customer development process for business development. The first two phases focus on the search and hence on the initiation of the new business idea, the latter two on the execution and therefore on the establishment of the new business.

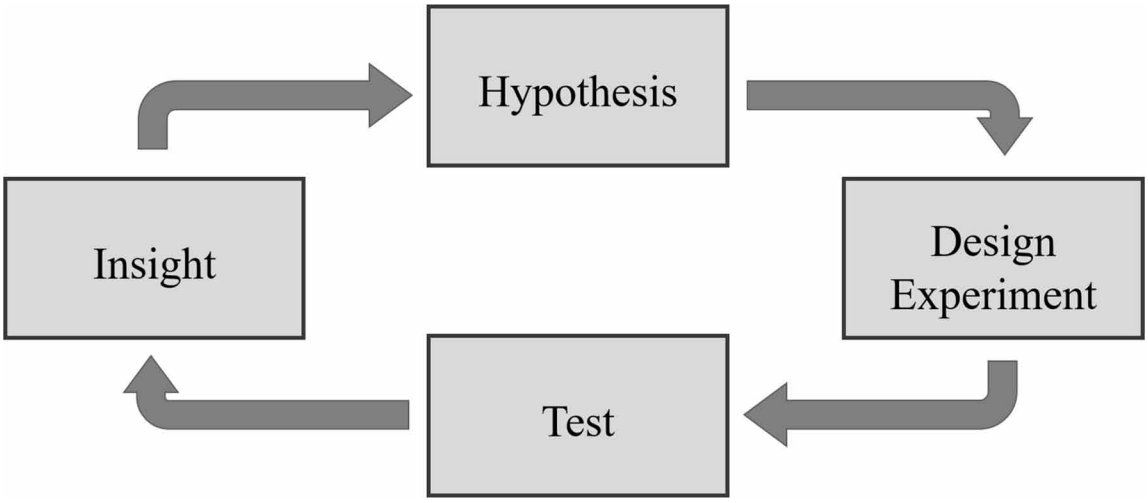
Planning

Business plans are based on assumptions and hypothesis, but "hypothesis is just a fancy word for 'guess'" (Blank & Dorf, 2012, p.37). Key for the successful establishment of a new business is to turn the assumptions into facts. This can only be done by testing them. The testing of assumptions is done following an iterative cyclic approach, as illustrated in Figure 5.

This iterative development cycle starts with an initial hypotheses and the first draft of the business model. In this phase the vision of a new business is turned by assumptions into a business model. In the second phase experiments should test the 'problem' hypothesis. Is there really a problem or a need that can be solved by a new business? If the initial assumptions are wrong this is the first point where they can be adapted. If the assumptions are adapted the new assumptions must be tested again. After the problem is tested the solution must be tested. The goal is to ask if the value preposition will solve the problem. At this time "the goal is not to sell the product, but to validate how well you understood the problem in Phase 2" (Blank & Dorf, 2012,p.68). The fourth phase is to validate the results of the tests.

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Figure 5. The iterative development cycle
Blank and Dorf, 2012, p. 38.



It must be clear that the problem is understood, the problem can be solved by the value preposition and that there is a decent volume of customer base that is willing to pay for the new product or service. Only if the questions are verified the second phase of the business development can be started, otherwise the initial plans and assumption must be pivoted and adapted.

On the basis of the business model a business plan can be worked out in detail. “A business plan should justify and describe your business idea in a clear and adequate manner.” (Schwetje & Vaseghi, 2007, p.1). It includes all relevant information of the new business. The business plan should include several other aspects like:

- Market analysis,
- Organizational structure,
- Management team,
- Operational plans,
- Critical milestones, and
- Funding.

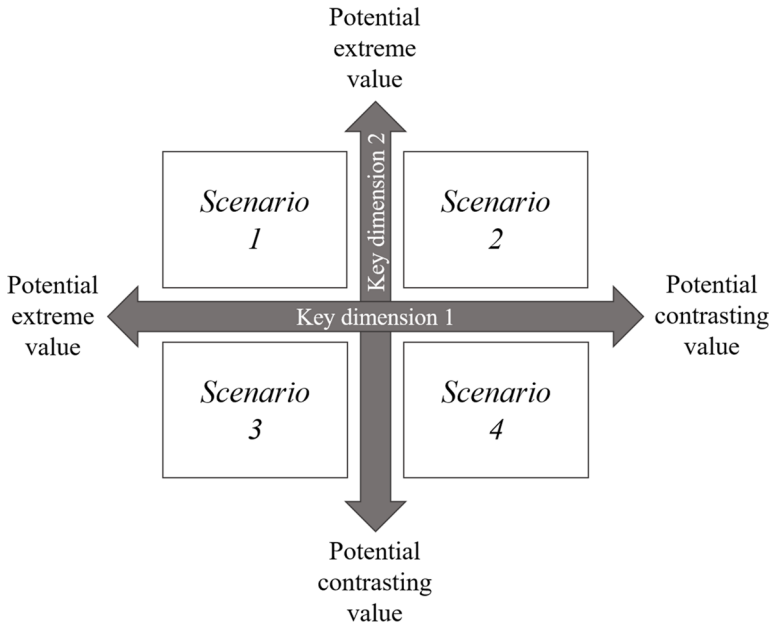
As in the early stage of a business plan it contains a lot of assumptions, all the assumptions must be included in the plan. This enables to pivot the plan and model easier in the process of the establishment of the new business because “no business plan survives first contact with customers.” (Blank & Dorf, 2012, p.35).

Uncertainty and Risk

Uncertainty and risk is one of the key topics in business development, as uncertainty can be seen as the justification for the profit of the new business. Hence uncertainty and different variation of uncertainties are important in business development and methods to cope with it exist.

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Figure 6. Example of a scenario framework



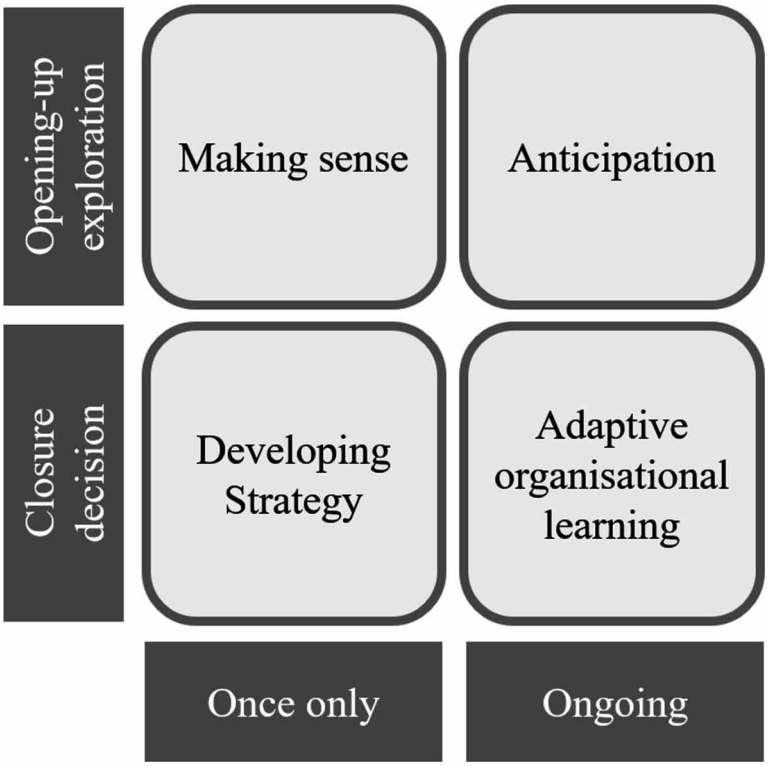
One of the tools to cope with uncertainty is "Scenario planning". At the beginning "scenarios have been used as tools for indirectly exploring the future of society and its institutions." (Bradfield et al., 2005, p.795) Hence the objective of scenario planning in business development is "to better prepare an organization for the future." (Garvin & Levesque, 2006, p.1). Scenario planning is not searching for the best fitting answer for a problem like strategic planning is doing, but for multiple possibilities. It hence "investigates in several uncertainties simultaneously." (Garvin & Levesque, 2006, p.1). The objective is to reduce the surprises of an incorrect assumption of the future by a broader planning of the business model and thinking about multiple futures.

The process of scenario planning starts with defining a key focal issue. This can either be a "significant, upcoming decision" (Garvin & Levesque, 2006, p.2) or "an issue that has profound uncertainty but is particularly relevant to the business." (Cinquini et al., 2013, p.51). If a factor has an impact on the scenario it is a driving force. Hence this are themes that will affect the key focal issue. Sources for driving forces are "social systems, economics, political affairs and technology." (Garvin & Levesque, 2006, p.3). Due to a wild range of driving forces they must be simplified for a further analysis. The critical uncertainties are "the two most important variables" (Cinquini et al., 2013, p.52) for the issue. These two critical uncertainties should not correlate to each other and hence be classified as independent variables.

For each of the variables two counterpart definitions, each from an end of the possible range of values, are taken and the two dimensions intersect to each other. The result is a 2x2 matrix, as illustrated in Figure 6, with four possible future scenarios. These matrix is the scenario framework. "The goal is to end up with a few, clearly contrasting environments." (Garvin & Levesque, 2006, p.3). These different futures are the scenarios that represent the alternative developments of the selected critical uncertainties and its interrelation to each other. After the definition of the scenarios each of the scenarios and its characteristic should be described in detail.

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Figure 7. Areas of scenario planning



One of the key areas of scenario planning is that the hypothesis is tested against the key focal issue. Here each of the possible futures is applied on the organization and the issue and the impacts on the organization explored. This leads to the development of strategic options that can be taken to deal with a certain situation. At the end early warning signals must be identified. These signals indicate the "emergence of one scenario or another" (Garvin & Levesque, 2006, p.4) and hence if the world is "moving in a particular direction." (Garvin & Levesque, 2006, p.4). By this it is possible to optimize the business model in dependence on the given situation.

Scenario planning is used in several areas. The areas can be categorized on two dimension. First, the purpose of scenario planning can be divided either into a specific problem or an ongoing process. The second categorization is between the closing of a specific decision or the opening of an organization for future exploration (Bradfield et al., 2005, p.806). Figure 7 shows the categorization of the scenario planning areas. By the combination of the two categorizations scenario planning can be clustered into four areas, "making sense of a particular puzzling situation, developing strategy, anticipation and adaptive organizational learning." (Bradfield et al., 2005, p.806)

Success

One of the issues is how the success and performance of a business development can be measured. "Performance measurement can be described as the acquisition and analysis of information about the actual attainment of company objectives and plans and about factors that may influence plan realiza-

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tion." (Kerssens-van Drongelen & Cooke, 1997, p.347). The measurement of success and performance is done on a performance metric and performance dimensions.

The performance metrics "provide a way of assessing the progress over time of specific activities, by quantifying key aspects of these activities." (Perkmann et al., 2011, p.207) Performance can be measured quantitatively and qualitatively. Based on the performance matrices, performance dimensions can be discovered. "Performance dimensions are evaluation criteria that identify those factors whose accomplishment is critical for success." (Chiesa & Frattini, 2009, p.20)

The performance measurements for the development of a new business differ from the once for an established and operating business. For established businesses the key success criteria are based on financial KPI's. For a new business "traditional financial measures may not be useful" (Frattini et al., 2006, p.432) and other indicators seem to be more relevant. Blank and Dorf (2012) suggest seven dimensions based on the business model to measure success. Each of the dimensions has one or more measurement indicators.

The dimensions and metrics are:

- **Value Proposition:** What are product costs, market size, attainable market share, and customer impact of network effects?
- **Customer Relationship:** What are customer acquisition costs, prospect conversion rates, customer lifetime value, and customer switching costs?
- **Market Type:** What market is the business in?
- **Cost Structure:** What are the operating costs of the business?
- **Channel:** What are the costs of selling through the channel? Channel margin, promotion, shelf-space charges?
- **Revenue Streams:** What are the average selling price, total achievable revenue, and number of customers per year?
- **Burn Rate:** How much cash is the company "burning" (spending) a month? When will the company run out of cash?

The measurements should be carried out for different time periods and compared over the process of the development of the business. The key question behind the numbers is not only if the business model is profitable, but also if it is scalable enough. If the numbers indicate that the probability to grow is not significant, it might be necessary to adopt or pivot the business model.

PROJECT MANAGEMENT AND BUSINESS DEVELOPMENT COMPARED

One of the major research prepositions is that project management and business development have similarities. This paragraph compares the disciplines on project management and business development along the dimensions of 'process', 'planning methods', 'risk and uncertainty' and 'success' in order to analyze what the two disciplines have in common and what differences exist.

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Comparison of Characteristics

Process

One of the compared dimensions is the process the two disciplines follow. Both project management and business development aim to create and/or deliver something new. Compared to the literature of project management the 'newness' of what should be delivered is higher in business development than in project management. This 'newness' relates to the uncertainty at the start of the process. The objective of the business development is to search within this uncertainty for the new business. Hence the uncertainty must be reduced to one evolving future that is beneficial for the underlying organization. It can be seen that the assumptions made for the first business plan in the initiation phase will not hold till the end. A classical step-by-step approach will not be able to cover the level of uncertainty. Hence business development follows a cyclic approach. The objective of the cycle is to test the initial assumption on their correctness as fast as possible to become clearer about the area of development. The cyclic approach should be followed for all activities and assumptions over the business development process. The iterative steps are:

- 'Formulate the hypothesis',
- 'Design experiments to test the hypothesis',
- 'Test the hypothesis', and
- 'Analyze the results by the insights got from the tests'.

At the end the process starts at step one again. By this the uncertainty can be gradually removed and the initial hypotheses transformed to hard facts. The process is hence designed to remove uncertainty within the area of development. Lowering the level of uncertainty generates facts on which the new business can be based.

Planning

For both project management and business development, planning is a key component. However, the purpose and the approach differ. Planning for a project sets the baseline for the execution. "Everything that is done on the project must be carried out in accordance with these documents." (Zwikael & Smyrk, 2011, p.184). The assumption is that at the beginning of the project everything is clear. Hence the planning can follow a strict process starting with the scope, the time and the budget and then all other areas, like risks and stakeholders. For project planning the assumption is that there will be no or only little deviations from the plan during the execution.

In business development, the overall mindset is different. Here the major assumption is that "no business plan survives first contact with customers" (Blank & Dorf, 2012, p.35). The business model is a living document based on the knowledge at this time of the business development. Minor and major changes of the business model and hence the business plan are normal for the area of business development. Therefore, the plans, as seen in the processes, are also generated by a cyclic approach. From the initial plan with a lot of hypotheses the assumptions are turned into hard facts and hence the business plan changed.

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One important tool for business development is scenario planning. Because it is not possible to forecast the future, plans and response strategies are made for different possible futures. Project management does not do this at all. The project planning assumes only one future, with some deviations that are handled as risks for which specific response strategies can be planned. The planning phase for a project is the basis for the performance of the project and deviations should be as little as possible to the plans. On the other hand for business development the plan is a living document that can be adopted along the full life-cycle of the business development to create a beneficial business for the organization.

Uncertainty and Risk

One key difference between project management and business development is the perception of uncertainty. In project management literature uncertainty is often perceived as risk and hence as threat that should be avoided. On the other hand for business development uncertainty is an opportunity. Only in an uncertain situation a new business can be developed and hence more profit generated for the organization. The perception of uncertainty as an opportunity is relatively new in the literature of project management. But also in this concept the opportunity within the uncertainty will only help to be better than the planned values e.g. scope, time and budget but not pivot the project into a completely different direction.

Success

There are also differences in the measurement of performance and success. The major success criteria for the project management process is on the execution in accordance to the plans. It is a planned versus executed value analysis. Therefore, the metric for measurement is around the golden triangle scope, time and budget and hence emphasis the process. It is done once, after the project is completed. The idea of measuring the overall process on a longer basis of the target outcome of a project and not only on the output is relatively new in literature. This indicates the need for a different point of view on project success.

The success and performance of business development is measured in two different ways. The new developed and established business can be measured, like any other business, by financial KPI's like 'return on investment' or 'sales'. This is done on a regularly basis, e.g. once a year. The performance of business development must be monitored over the whole process of the establishment of a new business. Here performance can be seen in the transformation of the initial assumptions into 'real' data. Next to this business development has financial KPI's that matter. The two most important are:

- 'Cash burn for period' and
- 'Cash remaining' (Blank & Dorf, 2012, p.445).

This indicates two things. First, as 'per period' tells, the measurement of the performance and success is done on a regularly basis and not only once after the completion of the process. Second 'cash burn for period' and 'cash remaining' indicate how much time is left to transform the business model into a sustainable, scalable and profitable business.

Compared to project management time and scope are very flexible in business development. The objective is not to deliver the initial business idea but to have a profitable business at the end. The emphasis is on the outcome.

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Table 2. Overview of the comparison of project management and business development

	Project Management	Business Development
Process	Linear	Cyclic, step-by-step
Planning	At the start	Re-planning over the life cycle
Risk and Uncertainty	Perceived as threat	Perceived as opportunity
Success	Measured on short-term dimensions Emphasis on the process and output	Measured on long-term dimensions Emphasis on outcome

Reflection

Although both disciplines have similar topics and perceptions there are also major differences between the two. Table 2 shows an overview of the differences in the compared areas between business development and project management.

The process of project management is a linear, step-by-step approach while business development follows a more cyclic approach. The planning for a project is done once, at the beginning of the project. On the other hand the plans for business development are living documents and hence re-planning is part of the overall process. Also the success is measured different. Project management success is measured once after the completion of the project and in accordance to the project plan. The measurement is on short-term dimensions. The emphasis is on the process. Business development is measured on the target outcome, the benefits the business is generating for the organization and hence on the long-term success of the business. In opposite to project management business development is also measured periodically. The comparison also highlights that the perception of uncertainty is different for the two disciplines. The common perception of uncertainty in project management is as a threat while for business development uncertainty includes the opportunity and hence is the source for the new business.

Outlook on Scrum

One of the project management frameworks that uses elements of business development is Scrum. Scrum is an agile project management approach that is based on the operational model of 'Plan-Do-Check-Act' (Gloger, 2010, p.196). Hence similar to business development, the process is based on a cyclic approach.

Process

In Scrum each of these PDCA Cycles is called a sprint. The overall product vision is tried to be developed by a continuous improvement of the solution. The improvements of the sprints are collected and prioritized in the product backlog. The product backlog is hence the list of functionality of the overall end product. Each of the sprints will have a planning phase in which the objectives for this sprint are set. A sprint is normally between 2 weeks and one month. The planning must answer two major questions: "What has to be delivered in the upcoming spring?" and "How will the work be delivered?" (Sutherland & Schwaber, 2013, p.8). The result of the sprint planning is the sprint goal. It is the basis for the implementation of the sprint by the development team. At the end of a sprint a sprint review is held. At this stage it reviews what has been done in the sprint and what changes did occur in the overall product backlog or vision by

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the development that has been done in this sprint. “The result of the sprint review is a revised product backlog that defines the probable product backlog items for the next sprint” (Sutherland & Schwaber, 2013, p.11). Another element of the sprint cycle is the sprint retrospective. It is an opportunity for the Scrum team for incremental improvements of the development process within the framework of Scrum. Although improvements of the process are always possible “the sprint retrospective provides a formal opportunity” (Sutherland & Schwaber, 2013, p.12) for searching for improvements.

As described by Schwaber and Sutherland “Scrum employs an iterative, incremental approach to optimize predictability and control risk” (Sutherland & Schwaber, 2013, p.3). As it is based on process control theory Scrum focuses on the process. Comparing the process of Scrum to the process of business development the two processes are similar. Both focus on a cyclic approach.

Planning

The Scrum planning is done within the product vision. Within the product vision certain functionality should be provided. For each Scrum sprint the functionality that should be implemented is defined and planned. The objective is an incremental improvement of the overall product to get closer and closer to the overall product vision. Hence also planning is done very often in the process of Scrum. It emphasis a two-way planning. The overall product vision and the functionality are planned on a relatively high level, and the next Scrum sprint is planned in more detail.

Uncertainty and Risk

There are two major ideas behind the short cycles of a Scrum sprint, first to control the risk and second to optimize the predictability for future cycles. This indicates that there is a sense of uncertainty in the process but the perception of the uncertain is as risk and hence as a threat. What can also be seen is that the overall uncertainty within the process is not included in any plan, neither in the product vision nor in the plans for the sprint. The assumption is that by the incremental improvement the predictability of the future sprints and the development of the product vision is given.

Success

The success of Scrum is based on delivering. Hence the success is measured on the process of the implementation. The major assumption is, that by the incremental improvement toward the product vision the long term objectives with the delivered product or service can be achieved. Hence the success criteria for Scrum emphasis more on the output. The long term success in only assumed by the customer satisfaction by the end of the delivery period.

Reflection

The process of Scrum is structured in a cyclic way. This is similar to the process of business development. The motivation of the cyclic approach in business development can be seen in the testing of the different starting hypotheses. Within Scrum the short cycles are used to reduce the risk in the future cycles of the development, hence the functionality of the cycles differs from each other. Uncertainty is

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Table 3. Overview of the comparison of project management and business development

	Project Management	Scrum	Business Development
Process	Linear	Cyclic-phases	Cyclic, step-by-step
Planning	At the start	Phase-wise-detailing, incremental	Re-planning over the life cycle
Risk and Uncertainty	Perceived as threat	Perceived as threat	Perceived as opportunity
Success	Measured on short-term dimensions Emphasis on the process and output	Measured on short-term dimensions Emphasis on output	Measured on long-term dimensions Emphasis on outcome

also treated different. The short planning cycles try to reduce the uncertainty in this development period and the following period. Overall scenarios for different futures are not prepared in the process of Scrum.

Another difference can be seen in the success measurement. The underlying argumentation for Scrum is that by the small development cycles a continuous improvement of the overall deliverable can be secured and hence the stakeholder will be satisfied with the output of the process. But similar to the other project management approaches the success criteria are set on the output of the process, hence they are short-term process driven. The overall – long-term – outcome that should be generated by the output of the process is not included in the measurement of the success of Scrum. Table 3 shows the differences between traditional project management, Scrum and business development.

Summary

This paragraph reported an analytical comparison of the disciplines of project management. In our comparison, we described both disciplines along the dimensions of 'process', 'planning methods', 'risk and uncertainty' and 'success'. The comparison showed that in both disciplines, the dimension of uncertainty is an inseparable element. However, the disciplines differ in the way they handle uncertainty and the related risk/opportunity.

This difference in the handing of uncertainty influenced all of the four described dimensions:

- The process,
- The planning,
- The risk and uncertainty management, and
- The success measurement.

In project management literature uncertainty is often perceived as risk and hence as threat that should be avoided. In business development, uncertainty is considered an opportunity. It can be concluded that the perception and the handling of uncertainty is more developed in business development than in project management. The methods to handle uncertainty in project management are oriented towards finding the most probably scenario of the uncertainty, whereas business development handles uncertainty with methods, such as scenario analysis, that cover different possible outcomes of the uncertainty.

The project management of Scrum uses some elements of business development but overall it can be seen that only using Scrum is not sufficient enough to manage uncertainty in projects.

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In the following sections, we will empirically explore how scenario planning can be applied in project management, as a way to handle uncertainty.

RESEARCH STRATEGY

The empirical part of our study focused on the potential usage of scenario planning in project management. The overall research question we formulated, "How can the techniques of business development for dealing with uncertainty be used in project management?", is therefore for this part of our study specified to "How can scenario planning be used in project management for dealing with uncertainty?".

In order to study this question, we deployed an explorative research design, with semi structured interviews as main data collection strategy. The interviews were conducted with project managers from different industries.

For the interviews, the following lead questions were developed.

- Do you think the technique of Scenario Planning can be used in project management?
- At which phase or steps do you think that the technique of Scenario Planning can be integrated to project management?
- What benefits can be generated by the technique of Scenario Planning?
- Do you see disadvantages for project management in the method of Scenario Planning?
- What has to be considered when using Scenario Planning in the other areas of project management or the project management process?

In the interviews, the researcher followed up on the answers of the respondents in order to discover backgrounds and the 'why' of the answers.

The interviews were transcribed and analyzed using emergent coding. The interviews were fragmented into the single parts and interesting knowledge areas. After that coding was done on the fragments in order to find common categories or elements.

FINDINGS

Regarding the question "How can scenario planning be used in project management for dealing with uncertainty?", the following answers were derived from the interviews.

Data from the Interviews

Usage and Integration

The planning of scenarios is seen as useful for the project management phases of initiation and planning. The integration of Scenario planning is seen more on the overall project level than on the individual work package or task level. Codes that are used are "general", "overall" or "full picture".

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Benefits

Different benefits are seen in the different areas. For the initiation phase the answers are very similar to the answers of business developers. The benefits that can be summed up as "information" and "understanding" are the same as the benefits business developers see in this method. In addition, the benefit of "clarification" can be discovered. The interviewees think that with the planning of different scenarios in the phase of project initiation the scope of the project can be clarified.

The interviewed project managers think that scenario planning can have a major benefit for the risk management. By the consideration of multiple aspects, that are necessary for the planning of the scenarios, the process of risk identification is seen to be supported. Next to the identification of risk it is also seen that the planned scenarios can have a positive impact to the planning of risk response strategies, since different possible solutions might be already in the different scenarios.

The planned scenarios might also be beneficial for the milestone planning. The interviewees think that the planned scenarios might be a foundation for better decisions at milestones.

Disadvantages

One of the disadvantages that is seen in the scenarios is that different stakeholders might prefer different scenarios. It is mentioned that the objectives might not be clear and hence different stakeholders will push in different directions. The fear is that the different scenarios and hence possible futures will lead to more changes within the process. The changes will trigger an additional effort in re-planning the overall project within the execution phase.

Considerations

One of the fears of the interviewed project managers is that the objectives get blurred. In their point of view it must be considered that the stakeholders and customers of the project expect a clear definition of the deliverables at the beginning of the project. Different scenarios can make this complicated and hence a good commitment between the project, the project owner and the customer must be found.

The scenarios must also be considered in the measurement of success and performance. It is mentioned that it might be hard to measure success if different outputs are possible.

Reflection

Scenario planning seems to be interesting for some parts of the project management process. Within the initiation phase it is thought that the scenarios can generate more information and a better, shared understanding of the topic. Within the process of planning, scenarios can be useful for single areas of the planning process. Especially the areas of risk management and milestone planning are mentioned by the interviewed project managers. The advantages are seen in the consideration of multiple aspects for the risk management and that this can also be a foundation for milestones and decisions on that milestones. Disadvantages are mainly seen in the blurring of objectives. This can lead to additional changes and problems in the measurement of the performance and success of the project.

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CONCLUSION

This chapter studied the similarities and differences between the disciplines of business development and project management. The rationale of this comparison is the realization that these disciplines have strong similarities. Both are temporary, follow a structured process and are aimed at creating something new. However, despite these similarities, business development and project management are considered as different disciplines in both research and practice.

In our comparison, we described both disciplines along the dimensions of 'process', 'planning methods', 'risk and uncertainty' and 'success'. The comparison showed that in both disciplines, the dimension of uncertainty is an inseparable element. Interestingly enough, the disciplines differ in the way they handle uncertainty and the related risk/opportunity. This difference in the handing of uncertainty influenced all of the four described dimensions:

- The process,
- The planning,
- The risk and uncertainty management, and
- The success measurement.

In project management literature uncertainty is often perceived as risk and hence as threat that should be avoided. In business development, uncertainty is considered an opportunity. It can be concluded that the perception and the handling of uncertainty is more developed in business development than in project management. The methods to handle uncertainty in project management are oriented towards finding the most probably scenario of the uncertainty, whereas business development handles uncertainty with methods, such as scenario analysis, that cover different possible outcomes of the uncertainty.

The project management of Scrum uses some elements of business development but overall it can be seen that only using Scrum is not sufficient enough to manage uncertainty in projects.

Based on our findings, we explored the potential use of the technique of Scenario Planning, as a technique that is used to handle uncertainty in business development, in project management. The respondents in our interviews indicated that they saw potential in the used of this technique in project management. More specifically, in the initiation phase the benefits of scenarios are seen in the creation of a shared understanding of the topic as well as the provision and consideration of different information. In the planning phase this information and hence the knowledge about different possible futures can be useful in the area of risk management and milestone planning. The advantages that are seen are similar to the advantages business developers see in this method.

As a potential disadvantage, the interviewed project managers mentioned that scenario planning might hinder the traditional measurement criteria for project and project management success. Hence, if the techniques are used, this must be considered within the measurement process.

FUTURE RESEARCH DIRECTIONS

As our study was largely of a conceptual and interpretive nature, a recommended direction for further research would be the empirical testing of the use of scenario planning in project management. For example, in the area of scheduling. A suitable research strategy for this would be a (longitudinal) case study.

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Chapter 64
Building Sustainable Enterprises through Innovations in Bulgaria

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ABSTRACT

This chapter aims to focus on the role of innovations for achieving sustainable development of Bulgarian enterprises. Following an analysis of the Bulgarian economy, the chapter explores a model for transforming businesses towards sustainability through innovations in production processes. The socioeconomic and environmental implications are considered in terms of defining the major outcomes of implementing sustainable business practices in Bulgaria. A comparison is made with the sustainable development levels in some EU countries to serve as a basis for identifying and further elaborating the main political and economic targets for Bulgaria.

INTRODUCTION

The countries from the former Eastern block have gone through a number of drawbacks in terms of their economic and industrial development as a result of the long period of transition. This has led to an abundance of underutilized resources and a deterioration of the production technology. The severe economic downfall has also significantly contributed to the fragmentation and polarization of the party system, which in turn undermines the capacity to manage the economy effectively (Haggard, 1995). Many firms in emerging economies have become trapped in dependent relationships as low-cost providers of technology, low-value manufactured goods or services, and have failed to develop their own design of new products (Bessant & Tidd, 2009).

The Bulgarian economy, in particular, went through all stages of the transition period – high inflation, drastically decreasing GDP, unemployment and income inequality, industrial stagnation, political instability and corruption. The accession of the country to the European Union in the beginning of 2007 and the following years that coincided with the financial crisis have also contributed to the transformations in the profile of the Bulgarian economy. Therefore, the analysis on the transition period of the

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country is of crucial importance in forecasting future trends of its economic development and drawing up scenarios for sustainable policy implementation, based on the increase in innovations.

Most commonly, in an economic downturn the response of the industrial enterprises is to make employees redundant, to sell out assets and to dispose of adjoining business operations in order to bridge the gap of financial resources. This, respectively, results in a significant reduction of valuable resources, alienation of key customers and loss of competitive markets. A number of macroeconomic studies in the late 90s have analyzed the determinants of growth in transition economies (Havrylyshyn, Izvorski, & Rooden,1998; Fischer, Sahay, & Vegh, 1996; Svejnar, 2002; Abed & Davoodi, 2000). Among their key findings is that structural reforms and reduction of government expenditures are required in all sectors of the economy and albeit the initial effect of reforms on output may be negative, over time the best growth performances are in those countries which make their greatest progress when implementing reforms. Also, growth performance in general is better in those economies where stabilization has been achieved earliest and where structural reforms have progressed most (Havrylyshyn et al., 1998).

It was generally believed that the transition would start with a recession, caused both by restrictive macroeconomic policies and by restructuring of the economy as a result of the shift to a market economy (Fischer et al., 1996). All countries experienced almost similar initial setbacks in their economic growth. Hence, they also carried out similar reforms in terms of macroeconomic stabilization, price liberalization, small-scale privatization and the break-up of state enterprises. Countries that developed a functioning legal framework and corporate governance have performed better than others (Svejnar, 2002).

The privatization process of state industrial enterprises was of paramount importance but it was performed in a disorderly manner and at a rather slow pace. The first laws on privatization were adopted in 1991-1992 but only for the small-scale enterprises, whereas the privatization of the heavy industry commenced in 1994-1996 and in some countries in 1997-1998. The mass privatization, carried out by privatization funds, ended up in the formation of corporate holdings. In Bulgaria, the majority of these state enterprises were bought by the new holding structures at a price which was below the market price of the assets. Due to the loss of markets, outdated technology, vague competition and poor management, the privatized industrial enterprises gradually became insolvent and were declared bankrupt in the late 90s.

In general, all of these factors contributed to the severe negative transformations in the structure of the GDP. In the 90s, in 2/3 of the CEE (Central and Eastern European) countries the industrial share in the GDP was drastically reduced and the agrarian sector aquired a growing proportion. This tendency continues nowadays and characterises the economies with sectoral imbalances along with output produced in the shadow economy, which slow down the R&D process and the introduction of industrial innovation in the 21 century.

This paper identifies the need for innovative mechanisms in transition economies as a measure against the post effects of an unstable political system and the recent financial crisis. It aims to highlight the role of innovations for achieving sustainable development in Bulgaria, particularly in the undertakings of small and medium enterprises.

The first part of the analysis provides an overview of the Bulgarian economy over the last 20 years - the dropdown of industrial production, the difficulties in setting up and managing SMEs, and the general decline in the country's economic activity. Furthermore, the paper explores the development impacts which will be achieved through the introduction of innovations. A comparison is made with some sustainable innovation levels in EU countries to identify and further elaborate the main political and economic targets for Bulgaria in the short and the long term. The last part of the paper summarizes the main findings and concludes.

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THE BULGARIAN ECONOMIC TRANSITION

Since the start of market reforms in 1989-1990, the socio-economic transformations in Bulgaria have passed through several stages, thus accelerating the social polarization in the country. Economic modernization was severely hindered as a result of a number of deficiencies in economic policy making, significant industrial decline, collapsing infrastructure and the loss of human capital after a sequence of emigration waves. Bulgarian early transition is marked by scarce progress in social reforms, caused by a variety of economic, social and also psychological burdens, inherited from the 50 years of centrally-planned economy. Hence, the core of policy making for the last 20 years has been to respond to the public expectations for building successful mechanisms to implement anti-poverty measures.

Since July 1997 Bulgaria has adopted a currency board arrangement, thus facilitating the macroeconomic stabilization and the gradual economic growth in the years prior to the country's EU accession in January 2007. According to the data from the Bulgarian National Statistical Institute, real GDP growth rates varied between 4.1% and 6.6% in the period 2001-2008 and at the same time the nominal GDP per capita has increased from 1919 EUR in 2001 to 4 475 EUR in 2008. According to initial data, during the first quarter of 2013 the GDP is 8,2 MEUR while per capita GDP is 1 100 EUR. Meanwhile, the official average income level in Bulgaria is still the lowest among the new EU member states.

As observed by Mintchev, Boshnakov and Naydenov (2011), during the last 20 years Bulgaria was affected by various adverse economic and demographic processes, which were particularly severe during the first half of the 1990s. The Bulgarian population decreased by about 13% during the first 15 years of transition (1989-2004) – or 1.2 million in absolute figures – of which 500 000 were due to natural disease and 700 000 due to emigration. Additionally, the increased migration from underdeveloped regions to more developed ones intensified the existing regional disparities.

Innovation in the Bulgarian Post-Transition Environment

According to a recent World Bank report (Report number 66263-BG, 2012) Bulgaria's transition was characterized by considerable macroeconomic turbulence and structural transformation, during which export-oriented industries generally declined. The country's competitiveness has improved in the last years but not strongly enough to catch up with its EU peers. While in 1990 the industry comprised 50% of GDP and 43% of employment, in 2001 it fell down to 18% GDP and 23% of employment. It is precisely innovation that could help industries in which Bulgaria has a comparative advantage to move up the value chain and expand the high-tech export base of the country. The Bulgarian government has committed to meeting a target of R&D/GDP of 1.5% by 2020, which is three times the current level. A large share of the new investments is expected to come from industrial enterprises. However, the report points out that while greater R&D levels are important, it is also important to upgrade relevant institutions, policies and legislation. These would ultimately provide the necessary strategic support to research and innovation and thus respond to the urgent need to reverse the erosion of Bulgaria's technical and scientific competences.

In order to meet the targeted R&D/GDP level of 1.5% by 2020 there should be a substantial increase in R&D investments to exceed the current level of 0.48% (compared to 1.85% in the EU-27). Due to the economic downturn and its impact on the capacity of the state budget, there have been 2 consecutive years of real decline in public spending on R&D (2011-2012). The propensity to export is higher for innovating firms with foreign ownership and, according to the World Bank data, in 2008 only 28% of

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Bulgarian companies invested in R&D. Meanwhile, annual sales for innovating firms grew 26% per year in the pre-crisis period (2005-2007).

Another World Bank report (Report number 62774-BG, 2012) elaborates further by pointing out that Bulgaria's per capita income at PPS is only about 44% of the EU-27 average. Given the country's unfavorable demographic situation, higher productivity is critical for sustainable growth and only significant improvements in production competitiveness would allow a shift to export-led growth, making the economy more resilient to external shocks.

Recent data shows that Bulgaria's economy has performed relatively well during the crisis and it is gradually reviving. During the period 2000-2010 output expanded by close to 50% (4.7% per year). In 2009 the GDP declined by 5.3% and remained flat in 2010 (World Bank, Report number 63457-BG, 2011). Thus, in 2010 the country lost 3 years of economic growth and household consumption fell by 7.5% in 2009 and 1.3% in 2010.

SUSTAINABILITY BENCHMARKS FOR SMEs

The role of SMEs in contributing to sustainability could be discussed in five major aspects: innovation development, social contribution, environmental contribution, good management and leadership practices, contribution to local networking incentives and NGOs (Figure 1).

SMEs are the most appropriate environment for *generation of innovation and development of innovative mechanisms.* They are easily adaptable to macroeconomic fluctuations and most ready to respond to the needs to invest in improvements of processes and products (incremental improvement) or developing products/services which are entirely new (radical innovation). In most cases, innovation in SMEs is an imitation of existing practices through the process of learning by using or learning by doing (Favaretto, 1989). The indicators which are most often used to monitor the level of innovation in SMEs are R&D expenditure, personnel employed in R&D and number of patents.

The next aspect is *social contribution* of small and medium businesses. Social entrepreneurship is particularly promising in SME environment, when social problems are to be adequately solved – e.g. alleviating poverty, providing employment opportunities, integrating people with disabilities, etc. Hence, SMEs have high levels of social contribution as they are easily adaptable to changing economic and social environment.

Equally important is the contribution of SMEs in solving problems of *environmental concern*. Small and medium sized organizations (SMEs) individually have, by definition, very limited operations, and therefore would not have the potential to impact the environment, to the same degree, as very large businesses (Gadenne, Kennedy, & Mckeiver, 2009). Yet, it is primarily in the limited scope of their performance that we can expect to identify motivating factors for environmental contribution of such companies. They are largely driven by the high competition among SMEs occupying the same market position as well as the close relationship established both with customers and suppliers, which provides for tight environmental requirements being set out by both parties.

Good management and leadership practices are of paramount importance when developing sustainable SMEs. They are particularly manifested in environmental management and pollution control (Perez-Sanchez, Barton, & Bower, 2003), as well as in managing activities with significant social impact. Hence, SMEs are the proper environment for implementing CSR practices with local as well as national impact.

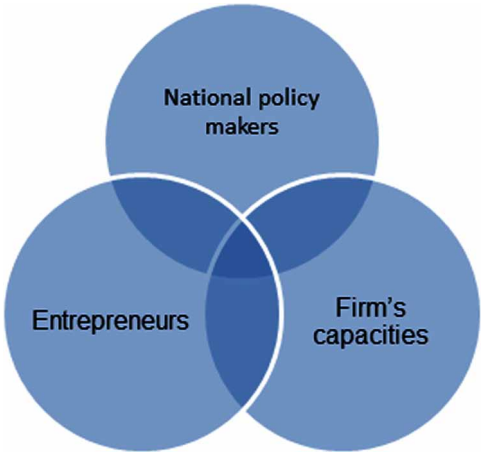
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Figure 1. Contribution of SMEs to sustainability
Author's model.



Local networking incentives and NGOs work in close cooperation with SMEs, acting as intermediaries between the government and the business as well as between local communities and small companies. NGOs and SMEs might work together in developing sustainable local markets and this cooperation is expected to be organized on several levels of networking aggregation, although they might have different

Figure 2. Three key players for innovation development
Author's model.



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perspectives on sustainability. While NGOs' main aim is to promote development, SMEs' main aim is to produce products or deliver services at the market (Castro, 2013).

We could also distinguish three key players in the process of innovation development – national policy makers, entrepreneurs and the companies' own capacities in terms of technology and financial resource.

Modeling Business Change towards Sustainability

In his study Doppelt (2010) introduced the "wheel of change toward sustainability", which consists of seven solutions to business operations and the blunders they address (see Table 1). Although change is not linear, the interventions of this model form a natural progression. Each action provides a fundamental building block for the next. Change results from cumulatively progressing through the three overall change modules embedded in the process as well as from the sequential completion of each separate intervention.

The first three solutions—change the dominant mind-set, organize deep and wide teams, and adopt sustainability visions and principles—combine to create a new organizational mental model and organizing framework. The fourth and fifth solutions—develop operational and governance change strategies and communicate with them—establish the means to design and test new ways of thinking and operating. The last two steps—foster learning and embed sustainability in standard operating procedures provide the means to make sustainability grow and stick over the long term.

Doppelt (2010) claimed that in order for each change module to provide a foundation for the next, each of the individual interventions must be satisfactorily completed, e.g.:

1. Only after a sufficiently compelling case for change has been established will the right people willing to participate in the development of sustainability plans;
2. Only after powerful transition teams are organized can an inspiring new purpose and vision for the organization be adopted;

Table 1. Seven sustainability blunders and solutions

Blunders	Solution
Patriarchal thinking that leads to a false sense of security	Change the dominant mind-set that created the system through the imperative of achieving sustainability
"Siloed" approach to environmental and socioeconomic issues	Rearrange the parts of the system by organizing deep, wide, and powerful transition teams
No clear vision of sustainability	Alter the goals of the system by crafting an ideal vision and guiding principles of sustainability
Confusion over cause and effect	Restructure the rules of engagement of the system by adopting source-based operational and governance-change strategies
Lack of information	Shift the information flows of the system by tirelessly communicating the need, vision and strategies for achieving sustainability
Insufficient mechanisms for learning	Correct the feedback loops of the system by encouraging and rewarding learning and innovation
Failure to institutionalize sustainability	Adjust the parameters of the system by aligning systems, structures, policies, and procedures with sustainability

Source: Doppelt (2010, p. 106).

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3. Only after people become clear about what they are striving to achieve and how this differs from their previous purpose can effective sustainability strategies be developed.

Also, because the process of change is circular, organizations can start anywhere on the wheel. No matter where change begins, eventually all of the seven interventions of the change process must be sufficiently completed, otherwise the effort will fail. The lack of clarity about the future sustainability image of the organization might be a cause for confusion and terminate temporarily the process of change. On the other hand, the adoption of operational and governance-change strategies and/or the production of some highly visible success may help people gain clarity about what they are striving to achieve. Yet, if effective leadership does not exist or a business as usual mentality has not been sufficiently undermined, it is highly unlikely that a sufficient number of skilled, credible, and politically powerful people can be engaged in the change effort. It is impossible to develop a shared understanding of a new vision or purpose without broad-based involvement. Therefore, timing and good leadership are the most important elements in any process of becoming more sustainable.

However, improving sustainability performance involves more than implementing solutions (Deloitte, 2015). It also involves revising business practices, instituting governance programs, and managing change. Deloitte and Oracle, for example, align people and processes and enable them with technology. Some of the green areas in which they assist companies in their efforts to reduce waste and improve productivity include:

1. **Sustainability Reporting:**
    a. Leverage enterprise systems to reduce the lead time necessary to generate sustainability reports;
    b. Track and analyze environmental metrics internally trough business intelligence applications;
    c. Implement a governance, risk and compliance framework for managing and tracking environmental sustainability processes and initiatives.
2. **Green Data Center Practices:**
    a. Virtualize and consolidate servers, which can be facilitated via technologies to reduce energy costs and decrease system maintenance;
    b. Leverage the advanced storage management capabilities available in some enterprise systems to reduce storage requirements and decrease energy use;
    c. Consolidate applications using a global, single instance model to save money on energy and hardware;
    d. Better manage workloads, using technologies to allocate spare server capacity and deploy additional processing power to production systems.
3. **Environmental Compliance and Supply Chain Optimization:**
    a. Manage products' environmental compliance;
    b. Optimize supply networks;
    c. Reduce manufacturing costs and environmental impacts via lean manufacturing principles;
    d. Shrink transportation and energy costs;
    e. Increase efficiencies in reverse-logistics;
    f. Decrease paper waste using customer self-service, customer e-billing, and contact center solutions.

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THE SUSTAINABILITY MATURITY CUBE

Muller and Pfleger (2014) provided exemplary ideas on how to improve working conditions in production processes (social perspective) or optimization of delivery routes (ecological perspective). They complement these two perspectives (first: corporate activities; second: dimensions of sustainability) by additionally introducing a way to capture the progress of sustainability actions, adapting the basic idea of stages of development and maturity to sustainability context. The analysis results with the design of Sustainability Maturity Cube, which serves as a blueprint of how an organization can structure the field of action for the transformation toward sustainability. This model serves as a basis for the installation of concrete sustainability maturity models and for deriving corporate actions. Furthermore, the model opposes the costs and benefits of sustainability actions in order to determine how these should be implemented, considering their economic effect. Hence, the assumptions behind this Sustainability Maturity Cube are that the economic dimension needs to be treated with a special focus—on the one hand, it is one of the three main pillars of sustainability, on the other hand, as companies need to follow economic principles to preserve their competitive advantage and gain long-term business success, it emerges as an additional organizational incentive when engaging in sustainability transformations and therefore should be differentiated from the other two dimensions.

In their study, Muller and Pfleger (2014) claimed that depending on the progress and strength of the transformation toward sustainability in the respective company, different stages of development within each sustainability dimension and corporate activity, and hence within each starting point, can be reached. A company that has already implemented sustainable actions at some stages could have achieved a certain level of maturity in some of the identified corporate activities and thus can improve its actual situation by further transformation.

The perspectives, namely the corporate activities, the dimensions of sustainability, and the respective sustainability maturity levels form a cube that structures the possible field of action regarding transformations toward sustainability. One field of the cube represents the description of a certain sustainability maturity level in one of the three dimensions of sustainability for one identified corporate activity. Thus, the Sustainability Maturity Cube can be used as a blueprint which is based on acknowledged scientific concepts to support the systematic improvement of sustainability management by considering certain corporate activities, the three dimensions of sustainability and the corresponding stages of development. Of the three perspectives of the cube, only the operationalization of the dimensions of sustainability is fixed.

The focus of the model is that implementing actions to improve sustainability (and thus the sustainability maturity level) requires investments. These payments may differ from starting point to starting point and may not be necessarily completed in one period. Therefore, the net present value of the investment will be applied. Whereas small improvements of the sustainability maturity level can be implemented relatively straightforward, greater improvements are expected to require a more complex approach, resulting in higher cash outflows.

Current Status of Bulgarian SMEs

There is a growing tendency of a socio-economic division between the northern and southern part of Bulgaria. According to the most recent data provided by the National Statistical Institute, the regions in the northern part of the country keep high unemployment levels, low income, and decreasing population (Bulgarian National Statistical Institute, 2015). The capital Sofia keeps the first place as the most

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Table 2. SMEs in Bulgaria: basic trends

	Number of Enterprises			Number of Employees			Value Added		
	Bulgaria		EU 27	Bulgaria		EU 27	Bulgaria		EU 27
	Number	Share	Share	Number	Share	Share	Billion €	Share	Share
Micro	252 137	90%	92.1%	532 880	28.9%	28.7%	3	16.9%	21.1%
Small	22 871	8.2%	6.6%	447 581	24.3%	20.4%	3	20.8%	18.3%
Medium	4 325	1.5%	1.1%	412 065	22.3%	17.3%	4	24.9%	18.3%
SMEs	279 332	99.8%	99.8%	1 392 527	75.5%	66.5%	10	62.6%	57.6%
Large	676	0.2%	0.2%	451 752	24.5%	33.5%	6	37.4%	42.4%
Total	280 008	100%	100%	1 844 279	100%	100%	16	100%	100%

Source: SBA, 2013.

developed region in terms of social and economic development. With the phasing out of the economic crisis, the last three years have shown a slow but steady economic revival of certain regions – mainly the central and southern regions. Yet the spiral high unemployment – low income – decreasing population keeps investment activity far below the pre-crisis levels.

There is a negative tendency in the infrastructural development, especially with regard to the declining levels of road maintenance which is only 39% as of the end of 2014. Negative tendencies have been also identified in education and healthcare – the percentage of health insurances has decreased to 86% and the attendance level in primary education has also decreased to 79%. The only strong economic region in northern Bulgaria is Varna, yet it is situated too far from the other economically underdeveloped regions and thus they cannot benefit from its economic influence. In addition, the last three years have been marked by worsening local governance and high corruption levels, which has been a major drawback for the city to develop its main potential in tourism and harbor infrastructure. The rest of the regions are marked by low entrepreneurial activity, which significantly reduces the production volumes, increases the unemployment levels to 12% (6% being the average for the country) and consequently decreases the income levels.

In this socio-economic environment, it is highly predictable that the economic performance of SMEs would be low. According to the statistical data, in 2011 the average profitability of the top 100 firms was 43%, declining to 40% in 2012 and 33% in 2013. In terms of regionalization, 43 out of the top 100 SMEs are based in the capital – Sofia. The sector which is mostly represented in agriculture with 19 companies, followed by construction works which totals 14 companies and machinery and equipment with 10 companies.

Statistical trends since 2003 provide clear evidence of dynamic development of the Bulgarian SME sector in recent years. The growth in the number of Bulgarian enterprises was only temporarily slowed down during the crisis in 2007 and 2008. However, growth levels picked up again relatively quickly, driven by small and medium sized enterprises.

The data in Table 2 demonstrates that the contribution of SMEs in creating value added and especially in providing jobs exceeds the EU average, moreover, the share of SMEs compared to Large Enterprises (LEs) in value added and employment in almost all sectors is higher than the EU average. However, this has resulted in labour productivity far below the EU average due to the lower capacity to benefit from economies of scale in low-value sectors. The Bulgarian economy went through a decline in value added

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Figure 3. Bulgaria's SBA performance: status quo and development over 2008-2013
Source: SBA, 2013.

	Number of enterprises			Number of employees			Value added		
	Bulgaria		EU27	Bulgaria		EU27	Bulgaria		EU27
	Number	Share	Share	Number	Share	Share	Billion €	Share	Share
Micro	252,137	90.0%	92.1%	532,680	28.9%	28.7%	3	16.9%	21.1%
Small	22,871	8.2%	6.6%	447,581	24.3%	20.4%	3	20.8%	18.3%
Medium-sized	4,325	1.5%	1.1%	412,065	22.3%	17.3%	4	24.9%	18.3%
SMEs	279,332	99.8%	99.8%	1,392,527	75.5%	66.5%	10	62.6%	57.6%
Large	676	0.2%	0.2%	451,752	24.5%	33.5%	6	37.4%	42.4%
Total	280,008	100.0%	100.0%	1,844,279	100.0%	100.0%	16	100.0%	100.0%

These are estimates for 2012 produced by London Economics, based on 2008-10 figures from the Structural Business Statistics Database (Eurostat). The data cover the 'business economy', which includes industry, construction, trade, and services (NACE Rev. 2 sections B to J, L, M and N), but not enterprises in agriculture, forestry and fisheries and the largely non-market service sectors such as education and health. The advantage of using Eurostat data is that the statistics are harmonised and comparable across countries. The disadvantage is that for some countries the data may be different from those published by national authorities.

and employment in the period 2008 – 2012, when both SMEs and LEs were affected. The decline in value added for the SMEs was by 4% without a corresponding fall in employment - the SMEs are much more reluctant than LEs to fire their workforce, as they have difficulties in attracting skilled employees once they re-hire.

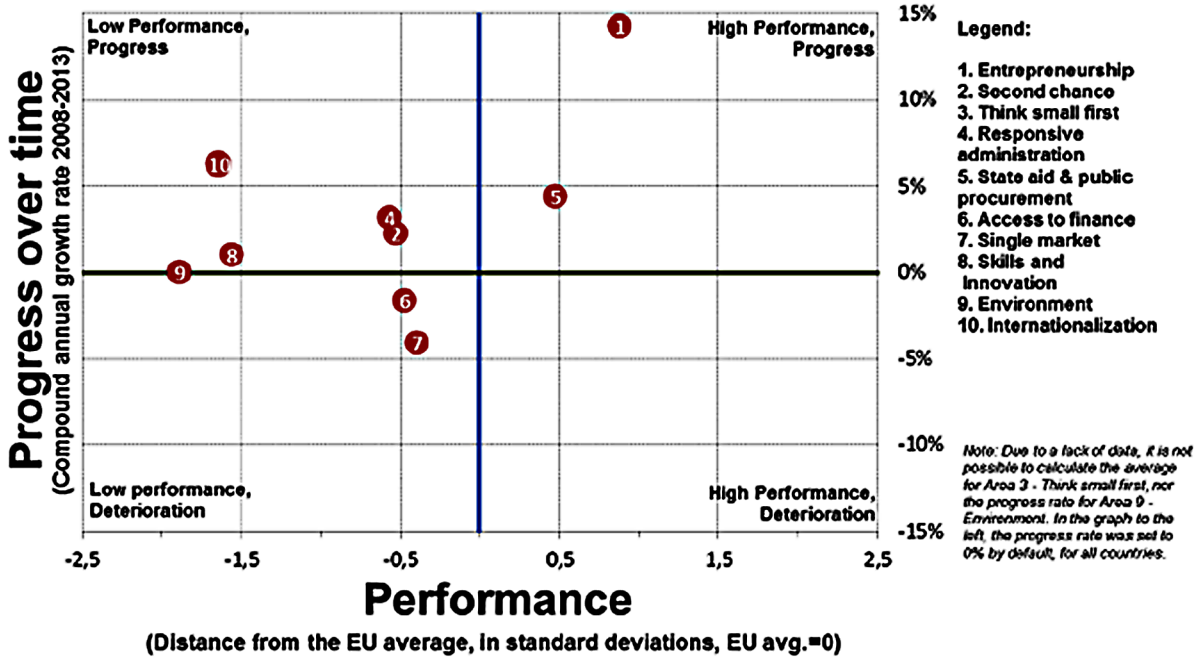
Another specificity of the Bulgarian SME sector is its concentration in the wholesale and retail trade sector, where almost 50% of the Bulgarian SMEs are active, and the low innovation activities of Bulgarian SMEs, which tend to specialize in bringing to market less expensive and better quality products from abroad. Foreign direct investment is concentrated in the construction and real estate sectors and it has declined ten-fold since 2008 as a result of high speculative movements before the crises, which significantly exceeded stable growth levels and did not correspond to actual demand. In 2011 about 37 000 SMEs closed down and more than 36 000 were created due to the financial shortcomings of the Bulgarian SME sector – companies face a lack of access to finance while at the same time there is a high level of inter-company indebtedness and late payments for work that has been delivered.

Bulgaria's performance in the area of entrepreneurship is above the EU average although the self-employment rate falls behind the EU average (11% compared to EU 15%), which is an evidence for unused potential, considering that the share of adults that have taken steps to start their own business is 36% (EU: 23%). Overall, the proportion of entrepreneurs who started their own business to exploit an opportunity – 42% compared to EU 49% - suggests that the majority of Bulgarian entrepreneurs go into business for lack of alternatives.

Access to finance for start-ups and SMEs is severely limited in view of weak credit growth due to the need for balance sheet adjustments and the on-going upward trend in non-performing loans. Some timely policy initiatives co-financed by the Structural Funds were launched to tackle some of the weaknesses highlighted. A new funding scheme was adopted in 2012, called the "acceleration and Seed Fund", to support SMEs in their seed and start up phases. According to most recent data in 2010 only 13% of Bulgarian SMEs are innovating in-house (compared to 17% in 2008), which is a direct consequence of the low rate of introduction of new products, processes, marketing or organizational innovations.

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Figure 4. Bulgaria's distance from EU average in terms of environmental performance
Source: SBA, 2013.



Bulgaria is clearly behind the EU average in terms of environmental performance as only a quarter of Bulgarian SMEs introduced environmentally friendly innovations or received public support for their resource efficiency measures.

Many sectors which constitute the backbone of Bulgaria's economy – such as real estate, construction, and financial services – were negatively impacted by the financial crisis in 2008, resulting in 10%-12% reduction of employment level or 350 000 people lost their jobs (Economic Policy Institute, 2011). However, it is precisely the SMEs that considered the recession as an opportunity to embark on new entrepreneurial ventures. In 2009 there were 315 850 SMEs which made up 99.8% of all Bulgarian enterprises and 90,3% of the SMEs were micro enterprises. In general SMEs provide 76% of the jobs in Bulgaria, while large enterprises account for 24%. During the peak of the crisis in 2008-2009 the SMEs were the source of employment, keeping 5 people on average as personnel. Approximately 56% of all SMEs dealt proactively with the crisis by cutting down costs, while 44% adopted a rather passive attitude.

In the beginning of 2011 over 90% of all SMEs had difficulties in accessing finance, the worst affected being the micro enterprises as well as the service firms, while financing is provided by the company owners themselves. In 80% of the SMEs innovation activity is weak, only 10% of all SMEs have substantial resources to finance innovation and the most innovative are the manufacturing companies. There are three prerequisites for innovation to be implemented in SMEs: new equipment, skilled and qualified workers, good financial status. In general, innovation in Bulgaria is hindered by the lack of appropriate funding, the high number of population with low income and low qualifications as well as the lack of a national innovation system, which would enable some firms to transfer and apply innovations.

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Case Studies of Innovation SME Leaders

The analyzed tendencies can be further supported by examples of recent processes which are observed in a number of innovative SME leaders, operating on the Bulgarian market (Dobreva & Koleva, 2015, pp. 300-306).

Every year a publishing company issues a ranking of the most dynamic small and medium enterprises in Bulgaria. The ranking for 2014 includes 1 578 small and medium enterprises. The region of Sofia is evidently a leader in this business segment. However, the overconcentration of SMEs in the capital has a negative impact on the national economy due to the imbalances in the regional development and the decreasing economic activity in the other big economic centers – the regions of Plovdiv, Varna and Burgas.

In order to fulfill the ranking criteria, a company should comply with the following requirements:

- Employ full-time between 10 and 249 employees.
- Demonstrate an increase in operating income for two consecutive years.
- Comply with all regulative requirements for small and medium-sized enterprises (not micro).
- Achieve an annual financial result between 3.9 million BGN and 97.5 million BGN income and / or assets between 3.9 million BGN and 84 million BGN.

The companies should be 100% privately owned and should have been registered before 2009.

Innovation is one of the most important components of the dynamic development of small and medium businesses, but to implement new ideas in operation, there must be close cooperation between companies, government, education and consumers. According to experts, SMEs have both potential and interest to develop innovations. The Foundation for Applied Research and Communications, which prepared the annual report "Innovation" recall that the growth of funding for research and development is higher than the growth of gross domestic product.

1. O.M.S Saleri

The company is №1 in the national ranking, part of the Italian company "O.M.S. Saleri", situated in Vratsa. Italy is one of the largest partners of the Bulgarian economy and is among the countries that have highest contribution to the growth of foreign investments in Bulgaria. According to the Bulgarian National direct investments of Italian companies in the country amount to 1.74 billion euro for the period from 1996 until the end of 2012, which gives them 11th position among foreign investors. In essence, Italy takes the leading position, if countries like the Netherlands and Luxembourg are excluded due to the setting up of many daughter companies, registered to benefit from the low tax rates (e.g. "Lukoil Bulgaria" is officially a Dutch investment).

The majority of the Italian investments are in the food industry, as well as in textile, clothing and footwear. After operating on the clothing market with Italian luxury clothing, "O.M.S. Saleri" decided to diversify its business by starting operations in a completely different industry - production of ball valves. The premises of the plant are designed to take up further expansion of the business since the beginning of the production is not large, but it is growing rapidly and this is reflected in the large revenue growth for 2014. The production of the Vratsa company is shipped to Italy, where the parent company approves and circulates spherical cranes worldwide. They are widely used in industry, including construction of oil and gas pipelines.

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Until the beginning of 2015, the investments in the factory were over 4 million euro, with plans to reach 15 million euro in the following years. In the spring of 2015, the company has employed nearly 30 people, with the intention to reach 120-130 people as a result of the production expansion. In the process of hiring new staff "O.M.S. Saleri" complained that they often have difficulty finding employees, although wages, social benefits and full insurance are well above the standard of living in the area.

2. Reichle & De-Massari

The Swiss company R & M (Reichle & De-Massari) opened a factory in Sofia two years ago and continues to expand its operations within the country. It is the most dynamically developing company in the machinery and equipment sector. The investor is a family company from Wetzikon town in the canton of Zurich. It manufactures passive components, copper and fiber optic cables for all types of communication networks. Currently R & M is among the 500 largest groups in Switzerland, with annual revenues of 197 million CHF francs (163 million euros) and over 800 employees in over 30 countries - 190 of these employees are in Bulgaria. The operating revenue and the number of employees increase by 20% per year. The Group has manufacturing plants in Switzerland, Poland, India and Dubai.

The Swiss company has a commercial branch in Bulgaria - "R & M Bulgaria", which covers the entire region and is responsible for Bulgaria, Greece, Turkey, Serbia, Macedonia and Cyprus. Since the beginning of 2011 the company also operates on markets in Albania, Bosnia and Herzegovina, Croatia, Kosovo, Montenegro, Romania and Slovenia. In 2011 the headquarters began to explore options to export part of their production from Switzerland because the strong franc made their production uncompetitive on the European market. The choice was narrowed down to Bulgaria and Poland where the group has already set up production premises.

In early 2012 the project began and was completed in nine months. The total planned investment of 9.7 million BGN did not include the amount of nearly 8 million BGN for the purchase of the building in the district of Sofia. The project was developed by installing epoxy coatings, antiseptic paint, new ventilation, air conditioning and electrical installations. The Swiss company bought entirely new equipment. As a result, the plant with its total size of 10 000 sq.m. is an exact copy of the one in Switzerland with the same number and type of jobs and workflow. The new production unit "Reichle & De-Massari" received a certificate for an A class investment. The company produces fiber optic components and platforms. After two years of operation the production staff now is 135 people. A small development center is also based in Sofia, which deals with the design of products for different platforms. Company employees undergo additional trainings in Switzerland and in Bulgaria.

"Reichle & De-Massari" Bulgarian production continues with the business expansion and in 2014 it made another investment of a total of 2 million BGN. As a result, the staff is expected to grow by another 50 people. The plan is for the entire line of fiber optic components to be produced in Bulgaria. In 2013 (which was the first full year of production) the company's turnover increased by over 400%, amounting to 15 million BGN, the forecasts are that the financial result in 2014 will be even higher.

The Swiss company invests in support of the Bulgarian education. A few years ago the company opened a teaching laboratory for cable systems at the Technical University - Sofia, and in 2013 donated funds to equip the laboratory at the Technical University - Varna.

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3. Aosia

There is hardly any other sector in Bulgaria, which is developing more dynamically than the IT sector. Due to the huge demand globally and locally, and thanks to the relatively weak government regulation in this sector, it has become the exception in the background of the overall poor economic picture in the country. To be truly successful in Bulgaria, the technology companies cannot rely solely on the momentum. The competition is overwhelming and any short-term delay could return the company years back in its development. What is needed is a long-term strategy, ingenuity and especially innovations. This is the case of "Aosia" LTD. The company passes through the crisis without much turbulence. Its financial statements show that despite the shrinking market, until now it has been financially stable and has not generated a loss. Moreover, by 2009 each year the company increased revenue and profit to reach a record in 2013 when "Aosia" registered 400% growth in profit, and profitability rose by more than 17 times.

"Aosia" was established in 2006 and in 2007 entered in the news once managed to build from scratch the entire communication infrastructure of four large metallurgical plants and two mines in the Rhodope Mountains. Only 10 months were needed to connect all the companies of "Intertrust Holding" JSC. The entire infrastructure was built - "the cloud" virtualization, IP telephony, the mines were wired and related to the entire network of the holding.

Having dealt with "Intertrust", the creator of "Aosia" formed a team and started to develop a new type of cloud technology - virtual based desktops. Since 2010 the company has specialized in this particular technology and offers services in the field of Mobile office as a service. By combining different software the office can be anywhere, without space and resource constraints. The virtual office is accessible from any device - PC, smartphone or tablet. The platform allows customers to have permanent access to the computer in their office - files or emails, to all software installed on the remote machine.

Thanks to the already established platform the company has managed to make telemedicine a reality in the country. So far, remote diagnostics are possible in Sofia "City Clinic", but the owner believes that after 5 years this technology will be available to the mass market. This is a platform that collects data but also binds the physician with the patient. Telemedicine is defined as the future of medicine worldwide as the number of well-qualified doctors is constantly decreasing. Also, due to the constant emigration of medical specialist, in some Bulgarian regions patients have to travel thousands of miles to get a diagnosis and proper healthcare.

The specialists of "Aosia" not only develop and build IT solutions. They start the process of consultation with customers and end with their training to work with the platform. A main problem of cloud technologies is precisely security. If the security in a cloud solution collapses, this affects all clients in the cloud. To guarantee that security to the customers, Aosia fulfills the most stringent regulatory requirements. Another success factor is the constant pursuit of the company to move forward and to invest in the best technologies, to improve them, test them and then offer them to customers.

The company's increase in its market share almost logically leads to an increase in the number of employees. As with the entire IT sector and in "Aosia" the main problem is the lack of ready-made specialists.

4. Bulpros

In recent years one of the biggest myths is that outsourcing ends with the establishment of call centers. This was the main criticism of a number of large technology companies like Hewlett-Packard and IBM,

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which started to establish similar activities for outsourcing services in Bulgaria. But these centers for customer service began to create clusters of Bulgarian companies to try to develop in the outsourcing industry. Such is the case of "Bulpros". The company was founded in 2010, initially focusing mainly on providing outsourcing services, but now has expanded its portfolio to activities that have a much higher added value than traditional call centers.

Before starting to work on the creation of "Bulpros" the owner has worked 18 years in Germany, then returned to Bulgaria and helped building the HP outsourcing center in the country. He claims that his experience in Germany has shown one major disadvantage when doing business. It is the lack of good partners to assist in the implementation of major projects with defined resources and skills to meet the requirements for price and quality in order to make their customers more competitive. "Bulpros" was created exactly for this purpose - to fill the gap in the implementation of major projects of large corporations.

"Bulpros" currently provides services to companies that provide services in the field of IT technologies. In other words, it assists giants like Siemens, UniSystems, Cisco, VMware and others to better provide their products to their customers. The Bulgarian company helps them in software development, the establishment of Internet-based and mobile solutions, services in IT infrastructure and cloud solutions. Only part of its business is related to outsourcing, it is mostly associated with outsourcing of data processing and work on segments of a software project.

Outsourcing is the perfect tool for starting a business, to accumulate stability, security and scale. Subsequently, the company began to develop its own products and services. According to the CEO what distinguishes the company from other outsourcing companies is that it not only deals with external activities but also looks for long-term partnerships and customers. This can generate growth not by amount but by quality and by seeking added value.

The results of good planning helped the company to report double revenue growth in the year 2013. Its revenues increased by 134% in 2013 over the previous two years when the company reported similar, over 100 percent results. Expectations are high growth rate to be maintained in 2014 and 2015 as well.

Like many start-ups "Bulpros" started with five or six people, but at the end of 2013 its staff was 141 people, and currently it has grown to over 300 people.

The company relies entirely on large international corporations. According to the CEO the Bulpros's customers are mainly from Germany, UK and Western Europe. Since 2013 the company prepared an active penetration on the US market. To be able to liaise with customers the company has established offices in the US and in Germany. The Bulpros management network of contacts has helped the company find long-term partners. It is already working with some of the largest companies in the country.

One of the main challenges the company faces is the management of growth, given the rate at which it increases its scale. The challenge comes from the fact that growth requires a continuous change in the structure of the company offices, distribution of tasks, internal processes, etc. Other obstacles are related mainly to the availability of highly qualified personnel, particularly in finding specialists who are specialized in specific areas. The main concern for 2015 is whether "Bulpros" will succeed with the products and services developed and marketed.

5. Casino Technology

"Casino Technology" is one of the few examples of a Bulgarian company which started from scratch and established itself on the world market for just over a decade.

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In 1992 the founder of "Casino Technology" was interested in slot machines, learning their structure. Once he realized that slot machines were not much more complicated than a computer, he decided to shift to production as at the time demand was great. The introduction of the Gambling Act in 1999 and the possibility of any manufacturer of gaming equipment to obtain a license for their activity allowed the owner to establish the company "Casino Technology" which became the first ever licensed company in Bulgaria.

The business grew rapidly as well as innovation. In 2000 "Casino Technology" created a product which was an absolute bestseller - the first multi-game called Mega Jack. Multi-game represents several games in a gaming machine. Once Mega Jack witnessed a great success in Bulgaria, the company began to offer it also on foreign markets mainly in Eastern Europe. Since the activity of the company includes also maintenance of the proposed gaming facilities, "Casino Technology" opened offices in countries where they have installed their products. The Bulgarian company has customers all over the world - Europe, North and Central America, Africa and Asia. For this reason the majority of its revenues for 2013 come from foreign markets - 14 million BGN, compared to 8.3 million BGN from the internal market. Behind these figures stand hundreds of skilled workers that operate worldwide. Despite its good performance the company faced difficulties in the crisis years of 2009-2010. Their revenues fell more than double, the market was stagnant and they decided to head to places where they knew the crisis - the countries of Latin America. After yet another expansion and taking new products to new markets, in the past two years (2013-2014) "Casino Technology" marked more than 20% growth in revenue.

Along with the development of the technology, the gambling business also develops. One of the innovations is the so-called online gaming, which allows access to various games not through the gaming machines but through online and mobile devices. "Casino Technology" decided to go one step further and to combine traditional gaming facilities with online gaming. This is how the company created THE BIG 5 (big five are the most typical large animals in Africa: rhino, buffalo, elephant, leopard and lion). This is a system of five products that are interrelated but may exist individually. The package includes system management game room and casino jackpot universal server, remote game server, online gaming and system for cash transactions. The company claims that they were able to make a product that appeals to their customers all over the world who want to smoothly switch from traditional to online gaming.

"Casino Technology" focused on users who are established in countries with better regulation of gambling business. These include Chile, Macau and the Philippines.

6. Shoelly Optics

Ten years after the creation of "Schoelly Optics" - a joint venture between the German and Bulgarian "Schoelly Optics", the company sells 98% of its production abroad.

The company specializes in the manufacture and assembly of endoscopes and endoscopic systems for medical and technical needs. For the first half of 2014 the it had revenue from sales of almost 10 million euro and profit of 400 000 euro. The company currently employs 90 people, while in its launch in 2004 they were only four. The equity ownership of the company is 60% German and 40% of "Optics". They started with an initial capital of 200 000 euro, and today the value of the company is 4 million euro. Approximately 60% of the production is for the US market, 29% for the European and 1% for the Bulgarian market.

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In 2014, "Schoelly Optics" has already achieved a price that cannot be seen even on the Chinese market. Endoscopic systems technology requires very high professional qualities of the people who create and produce, which is costly in China. Also the price of qualified labor in China is growing much faster than in Bulgaria.

The available equipment of "Schoelly Optics" will probably be used for another ten years. This means that it will be paid followed by better gains and higher profitability. This is important because the newest equipment cost of materials is higher than the value to be added. When one of the new endoscopes is sold for 10 000 euro, the materials used are 8 000 euro. The company tries to expand opportunities for adding value on more things - not only to produce endoscopes but complete endoscopic systems.

The latest investment of the company is in equipment and technology to produce one-time-use endoscopes protectors. This technology created a "clean room" that protects the endoscopes of powder and biological contamination. The "Clean room" is Class 10 000, which means that it is maintained ultra clean, measurable with 10 000 particles in 1 cubic meter of air. This is a high purity grade of total production related to the medical industry.

The production of "Schoelly Optics" for the local market is relatively small for several reasons. In Bulgaria there are only three medical robots (2 in Pleven and one in Plovdiv) which could buy and use 3D endoscopes. The relatively small private clinics have no capital accumulation to be able to afford the best technique "Schoelly Optics" offers.

7. Apex Solar

Apex Solar Ltd. is a leading engineering small enterprise in Bulgaria, which develops and manages new technologies and standards on systems utilizing solar energy. Since its establishment in 1993 the Apex Solar has implemented more than 300 projects with a total capacity of 40 MW (thermal and photovoltaic solar systems). Their expertise falls into residential, agricultural, industrial and hotel projects.

Through their solar energy systems Apex Solar save annually over 85,000 tons of harmful emissions of CO2. It is their mission to contribute to the environmental protection and to a better world for the future generations.

The reason to include this organization as a case of innovative SME is because Apex Solar have developed an educational program designed to promote technical excellence among Bulgarian installers of photovoltaic systems for own consumption. The program aims to develop not only a network of "Apex Installers" but to educate a larger number of people on the benefits of photovoltaic installations and the ecological impact they have on the environment. The product range of inverters which Apex Solar offers is specific and correct installation requires special knowledge.

The program is free of charge and consists of a half-day and full-day courses held in the company's premises in Sofia. The successful completion (after a brief examination) will award the participant the status "Apex Installer". According to the company the benefits from being an "Apex Installer" are numerous. The graduates are included in the map of installers of different series inverters branded under Apex Solar in Bulgaria, where users from different areas can find and contact them. The graduates can use the logo of the company's products online and can take advantage of special discounts on products. In addition, when the company gets inquiries from end users of the area in which the graduate works, the "Apex Installer" contacts them.

This is an innovative strategy where innovation, education, environmental care, and eco policies combine to introduce a different approach to doing business in Bulgaria.

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Innovations and the Role of SMEs for Sustainable Development

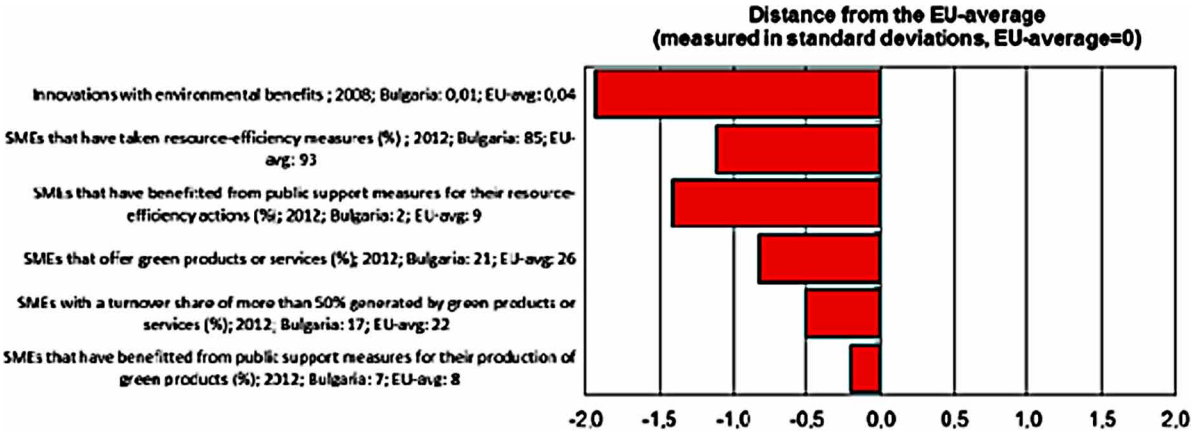
The SMEs have a structural role for the development of a country's economy and they are a main engine for economic growth. The main competitive advantages of the SMEs are their ability to generate new business ideas and to provide employment opportunities even in times of economic crisis. They are easily adaptable to implementing new technologies and innovations, developing entrepreneurial skills and business culture, which in regional aspect contributes to the improvement of the social and regional development and also strengthens competitiveness.

A major contribution of the governmental policies is to ensure the development of entrepreneurial skills through the provision of stimulating and reliable conditions for idea generation, which is the basis for innovation implementation. The role of SMEs and micro enterprises in the innovation process has a significant contribution and the implementation of specific measures in support of their activity is commensurate with their specific requirements. A driving motivation for innovations in SMEs is the progress of enterprises which deliver new products, services, energy efficiency, a better marketing approach, a better managerial structure or another type of innovation.

Taking into account the unpredictability of the results from innovations, the companies are often reluctant to make sufficient investments in R&D. Especially in Europe, the fear of failure is often a major hindrance for innovations, although knowledge acquired in such manner could have a high social value. Figure 5 clearly shows that Bulgaria is currently the modest innovator among all EU member states. In an environment where failure is unacceptable and also carries high business and social price, the actions of the state to stimulate innovations and entrepreneurship is obligatory.

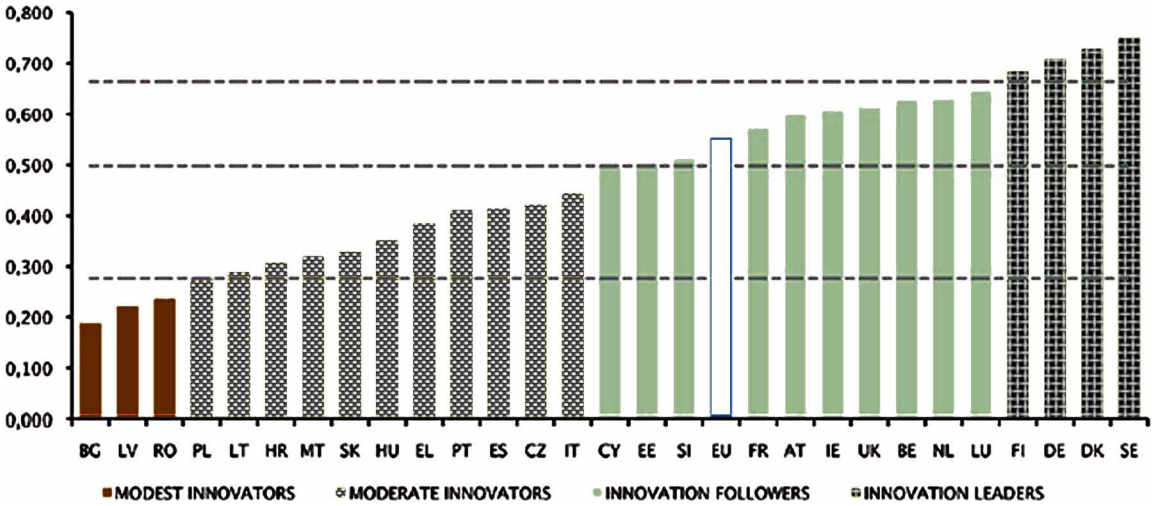
The formulation of objectives for creating a favorable environment for doing business, encouraging start-ups and stimulating the innovative activity among SMEs is developed in the European Initiative Small Business Act (SBA), which forms the basis of the entire European policy concerning the small and medium enterprises. SBA includes ten key principles and a number of particular activities which are implemented in Bulgaria through the National Strategy for Encouraging the Development of SMEs 2014-2020. The encouragement of the innovative activity of The Bulgarian SMEs is expected to ultimately contribute to the increase in developing local business competitiveness, the improvement of

Figure 5. Innovation rates in EU member states
Source: Innovation Union Scoreboard, 2014.



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Figure 6.



economic performance in comparison with other EU Member States and the setting of prerequisites for implementing knowledge-based economy under the 8th priority of SBA – "Skills and Innovations".

The main principles of "Skills and Innovations" (see Table 3) are to encourage the improvement of skills in SMEs, as well as all forms of innovations by stimulating the investment activity in research and development and their participation in R&D programmes, the cross-border research activity, the setting up of clusters and the effective management of intellectual property. Bulgaria takes the last (27th) place in the EU ranking 2014 according to the methodology of the EC. The last place is mainly due to the indicators: Share of SMEs (without microenterprises) which sell online, Share of SMEs (without microenterprises) which buy online, Participation of the Employees (in microenterprises) in training programmes.

Under the other innovation indicators Bulgaria is positioned from 22nd to 26th place, the most favorable result is only under the indicator – Share of the sales of new products for the company or new products and services for the market – 13th place with a result 14.2% compared to 13.3% average for EU.

Bulgaria is a country in which SMEs invests in R&D, they create on their own or in collaboration and place on the market new or improved products and services and also introduce new or improved organizational and marketing processes. The training programmes as well as the complete professional preparation of employees is a national and company policy and the enterprises do not consider it as

Table 3. Skills and innovations: worst indicators

Indicator	EU Average	Bulgaria
Share of SMEs (without microenterprises) which sell online	13%	3%
Share of SMEs (without microenterprises) which buy online	28%	4%
Participation of the Employees (in microenterprises) in training programmes	10.5%	2.5%

Source: own interpretation, based on SBA data.

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Table 4. Operative innovation objectives: 2020

N	Indicator	Objective	Change
1	Share of SMEs with internal innovations	>30%	Additional 45 000 SMEs
2	Share of innovative SMEs which collaborate with other enterprises and organizations	>11%	Additional 26 000 SMEs
3	Share of SMEs, which have introduced innovative products and processes	>34%	Additional 46 000 SMEs
4	Share of SMEs, which have introduced an organizational/marketing innovation	>39%	Additional 76 000 SMEs
5	Share of sales of products/services, which are new for the company or the market	>=14%	Increase/sustaining the current result
6	Number of SMEs, which have participated in R&D, financed by the EU	>23 SMEs	Additional 53 SMEs
7	Share of SMEs (without microenterprises), selling online	13%	Additional 2 400 small and medium enterprises
8	Share of SMEs (without microenterprises), buying online	>28%	Additional 6 700 small and medium enterprises
9	Share of SMEs, which provide training	>58%	Additional 102 000 SMEs
10	Participation of the employees (in microenterprises) in courses and trainings	>10%	Additional 26 000 microenterprises

Source: Ministry of Economy – www.mi.government.bg.

difficult to employ and train an employee. The national innovation objectives to be achieved by 2020 are shown in Table 4.

The major conclusion which can be drawn on the basis of these observations is that in order to achieve the objectives and support the sustainable development of SMEs, there is a need to observe the following:

1. Implementation of SME specific regulatory provisions.
2. Sufficient provision of financial resource.
3. Increase of the access of SMEs to the market.
4. Strengthen SMEs's role for effective use of resources, development of entrepreneurship and employment opportunities.

CONCLUSION

The analysis in this paper identified the need for innovative mechanisms in transition economies as a measure against the post effects of an unstable political system and the recent financial crisis. Its major focus was on the role of innovations for achieving sustainable development in Bulgaria, particularly in the undertakings of small and medium enterprises.

The analysis provided an overview of the Bulgarian economy over the last 20 years - the dropdown of industrial production, the difficulties in setting up and managing SMEs, and the general decline in the country's economic activity. Furthermore, the paper explored the development impacts of innovations. A comparison was made with innovation levels in EU countries.

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KEY TERMS AND DEFINITIONS

CSR: The policy of corporate and social responsibility, introduced in modern day companies to establish and underline their green practices and employee oriented approach.

Entrepreneurship: Any form of business undertaking which is new to the market and needs to be supported through its first stages of development. These business units are often risky and rely on the creativity in the establishment process. Also, they need to be introduced in market niches which require further exploration.

Innovation: The introduction of a new product and/or service on the market, which contributes to the improvement of the social, environmental and business climate.

Sustainability: A term which indicates the balanced development of environment, economy, and society.

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Chapter 65
Increasing Project Success in China from the Perspectives of Project Risk, Methodology, Tool Use, and Organizational Support

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ABSTRACT

Besides lack of organizational support, using project risk management tools and methodology effectively has been one major challenge to project success. As China is extending its project management (PM) concepts from mainly construction and national defense projects to many other industries, project managers in those new industries rely on the use of PM tools and methodologies. However, it remains unclear to what extent the use of them can increase project success. To address the research questions, this study surveyed 93 project managers in China and found that success of project execution is contingent upon: (a) project risks, (b) PM methodology, (c) organizational support, and (d) PM tool use. The presence of project risk can stimulate increased use of PM tools, thereby helping achieve project success. Organizational support and PM tool use also remain conditions for project success. This study contributes to the current literature by assessing project success from the perspectives of organizational support, PM methodology, and PM tools.

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INTRODUCTION

According to McGrath (2013), the innovation of new business models enabled by information technology is disrupting existing competition and giving new companies transient competitive advantage. In the face of volatile and uncertain business environments, both dominant and emerging companies need to be able to quickly propose innovative projects in order to cope with intensifying competition. However, a quick introduction to new projects can result in poor requirement management, which is considered the root cause of many dynamic risks, including scheduling and budgeting, as well as operational, technical, and programmatic risks (Angelow, 2015). These dynamic risks are highly complex and unpredictable in today's creative economy, and the inability to manage and mitigate these risks can wreak havoc on IT projects (Cooper & Chapman, 1987).

An effective assessment of project risks needs to consider structural (e.g. hierarchy of authority, centralization) and contextual characteristics (e.g. corporate culture and size) (F. Warren McFarlan, 1981). PM tools and methodologies have been commonly employed to minimize project risks because they can be adapted to different project characteristics. For instance, qualitative methods can be used to rate the magnitude of potential risks resulting from tangible and intangible threats on a low, medium or high scale (Lanfranchi, Giannetto, De Pascale, & Hornoiu, 2015). Other researchers favor the use of quantitative risk management tools (e.g. Monte Carlo simulation) because of their strength in managing projects that have uncertain project schedules and low budgets (Purnus & Bodea, 2014). One study has shown that software tools that comply with capability maturity model integration (CMMI) or project management body of knowledge (PMBOK) can effectively manage project management processes and achieve project success (Pereira, Gonçalves, Von Wangenheim, & Buglione, 2013). Although the literature has emphasized the importance of using the right tools and methods, it is not clear the extent to which their use can contribute to containing project risks and helping with project success (H. Thamhain, 2013). The lack of formal risk management tools could become a barrier to the execution of a risk management program (Parker & Mobey, 2004).

In addition, organizational support consists of the cognitive and emotional involvement of the management and is indispensable for the success of projects (Liu., Wang, & Chua, 2015). This study provides insight into the relative influence of organizational support on project success in comparison with project risks, tools, and methodologies.

The remaining sections are organized as follows: first is a literature review, followed by the development of a theoretical model. Hypotheses are proposed against the research model, and the research methods are presented with a detailed discussion of the data collection and analysis methods. Analysis of the results is reported with their theoretical and practical implications. The paper concludes with a discussion of its limitations and suggestions for future research.

THEORETICAL BACKGROUND

Project is defined as the achievement of specific objectives within a set of specifications and time constraints (Munns & Bjeirmi, 1996). Since each objective is time-limited, all projects are considered temporary endeavors and need to go through five stages of a project life cycle. A typical project life cycle consists of initiation, planning, execution, monitoring and closing phases (Morris, 2013). The establishment of a logical structure across the life cycle is critical to the successful delivery of a project

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(Andersen, Birchall, Arne Jessen, & Money, 2006). For instance, during the initiation phase, alignment of organizational and project objectives can help define and outline a project by understanding stakeholder needs – from defined goals to project outcomes. However, most projects fail in the attempt to achieve a high degree of strategic alignment before initiating a project, and these failures are primarily caused by poor internal logic of causalities and unrealistic expectations (Samset & Volden, 2016). Other issues, such as lack of a shared understanding among all stakeholders, poor quality control, and lack of risk assessment, can surface in other stages of the project life cycle. Therefore, PM is the process of managing all project issues across the project life cycle and controlling the achievement of the project objectives (Munns & Bjeirmi, 1996).

Project Success

Many studies have examined what constitutes project success. There are two general perspectives on defining project success in these studies: holism and realism (Jugdev & Müller, 2005). The holistic perspective considers project success as a comparison of actual performance with target performance against criteria pertinent to each project. In contrast, the realistic perspective attempts to reflect the reality of project conditions without a clear-cut classification of project success or failure.

Holistic Perspective

The traditional measure of project success is the comparison between the target and actual performance regarding budget, time, and functionality (Gemünden, 2015). In fact, meeting cost, schedule, and performance targets is a widely-used project success criterion (Williams, 1995). The commonly-adopted "iron triangle" criterion is a useful surrogate for measuring "project efficiency" (Serrador & Pinto, 2015). However, many argue that "defining success is not that easy" (Williams, 1995, p. 19) and that project efficiency criteria alone can lose sight of project success because they cannot capture the whole picture (Shenhar & Dvir, 2007). The success or failure of a project is not necessarily obvious or clear-cut. First, project objectives vary. Second, the achievement of these objectives may often be a matter of subjective judgment. Third, it is not uncommon for managers to revise budgets, schedules, or goals as projects evolve.

In the 1970s, project success was viewed from a technical perspective during the implementation phase Since then, focus has shifted towards accomplishments for internal and external stakeholders (Davis, 2014). Indeed, project success may be contingent on who the stakeholders are and what phase the project is in (Lim & Mohamed, 1999; Shenhar, Levy, & Dvir, 1997). While the "iron triangle" criterion is important, it has begun to be recognized that project success needs to consider stakeholder aspects (values lie in the eye of the beholder), exploitation (it may take time to achieve project outcomes and reap transpiring benefits), and strategic implications (an organization's strategic goals depend not just on one project but on the entirety of all projects) (Gemünden, 2015).

The success of a project was once viewed primarily as a matter of scheduling, but it actually depends on many factors (Belassi & Tukel, 1996). After reviewing previous studies, Belassi and Tukel (ibid.) summarize the factors related to (a) the project manager and team members, (b) the characteristics of the project (e.g., size, value, uniqueness of project activities, urgency), (c) organization (e.g., top management support, project organizational structure, project champion), and (d) the external environment (e.g., economic, technological, political environments). These factors affect the project manager's job performance, project estimates, and resource availability, and they in turn determine the degree of a

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project's success or failure. Based on the review of 63 studies, Fortune and White (2006, pp. 55-56) summarize the critical success factors (CSFs) for projects. Their identified CSFs range from risks addressed/assessed/managed and key financial performance indicators to the incorporation of different viewpoints.

Davis (2014) observes that success factors now highlight the focus on internal and external stakeholders. Internal stakeholders include senior management, the core project team, and project recipients, and the expectations and assessments regarding project success may vary according to different internal stakeholders in the life cycle of a project. Therefore, the requirements for project success may not be simple or monolithic—they should also be viewed holistically as dynamic entities, as our business environments are changing more quickly than before.

Realistic Perspective

Realistic or pragmatic scholars consider the use of CSFs in assessing project success unrealistic and impractical because (1) CSFs can vary with projects, (2) the interrelationships among CSFs can be more influential than CSFs by themselves, and (3) general, homogeneous CSFs are not effective at evaluating the unique and heterogeneous features of different projects (Fortune-White, 2006). Moreover, the application of a set of criteria to assess project success can also be problematic for many realistic scholars. Obvious problems include criteria with a narrow focus, unrealistic assumptions, unambiguous criteria, competing and conflicting criteria, incomplete knowledge about the range of project stakeholders, unrealistic target performance, and the relative importance of each success criterion (Hussein, Ahmad, & Zidane, 2015). Davis (2014) also finds project success factors could vary with stakeholders because they often have different perceptions. The discontinuity of project success factors continues to prevail across different phases of the project life cycle (Jeffrey K Pinto & Slevin, 1988). In the conceptual phase, effective client consultation is more important than top management support. After entering the planning phase, client acceptance, top management support and urgency take precedence over client consultation. During the execution phase, leadership and trouble-shooting grow more in importance. As the project reaches closure, technical tasks and client consultation appear to be more important.

Project success can be further examined from either the non-hierarchical or hierarchical perspective of realism. The non-hierarchical perspective considers that all of the related factors used to measure project success have equal weight or influence (Atkinson, 1999). The hierarchical perspective identifies all of the relevant factors and assesses whether and to what degree these factors can compensate each other (Görög, 2002). This paper adopts the non-hierarchical perspective of realism and emphasizes the importance of overall project success in seven areas: customer satisfaction, technical performance, firm success in the industry, the contribution of profitability, project success against competitors, project completion speed against competitors, and overall project quality against competitors (Zwikael & Globerson, 2006).

The Impact of Project Risks on the Use of PM Tools

Project risk is defined as "an uncertain event or condition that, if it occurs, has a positive or negative impact on one or more project objectives such as scope, schedule, cost, and quality" (Project Management Institute, 2013). Given that 1) project success depends on many factors and 2) many projects involve high-risk, "the need for project risk management is widely recognized" (Williams, 1995, p. 20). Project risks can originate from work processes, organizational environments, and people, and these risk factors are often intricately connected with each other in a non-linear fashion (Apgar, 2006). As a result, it is

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challenging to decouple all of the risk factors associated with a project and to track the root causes and culprits. Many best practices have shown that effective use of PM tools can help recognize individual risk factors and deal with risks early in their development and throughout the entire project life cycle (Thamhain, 2013). The risk breakdown structure (RBS) originally developed by David (Hillson, 2003) has been widely adopted by project managers to categorize risks in detail so that each risk can be properly managed and assessed.

Thus, as project risks escalate, some project managers turn to project risk management tools, such as templates and risk checklists, and make recommended actions based on the indicators of those tools (Marcelino-Sadaba, Perez-Ezcurdia, Echeverria Lazcano, & Villanueva, 2014). However, not all project managers intuitively turn to risk management tools in the face of project risks. Parker and Mobey (2004) study shows that a project manager's lack of understanding PM tools and benefits, as well as a risk-averse personality, could decrease the intent to use PM tools. Project management tools are results-oriented and their effective application across the project life cycle can potentially increase the project's success rate (Kendrick, 2013). PM tools range from software tools and templates to metrics. PM tools differ from project management methodology because the latter emphasizes the systematic application of all related tools instead of specific tools in achieving project success. In the face of risks, it is very likely that project managers will seek out specific PM tools in order to mitigate or eliminate them. Thus, the following hypothesis is proposed:

H1: The degree of project risk increases the extent of PM tool use.

The Impact of PM Tool Use on Overall Project Success

Many small- and medium-sized companies are struggling with the effective use of PM tools in order to achieve project success. One major reason for this issue is the misfit of PM tools for communication and collaboration among distributed and virtual teams (Quade, Birkenkrahe, & Habermann, 2013). One study (Raz & Michael, 2001) found a positive relationship between project tool use and project management performance score. It is worth noting that achieving project success requires the smart choice of the right PM tools for different stages of the project life cycle. In developing project ideas during the initial stage, project managers can utilize user stories (Cohn, 2004). As project ideas become more mature and finalizing project requirements becomes more critical, a semi-structured qualitative interview is a more suitable tool (Mayring, 2002). It is imperative for project managers to know what tools to use for what conditions in order to achieve project success. Therefore, the following hypothesis is proposed:

H2: The extent of PM tool use positively impacts the degree of overall project success.

The Impact of Project Risks Management on Overall Project Success

The presence of project risks can alert project managers to the potential influence of negative and positive risks on overall project success. Risk factors influencing the success of a project could be technical, organizational, and environmental (De Bakker, Boonstra, & Wortmann, 2010). Technical risks are contextual ones and are embedded in project characteristics. Organizational risk factors are internal. Environmental risk factors are external and could pose threats for a project manager in achieving predefined project objectives. However, these factors may raise new project and business opportunities. In

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response to dynamic changes in technology, regulations, and environment, a project manager needs to constantly assess not only the adverse effect of those changes on project scope and planning, but also new project opportunities. All of these risks need to be properly addressed in order to achieve project success.

Although high risks can result in low project performance, the effective enforcement of formal and informal controls in order to manage identified and emerging risks can enhance a project's performance (Liu & Deng, 2015). The ex-post evaluation approach asserts that an effective project risk management practice is to continuously collect information about known and unknown risk factors throughout the project (Alter & Ginzberg, 1978; F Warren McFarlan, 1981; Zmud, 1980). As the list of potential risk factors is identified and managed properly, project success rate can be largely increased.

The positive effect of project risk management practices on project success is also evident when these practices are executed in right sequence: identifying risks, analyzing risks, defining action, implementing action, and monitoring the situation (Boehm, 1991; Pich, Loch, & Meyer, 2002). Project risk prevention, risk monitoring, and risk integration management are essential elements of risk-coping capacity that can increase a project's success rates (Teller & Kock, 2013). According to the resistance to change theory, the successful diagnosis of risk factors can help project leaders better manage projects by knowing their underlying causes (Xu, Teo, Tan, & Agarwal, 2009).

The effective management of project-related risk factors and their non-trivial root causes can lead to project success. For instance, agile software development methodology is growing in acceptance because of its flexibility and adaptability to the external environment. The agile project management approach can help identify and manage external risks, costs, schedules, technology, and operational risks (Georgiev & Stefanova, 2014), and the effective use of the agile approach can improve the quality of the final product and, ultimately, the satisfaction level of customers. Thus, the following hypothesis is proposed:

H3: Implementing project risk management practices can increase overall project success.

The Impact of Appropriate Use of PM Methodology on Overall Project Success

Joslin and Müller (2015) cite the definition of PM methodology (PMM) by the Project Management Institute as "a system of practices, techniques, and procedures [sic], and rules" and define PMM elements as "processes, tools, techniques, knowledge areas, and comprehensive capability profiles" (p. 1380). According to their study, the use of PMM accounts for 22.3% of the variation in project success, and PM methodologies have been adopted in different fields in order to increase the success rate. In the IT field, agile methodology treats the tasks in each phase of the software project life cycle as incremental and interactive. Agile methodology has advantages over the traditional waterfall methodology, which treats system analysis, design, programming, and testing as discrete phases. Constant feedback from customers through the project life cycle can improve software quality, increase communication visibility, lower risks, and satisfy customers (Georgiev & Stefanova, 2014).

Nevertheless, "a project management methodology is considered part of an overall larger ecosystem" that includes project standards, best practices, supportive processes, templates, project activities, project roles and responsibilities, and project tools (Charvat, 2003, p. 39). Perhaps because methodology is an umbrella concept, few studies have identified the direct relationship between a particular methodology and overall project success. Some case studies report a lack of methodology leading to project failure (Fortune & White, 2006); others note project failure despite the application of a methodology (Scott & Vessey, 2002). Because of the lack of conclusive findings, Joslin and Müller (2015) conduct a cross-

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sectional, global online survey with 254 project managers and find that a high correlation exists between the degree of adopting PM methodology and project success. Pedersen (2013) surveys project managers in southeastern Michigan and finds that PM methodology, such as integration management, scope management, human resources management, communication management, and risk management, are critical factors in project success. PM methodologies are guiding processes that dictate the use of PM tools and resource allocation throughout a project's life cycle (Ahlemann, El Arbi, Kaiser, & Heck, 2013). Joslin and Müller (2015) conclude that project methodology is a critical factor for a project's success; in other words, the more appropriately the PM methodology is adopted, the more likely it is that the project can be successfully executed. Therefore, the following hypothesis is proposed:

H4: The extent of appropriate PM methodology use positively impacts the degree of overall project success.

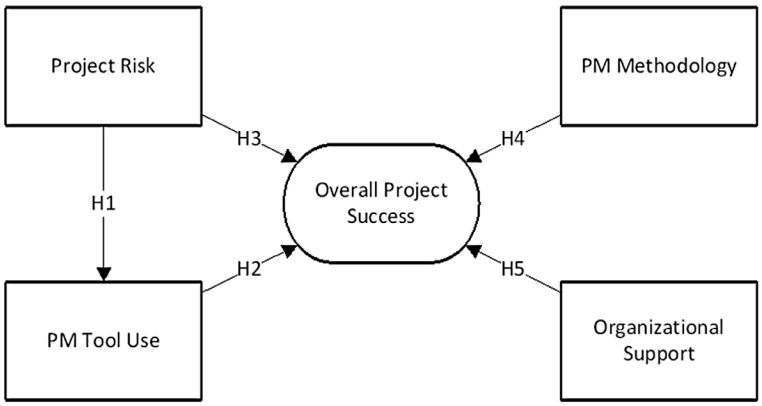
The Impact of Organizational Support on Overall Project Success

Organizational support is the degree to which companies value their employees' contributions, assist in achieving their personal and career goals (Edwards & Peccei, 2010), and pay attention to their welfare (Shanock & Eisenberger, 2006). When employees perceive high organizational support, they become more confident, optimistic, and resilient (Luthans, Avey, Avolio, Norman, & Combs, 2006) in the face of issues throughout the project life cycle. Project management brings changes to an organization. Stakeholders that are affected by new projects often react with anxiety and resistance (Cummings & Worley, 2009). Organizational support can reverse this natural reaction with positive support for changes brought about by projects (Rafferty & Simons, 2006). As a supportive organizational climate is created, stakeholders are more likely to play active roles in helping achieve project success. Thus, the following hypothesis is proposed:

H5: The extent of organizational support positively impacts the degree of overall project success.

The above discussion led to the development of a research model (Figure 1) showing the relationships among four constructs in relation to overall project success.

Figure 1. Theoretical model



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RESEARCH METHODOLOGY

China has the second largest number of PMPs (Project Management Professionals) in the world; more than 50,000 PMP members are implementing projects in diverse industries. A survey with these members helped gain a holistic understanding of the present proposed research model. Sample candidates were recruited from among registered PMP's from the Project Management Institute (PMI) in China. A total of 200 PMPs were randomly chosen from the list of PMI members. A link to an online questionnaire comprised of three parts was sent to these randomly-identified respondents.

The first part contained survey instructions and expressed the authors' appreciation to the participants. The second part of the survey contained measurement items of all the constructs used in this study. Since the data collection method used was self-reports by the PMP participants, common method variance (CMV) was able to introduce artefactual covariance problems (Spector & Brannick, 2010). Prior literature indicated that CMV is not a problem for project management topics such as that of the present study (Peng, Heim, & Mallick, 2014), but some effort was still exerted to reduce the effects of CMV (Reich, Gemino, & Sauer, 2014). The respondents were assured of their anonymity and told that there were no right or wrong answers. The measurement items were arranged in order to hide the name of the constructs and their relationships. The final part of the survey contained demographic questions.

The respondents were required to answer all of the questions in the questionnaire, and a cursory data screening did not identify any survey with fake participants such as those choosing the same response options over a series of questions. Although 125 PMPs completed the survey, 32 responses contained

Table 1. Sample demographics

		Frequency	%
Sales of the Firm	0-999	8	8.6
	1000-9999	16	17.2
	10000-99999	20	21.5
	100000-999999	15	16.1
	More than 10000000	11	11.8
	Missing data	23	24.8
Firm Size (Number of Employees	0-50	19	17.2
	51-150	13	14.0
	151-999	21	22.6
	1000-9999	14	15.1
	More than 10000	12	12.9
	Missing data	17	18.3
Number of Key Project Members	1-5	20	21.5
	6-10	20	21.5
	11-30	22	23.9
	31-100	7	7.5
	More than 100	7	7.5
	Missing data	17	18.3

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Table 1. Continued

		Frequency	%
Estimated Project Duration (months)	1-3	14	15.1
	4-6	17	18.3
	7-10	13	14.0
	11-25	25	26.9
	More than 25	5	5.4
	Missing data	19	20.4
Months Since the Project Start	0-2	20	21.5
	3-5	22	23.7
	6-8	14	15.1
	9-20	9	9.8
	More than 20	4	4.3
	Missing data	24	25.8
Number of Concurrent Projects Managed Now	1	18	19.4
	2	21	22.6
	3-4	16	17.2
	5-6	14	15.1
	More than 6	6	6.5
	Missing data	18	19.4
Your Experience as a Project Manager (years)	0-1	16	17.2
	2-3	13	14.0
	4.-6	14	15.1
	7-10	20	21.5
	More than 10	12	12.9
	Missing data	18	19.4
Industry	Manufacturing	19	20.4
	Construction	7	7.5
	Real estate	3	3.2
	Information and communication	15	16.1
	Wholesale and retail	3	3.2
	Transportation and storage	3	3.2
	Finance/insurance	7	7.5
	Professional, scientific and technical service	2	2.2
	Administrative and support service	1	1.1
	Energy	6	6.5
	Education	1	1.1
	Others	5	5.4
	Missing data	21	22.6

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missing data and only the remaining data sets were retained for analysis. A 46.5% response rate was achieved. A final sample of 93 responses was used for model testing. Table 1 shows that the majority of respondents were department managers (31.2%), followed by project managers (20.4%), line managers (17.2%), general managers (10.8%), and deputy general managers (7.5%). As for company characteristics, 38.7% of the PMPs in the survey are currently working for state-owned companies, versus 61.3% of PMPs for private companies. Respondents were also asked what types of projects they were currently responsible for. A large proportion (60.2%) of the respondents work on business projects, whereas 21.5% work on IT projects, and 18.3% on both IT and non-IT projects. IT projects account for a small percentage of the sample projects. The sample size is unequal and business projects account for the majority of all projects in the study. In addition, the tools and methodology used to manage risks are general in our survey. Therefore, we consider it is unnecessary to compare IT with non-IT projects.

As for project scope and scale, Table 1 shows project distribution with respect to budget and duration, as well as the number of team members and projects. In addition, the participants also reported their experience in managing different types of projects.

The questionnaire items were adapted from relevant studies in order to ensure the content validity of the constructs. The organizational support construct was operationalized as a formative construct with five reflective first-order dimensions (Table 2). Seven items were adapted from prior studies to assess overall project benefits (Zwikael & Globerson, 2006). Four items were modified from the survey instruments used in the studies of Zwikael and Globerson (2006) to measure the use of PM methodology. The use of PM tools was measured with 7 items (Zwikael & Globerson, 2006). Specifically, tools included in the study were: (1) risk management planning, (2) project cost estimates, (3) project cost estimate updates, (4) contingency planning, (5) task duration estimates, (6) task resource requirements, and (7) resource costs. Finally, four items were modified from Zwikael and Sadeh (2007) study to measure project risks. All constructs were measured on a seven-point Likert scale (1 = totally disagree; 7 = totally agree).

The research model was tested using structural equation modeling with partial least squares (PLS) because PLS enables a small sample size and latent constructs to be modeled as formative constructs (Chin & Newsted, 1999). Additionally, PLS is nonparametric and thus does not require that the assumption of a normal data distribution (*ibid*.).

RESULTS

Variable Constructs and Validities

The SmartPLS was used to test the model. Following extant studies (Kankanhalli, Ye, & Teo, 2015; Petter, Straub, & Rai, 2007; Wu, Straub, & Liang, 2015) that used the partial least square (PLS) path models, this study listed the construct of variables in Table 2 and the correlations of the variables in Table 3. Two variables, overall project benefits and project risks, were reflective variables because the measurement items were considered the manifestation of project benefits and risks. On the other hand, other variables were formative variables because the measurement items may not necessarily be correlated with each other. For an example, project office participation, PM software use, creation of a firm-wide project database, new PM tools/techniques, and the establishment of a cross-functional team each can be adopted independently. However, the degree to which each is adopted and used determines the overall level of organizational support. The weights and loadings of the variables were all significant.

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The reflective (latent) variables all had a Cronbach's α above 0.75 and the square root of AVEs above their correlations with other variables. Finally, the VIFs of the reflective variables were less than 5.00, and those of the formative variables were less than 3.33 (Diamantopoulos & Siguaw, 2006).

Table 2. Measurement of research variables

Organizational Support (Formative)	**Weight**	**t-Value**	**VIF**	**References**
Project office participation	-0.546	3.645	1.812	(Zwikael & Sadeh, 2007)
PM software use	0.591	3.540	2.001	
Firm-wide project database	-0.817	4.758	2.613	
New PM tools and techniques	0.409	2.123	2.804	
Cross-functional PM teams	0.865	7.575	1.410	
Overall Project Benefits (reflective)	**loading**	**t-value**	**VIF**	**References**
Customer satisfaction	0.629	10.278	2.258	(Zwikael & Globerson, 2006)
Technical performance	0.724	16.720	2.461	
Firm success in the industry	0.837	35.337	3.663	
Profitability contribution	0.791	28.562	2.917	
Project success against competitors	0.811	30.490	2.698	
Project completion speed against competitors	0.779	24.754	2.304	
Overall project quality against competitors	0.690	12.362	1.774	
PM Methodology (formative)	**weight**	**t-value**	**VIF**	**References**
Match between project type and methodology	0.624	4.382	1.141	(Zwikael & Globerson, 2006)
Customer project participation	0.405	2.418	1.288	
Project simplicity	-0.525	3.064	1.400	
Project requirement stability	0.586	3.277	1.297	
PM Tool Use (formative)	**weight**	**t-value**	**VIF**	**References**
Risk management planning	0.378	2.960	1.430	(Zwikael & Globerson, 2006)
Project cost estimates	0.575	3.123	1.689	
Project cost estimate updates	-0.478	3.174	1.681	
Contingency planning	0.543	3.413	2.060	
Task duration estimates	0.489	4.014	1.526	
Task resource requirements	-0.547	3.728	2.016	
Resource costs	-0.431	3.044	1.687	
Project Risk (reflective)	**loading**	**t-value**	**VIF**	**References**
Technical risks	0.757	13.547	1.151	(Zwikael & Sadeh, 2007)
Financial risks	0.757	11.667	2.167	
Human resources risks	0.714	14.843	1.600	
Other risks	0.754	11.663	2.037	

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Table 3. Composite reliability, R Square, Cronbach's α, Correlation Matrix

Variables	Composite Reliability	R Square	Cronbach's Alpha	Organizational Support	Overall Project Benefits	PM Methodology	PM Tool Use	Project Risk
Org Support	n.a.	n.a.	n.a.	--				
Overall Proj. Benefits	0.902	0.420	0.872	0.391	0.755			
PM Methodology	n.a.	n.a.	n.a.	0.055	0.343	--		
PM Tool Use	n.a.	0.092	n.a.	0.327	0.376	0.058	--	
Project Risk	0.834	n.a.	0.758	0.238	0.453	0.016	0.303	0.746

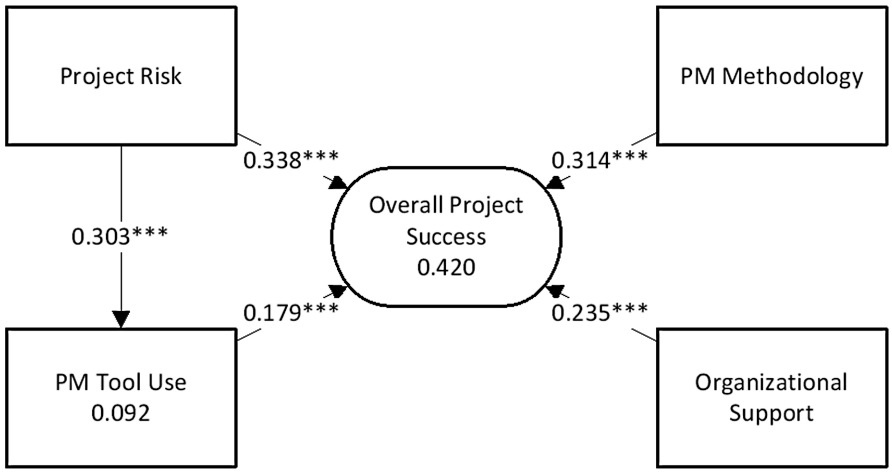
*: The diagonal of the correlation matrix lists the square root of AVEs.

Hypothesis Testing Results

Figure 2 shows the path coefficients and their significance. Table 4 summarizes the results of the hypothesis testing.

The R^2 of Overall Project Success is 0.420. This indicates that the model predicts relatively quite well on the degree of project success with the four independent variables. H1 (the degree of project risk increases the extent of PM tool use) was supported with a significant path coefficient of 0.303 ($p < 0.01$) from Project Risk to PM Tool Use. The path between PM Tool Use and Overall Project Benefits was significant with a path coefficient of 0.179 ($P < 0.01$). This supported H2 (the extent of PM tool use positively impacts the degree of overall project success). Project Risk positively impacted Overall Project Benefits with a path coefficient of 0.338 ($p < 0.01$), affirming H3 (implementing project risk management practices can increase overall project success). Overall Project Benefits were also positively impacted by PM Methodology and Organizational Support, which had path coefficients of 0.314 ($p < 0.01$) and 0.235 ($p < 0.01$) respectively. They give support for H4 (the extent of appropriate PM method-

Figure 2. Path coefficients and their significance



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Table 4. Summary of hypothesis testing

Hypothesis		Path Coefficient	T-Statistics
H1	Project Risk → PM Tool Use	0.303	6.280***
H2	PM Tool Use → Overall Project Benefits	0.179	3.749***
H3	Project Risk → Overall Project Benefits	0.338	9.307***
H4	PM Methodology → Overall Project Benefits	0.314	7.195***
H5	Organizational Support → Overall Project Benefits	0.235	4.416***

*: $p < 0.10$, **: $p < 0.05$, ***: $p < 0.01$

ology use positively impacts the degree of overall project success) and H5 (the extent of organizational support positively impacts the degree of overall project success). By comparing the coefficients, the most influencing factors for project success are project risk and PM methodology while the impacts of organization support and PM tool use are significant yet somewhat smaller. As hypothesized, PM use is strongly driven by project risk.

IMPLICATIONS

The Role of Project Risks

The results showed interesting perspectives regarding project risks. First, risks are perceived as major sources of project failures. As examples, the risks associated with leadership, organizational culture and structure, commitment, user involvement and training, developer expertise, technology planning, scope and objectives setting, and project estimation were noted as common sources of project failures in past studies, according to Al-Ahmad et al. (2009). On the other hand, risks that have been rightfully addressed, assessed, and managed are considered as key success factors (KSF) in project success (Fortune & White, 2006). From this perspective, the positive impact of risks on PM tool use (H1) was not a surprise. On the other hand, the positive association between risks and overall project success (H3) may surprise some. This finding reflects the project manager's endeavor to leverage the extent of risks into corresponding or even greater success than the degree of expected losses due to these risks.

The Utilities of PM Tools

The positive influence of PM tools on project success (H2) aligns well with the results of earlier studies (Quade et al., 2013; Raz & Michael, 2001; Saarinen, 1990).

The Importance of PM Methodology

The right choice of PM methodology is a CSF for project success (Fortune & White, 2006). PM methodologies such as Projects in Controlled Environments 2 (PRINCE2), PMBOK, Agile and one developed in-house are listed among the most common in Australia, Canada, and the UK, although the popularity of

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each PM methodology is uneven across the three countries according to an international study (Fortune, White, Jugdev, & Walker, 2011). The same study also reports that many project managers encountered limitations or drawbacks of a methodology, method or tool. That is, the use of a PM methodology is not necessarily easy or straightforward depending on the scale and complexity of each project. While the six-sigma approach was shown to lead to project success and organizational performance (Boon Sin, Zailani, Iranmanesh, & Ramayah, 2015), few studies have examined the impact of PM methodologies in connection with the extent of project risks and the level of organizational support, as the present study does.

The Criticality of Organizational Support

Lack of top management support is among the frequently-cited causes of project failure (Jeffrey K. Pinto & Mantel Jr, 1990). The reverse of that is the importance of organizational culture and structure in project success (Fortune & White, 2006). Our study assessed organizational support side by side with project risk, PM methodology, and a variety of PM tool use. An intriguing finding is that, while organizational support is still critical, its path model coefficient was 0.235 whereas those of project risk and PM methodology were 0.338 and 0.314. That is, relative influences of project risk and PM methodology on overall project success were higher than that of organizational support. Figure 2 indicates also that the path coefficient of PM tool use is 0.179, which is only marginally smaller than that of organizational support. Altogether, we should interpret organizational support as one of the requisite conditions but not necessarily a sufficient one.

Theoretical and Practical Implications

This study adopted the non-hierarchical perspective of realism (Jugdev & Müller, 2005) to measure project success and to assess its relationships with four vital elements of project management, including PM risks, organizational support, PM methodology, and PM tools. For researchers, this study is one of the first that assesses these vital elements of project management success. In addition, this study replicates Zwikael and Globerson (2006) study by modifying and incorporating seven criteria into the measurement of overall project success.

This study verifies the findings of current literature regarding the positive influence of organizational support, PM tool use, and PM methodology on overall project success. On the other hand, two new findings different from those found in previous literature were discovered. The first finding is that risks have a positive impact on PM tool use if they are properly assessed with the right PM tools. This finding is contrary to the general understanding of risks as a major source of project failure (Fortune & White, 2006). The second finding is that project managers in China have the tendency to interpret risks as opportunities for project success, thereby leveraging risks for achieving greater project success.

Similarly, PM practitioners can look at the results of this study as a birds-eye view of the day-to-day challenges they encounter. While most project managers tackle numerous details and unexpected (usually frustrating) developments of project evolutions, they need to go beyond these details and negatives to keep their eye on the high-level dynamics between success/risk and PM elements in the context of their organization.

In practice, project managers can first and foremost properly assess the extent of the influence of project risks on overall project success and then make efforts to convert project risks into opportunities in order to achieve greater project success. PM methodology is process oriented and can serve as guid-

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ance toward the use of effective PM tools in alignment with the strategic direction of projects. Along with active organizational support, project success can be more clearly defined, and the overall project success rate can be largely increased (Hussein et al., 2015).

Construction and national defense projects have been primary drivers for China's economy in the past decades. As China is moving into service and an intern-based economy, projects have become diversified, and different kinds of risks are involved. An increasing number of project managers in evolving industries rely on the use of appropriate PM tools and methodology. This study shows that project managers in China can overcome structural and contextual risks with PM tools, PM methodology, and organizational support.

LIMITATIONS AND FUTURE RESEARCH AGENDA

The research model constructed in this study has strong explanative power for the success of both IT and non-IT projects. The R^2 of the overall project performance dependent variable was 42%, which is higher than previous studies with similar dependent variables (Reich et al., 2014). This finding indicates that those four independent factors together—project risks, PM methodology, PM tools use, and organizational support—have strong influences on project success. Nevertheless, there were several limitations to this study. The most obvious is the small sample size (93 participants) despite the high degree of representatives in the samples that are project managers in the real world. The sample represented less than 0.2% of the PMPs in China. Another control that can be improved in future studies is to not only increase the sample size, but also to ensure the same proportion of IT vs. non-IT projects, as well as different industries. The control of equal cell size can minimize the potential influence of unequal sample size varied by industry and project types.

In order to further reduce the common method variance, different data collection methods should be employed (Spector & Brannick, 2010). This study should have tried to collect qualitative data from respondents regarding their personal opinions on the importance of project risks, useful tools and methodology, and organizational support for project success. The qualitative data could have been used to validate statistical analysis results and further improve the credibility of the findings in this study. Future research may also want to further compare different risk factors and tools used with respect to their impact on different project success outcomes (e.g. schedule, budget, scope, and stakeholder satisfaction). In addition, scholars interested in this study can explore other factors that could increase the predictive power of project success across project types and industries.

Lastly, a cross-cultural study can be conducted to examine whether the factors identified in this study have varying degrees of influence on project success due to different business and geophysical environments. Cultural elements, such as power distance and individualism, are correlated with the use of project tools (Matusitz & Musambira, 2013) and project failure rate (Jørgensen & Yamashita, 2016). For international projects, the cultural distance between business partners can also hamper project success (Malik & Yazar, 2016). Our research model examined the project risks and organizational support factors that were susceptible to the influence of cultural elements. Scholars that are interested in extending this study to the international context can survey PMPs in different cultures and assess the potential influence of different cultural elements on project success. Replication of this study in different cultures can increase the generalizability of its findings.

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CONCLUSION

Faced with volatile and uncertain business environments, firms need to be able to quickly propose and lead projects in order to cope with intensifying competition. The effectiveness of assessing project risks needs to consider structural and contextual characteristics. PM tools and methodologies have been commonly employed to minimize project risks. Although extant studies emphasize the importance of using the right tools and methods, it is not clear how much their use can contribute to containing project risks and helping project success.

This study is among the unique studies that have examined PM methodology, PM tools, and organizational support for the diametric relation between risks and rewards (success) of a project. These three essential elements of PM lead to project success when they are applied to projects in unison. Moreover, the greater the project risks, the more critical is the use of appropriate PM tools and the greater the extent of overall project success, which leads to operational success in this turbulent business environment. This study provides important motivations for project managers to communicate with their top management regarding the criticality of organizational support and resources for adopting appropriate PM methodology and tools.

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Chapter 66
Challenges for Innovation Due to Firm Size:
The Case of Brazilian Industrial Firms

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ABSTRACT

This chapter analyses the innovative capacity of small firms compared to medium and large firms in Brazilian industry. It presents the Schumpterian debate regarding the role of small and large firms as inductors of innovation, including a brief discussion about the barriers and opportunities for innovation faced by small businesses, particularly in developing countries. The empirical analysis is based on the Brazilian Innovation Survey, which is used to compare the innovative efforts undertaken by small, medium and large enterprises. Its main findings are that in Brazil, large companies predominate in the creation of new products and processes, while smaller perform more effort than those in innovations associated with processes modernization. However, from the observation of the industry sectorial structure, it identifies that in high-tech sectors, Brazilian small companies outperform large in efforts in R&D.

INTRODUCTION

This study aims to analyze the differences in the innovative performance of small, medium and large companies in Brazilian industry. It considers that sectorial characteristics influence in these groups of firms differently. The paper raises the hypothesis that in high-technology sectors, micro and small enterprises (MSEs) aim to take part in the market through differentiation, technological niches and opportunities, while in the lower technology segments the MSEs innovative processes are limited to technical improvement of their industrial plants.

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In Brazil, the literature about the productive and innovative performance of smaller companies is scarce, basically limited on those studies that will be mentioned in our literature review. Considering that most innovative expenditures are performed by large firms, the Brazilian studies have prioritized this group of companies. But, as it will be discussed later, based on the number of employees and number of innovative firms, smaller companies are a relevant category in Brazilian economy. So, it seems essential understand better their productive and technological performance to promote the diffusion of knowledge in the country.

The paper is composed of five sections and organized as follow. After this brief introduction, section 2 presents some of the main findings of the literature regarding innovation and firm size. Section 3 presents an overview of Brazilian industrial firms based on their innovative performance by firm size. Section 4 discusses the differences among sectors in innovative effort per firm size. Section 5 presents the main conclusions.

A REVIEW OF THEORETICAL AND EMPIRICAL RESEARCH

Micro, small and medium enterprises (MSMEs) account for a significant part of employment, production and sales in several countries. In the European Union, for instance, MSMEs represent 99 percent of industry and account for more than 70 percent of employment (Nieto & Santamaria, 2010). In the newly industrialized countries (NICs), MSMEs generally employ the largest percentage of the workforce, are responsible for income generation opportunities and, at least in the case of East Asia and India, MSMEs contribute with a substantial share of the manufactured exports. In China and India, they are responsible for most part of total businesses, gross industrial output value, sales revenues and employed people (Singh *et al.*, 2009).

Although their economic and social relevance is consolidated, the role of MSMEs on innovative performance is still controversial. The ancient Schumpeterian debate over how firm size relates to the ability and propensity to innovate continues to arouse controversy today (Nieto & Santamaria, 2010).

In his initial phase - known as Schumpeter Mark I - the author argued that radical innovations would be promoted by small businesses, through the action of entrepreneurs who would break with the prevailing technological paradigms (“creative destruction”). More than the generation of innovations itself, the economic development would result of their diffusion through the environment. Afterward - as Schumpeter called on stage Mark II - the author highlighted the central role of large firms in the development of new technologies and, consequently, of economic growth, in a processes known as “creative accumulation”.

As mentioned by Tether (1998), the contrasting hypotheses of Schumpeter have been widely but inconclusively examined. The existence of such a large literature is indicative of both the importance of the theme and the inconclusive nature of the results. Interpretation is especially difficult because of the different indicators used to evaluate the innovative performance, such as R&D expenditures, R&D employment, patents and others, suggesting different relationships between firm-size and innovative performance.

These differences in measuring and interpreting innovation efforts and results can be associated to the advantages traditionally ascribed to large and small firms. The main relative strengths of MSMEs lie in behavioral advantages, whereas those of large firms reside in their resource advantages. Especially in developed countries, smaller firms generally enjoy internal conditions that encourage innovativeness, such as entrepreneurship, flexibility, and rapid response. MSMEs present an increased ability to respond

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to changing environmental needs. Less bureaucracy and more clannish structures, which are common in small businesses, might also improve inter-organizational trust, communication and cooperation that contribute to innovativeness (Hausmann, 2005). Small firms are relatively strong in innovations where effects of scale are not important and where they can make use of their flexibility and proximity to market demand, such as new products or improvements in existing ones for niche markets, and small-scale applications. This idea is corroborated by the fact that, on average small enterprises spend a much higher proportion of their R&D budget on new products than on new processes (Nieto and Santamaria, 2010).

On the other hand, large companies would have greater capacity to deal with the financial risks inherent to innovative projects, presenting advantages over small firms in making such investments (Fagerberg, 2006; Vaona & Pianta, 2008; Botelho, Maia & Pires, 2012). As mentioned by Hausmann (2005), small firms are not simply smaller versions of major corporations: not only they lack the financial and human capital common in large businesses, their governance is often entirely different. The relative weaknesses of small firms compared to large ones lie in the constraints they face on gaining access to critical resources and capabilities for innovation. The advantages of scale and scope provided by the size of large firms make them better equipped for innovations that require large and specialized teams or sophisticated equipment. MSMEs are also usually at a disadvantage regarding intangible resources, as they have access to a smaller range of knowledge and human capital skills (Nieto and Santamaria, 2010). In general, small firms have limited financial capacity, suggesting they lack the financial resources to capitalize on innovative opportunities that can be very risky and costly. Besides, small business managers often lack the types of education and training that have been linked with innovativeness. Commonly the MSMEs owners are reluctant to delegate authority or decision-making to others (Hausmann, 2005).

Despite the limitations presented, small firms remain innovative. In a literature review presented by Tether (1998), the author found many studies which indicated that MSMEs innovate more than large firms. (Table 1 presents these results).

Although several studies have found that small firms have introduced more innovations than their larger counterparts, which has been interpreted as indicating that small firms are more innovative or more efficient innovators, Tether (1998) highlights that such an interpretation depends on the assumption that, on average, the value of the innovations introduced did not change with the firm size. In his paper, Tether (1998) used a database of significant innovations introduced in the UK during the 1980s and put into doubt the widely held conclusion that small firms are more innovative, or more efficient innovators, than large firms. He found that large firms, rather than small ones, appear to have been the more innovative, if the average value of innovations is considered.

Some studies suggest that small firms remain innovative, especially because they innovate in different ways than large businesses, which means that small and large firms have different determinants of innovation efforts. Most MSMEs engage mainly in non-formal innovative activities, incorporating the state of the technique in the form of physical capital rather than investing in research and development (R&D) (Vaona & Pianta, 2008 *apud* Botelho, Maia & Pires, 2012). In other words, the most significant portion of the innovative efforts of MSMEs is directed to the modernization of their processes through the acquisition of machinery and equipment (M&E).

Besides size, technological phase and sectorial characteristics are some of the elements that impact on innovative capacity of the firms. Based on Rizzoni (1994), Maia (2012) synthesized some approaches that compare the innovative performance of large and small firms:

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Table 1. Innovative intensities of small and large firms: the results from five studies (Tether, 1998)

Country and Year(s)	Coverage and Definition of 'Small Firms'[b]	Authors	SFIR / LFIR
UK (1979-1983)	Manufacturing; 'small' employ less than 500	Pavitt et al. (1987)[c]	1.31
US (1982)	Manufacturing; 'small' employ less than 500	Acs and Audretsch (1990)	1.55
US (1982)	Manufacturing and services; 'small' employ less than 500	Acs and Audretsch (1990)	2.38
Netherlands (1989)	Manufacturing and services; 'small' employ 10-499	Kleinknecht et al. (1993)	2.68
Italy (1989)	Manufacturing; 'small' employ less than 200	Santarelli and Piergiovanni (1996)	18.86
Ireland (1991)	Manufacturing; 'small' employ less than 20	Cogan (1993)[d]	2.67

1. **Industry Life Cycle:** Small businesses would present advantages in the early stages of the industry life cycle, while large firms would dominate the posterior one.
2. **Sectorial Approach:** The different inter-sectorial technological opportunities would imply different roles for each size of firm, according to the business segment.
3. **Neo-Schumpeterian Approach:** Emphasizes large companies as leading innovative agents and engine of technological progress.
4. **The Territorial Approach:** Innovations are developed in geographical areas, such as industrial districts.
5. **Innovative Division of Labor:** Large and small companies have complementary role in generating innovations.
6. **Networks:** The production of knowledge is not internalized in companies, being determined by the networks to which they belong. The innovative potential of firms would not depend on their size, but on their ability to establish inter-organizational relationships, share knowledge and participate in global circuits of information.

Regarding networks, the literatures dedicates several studies about their role on technology development, as they can overcome the lack of internal resources and promote the information exchange, resource acquisition, technology transfer and risk management. Networks, as well as cooperative agreement, are particularly considered an alternative to bridge the resource gap of MSME compared to large ones. The resources and capabilities that small firms can access through external partnerships may provide them with the stimulus and capability to innovate that they would not otherwise have. Also, small firms seem to have potentially more to gain from innovative partnerships than larger firms, due to their ability to use external networks more efficiently. The collaborations, though, are not homogeneous, since their impact varies among sectors and the type of innovation involved. In general, MSMEs commonly use their suppliers and clients as a valuable source of technological information. And although large firms are more likely to collaborate with universities and research centers, MSMEs also receive significant spillovers from them (Nieto and Santamaria, 2010).

Nieto and Santamaria (2010), based on a sample of 6,500 observations, analyzed how technological collaboration acts as an input to the innovation process and allows small and medium-sized enterprises to bridge the innovation gap with their bigger counterparts. The authors show that small firms are much less likely to innovate than large ones, whichever the innovation outcome analyzed. Besides, small firms

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tend to collaborate far less than large ones. However, technological collaboration increases the likelihood that MSMEs achieve innovations. The results show that although technological collaboration is a useful mechanism for firms of all sizes to improve innovativeness, it is a critical factor for the smallest firms. Specifically, the impact of collaboration in small and medium-sized firms is more significant for product than process innovations. Regarding the type of partner, vertical collaboration — with suppliers and clients — has the greatest impact on firm innovativeness, though this effect is clearer for medium-sized enterprises than for the smallest firms.

Besides R&D cooperation, MSMEs usually engage in collective actions to share the costs of the acquisition of machinery and also to access financial resources. Regarding the cooperation between large and small firms, sometimes both groups of firms are on equal terms and share the technology, infrastructure, capital or knowledge available to the firms in a cluster. But, in most instances, MSMEs act only as subcontractors of large firms, and the transfer of knowledge can be very limited (Chaminade & Vang, 2007).

There is a strong debate in several countries regarding the policies to support MSMEs. As in most public policies, strong opinions exist in favor and against MSMEs supporting programs. On one hand, it has been argued that MSMEs employ a large proportion of the population and therefore by subsidizing MSMEs more employment will be created. Defenders of these policies argue that MSMEs are more flexible and more dynamic than large firms, even though they are usually constrained by specific market failures, which requires specific policies. On the other hand, detractors point out that these policies generate distortions that affect the allocation of resources and the size distribution of firms, and thus may have a negative effect on global productivity. Also, those against the widespread use of MSMEs policies point to the lack of documented results on the effectiveness of such interventions. (Ibarrarán *et al.*, 2009).

Despite the debate, governments of several countries have developed policies to support these firms. For example, an important policy was implemented by the USA government, which launched in 1982 the Small Business Innovation Research (SBIR) aiming to support innovativeness of MSMEs through non-refundable resources, which can be accessed by firms with less than 500 employees. Similar programs can be found in Taiwan, South Korea, China, Russia and India (Leite, 2011).

MSMEs in Developing Countries

In developing countries, although MSMEs are responsible for the largest part of employment and a significant share of value added, according to Chaminade and Vang (2007) the innovation policy supporting their particularities has been widely ignored. The general trend has been to follow the innovation policies of the developed world that might not be the most appropriate for them. Unlike advanced economies, where there is an important presence of high tech industries in the MSMEs segment, in developing countries these represents an exception among the firms. Their innovation systems should be rethought to consider the type of innovation support necessary to the particularities and fragilities of their MSMEs. According to the authors, upgrading of MSMEs in developing countries is possible if four forms of capital – social capital; human and organizational capital; financial capital and physical capital (infrastructure) – are present and supported.

Chaminade and Vang (2007) argue that, in several Asian countries, the lack of qualified human resources, the poor managerial skills of the manager, and the difficulties to access strategic information are the main obstacles to innovation in MSMEs, constraining the firms' absorptive capacity. As

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a consequence, MSMEs have to deal with a significant portion of low-skill workforce, and rely much more on learning by doing, as opposed to formal training[1].

Asian MSMEs also have difficulties to access the financial capital, even when those funds are available in the productive systems. The government can play an important role in the provision of financial support for indigenous MSMEs. To finance R&D, the governmental support has been mainly in the form of loans at preferential rates explicitly targeting at groups of MSMEs. In the absence of an institutionalized financial structure, social capital facilitates the access to financial resources. When there is not a reliable infrastructure to provide MSMEs with risk capital, social networks might provide the access to microcredits and loans. Access to funds provided by transnational companies (TNCs), in most cases, is limited to a small number of MSMEs (Chaminade & Vang, 2007).

To summarize, the authors conclude that there is a need for innovation policies targeting the particular needs of MSMEs. Unless such measures are taken, MSMEs are not likely to perform relevant innovative activities and will at best maintain their role as low cost subcontractors to TNCs, without exploiting their potential. In the worst scenario, they could even lose their position as subcontractors, by being out-competed by world players.

These new strategies, which take into account the MSMEs needs, seem to be at least partially adopted in China. By the mid-2000s, private MSMEs had become the backbone of the local economy in some areas and/or regions mainly due to the implementation of new policies. Among then, the creation of incubators and science parks also promoted the technological innovation of China's MSME in high-tech sectors (Singh *et al.,* 2009).

However, despite the mentioned improvement, the majority of China's MSMEs still do not possess sufficient self-accumulated capital to meet their requirements. A shortage of management talent, underdeveloped technology transfer systems and lack of stability in the regulatory environment are also barriers to the MSMEs. The low level of technology, a lack of skilled workers and the difficulties in financial resources also limit the MSMEs development. In the case of high-tech new MSMEs, a remarkable feature is that their founders did not possess much personal management or financial expertise. Chinese MSMEs also face fierce competition from other NICs with lower labor costs (Singh *et al.,* 2009).

In India, the major problem with MSMEs is that they operate at very low scale of production and this hinders their capacity to reduce the costs of products and engage in technological upgrades. China, for example, produces on a mass scale while Indian MSMEs do not expand because they want to retain the facilities and incentives for a longer period even if this retention inhibits growth.

In China, and also in India, the major challenges of building product quality, reducing costs and upgrading technology generally are common to MSMEs. According to Singh *et al*. (2009), MSMEs of both countries should concentrate on developing human resources and implementing quality improvement techniques. Part of this process involves improving management talent and techniques as well as the level of equipment, technology and innovation capabilities of MSMEs. In addition, cultivating networks will help improve their competitiveness. The governments of both countries should continue to provide and develop efficient administrative and legal institutions, quality infrastructure and reduce bureaucratic hurdles at every opportunity.

Also in Latin America and the Caribbean (LAC), MSMEs are the most significant sources of employment and income. According to the OECD/ECLAC (2012), they represent 99% of businesses and account for 67% of all occupations in the region. However, the small contribution of MSMEs to gross domestic product signals a considerable gap in productivity and competitiveness between MSMEs and large firms. Low productivity is also related to the difficulty in accessing financing, human resources

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and technologies, the high costs of innovation, difficulty exporting, and their position in a relatively inefficient business environment. As most of them operate in lower productivity sectors (trade, informal services and basic manufactures), which, by their nature in the region, demand little knowledge, their propensity to innovate is reduced. Thus, the main innovation activities of Latin American MSMEs focus on acquisition of machines and imitation of existing products.

Among the barriers that MSMEs face in expanding production and reaching new markets, access to credit is one of the most significant. Factors that might inhibit access to credit include the lack of guarantees for smaller firms, high interest rates, and excessive bureaucracy and requirements, among others (Angelelli *et al.*, 2006). So, generally, Latin American companies, especially MSMEs, self-financing their innovation activities.

The majority of institutions that support MSMEs do not possess the knowledge, experience, and resources to monitor and evaluate their programs and initiatives, understand impacts and incorporate learning. There exists little systematic research in the area of MSMEs and the programs and policies to support them.

Although most Latin American countries have in recent years given more attention to MSMEs, either through the creation of institutions and specific support programs, either by creating public agencies especially focused on the sector, the barriers for these companies to gain greater dynamic are still many. Despite the existence of various funding programs to support innovation in MSMEs, the results in terms of innovation rates have been less than optimal. Still according to OECD/ECLAC (2012), starting from national surveys on innovation in enterprises carried out in some countries in the region (Argentina, Brazil, Colombia, Chile and Uruguay), the main obstacles pointed to innovation are:

- Deficiencies in public policies to promote science and technology;
- Ease of imitation by third parties;
- Difficulty for cooperation;
- Shortage of skilled personnel;
- Risks of innovation;
- Time for return on investment;
- Domestic market size;
- Access to Financing;
- Uncertainty of the economy.

In short, in the mentioned emerging regions, both in Asia and Latin America, it is noted that MSMEs have specific characteristics that need to be considered in policy making.

But…What Is an MSME?

The relative size of the MSMEs varies across sectors and countries, and international comparisons can be affected by these differences. Number of employees and monthly or annual sales are the most commonly criteria used to define MSMEs but, for example, the number of employees may vary from 50 employees in the Netherlands to 1,500 in the US (Leite, 2011; Ibarrarán *et al.*, 2009).

In the USA, there is a complex official criterion for a firm to be classified as a small business, defined by the "Small Business Act". This criterion is dynamic - that is, constantly updated -, it is based on the NAICS Code (six digits) and may have as reference the Gross Revenue, the value of assets or the

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number of employees. For activities classified by gross revenue, the values range between $ 0.75 and 38.5 million annually; for those based on asset value, the limit is $ 550 million and for those based on the number of employees, the limits range from 50 to 1,500 people (US SBA, 2015).

The European Union uses a unified criterion of classification based on number of employees, annual sales (turnover) and annual net income (balance sheets). (Eurostat, 2015). The main classes used for presenting the results are:

- **Micro Enterprises:** With less than 10 persons employed;
- **Small Enterprises:** With 10-49 persons employed;
- **Medium-Sized Enterprises:** With 50-249 persons employed;
- **Large Enterprises:** With 250 or more persons employed.

In Brazil, the legal concept of MSME has changed over the years. The art.2 of Law No. 9,841/1999 defined microenterprise (ME) as the legal entity whose annual revenue was equal to or less than R$ 244,000.00 and small business as the legal entity whose annual gross revenue was higher than R$ 244,000.00 and less than or equal to R$ 1,2 million. Decree No. 5,028/2004 changed these values respectively to R$ 433,755.14 and R$ 2,133,222.00. More recently, the Complementary Law No. 123/2006 defined micro-enterprises as those with annual gross revenues of up to R$ 240 thousand, and small businesses as those with annual revenue between R$ 240,000 and R$ 2.4 million. These limits were then altered by Complementary Law 139/2011, which set then in R$ 360,000 and R$ 3.6 million, respectively (Leite, 2011).

However, this legal definition of firm size according to the annual revenue is not unanimous among the federal public administration, state enterprises and mixed economy. The Brazilian Development Bank (BNDES), for example, considers that microenterprises and small firms are respectively those whose gross revenues is up to R$ 2.4 million and between R$ 2.4 million and R$ 16 million (Leite, 2011). But in some credit lines, the MSME can have a turnover of up to R$ 90 million (BNDES, 2014).

Public Banks such as Banco do Brasil and Caixa Econômica Federal operate a specifically targeted fund for MSMEs, the Guarantee Fund Operations. This fund uses the following classification (BB, 2014):

- **MSMEs:** Companies with annual gross revenues of up to R$ 15 million.
- **Individual Micro Entrepreneurs (MEI):** Sales up to R$ 36,000.

Table 2. Secex classification of firm size (Secex/Mdic, 2015)

Enterprise Size	Industry		Wholesale and Services	
	Number of Employees	Value	Number of Employees	Value
Micro	Up to 10	Up to US$ 400 K	Up to 5	Up to US$ 200 K
Small	11 to 40	Up to US$ 3,5 M	6 to 30	Up to US$ 1.5 M
Medium	41 to 200	Up to US$ 20 M	31 to 80	Up to US$ 7 M
Large	Above 200	Above US$ 20 M	Above 80	Above US$ 7 M

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The Foreign Trade Secretary (Secex) associates the number of employees and the value exported to classify firm size. Its classification (Table 2) is the same as used in Mercosul parameter (Secex/Mdic, 2015).

Sebrae (2012), the Brazilian Support Service for Micro and Small Enterprises, classifies industrial firms as:

- **Micro:** Up to nineteen employees;
- **Small:** Twenty to 99 employees;
- **Medium:** One hundred to 499 employees, and
- **Large:** Five hundred or more employees.

INNOVATION PER FIRM SIZE: AN OVERVIEW OF BRAZILIAN INDUSTRIAL FIRMS

The analysis will be held from descriptive statistics prepared based on the Brazilian Innovation Survey (Pintec), conducted by the Brazilian Institute of Geography and Statistics (IBGE), which provides indicators on innovation activities of Brazilian companies. The analysis of Brazilian data is based on the last edition of the Survey, Pintec 2011, and focuses the industrial segment, excluding services' sectors. Regarding firms up to 499 employees, Pintec is a sampling, but in the case of firms with 500 or more employees it is census. Data by size and by sector are available, separately, on the Pintec's website. To aggregate both information, special tabulation was requested from the IBGE in order to obtain industry statistics by size. (IBGE, 2011)

The conceptual and methodological reference of Pintec 2011 is based on the third edition of the Oslo Manual and more specifically, the model proposed by the Statistical Office of European Community (Eurostat), embodied in versions 2008 and 2010 of the Community Innovation Survey (CIS). The quantitative variables refer to the latest year of the survey (2011), while most qualitative variables refer to three consecutive years (2009-2011). (IBGE, 2011)

In Brazil, large firm stand out in the debate on generation of technological innovations. They are the most studied group and the main target of public policy. The most recent Innovation Survey shows that they present an innovation rate[2] of 55.9% and accounted for 57.8% of total expenditures on innovative activities and 82.2% of private R&D expenditures. This data (Table 3 presents them), show large firms as the main engine of Brazilian innovative effort.

Table 3. Innovative activities per firm size (IBGE/Pintec 2011, 2013)

Firm Size (Number of Employees)	Innovation Rate: Products and/or Processes	Distribution of	
		Total Innovative Expenditures	R&D Expenditures
From 10 to 99	34.4%	18.3%	6.8%
From 100 to 499	45.5%	23.9%	10.9%
500 or more	55.9%	57.8%	82.2%

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Table 4. Distribution of industrial firms by size: total firms, innovative firms and firms that perform R&D (IBGE/Pintec 2011, 2013)

Firm Size (Number of Employees)	Total	Innovative Firms (Product and/or Process)	Firms that Performed R&D Activities
From 10 to 99	91.2%	88.3%	70.7%
From 100 to 499	7.1%	9.1%	18.0%
500 or more	1.7%	2.6%	11.3%

prepared by the authors

If large firms are responsible for most technological investments, why smaller firms should be analyzed and supported by public policies? Some evidences justify this option:

1. MSEs represent 91.2% of Brazilian industrial firms, 88.3% of innovative firms and 70.7% of firms that perform R&D activities (Table 4). That is, even if they are not responsible for the main aggregate amount of innovative expenditures, they represent the largest contingent of firms that are engaged in these processes. Assuming the hypothesis that technological diffusion requires the existence of an "ecosystem" capable of absorbing these new technologies, stimulating the integration of smaller firms into the chains of innovation becomes essential.
2. Given the relevance of small business in the Brazilian industrial structure, it is important to understand their patterns of innovations - which tend to be different from that observed in larger firms -, so that appropriate support policies can be implemented. Providing similar incentives to firms with different sizes and features may not be effective, since the needs of different types of firms are diverse. This becomes even more relevant when one considers that the relative costs to access public incentives are, in general, significantly higher for MSEs.
3. If, in absolute terms, larger companies are responsible for most innovative expenditures, proportionally the innovative efforts[3] carried out by small businesses may be, according to several criteria, more significant. Total innovative effort performed by industrial MSEs reached 3.4%, compared to 3.1% in the case of medium firms and only 2.0% in large firms (Table 5). This percentage is especially significant among the smallest group of firms (between ten and 29 employees), which reached 4.6%. In general, a negative correlation between firm size and total innovative effort is observed in Brazilian industry.

Similar finding can be noticed regarding the acquisition of machinery and equipment (M&E): the effort made by industrial MSEs (2.4%) exceeds that observed among medium size firms (2.1%) and large firms (0.6%). On the other hand, a positive correlation between size and R&D effort[4] is observed. Large firms stand out over other groups, as they expended 0.84% compared to 0.38% (MSEs) and 0.42% (medium size firms). However, the smallest firms (10-29 employees) also present a high R&D effort (0.59%), only inferior to the presented by large companies (0.84%).

Proportionally, the acquisition of M&E is more significant for MSEs, representing 69.8% of total innovative expenditures. On the other hand, the share of R&D in total innovation expenditures is more relevant for medium and large companies (Table 5).

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Table 5. Innovative effort per firm size: Total, R&D and M&E expenditures (IBGE/Pintec 2011, 2013)

Firm Size (Number of Employees)	Total Innovative Expenditures / Net Sales	R&D Expenditures / Net Sales	M&E Expenditures / Net Sales	Share: R&D Expenditures / Total Expenditures	Share: M&E Expenditures / Total Expenditures
From 10 to 99	3.4%	0.38%	2.4%	11.1%	69.8%
From 100 to 499	3.1%	0.42%	2.1%	13.6%	68.7%
500 or more	2.0%	0.84%	0.6%	42.4%	30.6%
Total	2.4%	0.71%	1.1%	29.8%	46.9%

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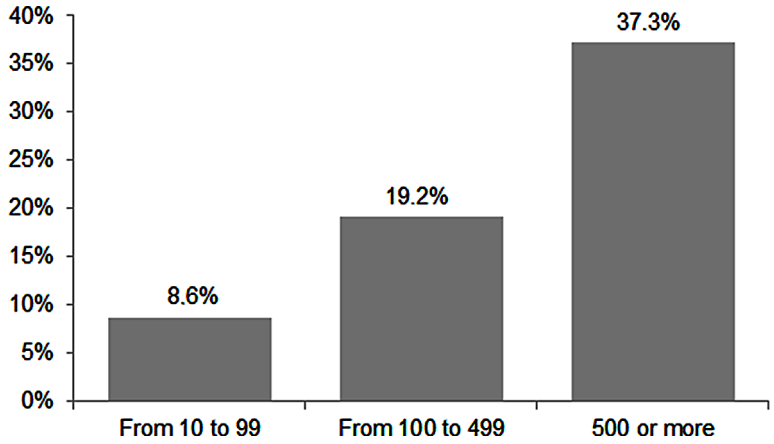
These percentages suggest differences in innovative profile of firms according to their size. The acquisition of M&E is associated with changes in the production process, aiming to increase productivity, while R&D performance is related to improving or creating new products - i.e. the evolution of the "state of the art". Thus, smaller firms mainly invest in innovative activities that are less directed to the generation of new products and with less potential for generating monopolistic profits. Another possible interpretation is that MSEs do not invest more in M&E than larger firms, but the acquisition of machinery is proportionally more costly to them.

Another data that supports this analysis is the rate of products that are new to the market - domestic and international - which means; they are not only new for the firm. Among MSEs, this percentage reaches 8.6%, compared to 19.2% for medium firms and, especially, 37.3% for large companies (Figure 1).

Summing up, innovative efforts of Brazilian small businesses are mainly concentrated in the acquisition of machinery and in launching of innovations that already exist in domestic and/or international markets. Their innovations are, therefore, less dynamic than that seen in medium and large firms.

It should be noted that the differences in technological innovation rates per firm size presented in Table 3 is not seen in the case of organizational innovations. Percentages are similar for all firm sizes, except for the large ones, which presents a lower rate (Table 6).

Figure 1. Products new to the market by firm size (%) (IBGE/Pintec 2011, 2013)



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Table 6. Organizational innovations by firm size (%) (IBGE/Pintec 2011, 2013)

Firm Size (Number of Employees)	Organization Innovation (Rate)
From 10 to 99	35.7%
From 100 to 499	33.5%
500 or more	28.6%
Total	35.4%

prepared by the authors

Table 7. Appropriability methods per firm size (%) (IBGE/Pintec 2011, 2013)

Firm Size (Number of Employees)	Appropriability Methods				
	Formal		Strategic		
	Patents and Industrial Design	Trademarks	Design Complexity	Industrial Secret	Lead Time
From 10 to 99	7.1%	22.5%	0.9%	7.1%	0.8%
From 100 to 499	18.6%	35.0%	5.0%	16.1%	9.3%
500 or more	38.8%	47.1%	12.0%	31.3%	19.3%
Total	9.1%	24.3%	1.6%	8.7%	2.1%

prepared by the authors

This can be another indicator that MSEs, in addition to invest in less sophisticated innovative activities and prioritize the launching of products that are new only to the firm, also consider management innovations more relevant than large companies.

At last, the use of appropriability methods per firm size shows a positive relation between the variables (Table 7). This result can be explained by two facts. Firstly, in the case of formal methods of protection (patents, industrial design and trademarks), in addition to the direct costs of intellectual property (IP) – such as registration fees -, there is a whole set of costs that, in general, are similar for all companies regardless of their size. It includes enforcement of IP rights and, eventually, litigation, which tend to be more costly than all the others. For small businesses, these costs are proportionally higher than for large firms. The strategic methods of protection, such as industrial secret and lead time, also involve costs that are, once again, more significant for small firms. For example, in the case of industrial secret, a small business would have greater difficulty in countering the harassment of a large firm on one of its employees that holds strategic expertise.

SECTORIAL INNOVATIONS PER FIRM SIZE

In section 3 of this study, we compared the innovation performance by firm size, without considering other variables that may influence in this result, such as industrial sectors and origin of capital.

Despite evidences indicating a positive relationship between innovation rate and firm, this correlation is not present in all sectors. Cohen *et al*. (1987) *apud* Botelho, Maia and Pires (2012) suggested that this positive relationship would be statistically insignificant when R&D expenditures are controlled

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by firms' industries, since sectorial effects would be responsible for about half the intensity of innovative variation. Sectors present different technological opportunities, which impacts on the propensity to expend resources on innovative activities. Considering that the sectorial distribution of firms by size is not homogeneous, part of the aggregated differences in the innovative efforts of small, medium and large businesses may be associated with the sectorial composition of the economy.

From the comparison of the sectorial distribution of innovative firms between MSEs, medium and large firms bBased on the technological intensity' classification proposed by the Organization for Eco-

Table 8. Percentage of firms by industry and size (%) (IBGE/Pintec 2011, 2013)

Technological Intensity	Number of Employees		
	10 to 99	**100 to 499**	**500 or More**
TOTAL - Manufacturing	100.0%	100.0%	100.0%
Low-technology industries			
Food products	14.0%	12.5%	19.0%
Beverages	-	1.3%	3.1%
Tobacco products	-	-	-
Textiles	2.4%	3.8%	4.2%
Wearing apparel	15.7%	6.5%	2.3%
Leather and related products	4.1%	4.0%	4.2%
Wood and of products of wood	3.3%	2.6%	0.9%
Paper and paper products	2.2%	2.8%	4.0%
Publishing, printing and reproduction of recorded media	3.3%	1.1%	-
Furniture	6.5%	5.3%	2.2%
Manufacturing n.e.c.	2.6%	2.6%	1.6%
Medium-low-technology industries			
Coke, refined petroleum products and nuclear fuel	-	0.9%	1.5%
Rubber and plastics products	6.0%	7.9%	5.1%
Other non-metallic mineral products	7.5%	4.1%	3.9%
Basic metals	1.7%	2.8%	4.4%
Metal products	9.4%	8.7%	4.2%
Medium-high-technology industries			
Chemicals and chemical products	4.8%	7.6%	5.3%
Electrical machinery and apparatus n.e.c.	2.1%	3.7%	5.5%
Machinery and equipment n.e.c.	6.0%	8.7%	5.8%
Motor vehicles, trailers and semi-trailers	1.5%	4.4%	11.0%
High-technology industries			
Other transport equipment	-	1.1%	1.9%
Pharmaceuticals	-	1.7%	3.9%
Computer, electronic and optical products	2.2%	3.5%	4.3%

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nomic Cooperation and Development (OECD)[5] (Table 8), one can observe some sectorial differences. Food products present a significant share in all groups. In the case of MSEs, wearing apparel products and metal products also concentrate most part of the firms. Regarding medium size companies, besides food and metal products, manufacturing of machinery and equipment is also a significant industry. At last, automobile industry is, after food products, the sector that concentrates most part of the innovative large firms.

Table 9. R&D effort by industry and firm size (%) (IBGE/Pintec 2011, 2013)

Technological Intensity	Number of Employees		
	10 to 99	100 to 499	500 or More
TOTAL - Manufacturing	0.3%	0.4%	0.8%
Low-technology industries			
Food products	0.06%	0.13%	0.13%
Beverages	-	0.03%	0.24%
Tobacco products	-	-	-
Textiles	0.41%	0.13%	0.21%
Wearing apparel	0.01%	0.04%	0.52%
Leather and related products	0.01%	0.40%	0.80%
Wood and of products of wood	0.40%	0.05%	0.33%
Paper and paper products	0.20%	0.18%	0.48%
Publishing, printing and reproduction of recorded media	0.09%	0.05%	-
Furniture	0.00%	0.29%	0.20%
Manufacturing n.e.c.	0.27%	0.69%	0.27%
Medium-low-technology industries			
Coke, refined petroleum products and nuclear fuel	-	0.05%	1.20%
Rubber and plastics products	0.10%	0.37%	0.79%
Other non-metallic mineral products	0.05%	0.31%	0.23%
Basic metals	0.09%	0.16%	0.45%
Metal products	0.33%	0.16%	0.88%
Medium-high-technology industries			
Chemicals and chemical products	0.54%	0.34%	1.48%
Electrical machinery and apparatus n.e.c.	0.80%	1.50%	1.08%
Machinery and equipment n.e.c.	0.81%	0.41%	0.77%
Motor vehicles, trailers and semi-trailers	0.23%	0.50%	1.26%
High-technology industries			
Other transport equipment	-	1.93%	1.99%
Pharmaceuticals	-	3.85%	2.02%
Computer, electronic and optical products	2.42%	2.28%	1.08%

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At least, we can compare the R&D effort by firm size and industrial sector (Table 9). Despite some data are not available due to confidentiality, the available data suggests that, in high-tech sectors (pharmaceutical and computer, electronic and optical products), R&D effort of MSEs is higher than the observed in large companies.

In lower-technology industries, on the other hand, the positive relation between size and R&D effort is showed, despite some sectorial exceptions, such as textiles and wood products, in which smaller firms also presented a higher indicator than large companies.

In this case, sectorial analysis evidences two distinct dynamics. In high-tech industries, the opportunities for smaller firms in Brazil are concentrated on their ability to offer innovative products, boosting their innovative effort. On the other hand, these sectors are dominated by transnational corporations which tend to privilege the performance of R&D activities in their countries of origin.

In traditional industries, large companies perform more R&D, while the smaller are "technology-followers' and concentrates their effort in updating their production processes.

It should be noted that other factors besides size and sector can influence this result, such as origin of capital, labor skills, export performance and business maturity. However, regardless of these determinants, the data show a stronger R&D performance of small and medium firms in high technology segments. Such evidence challenged the validity of horizontal policies. Not only the specificities related to the size must be considered, but also sectorial distinctions must be incorporated in the public policies to promote innovation.

FUTURE RESEARCH DIRECTIONS

The next version of this study will incorporate the following analysis:

1. The relevance of cooperative relations to firms of different sizes;
2. The importance of fiscal and financial instruments to support MSE, medium and large firms;
3. An evolution of innovative performance of MSEs, medium and large firms throughout the decade of 2000, based on five editions of Pintec Survey;
4. The impact of innovative activities in the generation of product and process innovations to firms of different sizes, based on an econometric analysis. The idea is to identify if which activities, including innovation expenditures, cooperation and public financing, are relevant to MSEs and large companies.

CONCLUSION

This study focused on the differences between the innovative performance of small, medium and large companies, based on Brazilian Innovation Survey.

It shows that large firms present higher innovation rates than the others, and their rate of products which are new to the market - national and international - and not only new for the firm, is also higher.

However, total innovative expenditures of large companies are proportionately smaller, especially because the acquisition of M&E does not represent a significant amount of their net sales. On the other

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hand, MSEs innovative expenditures stand out especially in the acquisition of M&E, which is mainly associated with changes in the production process, aiming at increase firms' productivity.

Moreover, sector becomes a relevant variable when R&D activities are observed. Corroborating the hypothesis presented at the beginning of this text, in high-tech sectors, MSEs opportunities tend to focus on their capacity of offering innovative products, leading them to a higher innovative effort. In traditional industries, the large companies present higher R&D efforts, while the smaller ones focus on the modernization of their productive processes.

Moreover, these findings go against what is being treated as a "common sense." The idea that the acceleration of the innovation process involves the structuring of large players, able to compete on equal terms with the highest world-class enterprises, has been increasingly widespread. This idea has been even materialized in the form of public policies, aiming to concentrate small firms in a larger group. However, data analyzed in this paper suggest that in high-tech sectors, small and medium firms spend proportionally more resources on R&D. One possible reason to explain the lower technological effort of large companies is that, in these sectors, these firms are mainly transnational corporations, which tend to privilege the performance of R&D activities in their countries of origin. Therefore, encouragement of mergers and acquisitions in order to increase the size of the firms will not necessarily raise the technological investments of Brazilian industries.

Thus, restricting the debate - and the public policies - about innovation at the universe of large companies may harm the innovative performance of the country. In other words, despite being small by the prospect of their size, these firms can be relevant inducers of technical progress, mainly through its dissemination by process improvement. This dynamic may be crucial for the creation of an "ecosystem" capable of absorbing technical progress and so boost the economy overall productivity. These observations indicate that incentive policies, rules and regulations that differentiate firms by size and sector are necessary to boost and disseminate the technological innovation in Brazilian industry.

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KEY TERMS AND DEFINITIONS

Acquisition of Machinery and Equipment: It includes the acquisition of machinery, equipment and hardware to implement new or substantially improved products or processes.

Appropriability Methods: Methods of protection methods used by companies to ensure ownership of the results of innovation, such as formal methods (patent, trademark, copyright) and strategic methods (industrial secrets, design complexity, time advantage over competitors) employed by companies.

Brazilian Innovation Survey (Pintec): It is engaged in the construction of indicators of innovation activities in companies. It seeks to deepen the theme of innovation producing information on aspects such as spending on innovation activities; funding sources of these expenditures; impact of innovations on business performance; information sources used; cooperative arrangements; the role of government incentives; obstacles encountered to innovation activities; organizational and marketing innovations, and use of biotechnology and nanotechnology.

Organizational Innovation: Implementation of a new organizational method in the firm's business practices, in the organization of its workplace or in its external relations, to improve the use of knowledge, workflows efficiency or quality of goods or services.

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Process Innovation: Introduction of new or significantly improved production methods or delivery of products. At industry, methods of production involve changes in techniques, machinery, equipment and software used in the process of transforming inputs into outputs.

Product Innovation: Is one whose fundamental characteristics (technical specifications, components and materials, incorporated software, functions or intended uses) differ significantly of all products previously produced by the company. The product innovation may be progressive, by a significant enhancement of previously existing product, whose performance was substantially increased or enhanced.

R&D Activities: It comprises creative work undertaken on a systematic basis in order to increase the knowledge to develop new or substantially improved products or processes. The design, construction and the prototype tests are often the most important phase of R&D activities. It also includes software development, since this involves a technological or scientific advance.

Schumpterian Debate: The role of small and large firms in the innovation development. In his initial phase, the author argued that radical innovations would be promoted by small businesses, through the action of entrepreneurs who would break with the prevailing technological paradigms ("creative destruction"). Afterward, the author highlighted the central role of large firms in the development of new technologies and, consequently, of economic growth, in a processes known as "creative accumulation".

ENDNOTES

1 However, not all Asian RIS lack the required qualified human capital. For example, Taiwanese SMEs have undergone an upgrading in formal competencies, and the level of education among the population is high. In the Bangalore software industry, there is also enough supply of qualified human resources.

2 Percentage of industrial firms that implemented innovations in product and /or process.

3 Total innovative expenditures / net sales.

4 R&D expenditures / net sales.

5 Considering that some indicators were exclusively available at 2 digits, "other transport equipment" sector - which includes aircraft, railways and shipbuilding - was entirely classified *as high-technology*, although by OECD classification only aeronautics would be included in this category.

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Chapter 67
The Importance Role E-Collaboration Capability and Information System Maturity on Knowledge Sharing and SMEs Marketing Performance

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ABSTRACT

This article discusses the effect of e-collaboration capability and information system maturity on knowledge sharing and SMEs marketing performance. This study was conducted at SMEs in Central Java which had used information system and technology in collaborating with partners and customers. There were 160 respondents in this research who were the owners or managers of SMEs in Central Java, Indonesia. This research used structural equation modeling analysis. AMOS version 21 was used to process the data. The result of this research showed that all proposed hypotheses were accepted. First, e-collaboration capability has positively and significantly influenced knowledge sharing. Second, knowledge sharing has positively and significantly influenced SME marketing performance. Third, e-collaboration capability has positively and significantly influenced SME marketing performance. Fourth, information system maturity has positively and significantly influenced knowledge sharing. Fifth, information system maturity has positively and significantly influenced SME marketing performance.

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INTRODUCTION

Firm proactively change their business processes to reduce costs and improve competitive advantage (Carrol & Shabana, 2010). Brink (2017) reveal that collaboration contributes to SMEs competitiveness. Collaborative activities make SMEs become more sustainable (Govindan et al., 2016). Collaboration enable movement of resources to the other party to enhance value creation (Prahalad & Ramaswamy, 2004; Thomke & Hippel, 2002), innovation (Kim & Lui, 2015; Zhang & Tang, 2017), competitive advantage (Allred et al., 2011; Maulana & Rufaidah, 2014) and performance (Choi & Ko, 2012; Chuang & Lin, 2015; Vereecke & Muylle, 2006; Wang et al., 2015). Collaboration also allows for better managerial decisions.

The development of information and technology enables collaboration activities without having to meet face to face. Switzer and Hartman (2008) reveal e-collaboration as working together in electronic environment. Electronic collaboration enables a comprehensive long-distance collaboration for research and development, marketing (Bidgoli, 2012), learning, and tacit knowledge sharing (Harris, 2009). In order to develop electronic collaboration, SMEs are expected to have maturity in adopting information system (IS). IS maturity influences the knowledge sharing and firm performance (Rao et al., 2015). IS is strategically important when the organization are distributed geographically (Lang, 2001). Technology and information system makes SMEs receive information rapidly, easy to collaborate and communicate, and it influences the speed of decision making. IS also makes everything efficient (Alavi & Leidner, 2001; Wade & Hulland, 2004) and enhace companies' performance (Mohamed et al., 2006).

We find inconsistencies in the impact of e-collaboration on performance. Rosenzweig and Roth (2007) found that e-collaboration can enhance operational and business performance. Some experts reveal that the use of the internet in collaborative activities has not been able to show its benefits to performance (Deveraj et al., 2007; Jap & Mohr, 2002; Mukhopadhyay & Kekre, 2002; Rosenzweig & Roth, 2007). The inability is caused by less attention to the various costs that arise due to e-collaboraion, such as human relations, system information, process changes and administrative costs (Kumar & van Dissel, 1996; O'Leary-Kelly & Flores, 2002). This study investigates the effect of e-collaboration capability and information system maturity on knowledge sharing and SMEs marketing performance.

LITERATURE REVIEW

E-Collaboration Capability

E-collaboration is a collaboration among individuals who accomplish a task using electronic technology (Kock et al., 2001). Switzer and Hartman (2008) and Weiseth et al. (2006) emphasize e-collaboration as working together in an electronic environment. Collaboration is carried out without face-to-face interactions between individuals or members of virtual teams involved in shared tasks using information and communication technology (Bouras et al., 2008). E-Collaboration uses a combination of hardware, software and communication technology that enables decision makers around the world to communicate, participate and collaborate in decision-making activities (Bidgoli, 2012). E-collaboration uses electronic technology, such as web-based chat tools, e-mail, internet, websites, social media, decision support system groups, and teleconference tools. E-collaboration is important because the relationship between the firm and its customers and suppliers can be managed efficiently.

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Social aspects are also important in building e-collaboration (Cai, 2005; Easley et al., 2003). E-Collaboration should not only be viewed from a technical point of view, but also related to the social construction process when different people perform their tasks in various adaptive situations (Berger & Luckman, 1966). Collaboration is based on social activities to establish good relationships. Relationships among participants will change collaborative entities. Collaborative activities is needed to manage conflict, improve the quality of tasks (Cai, 2005), reduce miscommunication (Baron, 1984), and coordinate in making decisions (Kannapan & Taylor, 1994). E-collaboration must understand other parties so that there is no conflict among parties. Intense communication is carried out to understand each other.

Information System Maturity

The concept of maturity model is increasingly applied in the field of IS (Vidal et al., 2019). A Maturity Model (MM) is a technique for measuring different aspects of a process or organization (Proença & Borninha, 2016). Several maturity models have been proposed, but there is no agreement on the stage of maturity. The stage of maturity is based on driver factors (Rocha, 2011), their application and quality (Pöppelbuß & Röglinger, 2011). Maturity models are important for decision making, and organizational transformation (Vidal et al., 2019). In this study, maturity model focus on information systems maturity of small medium enterprises (SMEs). Nolan (1979) uses the word "maturity" to explain the growth and development of information technology infrastructure is being adopted by businesses. Praničević et al. (2011) reveal the level of information system maturity, namely technological partner, service partner, and strategic partner. Technological partners are a level of information system maturity that focuses on data processing activities. Service partner focus on integration and comprehensive support to all business functions while the strategic partner focuses on improving business competitiveness.

King and Sabherwal (1992) revealed the maturity of information systems to provide benefits to companies. IS is fundamentally important for global reach when organizations are geographically distributed (Lang, 2001). Companies using Information systems and technology, especially the Internet and communications networks, will enhance collaboration and reduce costs (Mohamed et al., 2006), share information and communication efficiently (Zhu & Kraemer, 2005), and facilitate the creation and utilization of knowledge in a dynamic business environment (Lang, 2001). Information systems maturity also enable companies to enhance their performance (Rao et al., 2015).

Knowledge Based View (KBV) of the Firm and Knowledge Sharing

Knowledge based view of the firm (KBV) is one of the important approaches in the success of the firm. KBV explained that firm must be able to generate and apply various types of knowledge (Grand, 1996). Knowledge is the firm's most important resource and contributes to increasing added value (Grant, 1997) and competitive advantage of the firm (Jasinskas et al., 2015). The Firm strives to re-develop dynamic resources and knowledge-based capabilities to increase open innovation (Vanhaverbeke & Cloodt, 2014), competitive advantage (Jasinskas et al., 2015), the growth of the firm (Saarenketo et al., 2009) and superior business performance (Darroch, 2005). Kogut and Zander (1992) divides knowledge into information (explicit knowledge) and know-how based. Explicit knowledge can take the form of facts and symbols (Kogut & Zander, 1992). Explicit knowledge is easier to encode and articulate, so it's easier to transfer (Simonin, 1999). Tacit knowledge is non-verbal and very difficult to articulate (Polanyi, 1966). Tacit knowledge is often in the form ofpractical skill and expertise (Eric, 1988).

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One mechanism for integration of knowledge is transfer of knowledge. Knowledge transfer is a process of managing knowledge where someone learns to other people who are more understanding (Grant, 1997). The form of knowledge transfer is knowledge sharing. Knowledge sharing is understood and defined differently in the literature. Basically, knowledge sharing is the process of flowing knowledge from the source to the recipient. People or organizations can be sources, senders, facilitators or mediators between sources and recipients. Yoo et al. (2007) explain the definition of Sharing knowledge as a process of creating knowledge between individuals or groups, through direct or indirect interactions. Matin et al. (2010) reveal knowledge sharing as knowledge transfer behavior. Sharing knowledge means the desire of someone to learn and help others in developing new capabilities (Bock et al., 2005), new knowledge (Van den Hooff & De Ridder, 2004), experience sharing, skill sharing to other (Lin, 2007). Knowledge sharing provides information to solve problems, develop new ideas, or implement policies or procedures together (Cummings, 2004).

Collaboration between companies enable companies to acquire knowledge and skills that are not available within the firm (Scott, 2000). Knowledge is an important organizational resource that provide sustainable competitive advantage in a competitive and dynamic economy (Davenport & Marchand, 2001; Spender & Grant, 1996). Knowledge that flows from partners will have an impact on the firm's competitive advantage. Transfer of tacit knowledge is a determinant of success (Harris, 2009). Iandoli et al. (2012) analyzes about sharing knowledge in the online environment. The study conducted by Iandoli et al. (2012) revealed the importance of online collaboration platforms designed to support distributed knowledge management and decision making. The platform allows companies to enhance collective sensing and mutual understanding.

SMEs Marketing Performance

Performance is a measure of the firm's success in achieving goals (Ardyan, 2016). Lönnqvist (2004) defines performance as the actual outcome / ability to achieve results. In the context of SMEs, Ardyan (2016) defines the performance of SMEs as a measure of the success of SMEs in achieving the level of profitability and growth in accordance with previously determined. SME performance can be seen in various ways including: profit, growth, net sales revenue, increased sales, increased market share, growth potential, satisfaction, reaching financial goals, and others (Bakar et al., 2014; Carey, 2015; Minchna, 2009; Omerzel & Antoncic, 2008; Sok et al., 2013; Zheng et al., 2009). This performance is basically divided into financial performance and non-financial performance. In this study, the focus of performance measurement is non-financial performance, especially SME marketing performance.

Measuring performance through marketing performance is an interesting topic (Ambler, 2000; Clark, 1999, 2000; da Gama, 2011; Gronholdt & Martensen, 2006). Marketing performance measurement can be explained as the relationship between marketing activities and their performance (Clark & Ambler, 2001). Clark (1999) revealed 4 reasons the firm used marketing performance measurements. First, the focus on marketing will drive profit, growth and sales in the future. Second, investors need information related to marketing activities. Third, the concept of balance scorecard (Kaplan & Norton, 1992) Elijah inspired that performance measurement is not just a financial measure. Fourth, many managers are frustrated after using traditional performance measurement, so they use marketing-based measurements. although measurement of marketing performance has a positive side, Ambler et al. (2004) said that some researchers criticized the use of marketing performance. Some reasons are because marketing performance has limited diagnostic strength (Day & Wensley, 1988), focus on short term (Dekimpe & Hanssens, 1999) and lacking in attention to shareholder value (Doyle, 2000).

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HYPOTHESIS

E-Collaboration Capability and Knowledge Sharing

E E-collaboration is an innovative collaboration using information technology. The firm's ability to carry out innovative collaboration will affect the level of knowledge and accelerate access to knowledge (Zheng et al., 2013). Chen et al. (2014) argued that the firm requires collaborative innovation capability to transfer knowledge effectively. Tanriverdi (2005) argues that IT-based coordination mechanisms can increase the reach and wealth of corporate knowledge resources, and enable business units to learn about opportunities to share knowledge with each other. Group support systems and video-conferencing as e-collaboration tools such enable knowledge sharing process effectively. E-collaboration enables companies to gather other people's ideas and share creativity globally through the internet (Ko et al., 2011). Thus, we propose the following:

H1: E-Collaboration capability has a positive and significant effect on knowledge sharing.

Knowledge Sharing and SMEs Marketing Performance

In the business environment, knowledge management encourages organizational performance (Li et al., 2008; McAfee, 2002). Based on knowledge-based views, companies are institutions that integrate knowledge (Grant, 1996). Setia and Patel (2013) reveal the firm's ability to manage operational knowledge will have an impact on increasing its competitive advantage. Companies acquire knowledge through spillovers, acquisitions (Björkman et al., 2007), and knowledge sharing activities. Knowledge sharing plays an important role in the process of integration. Companies that have strong networks will easily carry out integration so that the knowledge sharing activity will greatly affect business performance (Saraf et al., 2007). The firm learns about information and knowledge from knowledge sharing activities, it will have an impact on its performance (Law & Ngai, 2008). Thus, we propose the following:

H2: Knowledge sharing has a positive and significant effect on SMEs marketing performance.

E-Collaboration Capability and SMEs Marketing Performance

Superior relationships will have an impact on firm performance as part of the development of marketing practices and theories (Morgan & Hunt, 1994). IT-based collaboration helps companies develop collaborative relationships, which can enhance firm performance (Bensaou, 1997; Hart & Saunders, 1998; Ko et al., 2011). In the study of relationship marketing, the goal of building relationships is to create profit and long-term performance (Hultman & Shaw, 2003; Palmatier, 2008; Palmatier et al., 2008; Ravald & Gronroos, 1996; Tse et al., 2004). Wang et al. (2015). Collaboration between SMEs in the cluster is expected to improve the performance of each UKM. Thus, we propose the following:

H3: E-collaboration capability has a positive and significant effect on SMEs marketing performance.

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Information System Maturity and Knowledge Sharing

The results of the research conducted by Rao et al. (2015) Information system maturity has a positive and significant effect on knowledge sharing. Information system gives meaning about connecting people, where it is a source of knowledge (Alavi & Leidner, 2001). Rao et al. (2015) gave an example of network video conferencing to support collaboration between employees in different locations, online knowledge sharing portals such as wikis. Information systems make information flow from one party to another. Information System can make companies to share information and improve communication with other parties to achieve efficient coordination (Dong et al., 2009). Knowledge can be stored through IS and the Role of IS provides effective and efficient facilities for collecting, storing, transferring and accessing knowledge (Alavi & Leidner, 2001). Holsapple (2005) reveal IT is very important to facilitate the flow of knowledge between knowledge processors (humans or computers) and also to help measure, control, coordinate and knowledge leadership and knowledge processors. Thus, we propose the following:

H4: Information System Maturity has a positive and significant effect on knowledge sharing.

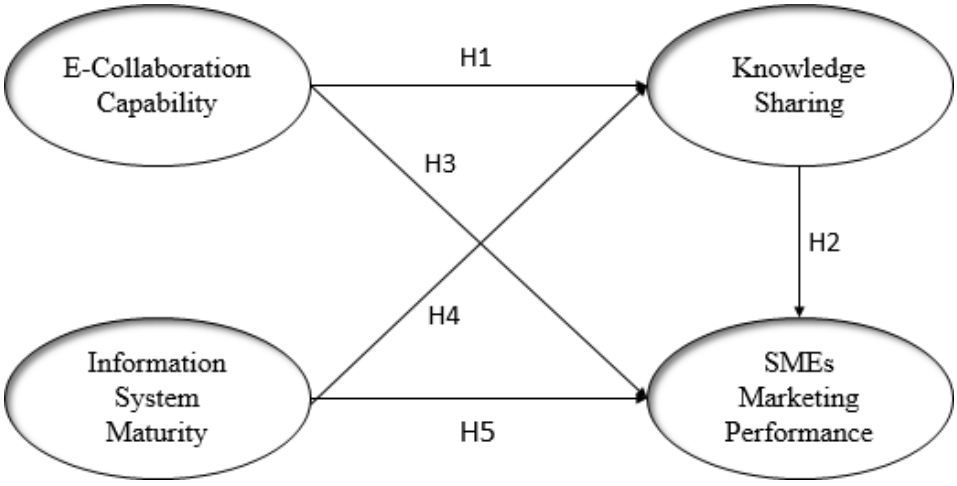
Information System Maturity and SMEs Marketing Performance

One of the important resources in the firm is the ability to adopt information system and technology. The firm's ability to adopt information systems will make it easier for companies to carry out various activities. The firm's ability to adopt IS will have an impact on its business performance (Bharadwaj, 2000). Holsapple and Wu (2009) also believes that IT capabilities will be able to improve firm performance. Thus, we propose the following:

H5: Information System Maturity has a positive and significant effect on SMEs marketing performance.

From the development of the hypothesis above, we propose the empirical research model shown in Figure 1.

Figure 1. Empirical research model



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RESEARCH METHOD

Data Collection and Samples

This study was conducted on SMEs in Central Java. SMEs has used the information system well to collaborate with its business partners. The use of information systems means in establishing collaboration and communication using electronic technology, such as web-based chat tools, e-mail, internet, websites, social media, decision support system groups, and teleconference tools. To obtain the required data, we distributed questionnaires to the owners or managers of SMEs. The questionnaire was distributed to 400 SMEs in Central Java, Indonesia. But the returned questionnaire and can be processed for further analysis only 160 respondents (40% response rate).

Measurement

Each question item in this study was measured using a scale of 5, where 1 indicates strongly disagree and 5 indicates strongly agree.

This study defines e-collaboration as a collaborative activity using information and communication technology (Weiseth et al., 2006). The e-collaboration capability indicator was adopted from Choi and Ko (2012), including the ability of SMEs to develop and revise plans (EC1), the ability of SMEs to understand and predict partners (EC2), and the ability of companies to coordinate with their business partners (EC3).

Information system maturity is the maturity level of SMEs in the adoption of information and technology systems. Indicators of information system maturity are adopted from Rao et al. (2015), including SMEs have used information systems and technology (ISM1), each strategy is linked through information systems (ISM2), and SMEs are always developing information systems and technology (ISM3).

Knowledge sharing is the process of creating a group of knowledge between individuals or groups through direct or indirect interactions (Yoo et al., 2007). The knowledge sharing indicator was adopted from Gibbert et al. (2002) dan Zanjani et al. (2008), including SMEs are able to develop knowledge from partners (KS1), SMEs are able to assimilate information about partners (KS2), SMEs are able to disseminate information to partners (KS3), and SMEs are able to harmonize the knowledge they have with partner values (KS4).

SME marketing performance as a measure of the success of SMEs in achieving the level of profitability and growth in accordance with previously determined (Ardyan, 2016). The focus of SME marketing performance measurement is more likely to be growth. The indicators developed for this variable are profit growth (SMP1), growth of market share (SMP2), and sales growth (SMP3). This indicator is adopted from Acquaah (2012) dan Zheng et al. (2009).

Analisis Data

The analysis in this study uses Structural Equation Modeling. Amos version 21 is used when processing data. Based on research from Anderson and Gerbing (1988) SEM data analysis process is divided into two stages: (1) measurement model analysis, which involves initial analysis with confirmatory factor analysis (CFA) to measure the reliability and validity of latent variables, and (2) Structural model analysis, where the hypothesis is tested by examining the coefficient path and significance.

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RESULT

Measurement Model Analysis

In the measurement model analysis, this study tests the validity and reliability. Validity and reliability are used to test research instruments.

Validity test is a test that is used to show the extent to which the measuring instrument used in measuring what is measured (Sekaran, 2003). The validity in this study was measured using loading factor and average variance extracted (AVE). Tabanick and Fidell (2013) reveal that the loading factor is related to the correlation between indicators and variables. The higher the loading factor on the indicator, the higher the contribution of the indicator to the variable. The required loading factor value is 0.5 (Ghozali, 2013). Average variance extracted (AVE) is a measure of the amount of variance that is captured by a construct in relation to the amount of variance due to measurement error (Hair et al., 2010). The AVE value must be above 0.5 (Ghozali, 2013). Table 1 shows the loading factor and AVE values above 0.5. So, it can be concluded that the instrument developed is valid.

According to Sekaran (2003), reliability shows the extent to which the measurement is without bias (error free) and is able to guarantee consistent measurements across time and across various items in the instrument. Reliability test is done by using composite reliability and Cronbach Alpha. Composite reliability is defined as a measure of internal consistency of indicators of a formed variable that shows the degree in which variables are formed. Nunnally (1978) Kotler suggests that construct variables (composite reliability) must be above 0.7. Cronbach alpha measures the consistency of all scales used in research (Hair et al., 2010). Sekaran (2003) explained that the Cronbach alpha number at 0.70 is acceptable, above 0.80 is good. Table 1 shows that the reliability test (composite reliability and Cronbach Alpha) has met the requirements, so it can be concluded that the instrument is reliable.

Table 1. Hasil Uji Validitas dan Reliabilitas

Variabel and Indicator	Factor Loading	AVE	Composite Reliability	Cronbach Alpha
E-Collaboration Capability (EC)				
EC1 EC2 EC3	0.948 0.823 0.889	0.789	0.918	0.915
Information System Maturity (ISM)				
ISM 1 ISM2 ISM3	0.887 0.878 0.875	0.774	0.911	0.911
Knowledge Sharing (KS)				
KS1 KS2 KS3 KS4	0.789 0.873 0.891 0.843	0.722	0.912	0.911
SMEs Marketing Performance (SMP)				
SMP1 SMP2 SMP3	0.910 0.921 0.789	0.767	0.907	0.894

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Table 2. The result of hypotheses test

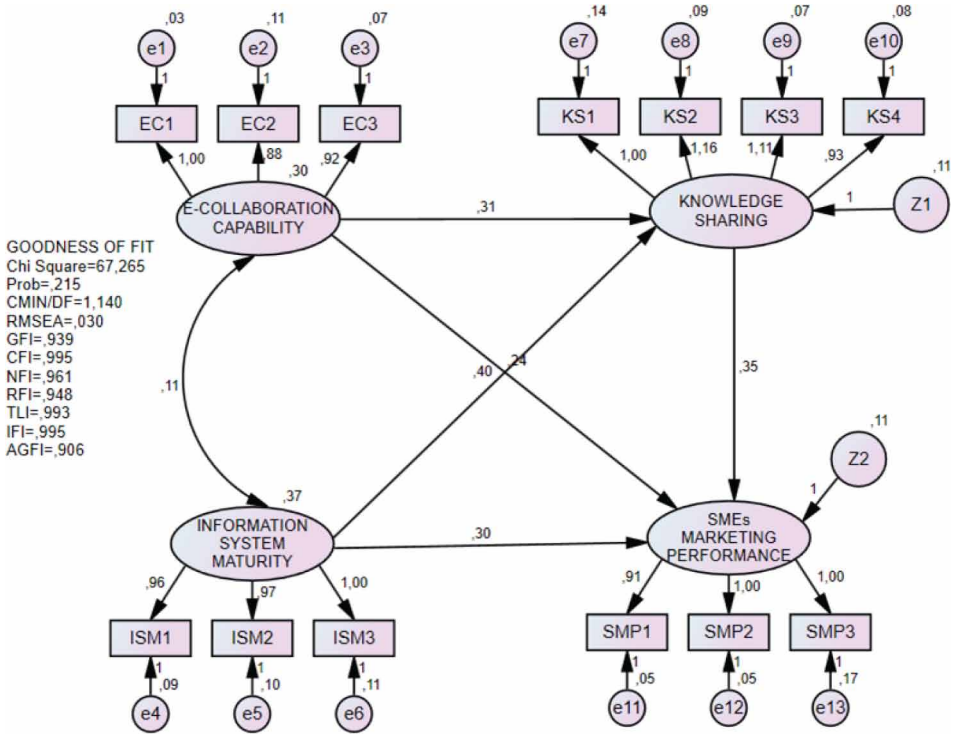
Hypotheses	Result	Explanation
H1: E-Collaboration Capability → Knowledge Sharing	β= 0.307; α < 0.001	H1 is accepted
H2: Knowledge sharing → SMEs Marketing Performance	β= 0.349; α < 0.001	H2 is accepted
H3: E-Collaboration Capability → SMEs Marketing Performance	β= 0.237; α < 0.001	H3 is accepted
H4: Information System Mature → Knowledge Sharing	β= 0.395; α < 0.001	H4 is accepted
H5: Information System Mature → SMEs Marketing Performance	β= 0.295; α < 0.001	H5 is accepted

Structural Model Analysis

Goodness of fit is examined to show that the built models have been fit with acquired data. In this research, all indicators of goodness of fit that have been used show good in goodness of fit. Here are the indicators of goodness of fit: Chisquare= 67.265 (p value= 0.215); CMIN/DF= 1.140; RMSEA= 0.030; GFI= 0.939; CFI= 0.995; NFI= 0.961; RFI= 0.948; TLI= 0.993; IFI= 0.995; and AGFI= 0.906.

In order to examine the model and data analysis, we used supporting tool, AMOS version 21. Table 2 and Figure 2 show that all of the five hypotheses are accepted. First, e-collaboration capability has positive and significant influence on knowledge sharing (β = 0.307; α < 0.001). Second, knowledge

Figure 2. Hasil full model



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sharing has positive and significant influence on SMEs marketing performance ($\beta = 0.349$; $\alpha < 0.001$). Third, e-collaboration capability has positive and significant influence on SMEs marketing performance ($\beta = 0.237$; $\alpha < 0.001$). Fourth, information system maturity has positive and significant influence on knowledge sharing ($\beta = 0.395$; $\alpha < 0.001$). Fifth, information system maturity has positive and significant influence on SMEs marketing performance ($\beta = 0.295$; $\alpha < 0.001$). Table 2 shows the result hypotheses examination.

DISCUSS

The results of this study indicate that e-collaboration capability has a positive and significant effect on knowledge sharing. The results of this study support previous research, where companies that are able to carry out innovative collaboration (e.g. electronic based collaboration) will influence the level of knowledge and accelerate access to knowledge (Zheng et al., 2013). In conducting cooperation, SMEs are often limited by geographical distance. These limitations make it difficult for SMEs to communicate and establish relationships. The use of IT in collaboration makes it easier for SMEs to communicate and share information. Tanriverdi (2005) argues that IT-based coordination mechanisms can increase the reach and wealth of corporate knowledge resources, and enable business units to learn about opportunities to share knowledge with each other.

SMEs in Indonesia have used technology to collaborate with their customers or business partners. The ability of companies to use technology makes communication between companies and customers or business partners easier to do. Information technology facilitates knowledge creation, knowledge sharing / dissemination, and use of knowledge (Choi & Ko, 2012). Collaboration makes companies able to coordinate, discuss, and give mutual input to make decisions with their business partners. This collaboration will make it easy to exchange knowledge and coordinate (Santoro et al., 2006). IT-based collaboration will make it easier to find new ideas, skills and knowledge through knowledge sharing activities.

The results of this study reveal that knowledge sharing can significantly improve SMEs marketing performance. Knowledge sharing will make companies and actors in the network have the desire to form a shared vision. This common vision is usually the desire to integrate or combine resources (Tsai & Ghoshal, 1998). Therefore, knowledge sharing will be able to make parties in the network equate the vision to create new values. Expósito-Langa et al. (2015) also believes that a shared vision (due to sharing knowledge) will have an impact on the firm's innovation. Knowledge sharing is an activity to disseminate knowledge to both internal and external parties. This activity is certainly capable of informing all information or knowledge about the business. Based on findings from (Surijah, 2015), both employee engagement activities and knowledge sharing are assumed to have an influence on firm performance.

Ko et al. (2011) verify that electronic collaboration can enhance a firm's ability to exploit information where its main purpose is to improve performance. Knowledge sharing enables SMEs in Indonesia to make companies understand the needs of customers or business partners (Ardyan & Sugiyarti, 2018). Collaboration can make parties make better decisions. Knowledge makes it possible to make predictions, casual associations, or predictive decisions about what to do, unlike information that only gives us facts. Effective managerial decisions will have a direct impact on the performance of SMEs.

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E-collaboration capability has a positive and significant effect on SMEs marketing performance. The results of this study support the results of previous studies (Bensaou, 1997; Hart & Saunders, 1998; Ko et al., 2011). Computational capabilities, speed of information processing, and computer connectivity and Internet technology can greatly improve the efficiency of business processes, as well as communication and collaboration between people responsible for managing, implementing and maintaining them. (Wade & Hulland, 2004). SMEs that are able to collaborate electronically with consumers who differ in geographical distance make the opportunity for SMEs to increase their market share and increase the number of customers. The internet is able to connect all parties that are geographically different. Electronic collaboration will have an impact on SMEs marketing performance.

The results of this study indicate that information system maturity has a positive and significant effect on knowledge sharing. The results of this study support previous research (Rao et al., 2015). Technology enables SMEs to communicate with other parties without having to meet face to face. Often SMEs need a variety of knowledge, skills, and experience owned by business partners. The obstacle is that the distance from the location of SMEs to business partners is very far. So, by using social media (YouTube, Facebook, etc.), chatting, electronic mail, it will be very easy for both parties to carry out knowledge sharing activities quickly. This is what makes SMEs mature in mastering information systems and technology, making it easier to carry out knowledge sharing activities.

The results of this study indicate that information system maturity has a positive and significant effect on SMEs Marketing Performance. The results of this study support previous research (Bharadwaj, 2000; Holsapple & Wu, 2009; Rao et al., 2015). O'Brien and Marakas (2007) explained that the ability to use IT as the main driver of business process reengineering, which integrates strategies to promote business innovation with a strategy of making major improvements in business processes so that companies can obtain and maintain competitiveness. The more SMEs have the ability to adopt system information, usually will have an impact on the costs incurred. Information systems help in the efficiency of knowledge transfer (Alavi & Leidner, 2001) and have an impact on efficiency when coordinating. Therefore, the efficiency that occurs in SMEs will also have an impact on the performance of SMEs.

IMPLICATION

Managerial implications as SMEs continue to develop technology and information systems are yet to be discovered. This capability in developing technology and information systems will enable companies to collaborate electronically. Both e-collaboration capability and information system maturity will make the activity of knowledge sharing and SMEs increase in marketing performance.

RESEARCH LIMTATION AND FUTURE RESEARCH

The limitations of this study are (1) this study is not specific to certain industries and (2) this study does not determine the maturity level of SMEs in the use of information systems. For future research, focus on SMEs in industries related to technology.

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Section 6
Managerial Impact

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Chapter 68
IT Strategic Planning through CSF Approach in Modern Organizations

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ABSTRACT

Although the purpose of strategic planning is straightforward - to outline where an organization wants to go and how it's going to get there - its nature is complex and dynamic. The, critical success factor (CSF) method, can augment strategic planning efforts by illuminating an organization's present situation and potential future. This chapter explores the value of enhancing typical strategic planning techniques with the CSF method and presents an integrated framework for helping modern organizations to understand the broad range of interrelated elements that influence strategy development for Information Technology (IT). The chapter synthesizes documented theory and research in strategic planning and CSFs. It also provides insights and lessons re the pros and cons of integrated strategic planning framework in the context of IT in modern organizations. Through in-depth literature review and contextual analysis, the chapter incorporates suggestions to modern organizations for IT Strategic Planning with CSF Approach for a holistic and effective strategic planning process.

INTRODUCTION

So many important matters can compete for one's attention when framing strategies especially information technology strategies in this ever changing and dynamic ICT world. This makes it often difficult to see the "wood for the trees". What's more, it can be extremely difficult to get everyone in the team pulling in the same direction and focusing on the true essentials. That's where CSFs can help especially in modern organizations which are becoming more and more complex because of networked economies. CSFs are the essential areas of activity that must be performed well if you are to achieve the mission, objectives or goals. By identifying CSFs, one can create a common point of reference to help in directing and measuring the success of any strategy, project or business. As a common point of reference, CSFs

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help everyone in the team to know exactly what's most important which then helps people perform their own work in the right context and this creates to heave together towards the same overall aims. Thus in simple terms CSFs refer to identifying the things that really matter for success.

The idea of CSFs was first presented by D. Ronald Daniel in the 1960s. It was then built on and popularized a decade later by John F. Rockart, of MIT's Sloan School of Management, and has since been used extensively to help businesses implement their strategies and projects. Inevitably, the CSF concept has evolved, and you may have seen it implemented in different ways. This paper provides a simple definition and approach based on Rockart's original ideas. Rockart defined CSFs as: 'The limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization'. They are the few key areas where things must go right for the business to flourish. If results in these areas are not adequate, the organization's efforts for the period will be less than desired. They are areas of activity that should receive constant and careful attention from management (Rockart 1979). CSFs are strongly related to the mission and strategic goals of any business or project. Whereas the mission and goals focus on the aims and what is to be achieved, CSFs focus on the most important areas and get to the very heart of both what and how to achieve.

BACKGROUND

Industry executives and analysts often mistakenly talk about strategy as if it were a chess game, but in a game there are just two opponents, each with identical resources, and with luck playing a minimal role. But the real world business and competition is different and certainly it is not a chess game – it is more than that. According to Moschella, D (1999), the real world is much more like a poker game, with multiple players trying to make the best of whatever hand fortune has dealt them. This paper explores the value of enhancing typical strategic planning with the critical success factor (CSF) method. It synthesizes documented theory and research in strategic planning, CSFs and proposes an information framework for enhanced strategic planning. The paper does not advocate or articulate a specific strategic planning approach, though theories are discussed and pointers to published methods are provided. Nor does the paper aim to document the CSF as a method; these are published elsewhere. (Caralli 2004; van der Heijden 1996)

CSF can augment strategic planning efforts by more deeply illuminating an organization's present situation and potential future. Critical success factors represent key performance areas that are essential for an organization to accomplish its mission. In addition, CSFs provide processes that help an organization establish strong ways of thinking, communicating, and making decisions. While future scenario and CSF methods have extensive histories with operational and strategic planning, neither method, on its own, constitutes a strategic planning effort, results in a strategy or strategic plan per se, or even has a direct, explicit interface with strategic planning. However, when used together within a strategic planning process, they noticeably enhance the process and the resulting strategic plan. According to a study by Esteves (2004), the critical success factors (CSF) approach has been established and popularized over the last 30 years by a number of researchers, particularly Rockart (1979). Today, the approach is increasingly used by consultants and IS departments as a means of support to IS strategic planning (Esteves, 2004). Ramaprasad and Williams (1998) underline this position by stating that "there is a great deal of attention devoted to the concept in the IS literature as many argue that the use of CSF can have a major impact on the design, development, and implementation of IS".

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In literature, several definitions of CSF exist. Representing one of the most frequently cited definitions, Rockart (1979) uses ideas from Daniel (1961) and Anthony et al. (1972) in defining CSF as "the limited number of areas in which results, if they are satisfactory, will ensure successful competitive performance for the organization" (p. 85). Consequently, Rockart (1979) stresses, that these particular areas of activity should be constantly and carefully managed by a company. In a similar fashion, Bruno and Leidecker (1984) define CSF as "those characteristics, conditions or variables that, when properly sustained, maintained, or managed, can have a significant impact on the success of a firm competing in particular industry", while Pinto and Slevin (1987) regard CSF as "factors which, if addressed, significantly improve project implementation chances" (p. 22). According to Esteves (2004) however, both of these definitions fail to address the comprehensive concept proposed by Rockart (1979), which seeks to identify an ideal match between environmental conditions and business characteristics for a particular company. Within the field of strategic management, the definition of Key Success Factors (KSF) is closely related to the CSF concept. In this context, Ellegard and Grunert (1993) define KSF as a qualification or resource that a company can invest in, which in turn, accounts for a significant part of the observable differences in perceived value and/or relative costs in the companies' relevant markets. In literature, the terms CSF and KSF are often alternately used.

Thus, though the purpose of strategic planning is straightforward - to outline where an organization wants to go and how it's going to get there is complex and dynamic. The, critical success factor (CSF) method, can augment strategic planning efforts by illuminating an organization's present situation and potential future (Baporikar, 2013). This chapter explores the value of enhancing typical strategic planning techniques with the CSF method and presents an integrated framework for helping modern organizations to understand the broad range of interrelated elements that influence strategy development for Information Technology (IT). Critical success factors are defined as the handful of key areas where an organization must perform well on a consistent basis to achieve its mission (Baporikar, 2013). CSFs can be derived through a document review, analysis of the goals, objectives of key management personnel and interviews with individuals about their specific domain and the barriers they encounter in achieving their goals and objectives. The chapter synthesizes documented theory and research in strategic planning and CSFs and provides insights and lessons regarding the value and limitations of the integrated strategic planning framework in the context of IT in modern organizations. Through a method of in-depth literature review and contextual analysis, the chapter incorporates suggestions to modern organizations for IT Strategic Planning with CSF Approach for a holistic and effective strategic planning process.

CSF EVOLUTION

Research on CSF can be traced back to 1961, where Daniel (1961) first discussed "success factors" in management literature. In a broad approach, he focused on industry-related CSF which are relevant for any company in a particular industry. In 1972, Anthony et al. (1972) went a step further by emphasizing the need to tailor CSF to both a company's particular strategic objectives and its particular managers. Here, management planning and control systems are responsible for reporting those CSF that are perceived by the managers as relevant for a particular job and industry. Combining the perspective of both Daniel (1961) and Anthony et al. (1972), Rockart (1979) described a study on three organizations in 1979 which confirmed that organizations in the same industry may exhibit different CSF. The reasons for such a constellation are differences in geographic location and strategies among other factors. Nevertheless, Rockart was also able

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to identify analogies between the CSF lists of the three examined organizations: "It is noticeable that the first four factors on the mature clinic's list also appear on the other two lists. (…) These, it can be suggested, are the all-encompassing industry-based factors. The remaining considerations, which are particular to one or the other of the practices but not to all, are generated by differences in environmental situation, temporal factors, geographic location, or strategic situation" (Rockart, 1979, p. 87).

In line with his initial study, Rockart (1982) gathered data in regard to IS executives. This data indicated that executives share a limited number of CSF. "Each executive (…) lists some, but not all, of the CSF gathered from the sample as a whole" (Zahedi, 1988, p. 190). The remaining differences were linked to organizational aspects as well as the time pressure facing the particular manager at the time the data was collected (Rockart, 1982). Furthermore, Rockart (1979) stressed that his approach did not attempt to address information needs related to the field of strategic planning. Instead, his CSF approach concentrates on information needs for management control and seeks to identify data which can be used to monitor and improve existing areas of business. In this context, Rockart (1979) follows Anthony's (1965) categorization of management activities into operational control, management control and strategic planning. However, it must be emphasized that Rockart (1979) limited his approach to management control which was precisely defined by Anthony (1965) as "the process of ensuring that resources are obtained and used effectively toward the attainment of corporate goals". Today, Rockart's (1979) CSF approach is particularly relevant within the limits of project management and IS implementation and therefore often used by IS executives. This is confirmed in a study conducted by Ramaprasad and Williams (1998), in which the results from 263 responses indicate the major areas in which the CSF approach is utilized: project management (63.49%), IS implementation (49.21%), and requirements (47.62%).

Dimensions of CSF

Reflecting the progress in research on CSF, several different CSF dimensions have emerged in literature over the course of the years. In the following, the most common six dimensions according to Esteves (2004) will be reviewed.

1. **Hierarchy vs. Group of CSF:** Rockart (1979) defines a specific hierarchy of CSF which is primarily based upon the organizational level at which the individual strategic issues are discussed. In line with this particular approach, CSF can be addressed on either an industry, corporate or sub-organizational level, thereby forming a certain type of CSF hierarchy within the organization (Rockart & Van Bullen, 1986). While a pre-defined level structure is dominant within the hierarchy suggested by Rockart, Barat (1992) argues that the hierarchy of CSF may also be built upon logical dependencies such as those existent between business aims and the factors influencing these aims. In addition, the hierarchical approach is extended to include groups of CSF. Here, either CSF for a group of organizations belonging to the same particular industry (industry CSF) or CSF for a group of managers in a particular role belonging to different organizations (occupational CSF) is identified. As a result, the idea of generic CSF for these particular groups is addressed (Esteves, 2004).
2. **Temporary vs. Ongoing CSF:** According to Ferguson and Khandewal (1999), CSF can be of either a temporary or ongoing nature. An example of an ongoing CSF is the existence of a project champion in top management, thereby influencing all phases of the project's implementation. On the contrary, the definition of the project scope represents a temporary CSF which is only regarded critical for a certain period of time. In this context, Ferguson and Khandewal (1999) note that all

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CSF can be defined in a way that makes them temporary. However the CSF may differ in their individual degree of temporality, some spanning a larger timeframe than others. Consequently, the key is to recognize their individual relevance for different stages within a project's lifecycle.

3. **Internal vs. External CSF:** CSF can further be distinguished by the dimension of which they are internal or external to the particular organization or unit in which they are applied. Arce and Flynn (1997) state that "an internal CSF has related actions taken within the organization; while an external CSF has related actions performed outside the organization" (p. 312). As a result, internal CSF is linked to issues within a manager's range of control, whereas external CSF may not be exclusively controlled by the manager. According to Rockart (1979), the relevance of this CSF dimension is particularly high when determining the proper sources of information within a process of data collection.
4. **Building vs. Monitoring CSF:** Building and monitoring CSF refer, on the one hand, to the amount of control on the part of the management and, on the other hand, to the monitoring or building nature of the actions taken. According to Arce and Flynn (1997), "a monitoring CSF is concerned only with monitoring an existing organizational situation (whereas) a building CSF is concerned with changing the organization or with future planning" (p. 312). For instance, the maintenance of technological leadership would be a CSF which a company could build and control, while changing consumer demographics would represent a CSF which needs to be monitored and not controlled (Esteves, 2004). In a similar approach Rockart and Van Bullen (1986) distinguish between building CSF, used to achieve certain goals or implement a certain degree of change in performance, and monitoring CSF, used to monitor key issues over a larger time frame. Such long term monitoring is often closely related to the strategic and tactical CSF dimension (see below).
5. **Strategic vs. Tactical CSF:** This dimension focuses on the type of planning which takes place within an organization, thereby differentiating between strategic and tactical CSF. According to Esteves (2004), while strategic factors seek to identify which goals are to be achieved, the tactical factors describe possible alternatives in regard to how these goals can be met. Strategic factors, although based on opportunities, often contain a great amount of risk and, therefore, require long term planning primarily executed by senior executives. On the contrary, tactical factors deal with resources required to reach the goals described on the strategic level and only call for a short or medium term planning effort, most often performed by the middle management. According to Ward (1990), "there will normally be a mixture of tactical and strategic CSF. If they are all strategic, the business might founder in the short term while everybody concentrates on the blue skies ahead. Equally, if all CSF are tactical, the business might burn out like a super-nova" (p. 117).
6. **Perceived vs. Actual CSF:** The identified CSF in one organization do not necessarily apply to all other organizations. Rather, each individual company must align their CSF in accordance with their own specific goals and needs. This is where the final dimension comes into play, distinguishing between perceived and actual CSF. Initially proposed by Ellegard and Grunert (1993), the concept of perceived versus actual CSF could bring forth useful implications by shedding light on the knowledge concerning discrepancies between actual and perceived CSF. Experience in this field could, for instance, lead to more stable strategy formulations and implementations. Although the measuring of actual CSF is not possible, Dess and Robinson (1984) suggest a more frequent confrontation of key decision makers with these factors. By doing this, decision makers might win insight on their perceptions in regard to both truly relevant success factors and those which are only perceived as such.

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Table 1. Research methods used for CSF identification

Action Research (Jenkins et. al., 1999)
Case Studies (Gibson et. al., 1999; Summer, 1999)
Delphi Technique (Atthirawong & McCarthy, 2001; Brancheau et. al., 1996)
Group Interviewing (handewal & Miller, 1992)
Literature Review (Esteves & Pastor, 2000; Umble & Umble, 2001)
Multivariate Analysis (Dvier et. al., 1996)
Scenario Analysis (Barat, 1992)
Structured Interviewing (Rockart & Van Bullen, 1986)

CSF IDENTIFICATION

In order to identify the relevant CSF, according to Esteves (2004), a wide array of research methods can be used (see Table 1). Among them are for instance the realization of case studies (e.g. Sumner, 1999), group interviews (e.g. Khandewal & Miller, 1992), structured interviews (Rockart & Van Bullen, 1986), as well as the analysis of relevant literature (e.g. Esteves & Pastor, 2000). According to Shah and Siddiqui (2002) the most frequently used method to identify success factors is the realization of a questionnaire.

CSF RELEVANCE

Pinto and Prescott (1988) argued that "the majority of the studies in the critical success factor research stream have been theoretical and have assumed a static view of the importance of various factors over the life of a project. In other words, a critical success factor was assumed to have the same degree of importance, throughout the life of a project" (p. 5). After having examined the criticality of CSF throughout the lifecycle of a project, they came to the conclusion that the degree of criticality of a CSF is subject to change during the different stages of a project lifecycle. Although the number of studies examining the relevance of CSF in regard to the individual phases of the project lifecycle has increased, most studies still remain limited to the sole identification of these CSF, not addressing their individual degree of relevance at all. Out of the more comprehensive studies addressing both the identification and the relevance, two different approaches can be found: The approach implemented by Pinto and Prescott (1988), for instance, is based upon the same set of CSF at all times, while examining their individual degree of criticality along the different project phases. In contrast, other studies have chosen to define different sets for CSF for each project phase. Although differently executed, both concepts generally tend to refer to the same set of CSF. According to Esteves (2004), in order to gain insight on CSF relevance, researchers most frequently use case studies as well as surveys based on interviews. Most of the time, participants are asked to either create a list of the most relevant CSF for each project phase or examine the relevance of individual CSF using a scale which indicates a low, normal or high relevance.

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CSF PAYBACK

According to Rockart (1979, p. 87), the following benefits exist for managers when applying the CSF approach:

- "The process helps the manager to determine those factors on which he or she should focus management attention. It also helps to ensure that those significant factors will receive careful and continuous management scrutiny."
- "The process forces the manager to develop good measures for those factors and to seek reports on each of the measures."
- "The identification of CSF allows a clear definition of the amount of information that must be collected by the organization and limits the costly collection of more data than necessary."
- "The identification of CSF moves an organization away from the trap of building its reporting and information system primarily around data that are "easy to collect". Rather, it focuses attention to those data that might otherwise not be collected but are significant for the success of the particular management level involved."
- "The process acknowledges that some factors are temporal and that CSF are manager specific. This suggests that the IS should be in constant flux with the new reports being developed as needed to accommodate changes in the organization's strategy, environment or organization structure. Rather than changes in an IS being looked on as an indication of "inadequate design", they must be viewed as an inevitable and productive part of IS development."

However, according to Esteves (2004), the CSF concept itself can be used for more than only IS design. Current studies, suggesting a number of additional areas of assistance to the management process, reflect this.

STRATEGIC PLANNING

Strategic planning is the process of defining an organization's intentions for achieving its mission. There are many ways to conduct strategic planning, most of which result in a plan or set of plans that articulate organizational goals and a high-level strategy for achieving them. Division-level and organizational unit-level planning should be tied directly to the organization's strategic plan. Strategic planning is not only an important foundation for executing work; it also sets the stage for enterprise architecture, process improvement, risk management, portfolio management, and any other enterprise-wide initiatives. There are many documented approaches to strategic planning (e.g., Fogg 1994).

Strategic planning is the process of defining an organization's plans for achieving its mission. An organizational *strategy* is a derived approach to achieving that mission. The product of a strategic planning effort is typically a document (a *strategic plan*) that elaborates a high-level strategy and articulates the elements that influence it—it is a full description of the organizational environment and intentions. Note that a strategy is directional in nature; although descriptions and analysis of the present situation are included, a strategic plan does not merely endorse the status quo, and it directs change of some kind (Cassidy 2006). Division-level and organizational-unit-level planning should be tied directly to the organization's strategic plan. Strategic planning is not only an important foundation for executing work; it also

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sets the stage for enterprise architecture, process improvement, risk management, portfolio management, and any other enterprise-wide initiatives. There are many documented approaches to strategic planning (Fogg 1994). Typical strategic planning processes examine an organization's current environment and abilities (the present situation), considerations about how it would like to grow or evolve (the desired future), its aspirations as an organization (what it will strive to do), and its intentions for moving forward (how it will move forward).

These high-level elements are described below:

- **The What:** These are descriptions of what the organization does and what it aspires to achieve - its organizational targets - including its goals, objectives, and quantitative performance measures.
- **The Present:** The present situation, or current environment, is typically described in terms of the organization's mission, guiding principles (or values), organizational strengths (or enablers), and organizational barriers (weaknesses or challenges).
- **The Future:** The desired future is described by the organizational vision and targets.
- **The How:** The preferred route to achieving the organizational goals, objectives, and mission is communicated as a strategy or as strategic goals. Strategic goals typically reflect the primary goals of an organization or enterprise and imply a particular set of strategies.

STRATEGIC PLANNING ELEMENTS

A well-documented strategic plan is critically important for organizing thinking and communicating thoughts. Strategic plans include elements that describe an organization's present state, aspirations, and intentions for the future, and approach for going forward. Table 2 contains the definitions of the terms typically used to describe strategic planning elements.

Understanding these elements and their relationship to one another supports strategic thinking and planning, but also enhances the effective use of CSFs in strategic planning efforts.

Strategic Planning and Organizational Hierarchy

It is important when thinking about strategic planning to think about organizational hierarchy, both in terms of how the strategy will apply to the organization and in terms of the roles and responsibilities for planning. Table 3 presents model of organizational structure, used to organize enterprise architecture concepts. The model identifies three general levels common to most organizations: the institutional (or organizational) level, the managerial level, and the technical level (Thompson 1967, Bernard 2005).

Becoming more common is the organizational network model, where work is carried out by cooperative networks of local and remote individuals and teams. Teams are functionally based and locally managed, removing layers of organizational management. As a result, the teams are flexible and can change function, goals, or make-up as necessitated by internal or external influences (Bernard, 2005). Gunasekaran and Garets articulate some good criteria for strategic planning participation. A well formed strategic planning team should include - executive support and access, a representative microcosm of the organization, with multiple levels of management and an external perspective. (Gunasekaran, 2004) An empowered representative group is the best faction to conduct strategic planning. But strategic thinking must involve personnel at the highest level of an organization. It is not a low-level project or a delegated

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Table 2. Strategic planning terms

Term	Definition
Mission	An organization's mission is its primary business or purpose; it describes what an organization does, for whom, and its benefit. The mission of an organization is not a time-bound objective.
Vision	A vision is an ideal that an organization intends to pursue. It links the organization to the future by articulating instantiations of successful execution of the mission. An organization's vision is a source of inspiration and can be broader than the organizations capabilities. It might, in fact, describe what can be achieved in a broader environment if the organization and others are successful in achieving their individual missions.
Goals	Goals are broad, measurable, aims that support the accomplishment of a mission.
Objectives	Objectives are specific, quantifiable, lower-level targets that indicate an accomplishment of a goal.
Guiding Principles	Guiding principles are directive statements that articulate the constraints an organization chooses to place upon the way it achieves its goals. Guiding principles embrace core values and are used to shape an organization's strategy. Guiding principles reflect long-term intentions, but are not necessarily permanent. A guiding principle may seem similar in content to a goal but it lacks measurable aims. A guiding principle can generate a goal when an organization chooses to commit resources to achieving a measurable result regarding its content.
Enablers	Enablers are external conditions or organizational strengths that facilitate an organization's ability to accomplish its goals or objectives.
Barriers	Barriers are external conditions or organizational (internal) weaknesses that hinder an organization's ability to accomplish a goal or objective.
Strategy	A strategy is a derived approach to achieving the mission, goals, and objectives of an organization. It supports the organizational vision, takes into account organizational enablers and barriers, and upholds its guiding principles.
Strategic Plan	A strategic plan is a document that results from a strategic planning activity. It elaborates the organizational strategy and documents the elements that influence it.
Initiative	An initiative is a specific set of actions that implement a strategy.
Actions	Actions are specific steps to achieve a goal or objective and typically have assigned staff and schedule constraints.
Performance Measures	Performance measures describe performance targets relevant to each objective.

Table 3. Model of organizational structure

Level	Organizational/Executive	Managerial	Technical
Purpose	Establish rules and relate to larger society, making possible the implementation of organizational goals.	Mediate between the organization and the task environment; administer internal affairs; provide resources.	Create the organizational product.
Activities	Interface with the external environment to determine the organizational domain and secure legitimacy.	Provide internal political mediation between the organizational levels.	Execute production and/or development functions; protect the production functions from external uncertainties.
Source: Adapted from Bernard (2005), An Introduction to Enterprise Architecture – Parson/Thompson Model of Organizational Structure			

task. Without executive input there is insufficient knowledge and authority to do meaningful strategy setting (Baporikar, 2014a).

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IT STRATEGY

Information technology is a resource for organizational and mission-specific requirements (Bernard 2005). In addition to being viewed as a resource for an organization, IT is commonly viewed as an enabler of the nonfunctional requirements, or quality attributes, of a system (e.g., reliability, availability, usability). IT strategy refers to a global level of thinking about IT and its integration with the rest of an organization. The ultimate goal of IT strategic planning is to provide a broad and stable vision of how IT contributes to the long-term success of the organization (Gunasekaran 2004). In today's environment, an organization's existence depends on the effective application of IT. As a result, organizations increasingly look to technology not only to support business opportunities, but also to create competitive advantage (Baporikar, 2014b, 2015 a). IT planning has coincidently been elevated from a tactical management tool to a strategic decision-making vehicle (Ward, 2002). As with organizational strategic planning, there are documented approaches to IT strategic planning (e.g., Cassidy, 2006). Critical success factors are defined as the handful of key areas where an organization must perform well on a consistent basis to achieve its mission. CSFs are typically derived through a documented review of the goals and objectives of key management personnel and interviews with those individuals about their specific domains and the barriers they encounter in achieving their goals and objectives. Levels of management introduce different types of operating environments and thus different levels of CSFs. Commonly identified CSF levels are*:*

- *Industry,*
- *Organizational,*
- *Division,*
- *Operational-unit* and
- *Individual*.

These labels are general terms that reflect most organizational hierarchies. There is a direct parallel between CSF hierarchy and a typical strategic planning hierarchy.

THE STRATEGY PARADOX

A common criticism of strategic planning is that it is overly involved with extrapolation of the past and present and can create the illusion of certainty regarding the future (Heracleous, 1998). The strategy paradox is the conflict that arises from the need to make operational commitments in the face of unavoidable strategic uncertainty (Raynor, 2007). One solution to the paradox is to separate, and align, the management of commitments from the management of uncertainty so that the work of delivering on organizational commitments is aligned with, but distinct from mitigating the risks associated with future uncertainty and providing exposure to promising opportunities. Because uncertainty increases with the time horizon under consideration, decision making should be allocated to the managerial levels responsible for each approximate time horizon. Executives tend to be well suited for managing strategic planning, scenario planning, and risk, while managers are well equipped for operational planning, the identification of critical success factors, and product or service delivery. With executives focused on managing uncertainty (strategic positioning), operating managers can focus on delivering on commitments (operational effectiveness). Operational effectiveness is akin to efficiency and means performing

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similar activities better than one's industry peers. Strategic positioning means adopting activities that are different from one's peers or performing similar activities differently (Porter, 1996).

Expanding the breadth and depth of knowledge and thought that are available for making strategic decisions can only strengthen the decisions and strategies themselves. Thus, the CSF method supports strategic thinking and decision making by strengthening perceptions and assumptions that lead to information-based decisions. They also address the strategy paradox by forming a bridge between strategic and operational activities. CSFs identify operational activities that serve the achievement of the mission. Future scenarios help form strategies that lay the groundwork for operational activities.

USING CSFS FOR IT STRATEGY

Organizations often have difficulty developing and implementing IT strategies because they do not maintain an explicit focus on high-level business drivers. As a result, IT strategies often fail to reflect what is important to the organization, the accomplishment of the mission, and long-term resilience. The key to an IT strategy is that it explains how information technology will align with and support an organization's overall business strategy. It should reflect a global level of thinking about IT and its integration with the rest of the organization.

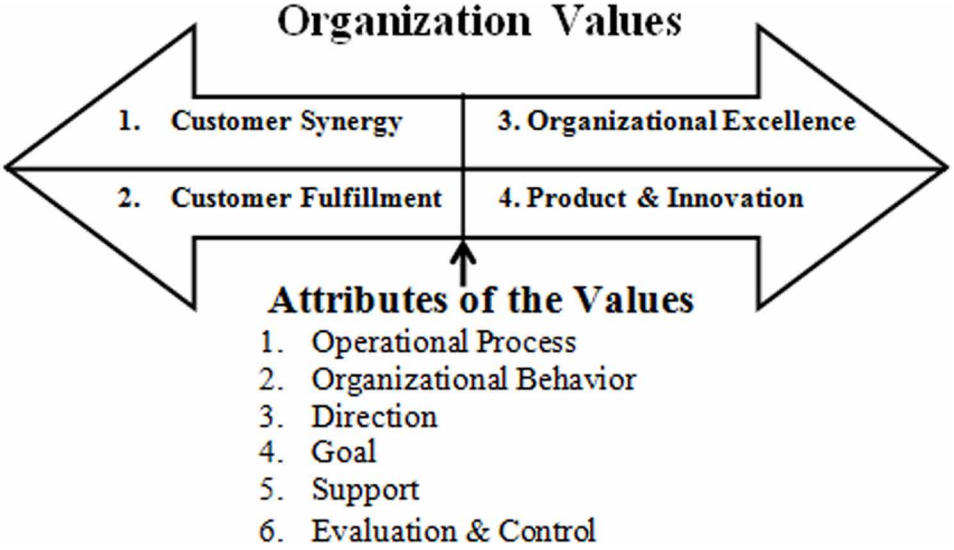
The success of an enabling resource, like IT, relies heavily on aligning IT-strategy with higher level, organizational strategy. Because CSFs can be derived at each level of an organization, they can facilitate alignment. They link organizational strategic interests and the information-planning function. In fact, a good IT strategic plan must include an understanding not only of its own CSFs, but of the CSFs for the divisions of the organization it supports as well as the higher-level organizational CSFs. Organizational CSFs are critical to IT strategic planning because they reflect the business goals of the organization and the field of vision of top management (Caralli, 2004). In addition to supporting strategy development, CSFs also enhance strategic planning to some degree. In particular, CSFs can provide an organizationally tailored filter for identifying driving forces for future development. This method has been piloted in several government strategic planning efforts with positive results. Not only has the integration of these techniques produced robust strategic plans, it has fostered strategic conversation among organizational leadership, inspired data-based decision making, and increased communication across the organizations. This approach can be implemented in stages, at any level, and still realize gradual benefits.

Improving Strategy Execution

Improving strategy execution is at the top of the list of important issues for most corporate executives, followed by concerns about actually having a sound strategy. When strategic planning is done well, with a mature and robust process that guides the effort to ensure completeness - the outcomes can be powerful and position an organization to thrive and sometimes even dominate the competition. Yet only a small percentage of organizations operate with mature planning models that yield complete and comprehensive strategic plans addressing alignment to key dimensions of the business. Not surprisingly, even fewer organizations have mastered the art of fully and successfully executing corporate strategic plans. With successful strategy outcomes continuing to be an elusive prize sought by so many corporate leaders, this part is focused on exploring eight critical success factors related to improving strategy execution. A common mistake organizations make during strategic planning is that over jumping directly into plan-

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Figure 1. Current state analysis



ning for the future. That may not sound like a mistake at first blush, after all...isn't strategic planning all about the future? The current-state analysis phase of corporate strategic planning involves gaining a realistic perspective of where the organization is today so that it is possible to plan effectively for moving from the current reality to the desired future. Missing this step puts the strategy and the execution in jeopardy. It helps put everything about the organization into a singular context – with a holistic-360 degree, multi-dimensional view that allows for comparability and planning occurring effectively.

Sometimes organizations feel that they are adequately addressing the current-state by performing a traditional SWOT analysis to provide indications of Strengths, Weakness, Opportunities and Threats. The current-state analysis prescribed here Figure 1, provides far more relevant attribution of the organization and the environment in which it must operate (the business ecosystem) – inclusive of critical aspects, such as: the organization's culture, structure and core values as well as the relationships with customers, partners, employees, suppliers. Likewise, current-state analysis is reflective of the economic fluctuations that occur within that system we refer to as the business ecosystem. The assessment yields a more complete picture of the organization's strengths and weaknesses, and the same is true for the external assessment. Far more is understood and uncovered relative to opportunities and threats using this approach than when using the more traditional SWOT analysis.

A Value Quadrant Analysis (VQA) is an excellent method to truly understand key buyer segments by profitability. Such an understanding allows a business to make informed decisions to drive sales and marketing related strategies - even helping make key decisions related to remaining in one or more quadrants or exiting unprofitable segments. In short, VQA during current-state analysis drives value proposition messaging, strategy development and ultimately should determine strategic investment decisions. The organizational profile resulting from the current-state analysis, as described, encapsulates key data that will feed the planning process with richer data - broken down into three major components:

1. Operating environment & business processes
2. Business relationships

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3. Key performance categories

The holistic understanding of the business ecosystem that comes from having conducted a current-state analysis allows for strategic planning to optimize the shortest path to the future-state, once it has been defined. That path is dependent upon an understanding of the business's core values, culture, value proposition, organizational value quadrants, org structure relative to culture and external competitive environment by line-of-business (including key players like customers, suppliers, partners and channel relationships). The comparison of the organizational profile to the challenges identified during this step result in the gap that serves as the basis for planning.

Requirements of Strategic Planning

Strategic planning requires "real" information related to questions like:

1. What is working well?
2. What is not working so well?
3. What are our organizational vulnerabilities?
4. Where are there untapped opportunities?

Table 4. Realisms

Serial No.	Type	Interpretation
1	Operational	Businesses need the discipline of a planning process which structures an analysis of operations – allowing the organization's employees to provide input into the panning process. This action engages employees and is especially beneficial in helping executives have a better understanding of today's reality across the business. That does of operational reality is essential to constructing meaningful strategy and planning realistic execution. Getting to business truth even extends beyond the organization to include engaging key suppliers, distributors, channel partners and customers in aspects of the planning process.
2	Cultural	Business truth includes understanding not only operational issues facing the business, but also more subtle disconnects and problems not so easily detected – yet equally important. Understanding culture is an understanding of "Who are we as a company, really?" Culture is defined by what members of the organization, and the organization as a whole, do to create success. Culture is about an organizations core values and how members define acceptable and unacceptable behavior. In planning a clear understanding of culture provides a framework for understanding the "What, Why and How" work gets completed.
3	Value Proposition	A value proposition can be thought of as a set of market promises based on capability and credibility, which helps prospective customers understand how the company's offering uniquely addresses specific problems, opportunities and challenges. Testing the internal perception of organization's value proposition at different levels of the organization provides yet another form of business truth. It indicates where there is consistency, where there are disconnects and if value is being communicated to the marketplace effectively.
4	Core Competency	Companies must realistically assess their core competencies because they are the underpinnings of the organization's skills and the cornerstone of successful strategic execution. They represent the fundamental knowledge, abilities and expertise of an organization. True ability to understand and measure organizational core competencies is a critical factor in reaching strategic goals.
5	Industry	Understanding the company's position in the market place is essential. Now more than ever, business leaders must clearly understand the directional flow of their industry and plan for transitions and consolidations that may be occurring now or are on the horizon. Data must be gathered from managers and employees in sales, marketing, customer service, supply-chain and other areas of the business in order to gain true visibility into the organization's industry and market sectors.

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To get to this information straight from the source that knows it best, employees must be engaged in the strategic planning process as early as the current-state analysis. This is where most companies make a big mistake. The executive team pulls into a shell to "meet" about the strategic plan and routinely locks out key people from the process that might well have contributed beneficial ideas and information.

This is not done intentionally of course. It is done out of habit and expediency. "*Let's get the executives and their managers into planning sessions and get this done...*" Such sentiments are common and can be heard in companies around the world. It is unfortunate, but closed loop thinking like this often hatches flawed strategies as a result of executive management groupthink. "Happy talk" takes control and the management team convinces themselves that the business is doing relatively well...oblivious to threats and issues awaiting them in the near future. The planning process requires realism to actually produce a valuable result. These realisms are reflected in Table 4.

The Global Factor

Approaches to strategy and planning in multinationals require more effort due to more complex organizational structures and market specific factors global companies face. Corporate strategy must be "localized" to allow the business to respond appropriately to geographic-based opportunities and threats. Likewise, strategy development must include the involvement of the company's foreign business leaders to help the strategy be adapted correctly to local needs. Exactly how this is done is dependent upon the type of structure the company has decided best suits the organization (e.g. matrix, product, geography, etc.). Multinational strategies are shaped by the trade-off between opportunity and risk. Three broad environmental factors determine that trade-off. The first is the prevailing political economy, including the policies of both host and home governments, and the international legal framework. The second is the market and resources of the host country. The third factor is competition from local firms. Given these factors, one challenge multinational companies face is recognizing the need to "localize" strategies. Once that recognition has set in, the next challenge is then determining how best to accomplish localization. Strategy localization is needed in order to allow the business to respond appropriately to geographic-based opportunities and threats. Corporations should expect cultural heuristics to differ from country to country. Likewise, markets operate differently across the world, and there is no "one size fits all" approach to successfully conquering them. Competitor threats must be addressed with locally adapted strategies to be effective, thus the competitive analysis involved with strategic planning is a requirement to successfully navigate the terrain of the region's business ecosystem. Marketing and sales tactics are only part of geographic differentiation, although they are certainly not insignificant in terms of importance. There are also unique supply-chain considerations to factor into local strategies. Resource costs, including labor, vary widely across countries. It doesn't stop there. Legal systems, labor laws and distribution systems also impact local strategy. For this reason, operational considerations related to pricing, production and distribution also cannot be ignored with a cookie cutter corporate strategy that is imposed across countries / geographies. None of this means that the foreign-based division can go rogue and operate business practices that run counter to the strategic goals of the parent. What it does indicate, however, is that parent company's corporate strategy must be operationalized to fit localities.

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The People Factor

Implementing corporate strategy is dependent upon the energy, dedication, hard work and faith of the organization's employees. Motivating employees to act decisively in the face of uncertainty is a challenge where many an organization has failed miserably. Simply stated, a considerable amount of energy is required to drive strategies to fruition - and that energy must be generated from within the organization. The more that employees have been involved in the process of creating the strategy, the more they will have already bought into it - helping fuel strategy delivery and thus propelling the momentum of execution to make it both easier and smoother. When it is not possible to broadly involve employees in some way, the communication effort surrounding the strategy needs to be amped up across the organization to compensate for the fact that many if not most employees will be in the dark regarding the strategy and what is expected of them.

CSFS AND GOALS

There can be some confusion between CSFs and goals, which are not the same. Goals are broad, high-level aims that support the accomplishment of the mission. Like goals, CSFs represent things that enable the success of or contribute to the accomplishment of a mission. Goals, however, are often derived from performance management exercises rather than strategic planning, and are set with an eye to achievability rather than organizational success or contribution to accomplishment of the mission. CSFs refer to ongoing operational activities that must be sustained for the organization to function successfully. Where goals help an organization attain success, CSFs ensure an organization's survival. If an organization focuses only on goal-setting, it might, as a result, drop attention from the day-to-day activities that sustain its success.

Goals and CSFs share a many-to-many relationship because organizational goals may rely on the achievement of more than one CSF and a CSF may affect the achievement of several goals. The potential many-to-many relationship between CSFs and goals is indicative of their interdependence and importance for accomplishing a mission (Caralli, 2004). CSFs reflect areas that are important to the organization in the current operating environment and to future success; they remain fairly constant over time, at least in the sense that they are seen as areas critical to the success of the mission in both the present and the future. Rockart writes, "Goals represent the end points that an organization hopes to reach. Critical success factors, however, are the areas in which good performance is necessary to ensure attainment of those goals" (Rockart, 1979).

There is some fluidity among CSFs and goals. As stated earlier, a performance gap in a particular operational area may cause a CSF to be elevated into a fix-oriented goal. Alternately, a goal, once achieved, may migrate to a CSF for sustainment.

FUTURE RESEARCH DIRECTIONS

In an early contribution to the work on critical success factors and management control systems Anthony et al. emphasized that the development of timely, concise measurements was crucial to monitoring identified CSFs (Anthony, 1972). Although not all documented CSF method descriptions include develop-

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ing CSF measures, measures were also a fundamental part of Rockart's original CSF method. Rockart writes, "Critical success factors are areas of activity that should receive constant and careful attention from management. The current status of performance in each area should be continually measured, and that information should be made available" (Rockart, 1979). Critical success factors can establish a set of performance measures that directly link operational issues to the mission. Further area of research would be to establish this set of performance measures that directly link CSFs especially in the area of IT, Strategic Planning and Modern Organizations. Another interesting research thread would be to see how the dynamic environment of IT convergence with communication and technologies would affect CSFs and counter effect of this on identifying and linking CSFs to strategic planning.

CONCLUSION

Information has emerged as an agent of integration and the enabler of new competitiveness for today's modern organizations in the global marketplace. But the real concern is whether the paradigm of strategic planning changed sufficiently to support the new role of strategic planning, information systems and technology (Baporikar, 2015b). This chapter is an attempt to review the literature in this context and the focus is on CSF as approach for IT strategic planning in modern organizations. Critical success factors and future scenarios are particularly well-suited augmentations to IT strategic-planning efforts. They illuminate an organization's present situation and potential future, respectively, and facilitate the alignment of IT strategy with organizational business drivers. Each technique can be used to strengthen both strategy setting and operational activities. When the CSF method and scenarios are used together and integrated with a strategic-planning method, they also reveal the value of an overarching strategic thinking and strategy development process. They contribute to the strategic thinking and planning process and the development of robust strategic planning information assets.

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KEY TERMS AND DEFINITIONS

Action: A specific step to achieve a goal or objective. An action typically has assigned staff and schedule constraints.

Barrier: An external condition or organizational (internal) weakness that hinders an organization's ability to accomplish a goal or objective.

Critical Success Factors (CSFs): The handful of key areas where an organization must perform well on a consistent basis to achieve its mission.

Enabler: An external condition or organizational strength that facilitates an organization's ability to accomplish its goals or objectives.

Goals: Broad, high-level aims that support the accomplishment of a mission.

Information Systems (IS): The means by which people and organizations gather, process, store, use, and disseminate information.

Information Technology (IT): The hardware, software, and telecommunications that facilitate the acquisition, processing, storage, delivery, and sharing of information and other digital content in an organization. It also is the use of computing, electronics, and telecommunications technology in managing and processing information, especially in large organizations.

Initiative: A specific set of actions that implement a strategy.

IT Strategy: A description of how information technology will support an organization's overall business strategy.

Operational Planning: The process of making decisions about the allocation of organizational resources (capital and staff) to pursue a strategy.

Performance Measure: Performance targets relevant to each objective.

Strategic Goal: A primary goal of an organization or enterprise that implies a particular strategy or set of strategies.

Strategic Plan: A document that results from a strategic planning activity. It elaborates the organizational strategy and documents the elements that influence it.

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Strategic Planning: A process for defining an organization's strategy, or direction, and making decisions about how to allocate its resources to pursue this strategy, including its capital and people.

Strategy: A derived approach to achieving the mission, goals, and objectives of an organization. It supports the organizational vision, takes into account organizational enablers and barriers, and upholds guiding principles.

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Chapter 69
Alternative Research Funding Mechanisms:
Make Funding Fit for Science 2.0

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ABSTRACT

Funding affects how science is carried out. Over the last 50 years, the core of science funding has become competitive, project based and increasingly oriented towards societal challenges. Recently, alternative, more open and flexible funding mechanisms have emerged, such as crowdfunding, philanthropy and bottom-up mechanisms. This chapter analyses the development and implications of alternative funding mechanisms for science, through an umbrella literature review complemented by case studies. It concludes that alternative funding are an important component of research funding, which provides new opportunities especially for niche and unrecognized research, and require stronger communication skills by researchers. However, they can't and should not substitute traditional mechanisms. Researchers, institutions and funding agencies should redesign their activity accounting for a plurality of funding instruments, and facilitate collaboration between them.

INTRODUCTION

Science 2.0 is more than the adoption of Web 2.0 tools (blogs, Twitter or wiki) in science. It refers to a new approach that embodies the key values of Web 2.0 – openness by default, peer-to-peer recognition, presence of proactive users, perpetual beta and long tail – applied to the field of science and research.

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The emerging literature on the implications of Science 2.0 points to a greater level of collaboration between scholars from different disciplines, including nonprofessional researchers; more creativity because of the scale of contribution, the myriad of different actors and wealth of data produced and analysed; a more emergent nature of collaboration focusing not only on paper publication but on a wider set of scientific outputs; higher accountability and transparency of science thanks to the wider sharing of data underlying the analysis (Ioannidis 2005; Murray-Rust 2008). The emergence of Science 2.0 is in many ways convergent with the so-called Mode 2 system of science (Nowotny, Scott, & Gibbons, 2003) which involves multidisciplinary teams working together for short periods of time on specific problems in the real world, as opposite to traditional research pursuing scientific knowledge free from application concerns.

The literature also identifies a number of main barrier to greater uptake of Science 2.0, for example the lack of a favourable institutional setting and the lack of appropriate incentives to scholars (Burgelman, Osimo & Bogdanowicz, 2010). Too often research careers and scholars' reputation remain based on "publish or perish" principles focusing solely on the research and discovery activities that fall under the "scholarship of research" (Nicholas, Herman & Jamali, 2015), and do not encourage other aspects of scholars' work such as multi-disciplinary work, data sharing and large scale collaboration for example in citizen-science projects.

The way science and research is funded, in particular, can play a determinant role in hindering or supporting Science 2.0. The funding of science has undergone significant changes in the last 50 years, mainly moving from a block-based funding to a competitive, project-based funding which deeply affected the behaviour of scientists (Laudel, 2006). As a result, for example, highly competitive mechanisms such as the EU Framework programme often turn out to fund professional project writers (the so-called "usual suspects" of EU funding) rather than frontier researchers who are less skilled in writing project application that tick all boxes of the evaluation process (Arnold, 2010). Such system, while being generally considered more effective, has also attracted several criticisms (Guthrie, Guerin, Wu, Ismail, & Wooding, 2013) as an inefficient way of distributing research funding because of the high bureaucratic burden it places on individuals; the high cost of the process; and the doubtful capacity by government to select the genuinely promising research priorities and projects (Sutherland, Fleishman, Mascia, Pretty, & Rudd, 2011).

Recently, there as been an emergence of a set of novel "alternative" funding mechanisms (AFM) for scientific research. They tend to be more open and flexible, examples of these are crowdfunding, philanthropy and open bottom-up mechanisms. These new mechanisms appear to be more in line with the agile, multidisciplinary and emergent nature of science 2.0. This chapter aims at shedding more light around such AFM practices as a potential institutional driver, or an enabler, of science 2.0. The research is based on a study carried out for the Joint Research Centre of the European Commission (Vuorikari & Punie, 2015) that aimed at analysing these new mechanisms for scientific research in order to address some key questions:

1. What are the key features of alternative funding mechanisms and to what extent are they available in Europe?
2. What are the implications for researchers and research institutions?
3. What are the opportunities and challenges for EU policy?

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BACKGROUND

In order to analyse the implications of "alternative" funding mechanisms (AFM) in Europe, an "umbrella literature review" (Grant & Booth, 2009) was conducted. It was also complemented with a desk-based analysis of 67 AFM for scientific research that were identified through web search and desk research. The scope was international; the examples are spread in 14 countries, notably 45 out of 67 are based in Europe and the rest outside. Furthermore, four examples were selected for in-depth exploratory case studies as representative of AFM from different European countries. The aim of the cases was not to be exhaustive, but provide concrete narrative examples of AFMs in order to illustrate how they work and detect possible initial implications. The study is reported in detail in Osimo et al. (2015).

The notion of "alternative" is defined by referring to two dimensions, namely WHO and HOW. WHO refers to the source of the funding (private rather than governmental) and HOW to the modality used to distribute funds. This alternative modality concerns in particular the lack of a rigid top-down setting of research priorities and the openness of the decision-making process to select the beneficiary. Based on the above mentioned desk research, AFM for scientific research are defined as competitive research-funding mechanisms that fulfil *any* of the following cases:

- Are led by non-governmental organisations;

OR

- Set research priorities in an open way without strong identification of research priorities;

OR

- Select proposals through other means than peer review of the projects.

Under the definition of AFM the following instruments are included:

- Crowdfunding for science, where a large number of citizens donate money for a specific research project through dedicated platforms such as Kickstarter and IndieGoGo. While these platforms originally started for raising money for political causes, the arts and charity, start to be used to fund science projects and research (Mollick, 2014).
- Both privately and public funds sometimes adopt open, bottom up methods for selecting research projects. These mechanisms (such as open funding, inducement prizes and others) do not pre-emptively select the research priorities, but leave the scientist open to address a specific problem in the way she-he feels more appropriate.
- Wealthy individuals ("celebrity philanthropists) start to play a major role in science funding. Bill Gates (Microsoft), Eric E. Schmidt (Google), and Lawrence J. Ellison (Oracle) are among hundreds of relevant donors who are shaping the priorities in science for today and the coming years.

These new funding mechanisms are the reflection of long-term and society-wide trends towards a more active role of private citizens in co-producing public services, e.g. philanthropy and crowdfunding as part of the crowdsourcing movement (Shirky, 2009). Moreover, the increasing adoption of open mechanisms

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such as FET (Future Emerging Technologies) is designed to better accommodate the complexity of the innovation process and enable disruptive innovation (Fraunhofer, 2012). On the other hand, inducement prizes can also help breaking the "usual suspects" problem and therefore reduce the asymmetry of skills between researchers and funders by rewarding concrete results rather than project proposals (Beckert, Friedewald, & Schaper-Rinkel, 2012).

One of the most interesting aspects of AFM is that traditional government players do not have a role in defining the specific research priorities and they therefore opt for a more open, demand-driven approach where the answer to the problem can come from unexpected sources and disciplines (Stallbaumer, 2006). While these mechanisms did not always emerge as a deliberate answer to the challenges of competitive research funding, we will see that they are often relevant to address these specific challenges.

REVIEW OF ALTERNATIVE FUNDING MECHANISMS

From the research conducted, it becomes visible that alternative funding mechanisms (AFM) are already a visible phenomenon in Europe and elsewhere. The mapping exercise identified 67 examples. Looking at the geographical distribution, the largest number of mechanisms was gathered in the United Kingdom, followed by Spain, Germany, the Scandinavian countries, Austria and Italy. Despite the recent growth in the number of European crowdfunding platforms as an alternative funding method for scientific research, the mapping highlights how philanthropy seems to remain the main alternative mechanism used in Europe. The majority of the cases pertain to philanthropy (19/45), whereas fifteen of the European cases represent the category of crowdfunding and 11 refer to bottom-up mechanisms. In most cases (47/67), scientific research projects in multiple scientific fields are funded. However, when a discipline is indicated, Health is clearly prevailing (14 mechanisms). When looking at AFM and disciplines, there is not a big difference between the mechanisms: they all tend to be open to all disciplines. The only interesting correlation is the strong focus on Health research by philanthropic mechanisms (11/19 mechanisms). More details and analysis are available in Osimo et *al.* (2015).

In the following section, examples of funding mechanisms are given in three of the following areas: philanthropy, crowdfunding and open bottom-up instruments referring to the desk research and cases studies for illustration.

Philanthropy for Science: Review and Case

The most conventional modern definition of philanthropy according to Wikipedia is "private initiatives, for public good, focusing on quality of life". In the US, the Foundation Center reports that donations from US-based foundations to science, technology and medical research were at 1.7 billion dollars in 2010. In the EU, the size of the private non-profit sector accounts 0.8 % of the total R&D expenditure in 2014 being equivalent for EUR 2.3 billion (Eurostatt, 2016). In Europe, foundations such as the Wellcome trust provided more than 600 M EUR in 2014 alone for scientific research. About 75% of European universities have tried to fundraise from foundations and 79% from corporations (Breeze, Wilkinson, Gouwenberg, & Schuyt, 2011).

Individual philanthropists are also forming a growing part to the support of science. Michael J. Fox, a famous Hollywood actor with Parkinson's disease, created his own foundation where first grants to support research in finding a cure for Parkinson's were given out already in 2000. Similarly, Gates Foundation

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with its affluent support is steering, for example, the malaria research in new ways. At the same time, corporate private philanthropy has also emerged, for example in the form of inducement prize contests that award a cash prize for the accomplishment of a challenge. The X Prize, for instance, awards prize money to foster high-profile competitions to develop innovative ideas and technologies. One example is the Google funded "Lunar XPRIZE challenge", an inducement prize which aims to land a robot safely on the moon. In order to win, a team must successfully land an unmanned rover on the Moon, travel for a minimum of 500 meters from the landing site and send images back to Earth. The participating teams should be at least 90% privately funded, therefore with a maximum 10% of public funding. The first team to complete the mission objectives will receive $20 million, the second team $5 million. The final deadline for completing the challenge is December 31, 2016. The intermediate Milestone Prizes, totalling US$6 million, are for demonstrating (via actual testing and analysis) robust hardware and software to overcome key technical risks in the areas of imaging, mobility and lander systems — all three being necessary to achieve a successful Google Lunar XPRIZE mission.

One of the case studies focused on one of the European participants in the XPRIZE challenge. Namely, Team Puli from Hungary is a finalist of the prize, the team is led by Tibor Pacher. In his early career he was a scientist and since 1993, he moved to business and public outreach activities for promoting STEM education. The challenges related to the mission of Google Lunar XPRIZE are highly multidisciplinary, from physics to engineering to astronomy issues. The team relies on a combination of off-the-shelf components adapted to resist the conditions and on custom design. For instance, it will use an "off-the-shelf" Geiger Muller Counter that can travel in space, but they will build a custom microcircuit to send data to Earth. They plan to purchase a travel service to the moon, which is expected to cost several million dollars.

When comparing the example of costs and the final prize money ($20 million), it becomes clear that the prize covers little more than the actual expenses. Even in the case of winning, the financial benefit is minimal. According to the Team Puli project funder, "nobody is working for the money". The amount is rather perceived as a catalyser of the effort, to raise visibility and competence. The real goal is to build knowledge, expertise and visibility, and to build a brand for the new company in an emerging market. In fact, the main strategic objective of Team Puli is to build organizational competences in order to become a player in the "space market". The team sees a strong market opportunity ahead, valued by some reports at $1.9 billion during the next decade following the conclusion of the prize (XPRIZE, 2013). Therefore, one can consider that the funding mechanism is far from being the main financial support to the scientific effort.

Mobilizing resources from many different sources was also central to Team Puli's - and most other competitors' strategy. This brings up another interesting point about these AFM, namely the multimodality of marshalling funding. Industrial sponsors, for example, were mainly used to receive in-kind donations for products and software licenses necessary to carry out the work. On the other hand, crowdfunding was used in the initial phase to gather the necessary funding to register for the prize ($50.000) and to procure some radiation equipment. Additionally, self-financing and voluntary efforts are important; there are about 30 volunteers working in their spare time, and two full time employees (the funder) investing their own money in the project. In this case, personal wealth can be considered as a vital enabling factor, too.

Seen the above complex set-up of the project, it can be speculated that inducement prizes are not really to be considered as a pure funding mechanism. They seem to have many functions, one of which is also the awareness raising activity whose aim is to trigger additional investment. This "leverage effect" of inducement prize should be considered as one fundamental factor for participating. Just as prizes are

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effective in orienting the attention of researchers towards a specific challenge, in the same way they are orienting the attention of other funders, either public or private. Because of the very nature of inducement prize, which have a "winner takes all" approach, researchers typically do not rely on the prize funding only to justify their investment, but use the visibility of the prize to attract additional funding. Indeed, as (Gök, 2013) shows, the amount of the prize itself would not justify the needed effort.

The case study also showed the importance for scientists to become highly skilled in fundraising from third parties. Fundraising from private sources implies dedicating extensive resources to PR, either by cultivating it directly or by employing dedicated resources. This communication effort, however, is also beneficial in terms of scientific awareness raising and dissemination. In other words, there is an alignment between the communication skills and effort needed for fundraising, and the skills and effort needed for scientific dissemination. The skills needed (for broad communication and investment pitching respectively) appear as complementary to research skills and helpful to the success of the project – not only to the fund raising activities.

Moreover, the case study highlighted an interesting factor related to the quality of research teams. The absence of direct funding seems to discourage opportunistic behaviour, and ensures that teams are driven by scientific curiosity and long-term entrepreneurial spirit. The interviews conducted with the Team Puli researchers showed that the quality of the participants in the whole XPRIZE mission was perceived as very high. It appeared that researchers were also often more willing to share information openly about their progress, because the risk of plagiarism is offset by the strong need to have attention and gather sufficient funding. The general high level of participants seemed to create a more trusted environment of researchers motivated by higher purposes.

Crowdfunding for Science: Review and Case

Crowdfunding has been recognized as a major source of funding for start-ups and it is expected to actually overtake venture capital in 2016 (Massolution, 2015). In Europe, crowdfunding has mobilized around 3 billion Euros in 2014, equivalent to around 40% of the most important European funding programme for innovation, Horizon 2020 (15 billions in the first two years).

Recently, the crowdfunding model has widened its scope to science. Researchers have started raising money for their work directly from the public both through generic crowdfunding platforms and through dedicated platforms for science crowdfunding, for instance through platforms like Experiment.com or Petridish.org. German platform Science Starter and Spanish platform Funds4research are just examples of a long list of crowdfunding platforms devoted to scientific research today.

However, the research-oriented crowdfunding still remains limited in size. Data related to an US experiment called the SciFund challenge raised about $253,000 in 2011-2012 through three rounds and funded 159 research projects by scientists (Byrnes et al., 2014). This reveals the very small amounts of money raised per project (median project $1,440 at the last round), both compared to the amounts of regular individual grants and compared to the amounts raised in reward-based crowdfunding (for a review of different types of crowdfunding platforms, see for example Gabison, 2015). Amid discouraging figures, many scientists share the hope that crowdfunding for Research & Innovation would grow in the future and would especially offer new means of funding to young scholars and out-of-the-box thinking, two areas that are typically less likely to receive funding through regular peer-reviewed panels (Siva, 2014).

As any funding model for research, crowdfunding also has its critics. One of the main critiques by the research community concerns the difficulty to screen the projects and detect possible fraud or the

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quality assurance of the research projects and results. Online funding decisions are not in the hands of experts, the research community or peer review, instead it is the crowd and general public who decides, which research project they think most important or relevant according to their priorities and interests.

Two of the cases studies focused on crowdfunding scientific research. "I Lowe You" is a health related research project on an ultra-rare disease called the Syndrome of Lowe. The project completed a successful fundraising campaign through a Spanish crowdfunding platform called "Funds4Research" in June 2013.

In general, the progress of clinical research of rare diseases is held back by the availability of research grants due to the small impact of research in terms of population. In the case of "I Lowe You", the main reason for the research team to apply using a crowdfunding campaign was the past failed grant proposals presented to different governmental agencies and organizations. The benefit of the research proposed to the governmental agencies was always foreseen limited, as the target population is not large enough. Therefore, when competing with other type of research projects in health, there was always another project with larger impact in terms of population that could be positively affected by the results of the project in question.

Another reason was the limited access to patient data. The general problem in the field of the Syndrome of Lowe is that a doctor or a researcher rarely sees more than 3 or 4 patients in his entire career which limits the possibilities to "accumulate" personal experience and knowledge. On the other hand, the families who take care of a patient with a rare disease accumulate a large amount of information on a daily basis - information that can be very valuable for researchers of the disease. One of the goals of the "I Lowe You" project was the involvement of patients and caregivers in the research project. The case study shows that through the intensive fundraising campaign, the research group was successful in both raising funds and creating a community of patients. The duration of the campaign was 3 months and they raised around 45.000 Euros.

During the campaign, the effort of the coordinator and the entire research team was considerable in order to mobilize their networks, to provide constant feedback about the project to donors, and to negotiate with media players some free space to advertise the project. The members of team mobilized their social networks in order to achieve the threshold of funding fixed at the beginning of the campaign. Not only Facebook, Twitter and other social networks were used, but also the research team was in contact with mass media. Such efforts are to be expected when launching a crowdfunding campaign. The team members compare the efforts to an electoral campaign and highlight the level of stress they went through in order to achieve the target. More traditional funding mechanisms do not require such skills and type of activity. This is something one has to take into account when choosing for crowdfunding research activities - a piece of advice shared by the research team behind the project. In this particular case, the research team of "I Lowe You" consider the communication effort as worthwhile, as it served to identify families that had a child affected with Lowe syndrome. So apart from money, the crowdfunding campaign also helped to kickstart the research as the attention received was instrumental to gathering more data.

The other case study in this area focused on crowdsourcing financial support for young researchers with the help of "Fondazione Fondo Ricerca e Talenti" in Italy. It promoted fundraising and support projects for the benefit of young researchers at the University of Turin in 2013. The crowdfunding platform was born with the aim of complementing the traditional funding activities of the Foundation with new fundraising methods for additional initiatives beyond the scope of the traditional funding. In this case, the crowdfunding platform is a process based on a system of cooperative micro-finance. The Fund selects projects proposed by the University research facilities that will be published on the website of the Fondazione Fondo Ricerca e Talenti and are likely to appeal to the community to raise the necessary

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funds. The crowdfunding platform has successfully funded three projects. Each project had a target of 3000 euro, and reached an overall amount of 10.540€.

This case study shows that even small amounts of funding (e.g. 3000 euros/project), which was mainly harnessed though family ties and other social contacts, can help young researchers in their work. The crowdfunding platform in this case was considered to be a complementary tool to traditional fundraising methods, such as events and communication activities. Importantly, the young researchers participating in fundraising were taught valuable skills for the future career regarding grant and alternative fundraising campaigns. Through the case study it became clear that in order to achieve the target set for funding, a very clear "marketing" idea was needed. A thorough preparation of a marketing template in advance was conducted with the help of the help of "Fondazione Fondo Ricerca e Talenti". In that regard, the marketing strategy has to be profit oriented and consistent in order to be efficient and feasible.

The Italian context, which can be characterized by governmental cuts to science funding, has encouraged young scholars and volunteers to use alternative funding mechanism for scientific research. However, it is also important to highlight that one of the obstacles to the development of the crowdfunding platform in question has been the university itself. Crowdfunding was initially not seen as a credible mechanism for funding projects nor as a real opportunity to research funding. In the opinion of the Team that led the crowdfunding campaign, it was not straightforward to convince the University of Turin to understand that the crowdfunding is a process involving trust. The mechanism of trust, which develops between members of the team and their personal network of contacts, is critical to the success of projects. An example of this is that every person of each project's team has donated and engaged his or her own network in the campaign in order to convince other people to donate.

Open Bottom Up Instruments: Review and Case

The debate between top-down and bottom-up priority setting is far from new (Gilman, 1995; Nature, 2012). Today, open, bottom-up instruments are becoming increasingly used in science funding by public and private agencies: for instance, the recent Horizon 2020 programme includes an increase of bottom-up instruments such as the European Research Council, inducement prizes and FET Open (European Commission, 2015). The mapping identified 11 such instruments in Europe, without any specific focus on a discipline.

These open mechanisms include different approaches: a selection process based purely on excellent curriculum of the researcher, who is then free to pursue his/her interests, such as the ERC; or a collaborative "sandpit" where researchers and a diverse group of experts come together for brainstorming sessions and interactive collaboration to decide which proposal to find; or inducement prizes, where companies and governments have set up "challenges", where the financial reward goes not to the best proposals, but to the innovators who come up with the best working solutions.

One example of such instruments is the IDEAS Factory, launched by the Engineering and Physical Sciences Research Council (EPSRC), the main UK government agency for funding research and training in natural sciences. Overall, EPSRC invests around £740 million a year in a broad range of subjects - from mathematics to materials science, and from information technology to structural engineering.

The IDEAS Factory is an alternative concept for funding scientific thinking, used by EPSRC to stimulate highly innovative and more risk-accepting research activities. It tries to break down traditional barriers of a specific topic and build new relationships with different kind of stakeholders to create new ideas to solve a particular problem.

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At the core of the concept lie "sandpit workshops" that assemble the dynamic range of people and skills to address the problems from different angles. These workshops enable people to group and come up with different ideas in five days, although not all participants receive funding. The quality of the research is guaranteed by the quality of the participants selected. Each group of participants presents the idea and all participants provide feedback and review other's ideas. Throughout the week, a peer review process is put in place and by Friday (last day) all ideas are ranked. Then the group has two months to make a more comprehensive proposal to be approved and validated. It has to be coherent with the idea presented in the "sandpit" and no major changes should be there. After the sandpit, 3 or 4 projects are selected to be funded. The participants that have not been selected will have some advantages too, for example to take home the network and all knowledge acquired on the topic.

Participants are foreseen to have communication skills in order to be able to share their ideas and projects. They are expected to be good team workers, open-minded to listen to each other's perspectives and with a clear will to interact with others. The scholars participating in the "sandpits" develop new thinking in the subject, they are offered new networks and contacts with relevant people in the field - and also strategic relationships with industry. There are usually researchers with a recognized career, but also PhD students and other type of stakeholders who provide valuable knowledge to the topic of the sandpit.

Stakeholders often include industry representatives, government officials, charities, lobby groups or citizens' groups. Their input helps other participants and researchers to better understand the issue and shape potential new ideas. This can include challenging presentations on the current state of play and can lead to future involvement with research groups.

Some of the disadvantages that have been highlighted in terms of success are the large number of applicants that apply for a sandpit and the low number of actual candidates that will participate in the workshop. A way to manage this potential "frustration" of rejected candidates is the possibility that the organization gives to those people to join the network of participants at a later stage. There is also later a workshop to share the outputs of the sandpit. This is an open workshop for the rest of participants.

SOLUTIONS AND RECOMMENDATIONS

The case studies and their analysis allow highlighting some conclusions that are relevant for EU policy priorities. In most cases, these are general implications valid for any government; in some cases, they are directly related to specific challenges of EU policies.

AFM Are More Than a Passing Trend

The first reflection is that alternative funding is not hype but a reality. The number of mechanisms identified and the overall amount of funding makes it clear that, while still fragmented, it is more than just an emerging trend. Researchers and research organization increasingly have to live in a context of multiple funding resources. At the same time, the multiplicity of small-scale platforms suggests the possibility of further consolidation in a more limited number of larger platforms, but it could also be that in the future a more fragmented landscape with "one mechanism for every institution" will emerge.

Moreover, alternative funding matters because it is deeply connected to long term trends internal to science. In particular, the emergence of "Mode 2" science identified the same trends that underpin alternative funding: the emergence of a plurality of funders, beyond government, that fund ad-hoc groups

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of scientists and not scientists around problems that are socially relevant. In other words, one could say that the trends identified by Baber et al. (1995) have grown to their consequences, and are likely to be further developed in the future. They are part of a long-term historical trend towards more "liquid" forms of organizations that is visible in the development of science – and probably of society in general. As such, policy-makers should take them seriously.

AFMs Address Some Key Challenges of Traditional Funding

Alternative funding directly challenges two of the most critical areas of government funding activities: the identification of the research priorities and the selection of the projects to be funded. One of the key roles of government is to determine which research areas to fund, and which projects deserve to be funded. Governments typically do not make such decisions autonomously, but by involving the research community. Still, it is the government who typically mediates between different interests and decides who to fund. This role can be bypassed by alternative mechanisms. No longer is the government the only actor in charge of identifying the funding priorities by mediating between scientific curiosity, economic competitiveness and societal needs. In a context where wealthy and "normal" citizens can directly decide which project to fund with their money, they can directly take the decision to fund what matters to them.

Furthermore, no longer are research priorities and approaches prescribed "ex ante", but increasingly decisions tend to be left "ex-post"; once the project proposal is made (as in crowdfunding) or results are achieved (as in inducement prizes). This, again, reflects a broad trend as summarized by Shirky (2009) in the expression "publish, then filter": in a complex world, it is more effective to delay the filtering as much as possible and make judgments based on results, rather than assumptions. Rather than pre-selecting what social issues deserve to be targeted, citizens should decide directly which research to support, based on the proposals published on a crowdfunding platform. Rather than deciding ex-ante which research projects deserve funding, it is more effective to wait until the end of the project and award the funding to those that achieve the expected results.

For researchers, this potentially leads to greater opportunities to pursue original research endeavours without having to "fit into" the priorities of the funders, hence leading to greater scientific freedom, as the "I Lowe You" case shows. At the same time, young scientists, amateurs, and those active in niche disciplines and with low-capital investment research are likely to gain most from this plurality of mechanisms: no project will be "too small" to be funded. On the other hand, established research players, skilled more in the knowledge of the traditional funding mechanisms themselves rather than in the topics of the research, may tend to loose more in this increasingly "liquid" landscape. Well known, established scientists can less and less rely on a stable stream of funding, as funding mechanisms increasingly tend to vary over time. Clearly, this questions the role of government as "gatekeeper" of deciding what is beneficial to society and what needs to be funded. Taken to its extremes, it could go as far as undermining the rationale for public funding.

New Take-Home Messages

AFMs seem an effective way to involve top researchers and innovators, as shown by both the "I Lowe You" and Puli Team examples, by overcoming some of the key challenges of traditional funding. On the other hand, it also seems suitable for involving early-career researchers to acquainting them with such emerging methods, as shown in the case of Fondazione Fondo Talenti e Ricerche. The simplicity of rules

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and the possibility to focus on the problem to be solved are working effectively to reach those innovators who are typically reluctant to be involved in complex government procedures with bureaucratic load. Whereas the bureaucratic load remains very reduced across all cases, new challenges are generated by a greater communication effort and design needs for fundraising campaigns that aim to appeal to fellow citizens as funders of the research.

Fundraising activity will, in any case, become more time-consuming in the future, but this time will be more related to the communication of the ideas and the results rather than fulfilment of bureaucratic requirements. AFM require greater communication skills for scientists and research organizations. The effort in communication was systematically mentioned by all interviewees as highly important and much more time-consuming than expected. Scientists must invest more time in communication, and have to develop excellent capacity to explain their research to a variety of funders, with different levels of skills and knowledge.

This effort in communication is not finalized only to raise money, but generates important positive by-products. Funding is not just a monetary transaction, but also the establishment of a relation. Scientists have to develop stronger links with citizens and other stakeholders, and hence have to better interacted with their needs and problems. As in the case of "I Lowe You", for instance, fundraising will also become a community-building activity that is likely to generate rich exchanges of information between researchers and patients that will advance the research itself. Or as in the case of "Team Puli", fundraising also can develop into an awareness raising activity about scientific research. Lastly, as in the case of the "Sandpit" initiative, funding decisions can become also an opportunity to create networks of collaboration among scientists with similar research interests, as well as other stakeholders. In other words, AFM seem to be more effective in stimulating greater systemic interactions with other actors in the ecosystem, and in particular between researchers and society, which traditionally was one of the long-standing goal of the introduction of competitive funding. In summary, the greater required effort in communication is likely to be not only a burden that deviates from "pure" research activities, but also a benefit in terms of knowledge exchanges.

AFM Are Not a Substitute for Traditional Funding

The literature review, the mapping and the case studies demonstrate that alternative funding mechanisms are important, but do not function as a substitute of traditional funding. Firstly, they are typically limited in budget and would not be able to be sustainable in the absence of traditional funding. Crowdfunding, philanthropy, inducement prizes and open methods are effective because they act in a context dominated by traditional funding, and add value to it. The projects found on European crowdfunding platforms, for example, are only rarely targeting amounts above €50.000. Because of the intense communication efforts required, they are difficult to scale up and there is a risk of "prize inflation".

Secondly, alternative funding is biased towards "real world problems" and applied research, specifically in some areas such as health, and tends to favour researchers more able to communicate. Alternative funding mechanisms are not balanced in their discipline coverage, and much valuable research would not be suitable for it. Most importantly, the funders are not accountable to any organization, and it is easy to think of the dangers that leaving the development of science to unaccountable organizations and individuals could produce: rich individuals would be in a position to determine the development of science. As such, it would be unthinkable to use alternative funding as main funding instruments.

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Government funding has legitimacy and accountability, both in the identification of the research priorities and in the selection of research proposals, which private funding does not have. Researchers have to deal with, and meet the needs of, individual funders that might neither be wise nor ethical in assigning the funding.

Finally, all cases analysed in the study report that different funding mechanisms were used in combination. For instance, the Puli Team in the inducement prize had to first deliver crowdfunding to pay the registration fee, used sponsors for software, leveraged volunteer work and used direct funding from the project leader. Notably, the funding of the prize itself was not the main incentive, but rather a catalyser. Alternative funding mechanisms are typically designed to achieve a leverage effect, by mobilizing additional effort towards private sponsors, crowdfunding, as well as traditional funding. This interaction of different funding mechanism not only helps raising more funding, but also acts as a demonstration of the validity of the project, of the capability of the team to mobilize interest and deliver results. Achieving sponsorships and additional funding is a "sign" that the project is valid and makes it easy to gain further funding.

These reasons make us conclude that different funding mechanisms are effective for different needs, and that governments should design its funding with a strategic, holistic perspective that takes into full account the existence of different funding instruments. As positioned by OECD (2011) it is important to assess "whether the portfolio of funding mechanisms in place responds to an underlying policy mix or is, instead, simply the sum of different tools. Funding tools can either reinforce one another in a healthy, competitive environment or be overlapping, highly fragmented, potentially inconsistent and result in increased red tape". It is highly inefficient to design an instrument without taking into account the risks of redundancy, and the opportunity of synergy. Governments should recognize that, as in many other domains, there is a plurality of players working in research funding, each with its strength and weaknesses, and that public funding today is just one of the possible sources. Similarly, research institutions have to increasingly deal with many different funders with different selection criteria. This does not necessarily mean that organizations have to build their own mechanisms and platforms (e.g. crowdfunding platforms), but there should be an organizational culture (and skills) that enables dealing with different existing mechanisms.

FUTURE RESEARCH DIRECTIONS

The analysis presented so far points to the need for further investigation. It provides evidence that alternative funding mechanisms are an important trend that deserves both research and policy attention.

Firstly, there is the need for more extensive data availability about alternative funding for scientific research purposes. On the one hand, more systematic monitoring of available funding mechanisms and the amounts allocated through them to scientific research will encourage new initiatives and allow better community building around them. On the other hand, such monitoring will be valuable for decision-makers for planning new pilot initiatives as well as for in-depth discussions of possible policy measures.

In particular the need to research into AFMs to define synergies between already existing and emerging funding mechanisms was identified. The benefits of science-only or proprietary funding platforms should also be assessed, in order to explore, for example, whether universities should start to have their own crowdfunding platforms or use the existing ones. Along this line, more research into the use of platforms but also to their regulatory issues across EU should also be further addressed in order to facilitate such practices (e.g. Gabison, 2015)

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Secondly, there's a need for further research into "really new ways" to fund scientific research. For example, beside money, other support can be provided such as researcher's time, equipment like illustrated in by the case of Team Puli, but also by crowd-sourcing the subjects for the study. Furthermore, this strand of future research should also look into the "unexpected consequences" of alternative funding, such as crowdfunding as market testing, engaging potential customers and target groups and exploiting the advantages of community and proximity (Ramos, 2014); and as a way to promote new interactions between economic efficiency and democratic practices which are distinctive of the crowdfunding market (Ramos, 2014).

Lastly, it's important to understand how alternative mechanisms for scientific research are used within the institutional science and outside of it in order to monitor the emerging effects, such as "celebrity philanthropists", in the field of science in general.

CONCLUSION

In this study, the focus was on the alternative funding mechanisms (AFM) for scientific research and the issue was looked at from the European perspective with the aim to discuss some recommendations for European decision makers who are responsible for research and innovation policies and systems. Based on the research conducted, a collection of 67 examples of AFM for scientific research was gathered. They were classified under the following categories; philanthropy, crowdfunding and open bottom-up mechanisms. Examples of the case studies were given on top of the desk research and literacy reviews.

The initial recommendation of the study is the need for greater collaboration between AFM and the existing mainstream mechanisms. At the most basic level, it seems important to learn lessons from other mechanisms. The introduction of more open and agile funding mechanism as part of the public funding package is a good example of this. Recently, the EC has launched several inducement prizes. Additionally, there is clear potential for experimentation with mechanisms such as the Sandpit. However, it is necessary to go one step further: designing measures that ensure synergies between different mechanisms, such as the ones identified by this research, as a novel opportunity. For instance initiatives that match funds from different mechanisms could offer new opportunities. On the other hand, designing research priorities as complementary to existing alternative funding could be used as a way to select projects for funding that normally requires a heavy proposal writing process. Also, it could be envisaged that sharing data on the "performance" of projects using alternative funding mechanisms facilitate the access to mainstream funding for projects that otherwise would have hard time accessing public funding.

National governments should also acknowledge the essential role played by AFM and ensure that the combination of all mechanisms delivers the best results for the society as a whole. In other words, government should not fear being substituted by AFM, but move its strategic role to a higher level: rather than deciding what needs to be funded, it should ensure that the combination of the decisions of the plurality of funders leads to the best results. This could include the introduction of favourable measures to ensure, for example, adequate tax exemptions for donations to crowdfunding platforms (practices vary within Member States, see Gabison, 2015), or a quality system for alternative funding mechanisms. Last, it would be advisable that measures were be taken by governments, policy-makers and other responsible agencies to ensure that the most accurate information is available regarding the variety of funding mechanisms for scientific research. Such a complete map of funding mechanisms would serve as a service to researchers but also as a governance mechanism to ensure a systemic perspective over research and innovation funding, also helping with the early identification of possible funding gaps.

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Chapter 70
The Role of Philanthropy on the Strategic Planning Process of a Selective Liberal Arts and Science College

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ABSTRACT

This chapter describes how constituencies of a four-year, private liberal arts and science college perceived the effect of philanthropy on the strategic planning process. Due to their reliance upon tuition revenues and private support, liberal arts and science colleges are particularly susceptible to ebbs and flows in the economy. How these institutions plan for the future and the extent to which philanthropy factors into strategic plans provides crucial information about the future of these higher education institutions (Connell, 2006). Gaining a deep understanding of how philanthropy shapes a strategic planning process and the decision-making model that was used during the process provides insight into how philanthropy, strategic planning, and decision-making models intersect to form a new decision-making model, described as feedback and revenue.

INTRODUCTION

Liberal arts and sciences colleges are uniquely American institutions. As highlighted, their very existence is due to the philanthropic generosity of wealthy individuals and/or religious or philosophical

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movements (Thelin, 2004). As private institutions, they receive little direct state or federal government support and rely predominantly on tuition revenues, endowment earnings, and philanthropic support to balance their budgets (Balderston, 1995). Philanthropic support and earnings off of endowed gifts are on a rise during a time when increasing net tuition revenue is a challenge for all but a few institutions (Rivard, 2015). In a recent article in the Chronicle of Higher Education, Ripon College Board of Trustee Chair Ron Peterson underscored the important role governing boards of private liberal arts colleges play in fiduciary oversight of their institutions by stating that they must be prepared to "contribute green paper, gray matter, and brown shoe leather (Biemiller, 2015)." By providing high-touch experiences for their students in and out of the classroom, including low student to faculty ratios, liberal arts institutions are not particularly cost-efficient (Stimpert, 2004). Due to their reliance upon private support and tuition revenues, liberal arts and sciences institutions are particularly susceptible to ebbs and flows in the economy. How these institutions plan for the future and the extent to which philanthropy factors into these plans was an important question to examine (Connell, 2006). Further, what decision-making model was used to craft these plans was worth investigating.

Providing additional research and literature on this timely topic added to the current literature and helps in the effort to give current and future private liberal arts college presidents, governing boards, and other members of the campus community, a frame of reference by which to compare and guide their actions relating to these issues. Having a sense of how a similar institution carried out a strategic planning process in the shadow of economic challenges is beneficial to liberal arts and science institutions' campus and governance board leadership. In addition, scholars and researchers in the field will find this study beneficial as it provides additional literature in these emerging subject areas. The recently announced closure and sudden reopening of Sweet Briar College, a nationally ranked liberal arts and sciences institution, due to donor intervention provides additional urgency to examine how a financial sustainability plan can be best crafted (Bidwell, 2015).

The purpose of the study was to address deficiencies in the literature by providing an in-depth view of how the constituencies of a four-year, private liberal arts and science college in the United States believed philanthropy affected a strategic planning process and how administrative decision-making models were used during this planning process. The case study, which was conducted at a singular private liberal arts and science college following a recently completed strategic planning process, answers the following research questions: (a) How did philanthropy affect planning for capital projects within a strategic plan?; (b) How did philanthropy affect the focus of current and future academic offerings of an institution? It is common for case studies to focus on one institution so that researchers can conduct an in-depth examination of the functioning of an institution.

As private institutions, private four-year liberal arts and science colleges rarely receive funding from government sources with the exception of grants for research and the indirect benefits received through government financial aid programs supporting students. As a result, these colleges primarily depend on three sources of funding which include tuition and fees, endowment earnings, and philanthropic gifts (Balderston, 1995). While private liberal arts and science colleges have become increasingly dependent on tuition, endowment earnings, and gifts to sustain and enhance their programs, leaders of those institutions will be required to focus more of their attention on financial issues (Balderston, 1995).

Colleges will strive to keep the cost of tuition and education affordable and accessible for all. Thus, they will be called upon to seek other sources of support, including philanthropic gifts (Connell, 2006). As a result, colleges will need to take philanthropic trends and outlook into account when crafting their strategic long range plans (Connell, 2006). To what extent college leadership is willing to alter their

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strategic plans in order to maximize philanthropic support may have implications on the mission, values, and financial outlook of their institution (Pully, 2002). Similarly, the degree to which leaders of these institutions believe philanthropy should play a role in the development of their college's strategic plans may change the influence philanthropy does or does not have over the process.

BACKGROUND

The institution which served as the site for this research has been given the pseudonym of Selective College. Selective College has the distinction of having served as a coeducational institution from its inception. Today, the college boasts an enrollment between 1,000 – 1,500 students with more than 90% living on campus. Selective College also provides an intimate learning experience with the student to faculty ratio of less than 15:1. During fiscal year 2012, Selective College, had expenses totaling nearly $50 million and a revenue stream nearly equaling that amount. Selective College is predominantly dependent upon tuition, board and fees, as well as philanthropic support for operating revenue. Members of the Selective College Board of Trustees have historically been the largest philanthropic supporters of the institution and thus have significantly impacted the college's finances and investments in facilities and programs. In recent years, the college has completed or begun two major building projects. How Selective came to the decision to significantly invest in their facilities using gifts and debt was a major focus of this study.

MAIN FOCUS OF THE CHAPTER

While there are numerous models regarding governance and decision-making processes in higher education and beyond, there are three main models that are most apt and widely-used. The collegial, political, and bureaucratic models highlight the primary spectrum of involvement in the decision-making process from one of total consensus-building to one of almost complete dictation of the goal and the path necessary to succeed (Tierney, 2008). The collegial, political, and bureaucratic models provide the three most basic approaches to decision-making and are thus most likely to be utilized due to their simplicity and common acceptance. Other models, such as cybernetic, rational, and cultural are also amongst the many decision-making theories that have been identified. Due to the intimate culture of private liberal arts and science colleges, it is assumed that a collegial and collaborative decision-making approach is most likely to be used. However, given the recent economic recession that has dramatically affected the financial state of these institutions, it is possible that other types of models may be used out of necessity to make quick and strategic decisions. Some common descriptions of these three models, as well as an analysis of each follows.

Tierney (2008) describes the collegial model as "a view of academic life that assumes a community of scholars operates around notions of respect and consensus" (p. 152). By nature, the collegial model encourages consultation and shared governance amongst all members of the respective community (Bess & Dee, 2008). Governing by consensus, as advocated by the collegial model of decision-making, has deep roots in higher education. Prior to the rise in power of college and university presidents in the 20th Century, the faculty of respective institutions served as the heart and soul of the institution both literally and figuratively. Faculty approval of operations of the university was, and remains, an important

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weathervane regarding the direction of the institution to both internal and external constituencies. The symbolism, which remains an important aspect of academic culture, continues to support a culture and precedence that encourages consensus-building (Tierney, 2008).

Proponents of the use of the collegial model in higher education decision-making process cite that the "loosely coupled and decentralized nature of the academy is well suited to such a framework" (Tierney, 2008, p. 152). At the core of their existence, colleges and universities encourage and reinforce the need to foster an environment of inclusion of various thoughts and ideas. To dictate policy, rather than to openly debate it, would stifle this sense of community that truly makes higher education different from any other sector. A decision that is reached by consensus, which includes numerous points of view, would seemingly produce a well-thought out outcome (Tierney, 2008). Additionally, use of the collegial model helps to create a sense of loyalty and buy-in by the participants who subsequently embrace the decision as their own (Bess & Dee, 2008). Liberal arts and science colleges, in general, embody the philosophy of the collegiality model through their embrace of a shared governance model of operation. In particular, faculty governing bodies are consistently consulted and kept apprised of fluctuating conditions at their college by the administration (Gibson, 1992).

It is not uncommon for the faculty to have final say on new initiatives involving the curriculum or in the setting of admissions standards at liberal arts and science colleges (Gibson, 1992). Beyond faculty involvement, it is also common for senior administration to regularly consult student and staff leadership, as well as representative bodies of external constituencies such as alumni and parent boards. By involving and updating various constituencies of pending actions, the senior leadership creates this sense of community that is unique to liberal arts and science colleges. It can be argued that while the collegial model creates a buy-in from members of the academic community, it also results in a decision that supports the status quo or the least objectionable option (Tierney, 2008; Bess & Dee, 2008). Detractors of the use of the collegial model further state that the common ground that participants of a consensus decision-making exercise are striving to obtain is unrealistic and never existed (Tierney, 2008).

According to Bess and Dee (2008) a culture where the political model is utilized is "identified through its reliance on negotiation and bargaining among interest groups and coalitions within the organization" (p. 377). Further, a quid pro quo is established wherein support for a particular need or initiative is rewarded by the promise of future support for another need or initiative (Bess & Dee, 2008). The political model is also identified as having a decentralized form of governance where the power shifts from group to group and the dissemination of information can be ambiguous (Bess & Dee, 2008). The political model came to light in the 1960s and 1970s and is viewed as middle ground between consensus-building and a bureaucracy (Tierney, 2008).

The political model is often utilized during employment contracts through collective bargaining and with interactions with external constituencies such as donors, community leaders of the town or city the college is located within, or with legislators (Tierney, 2008). Although political negotiating is often utilized, it can be argued that it is difficult to use as a reliable model due to the natural ebb and flow that takes place during negotiating. It incorporates aspects of the collegial and bureaucratic models, but does so inconsistently and unreliably (Tierney, 2008). The political model appears to be utilized out of necessity rather than by the desire of any parties who are involved with the negotiation.

Max Weber (1864-1920) first described the bureaucratic model as it "assumes that decisions and planning take place by way of a coordinated division of labor, a standardization of rules and regulations, and a hierarchical chain of command" (Tierney, 2008, p. 151). In a bureaucratic culture, rules such as specified roles and reinforcing reporting relationships are followed in order to ensure efficient perfor-

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mance (Bess & Dee, 2008). Information is also disseminated extensively and in a top-down fashion. Attempts are also made to reduce uncertainty and ambiguity for the college or university by valuing and embracing rationality in the decision-making process (Bess & Dee, 2008). According to Bess and Dee (2008, p. 547), in a bureaucratic organization there is little deviance from "organizational mandates" and the decision-making power is centralized.

Supporters of the use of a bureaucratic model in higher education claim that a more centralized and formal governance structure would result in higher quality outcomes (Tierney, 2008). They further state that with stronger presidential authority, 'antiquated' practices such as tenure could be eliminated, mediocre faculty could be dismissed, and the preservation of unproductive academic departments could be halted in order to ensure efficiency and quality (Tierney, 2008). The bureaucratic model views faculty as an asset to be managed rather than as a participatory factor in the decision-making process and that they should be utilized in a manner that most effectively advances the mission and needs of the institution (Tierney, 2008).

Robert Birnbaum (1991) suggests that the collegial, political, and bureaucratic models can live and thrive simultaneously within an organization. This system of co-existence is referred to as the cybernetic model. Senior administrators who use all three models simultaneously are better able to monitor various issues more effectively using these multiple frames of reference and leadership (Birnbaum, 1991). Thus, the three models are complementary to one another rather than being in competition (Birnbaum, 1991). The cybernetic model creates loops for negative feedback which serve as built in thermostats that alert the administration that a 'reset' is needed in a certain area of function of the institution (Birnbaum, 1991). Birnbaum (1991) argues that this model is particularly useful at an institution that has both loosely-coupled and closely-coupled organizational models.

Two other types of decision-making appear in the literature: rational decision-making and cultural decision-making. First, Weiss (1982) describes rational decision-making as one that follows as an established, or ordered, process for making a calculated decision. The model assumes that full information is available to the decision makers, and that possible consequences are rationalized before the decision is executed (Weiss, 1982). The ordered process by which decisions are made in the rational decision-making model differs from the cultural decision-making model. The cultural decision-making model encourages practitioners to "consider real or potential conflicts not in isolation but on the broad canvas of organizational life" (Tierney, 1988, p. 6). Further, the cultural model encourages leaders to "implement and evaluate everyday decisions with a keen awareness of their role in and influence upon organizational culture" (Tierney, 1988, p. 6). This model assumes that imperfect information exists for the solution and possible consequences, and the decision-making process must consider the framework of organizational culture within an institution (Tierney, 1988). Environmental elements, including the institution's mission statement, how new members are socialized, and perceived differences in leadership structures inform the decision-making process in this model (Tierney, 1998).

Although the collegial, political, and bureaucratic models best represent the range of traditional decision-making models that are utilized by college and university leadership, there are others that may be better fits for some institutions. It is possible that the studies cited for these three options were situational to specific institutions and in reality are not applicable to a broad sector of higher education. It is also possible that this research and use of these models are no longer applicable to today's world of higher education. Much has changed over the past few years in terms of financial affairs, enrollment and internal communications; therefore perhaps a new set of decision-making models would be more appropriate. In reality, it is possible that no model will fully encompass the decision-making process

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of any institution as these decisions are complex and have various factors impacting the process at any time. It is also unknown the degree to which philanthropy and fundraising impacts these models at an institution which routinely seeks external support. However, the researchers believe that the collegial, political, and bureaucratic models represent the best range of decision-making models for liberal arts and science colleges.

SOLUTIONS

In order to answer the research questions, 23 semi-structured interviews with key informants (e.g., the college president, faculty, staff, and governing board members) were conducted during a campus site visit on the heels of the formal approval of the strategic plan by the Board of Trustees. To supplement the interviews, a document analysis of recent press releases, news and magazine articles, and fundraising campaign materials related to the strategic planning process were also conducted as part of the study. The review of these materials provided another perspective regarding how the planning process was facilitated, what decision-making model was used to carry out this process, and the resulting reactions of internal and external constituencies to this process.

The case study revealed three major findings. The first finding confirms the role of donor and philanthropic considerations and the influence they have over the strategic planning and decision-making processes. Donor and philanthropic considerations did influence both administrative decisions (i.e., construction of new buildings, performance reporting functions) and curricular aspects of the College (i.e., interdisciplinary academic work, student research opportunities). The second finding describes the rationale for strategic planning as being more business-oriented than altruistic. Declining revenues from enrollment and lower earnings from the endowment, spurred the growth in revenue-generating staff positions to attract new forms of tuition revenue and donor support as part of the strategic plan. The final finding describes a new decision-making model that emerged during the strategic planning process at the campus. The new decision-making model was more business-minded, accelerated in time, and limited collegial decision-making. That is, consensus-seeking processes that require extended time were absent from the process. Rather, key informants described decisions that were formed by senior administrators and vetted by faculty, alumni, students, and Board members in one-time meetings. These three findings serve as a foundation for a contemporary discussion of philanthropy and administrative decision-making models and their role at liberal arts and science colleges.

Finding One: Donors and Philanthropic Considerations Do Have Influence over Administrative and Academic Processes and Decision-Making

While there did not appear to be any significant donor influence over the core academic liberal arts program and mission of the college, donor influence and philanthropic considerations did appear to influence academic and administrative decisions of Selective College. Perhaps the most obvious example of philanthropic influence over the strategic plan decision-making process, and affecting both academic and administrative processes, was the combination of business and science departments into one new physical structure. As described by many members of the campus community, merging two academic disciplines with significant facility needs into one facility not only met programmatic needs, it also multiplied the potential donor base needed to support the construction. While the idea of integrated

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learning between the business and science disciplines played a supporting role in the decision to build a joint facility, it is clear that financial limitations and the hope of developing a broader donor base played the leading role in the decision. This compromise of placing two disciplines into one facility made the project financially feasible and will ultimately strengthen both academic programs by placing them in a state-of-the-art facility as well as provide unique integrated learning opportunities within its walls.

A member of the administration confirmed the belief that financial and philanthropic considerations were a driving force behind the merger of business and science into one building. He said:

[We] did a little bit of looking at fundraising capacity and, and my response was, [we are] not certain that [we] can imagine getting the support to build a science building from our alumni base. I think we can get good support from our business alumni. You know my guess is that it [business department facility] is about a $6 million project and the laboratory is about a $35 million budget, and [we] think we can raise the $6 million twice but I don't think we can raise half of that, of the laboratory building. So, let's merge the two together and see if maybe for, for $35 or 40 million so we can build a combined building, and we will not break out the donors and so all our donor pool is working on the project. So it was purely pragmatic reasons driving the decision to put those departments together.

Even though the merger of the two disciplines was viewed as being a financial decision, some observers saw this merger as a way to creatively address the problem. One person said:

My impression is that between the president and some trustees, the idea was that we… could get more funding for the building if it weren't just a science building. But they needed something to attract former business alums, or alums who are doing business even if they haven't been business majors, who would donate to this project. And then one way to do that would be to fuse it and then maybe [the president] decided that 'wow, we could pitch this as we're integrating, you know, because liberal arts is all about putting different disciplines together' and so… there was a lot of faculty buy-in to that too, initially.

In addition to new capital projects, philanthropic support advanced special projects and initiatives at Selective College, including the presidential portfolio projects. Presidential portfolio projects are student and faculty initiated research and experiential learning projects. Not only do donors make these projects feasible, they can also have influence over which portfolio projects occur by funding them, or not funding them. Further, the recent addition of a new campus chaplain was donor-driven. The new position was purportedly pushed and funded by a donor, the idea of creating a strong tie to the church associated with the founding of Selective College was proposed as a way to broaden the tent of prospective donors.

Finally, philanthropic considerations influenced administrative decisions of Selective College. In order to show return on investment to its governing board and select donors, Selective College implemented an administrative function to measure outcomes of various aspects of its operations. This including the push for academic and co-curricular program heads to demonstrate quantitative evidence that their program is making the desired effect on students as well as the campus and local community. Feeling forced to demonstrate return on investment and to focus on the bottom line, in order to receive funds to maintain or expand their operations, can result in programs focusing less on providing learning opportunities and experiences and more on proving their relevance and defending their place on campus. One campus member said:

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I think one of the changes we've had with our strategic plan is a real focus on measurement and milestones to identify progress…and a commitment to that. As a result of that we also had a donor, I believe, who had some specific requirements in terms of performance and allocation on a gift. And I think that was a further support that we were directionally sound.

The issues facing Selective College, and the way that institution tackled those challenges, can likely be found at dozens of other similarly situated liberal arts colleges across the country (Jaschik, 2010). Increasing philanthropic support is a common strategy to budgetary challenges, particularly when there is not a strong sense that the price tag can be increased to maximize net tuition revenue (Kiley, 2012). The leadership of liberal arts and science colleges, that are primarily tuition dependent, understand that the survival and success of their institution depends on its ability to gain ground thanks to donor support. As alluded to by Cook (1997), there are few measurements of performance more important than how effective a president, and their administration, is in raising philanthropic support and managing donor expectations. It is possible that the need to show solid performance in fundraising efforts, in order to help secure the legacy of the current administration and show positive movement forward, has opened the door for more donor influence and input at liberal arts and sciences colleges.

The finding that philanthropy does not influence decisions surrounding the core curriculum of Selective College is comforting to those who believe that the curriculum of a college is the foundation upon which it exists and is, thus, beyond influence. By not allowing philanthropy or tuition revenues to dictate the core of the academic program, Selective College did not find itself chasing fads, such as allied health programs, and instead invested in its liberal arts and sciences academic core. Others may argue that by not broadening the core curriculum, and finding ways to further maximize tuition revenues or leverage philanthropic dollars, leaves the college with few opportunities to be nimble and inventive. In addition, with an increased focus on post-graduate outcomes, prospective students and their families may feel that an inability to review the curriculum to make it more contemporary may mean that institution's degree has less value in today's job market. While the liberal arts and sciences mission of Selective College was not changed by considerations focused on maximizing revenue, many academic and administrative decisions of the college were susceptible to this influence.

Finding Two: Business Oriented Rationale for Undertaking Strategic Planning Process by Reacting to External Influences

An important outcome of this study was gaining an insight into why Selective College undertook a strategic planning process when it did and what was the expected outcome of this process. The evidence gained from the various sources of data makes it clear that the overall goal for completing the planning process was to create a plan for the college to follow over the next five years. In many ways, the need for a solid plan was a needed response to the recent economic depression that had reduced Selective College's endowments, as well as estimated family contributions towards tuition and fees. Selective College, in response to what was occurring in the external market, revised its business model in order to maximize short-term revenues. One individual reflected on the impetus for undertaking the strategic planning process when he stated:

[W]e got really serious about business planning right after the economic down turn. Right so the economic down turn came late in what 2008, early 2009? You get the idea. So the summer of 2009 we had

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a task force get together and we said…let's presume this sticks around a while. We cobbled together the budget for next year. You know we said 'gee, maybe we're going to have to not make payments to [employee retirement funds],' well that didn't have to happen. But you know it was a possibility. We had a whole series of contingencies some of which we had to exercise some of them we didn't. And we said alright instead of, instead of doing this ad hoc here, let's come up with a long term plan.

As Balderston (1995) notes, institutions have become increasingly dependent on tuition revenues, endowment earnings, and fundraising activities to remain viable. Creating a plan to maximize these revenue streams, in response to external market forces, was important for the future vitality of Selective College. Reacting to external market forces by focusing on short and long term plans to increase revenues is a change of mindset for higher education institutions where change occurs much more deliberately. A new plan was also important in identifying, and subsequently, creating ways to improve the programs and facilities to attract higher quality students as well as those who can pay more for their education. One person said:

We sort of had an unspoken strategic plan before we got our written one and that was to get the campus into a position where students wanted to come and live comfortably and engage in student life and you can see…a quick visit to the campus shows you all the recent dormitories and that sorority house that we've built and things we've done there including the stadium, the [athletic] center to do that was never really a part of a written strategic plan like the one we have now.

A faculty member agreed that new facilities attract more high-caliber students. She said:

One of the reasons that [the sciences], don't have…large enrollment majors is their facilities are out of date and it's hard for them to attract students … and obviously new facilities … has the potential to attract more and better students. So, [business department] was put there because it was growing and big and the other set of departments [sciences] were put there because they were small and needed to grow.

A solid plan for the immediate future provides Selective College with a vision that it can now take to its donor-base in order to begin the process of fundraising for these needs.

The negative influence of the recent economic depression on colleges and university balance sheets forced institutions to retrench and rethink how they operate (Jaschik, 2010). Private liberal arts and sciences colleges like Selective College were particularly susceptible given its modest endowment, its regional draw for students, and the modest estimated financial contribution of its average student. As Hammond (1984) cited, economic depressions often have crippling effects on the enrollment and budget scenarios for small liberal arts college. This is particularly relevant when considering that most small liberal arts colleges gain 75% of their revenue from tuition and fees (McPherson & Schapiro, 1999). While Selective seemingly rode out the recession better than many institutions, creating a plan to strengthen its finances and prioritize its spending was important in order to be better prepared for future economic downturns.

Creating the Draw for Prospective Students

Part of preparing for a stronger financial future for Selective College included the creation of unique programs and upgrades to key facilities that will attract not only more students, but more academically

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strong students. Selective College assumed that a percentage of higher achieving students would come from wealthier socio-economic backgrounds, which would enable them to pay more for an education that they assess as being higher in quality. Part of increasing that perceived quality includes creating programs, such as the integration between science and business, which provides unique learning opportunities with a nod towards the future. One person said:

You know, these small schools…are very enrollment driven so, if we had to put our weight on one over the other, I think [the assumption that Selective College] needs to be attractive to science majors was very important to us. Your science majors are your more high-end ACT kid typically. They have maybe a little higher propensity to persist … But then I and you know we can't discount our facility, our science facility was really worn out… not cutting edge in any way. [T]he building is also a difficult one to maintain and it was, it's just time and all of our competitors have a new science facility.

The strategic plan capitalized on the broadly held belief that families with means will pay more for what they perceive as having added value. A danger exists here in that Selective College cannot unilaterally pull out of the arms race with other colleges and universities who are trying to attract this student profile. However, there is no evidence that Selective seriously entertained the idea of eliminating, reducing, or consolidating existing programs and operations in order to reduce costs. A critical review of existing operations may have led to cost savings that could have been reinvested into the program, in addition to proposed investments funded by new philanthropic gifts or increased enrollment revenues.

Importance of a Strategic Plan in Attracting Philanthropic Support

Finally, having a solid plan for the future is important for stakeholders, particularly for donors and prospective donors. Not only does it provide donors with a sense of where the college is heading, it also provides a vision that can inspire them. A strategic plan can become a reality with the assistance and generosity of donors. It is also clear that people want to support successful, innovative, and impactful organizations. Having a plan for the future not only shows steadiness and strength, it also reaffirms the college's current and future sense of purpose and mission. As stated by Kotler and Murphy (1981), conducting a strategic planning process shows willingness by institutional leadership to examine the greater higher education environment and position their college in a way to be successful moving forward. As evidenced at Selective College, and referred to in the literature, strategic plans often provide the basis for subsequent fundraising initiatives. By having a clear, concise, measurable, and endorsed plan for the future, the various constituencies can work together to provide the appropriate resources towards programs, facilities, and personnel that will make the vision of the plan a reality.

Finding Three: An Emerging Decision-Making Model Focused on Feedback and Revenue

Over the course of this study, it was apparent that the decision-making model used during the strategic planning process at Selective College was not purely collegial, nor political, nor bureaucratic in nature. There was little evidence given by participants or in official documents of negotiation or quid pro quo as Bess and Dee (2008) suggests should be found in instances of political decision-making. There was also a lack of a formal rigid structure in the process that Tierney (2008) describes as being core to a

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bureaucratic exercise. Bess and Dee (2008) describe a pure collegial decision-making model as encouraging consultation and shared governance amongst all members of the campus community. The process was also not purely collegial in that it was not an example of governance by consensus. Contrary to the scenario that Gibson (1992) describes, the faculty of Selective College did not have final say over which new initiatives were to be included or excluded.

One person expressed concerns that the lack of a strategic planning and governance committee resulted in less faculty input and control of the process. She stated:

I think the lack of continuity has made us more defuse. I will say that from our administrator's point of view that might be a better thing. Because what is does is it allows them [the administration] to control the conversation. … If the faculty feel like… governance is ours, which we do, then one of the things on this campus is that administrators have to be in sync with the faculty. And, if there is a diffusion of these sort of duties and conversations, it allows the administration to come in with the final word and say, 'well this is what I'm hearing.' Because we are not actually talking to one another… so when [the president] says this [strategic plan] was generated by a faculty discussion and discussion with the trustees, that's absolutely true. And he was in on, or the dean was in on, most of those conversations in various ways. … What most of us would want is a real Quaker model of going to the meeting house and just talk and get consensus. You know it didn't happen that way.

Another individual countered this idea. He indicated that the creation of a planning and governance committee would have been good for enhancing internal communication, but it likely would not have altered the outcomes of the process. He stated:

I will probably always wonder if we should have…after two or three years we could have created something that we called the strategic planning committee. And it could have held hearings and…I don't know that they would have gotten different or more input. Maybe they wouldn't even have got as much input as we did by doing things very…loosely, very organically with lots of different groups that were never called strategic planning committees. But at least the perception would have been 'oh yes, that's the damage, I got to say my piece about the strategic plan.' I think that there was so much discussion going on in so many different venues that, and also informally, that collectively there was far more information that went into the plan than if we…had been structured.

While various college constituents were given the opportunity for input, the final outcomes were not the product of a collegial Quaker-style town hall process where the pathway chosen was that of least resistance. Based on participant feedback and other data uncovered by the researcher, a new feedback and revenue-focused model was used during this process. One individual described the process as top down and not faculty-based, indicating:

[W]ho determines our priorities? Some of those probably come from trustees. Trustees talk to the president. The president talking to the business office, talking to development office… And then, feedback or input comes from the faculty and sometimes they ask for that and maybe…suggest directions that trustees and administration can go, but more often, and maybe this is just a bias from a faculty perspective, it seems to come from the top down rather than the bottom up.

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A faculty member agreed. He described the process as being one where there were many opportunities for input, but that the end result, was driven from the top down. He said:

I think there were a number of…times when this information was…discussed. …[B]ut for me it was, it was almost more about 'okay here's what we're going to do, kids.' And less about 'what do you want to do, kids?' So [the] number and kind of opportunities [for input and feedback were] certainly sufficient. I don't think anybody is, is going to…quibble or question…what the guiding principles are. I don't think… anybody particularly wants to fight about those but, but I think in some cases a view might be that this came more from the top down rather than from the bottom up and…that just may be the way things are.

Whether it was due to the economic pressures felt by Selective College during the recent recession, or the increasing professionalization of higher education administration, the new decision-making form that emerged met the need to make quick and decisive decisions. This evidence suggests that the traditional collegial, bureaucratic, and political models may be out of date and not useful for contemporary decision-making in higher education when considering the recent economic recession.

The decision-making model that emerged from the data has similarities to the cybernetic model championed by Birnbaum (1991) in that systems for input were put into place during the planning process at Selective College. However, given the size and culture of liberal arts and science colleges, as is the case at Selective College, employing different decision-making styles for various situations is not likely to be well received in a tightly-coupled organization. One person addressed what she saw as a possible change in decision-making practices in high education. She stated:

This college is more democratically run than the one I came from. Not to say the one I came from was total oligarchy or something but just that there was a continuum. But, I actually wonder if even this institution is moved to be…slightly less democratic. Every body has to have a say and everything to…get your voice heard but then…the appointed people make decisions, I think probably it's moved over in that direction. I think it is [because] these are different times. … looking back now, I see it was just a wonderful time. The stock market was going up and everything was great, and seemed like a real…stable and…enriching place. The pile seemed to be getting bigger and now I think we're all… struggling and that is different.

Another individual agreed, indicating a change in the planning processes conducted in higher education. He stated:

I sort of grew up and then began teaching in an era where when we talk about strategic planning the faculty thought, whether rightly or wrongly, that it should have a major role in the planning and implementation of any plan. I mean the world has changed and so you know in the last 35 years I think, and I don't mean this as a negative comment, but I think a lot of…college and university administration has become both more professional and perhaps more corporate. So I suspect that for many of us who sort of long for the good old days, if they were the good old days, that we're not going to have that kind of direct input into the process. So, at some level, those folks who were basically…making the final decisions may in fact tell us what's going on and you know give us some idea and…some input into that process. So, I think a lot of us then would like to say 'well I think building A should be a higher priority than building B or I think we should do this instead of that'. I'm not sure in 2012 that's really going to be realistic for many colleges and universities as they move forward.

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While there may be healthy competition between individuals and departments, there is not a strong basis for competition for substantial resources as might be found between Schools of a large loosely-coupled university. Thus, using various decision-making styles to accommodate different individuals or departments would not be an effective model in a lean administrative structure. In addition, with a small hierarchy, the need for 'thermostats' to alert the administration about departments or individuals losing focus or underperforming seems unnecessary (Birnbaum, 1991). The feedback and revenue model is a better fit for institutions like Selective College, which is a tightly-coupled organization that works to provide an quality product using limited resources. While feedback was accepted and encouraged, decisions were ultimately vetted based on their ability to enhance the finances of the college. One person summarized the process as a work in progress, yet representative of difficult decision-making processes at private liberal arts colleges. He stated:

I generally think the communication at the college, and I think this is typical of a lot of colleges,…takes place in pockets. Sometimes communication is inaccurate in those pockets. I don't think we've done a good enough job quite frankly of assembling the right people together with the president and maybe with [the board of trustees], with other people so they at least hear from us. … We could have done a better job of that. I think we did a good job trying to engage the faculty and certainly some outside constituents as we developed the plan. I mean, could we have done more? Sure. But I think that we probably didn't have to do as much because we felt the faculty was really aligned on this integrated learning [concept] since it came from them. … I think there's always 20% in any organization that says … 'I don't want to change.' … I think, overall, we did a good job. Could we have done better? Yes.

The rational and cultural decision-making models do not appear to be an exact model for the recently completed strategic planning process at Selective College. The boundedness construct of the rational model was not met as it was not clear who was charged with making final decisions, and within what timeline, with no formal committee in place. Further, the perceived significance construct was not met as there was no evidence of policy changes that carry consequences with them as an outcome of the planning process. While the focus on offering opportunities for feedback was in deference to the traditional collegial culture of Selective College, the planning process at Selective did not examine or address all of the issues at the core of the cultural decision-making model. While the liberal arts and sciences mission was reinforced during the process, other broad areas of focus in the cultural model, such as environment, socialization, and what is expected of institutional leadership, were not addressed.

The feedback and revenue model for decision-making allows for input from the broader community including faculty, staff, and alumni via formal and informal venues. Whether it be through representative committee structures where faculty and staff leaders funnel input to the senior leadership and the board, or through participation during question and answer sessions in scheduled town hall meetings, opportunities for input were given. However, unlike the pure collegial decision-making models, that input could be used or disregarded. As Tierney (2008) describes, collegial decision-making is truly present when "a community of scholars operates around notions of respect and consensus" (p. 152). Ultimately, the senior administration and the board of trustees made the final decisions about the future of the college and the best path to take in order to reach the desired outcomes. As a result, while opportunities for collegial input were granted and encouraged, the ultimate decisions were made by the senior administration and the governing board.

In addition to feedback, this new decision-making model stressed the use of opportunities to maximize revenue through tuition, fees, and philanthropy. While feedback from faculty, staff, and other constituen-

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cies was encouraged during this process, the ultimate scale by which various proposals were measured by was whether or not these initiatives would help to generate additional revenues for Selective College. Recommended outcomes of this planning process validate this observation via investments in facilities, personnel, and programs to attract and retain more students and higher quality students. One person stated:

We have a beefed up … the student support services program. [They] have really upped the ante on what they're trying to do. … We got lots of new ways of tracking some of the students who are under achieving on the student support services side. There are tutoring services being offered for the students who simply need more help.

In addition, creating a vision for the future that includes opportunities for donors to realize immediate measurable results encourages philanthropic investment into the organization. According to a staff member, investments in personnel in the college's development operations have been deliberate. She stated:

On the budgeting side I know that we also did do some budgeting to make sure we had enough staff within the development office. That office started out five or six years ago with a very skeleton group. So one of the key things that they did early on was realize that if we are going to be in the next five, six years at that point in time, embarking on a capital campaign that we'd know we'd be embarking on… we have to get that staff in, established, settled. We've got to give them information they need. We've got to give them the research they need. We got to give them the tools and they've got to be ready, they've got to get ready to run.

A significant outcome of a strategic planning process is gaining a perspective of how an institution is viewed in the marketplace (Stevens, Loudon, Oosting, Migliore, & Hunt, 2013). Having external input from stakeholders and others regarding the strengths, weaknesses, opportunities, and threats that most accurately describe an institution is a valuable outcome of this process (Stevens et al., 2013). As was the case with Selective College, providing formal venues for feedback from external constituencies, whether it be through alumni representation in the process or by facilitating external listening and feedback sessions, adds an important element to the discussion. The opportunity for feedback from key external stakeholders will likely continue as the college may undertake a feasibility study prior to launching a fundraising campaign focused on the outcomes of the strategic planning process.

During the course of a feasibility study, key donors and prospective donors will be given the opportunity to share their reactions and interest in various aspects of the college's strategic plan. Feasibility studies are considered as being a best practice for institutions who are preparing to launch fundraising campaigns (Mai, 1987). It is during this exercise that it is determined which aspirations for the college have support amongst the donor base, thus it should be included in a subsequent campaign, and which may need to be addressed using other resources (Mai, 1987). While the strategic plan may be complete, which aspects of it can be funded through philanthropic support is often decided based on feedback from key external stakeholders. An additional factor in the success of a potential campaign, which can be assessed during a feasibility study, is whether or not the institution has the donor base, the culture of philanthropy, a mature fundraising organization (Pierpoint & Wilkerson, 1998).

In reality, higher education administration has become far more professional and organized in recent decades (Balderston, 1995). Fewer faculty members and deans are finding their way to the presidency and into other senior administrative positions (Cook, 1997). Thus, an increasing number of staff mem-

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bers end up spending their entire careers as professional higher education administrators having limited classroom experience, research expertise, or having served on faculty committees. Not having experience collaborating on various topics with their peers as a member of the faculty, administrators do not have first-hand experience using collegial decision-making models in a professional setting. Instead, they are serving in positions in fundraising, admissions, marketing, and finance, where decisions often need to be made quickly in order to mitigate risk or maximize opportunities. The feedback and revenue model of decision-making has similarities to how businesses and corporations function, where key administrators are entrusted and expected to make decisions.

While the use of this new form of decision-making leads to a decreased sense of shared governance and ownership from various constituencies, it does allow the institution to be quickly decisive and responsive to changes in the external environment. In the case of Selective College, which was not financially strapped, nor flush, being able to create a plan to increase the quality and quantity of students was important. Similarly, by having a vision ready to reveal to donors was important and allowed the college to take advantage of opportunities to gain financial support. Given the recent shifts in the higher education landscape, it is likely that traditional decision-making models will need to be modified as institutions grapple with decisions in the future. For private liberal arts colleges like Selective College, the emerging feedback and revenue decision-making model allowed for broad input but attempts to mitigate errors by leaving ultimate decision-making authority with senior administrators and the governing board.

RECOMMENDATIONS

Findings of the study led to four primary actionable recommendations for college and university leadership engaged in a strategic planning process. The first recommendation is that a strategic planning exercise is valuable in garnering philanthropic support. The second recommendation focuses on the importance of selecting a decision-making model that is right for the institution and the current state of the institution. More affluent colleges and universities might opt to employ a collegial decision-making model with an extended time frame. Other institutions, like Selective College, may need to use a different model, such as the feedback and revenue model, to create an expeditious yet comprehensive future institutional plan.

A third recommendation suggests that investments in revenue generating positions in admissions, development, and marketing are key to the financial success of institutions. However, college and university leadership must keep in mind that the ultimate measure of success is the quality of instruction by faculty and staff in and out of the classroom. Investments in revenue generating positions should not be made in lieu of investments in the faculty. Fourth, campus leadership must be cognizant of the importance of philanthropy. Few private institutions would have been founded, or continue to exist, without donor support. Public institutions seem to be increasingly reliant upon philanthropy given a continued decrease in state support (Casteen, 2011). The pursuit of philanthropic support should not come at the loss of institutional mission and values. Finally, while new investments in programming and operations are necessary to maintain quality measures, new expenditures should be balanced with cost-cutting or cost-sharing efforts when appropriate.

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Recommendation One: Strategic Plans Play an Important Role in Garnering Philanthropic Support

While the process of how a strategic planning exercise is carried out can be debated, the outcome of this process provides numerous benefits to institutions. Utilization of a strategic planning process results in a comprehensive business and operational plan which is helpful with setting fundraising priorities, prioritizing investments in programs and personnel, and budget modeling. Carrying out a planning process every five to seven years maintains communication among campus stakeholders on the institutional priorities, while allowing for flexibility due to changes in the economic and educational climate. While world and campus events can make aspects of a planning process seemingly void within a matter of a few years, having an agreed upon set of priorities by which all decisions can be measured provides campus stakeholders with a sense of direction. A strategic plan does not limit an institution from making a nimble and unforeseen move, but it engages college and university leadership to weigh that decision against previously established goals.

An established "checks and balances" protocol between the goals of a strategic plan and the temptation of pursuing previously unforeseen philanthropic development opportunities provides various constituencies with a sense of confidence about the direction of the institution. Included amongst those constituencies are faculty, staff, students, friends, alumni, and foundations who are current or potential donors to the institution. The strategic plan gives donors a feeling of whether their investment in that institution is wise and provides context for the investment. The strategic plan also helps the institution by creating a menu of priorities to be used in a proactive way with donors and preempts them from creating ways to give that may not fit with the mission and values and long-term priorities of the college.

Recommendation Two: Decision-Making Models Used during a Planning Process Must Fit the Culture and State of the Institution

A critical component of the strategic planning process, and whether it will be successful in galvanizing faculty, staff, administration, and alumni towards reaching goals, is how decisions are made regarding what is included in the plan. The decision-making model used during a planning process provides opportunities for engagement for various constituencies, but it also influences the pace by which decisions are made, and the culture of decision-making for campus decisions. The model utilized in various planning processes must match the culture and needs of the institution as determined by its current state and the perceived significance of the decision. For some colleges and universities, a prolonged collegial decision-making process may be feasible and necessary, while other institutions may need to make quick and more bureaucratic-like decisions in order to respond to current or imminent threats or opportunities.

In the case of Selective College, a decision-making model emerged somewhere in the spectrum between the collegial and bureaucratic decision-making models. The feedback and revenue model allowed and created formal and informal venues for constituent input and feedback on an accelerated timeline. Central to the model, senior administration and trustees made the final decisions with revenue generation being the primary filter by which decisions were made. While full-faculty and staff support is sacrificed in decision-making, it allows institutions to be nimble by entrusting a leadership group to make final and, if need be, expeditious decisions. This model assumes a high level of confidence or trust in the campus leadership; mistrust and poor leadership will alienate the strategic plan from the campus

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community. Senior leaders using this model should assume their employment condition depends on the success of these decisions.

Colleges and universities that are either relatively affluent or cash strapped are more likely to benefit from using decision-making models, respectively, that are angled towards the collegial and bureaucratic ends of the spectrum. An affluent institution that is stable and can utilize a planning process to dream about program innovations without concern for how much or little revenue will be generated from them, or how long the process will take, has the luxury of carrying out a prolonged and diligent collegial process. An institution in the midst of a true crisis, financial or otherwise, needs to retrench immediately and is likely to benefit from the ability provided by a more bureaucratic model to be quick and decisive using a limited group of decision-makers. Either of these scenarios runs the risk of making an institution either inhibited in its ability to be nimble or of alienating constituencies not involved in the decision-making process. It is also likely that the traditional decision-making models (e.g., collegial, political, and bureaucratic) are outdated and that new models, including feedback and revenue, are necessary to match the complex internal and external environments of institutions. Ultimately, a planning process must use a decision-making model that is appropriate for the state of the college and is cognizant of the culture of that institution.

Recommendation Three: Institutional Leadership Must Embrace Donors and Philanthropy, but Not Lose Sight of Mission and Values

Donors have a key role to play in the life of liberal arts and science colleges, and an important role in promotion of institutions of higher education. Many institutions, particularly those that are private, rely on sustained support of alumni and friends through their philanthropy. In this era of reduced support from legislatures for state colleges and universities, public higher education has also ramped up their efforts in the race for philanthropic investment. Given this established trend, the role of donors and their philanthropic support for higher education is likely remain vital in the coming decades.

While donors are necessary to help fund the mission of colleges and universities, their gifts should help support these institutions and not unduly dictate their directions. Presidents and governing boards should focus on philanthropy and embrace donors, and avoid burdensome conditional gift commitments. It is important to remember that philanthropic gifts should enhance and improve the life of a college, not force it to alter its mission or values in order to meet a donor's wishes or demands. While it is important for colleges and universities to embrace the role of philanthropy in the history and culture of an institution, they should also avoid undue influences.

In order to protect against undue donor influences, the leadership of college and universities should work with their governing boards to develop and regularly review institutional gifts acceptance policies. These documents should clearly outline under what conditions certain gifts will be accepted and outline unacceptable gift conditions. Having a board-endorsed document provides the development staff and the president with guidelines by which to act in the best interest of the institution. A gift acceptance policy will help to ensure that donors act in support of the mission and values rather than using philanthropy as a way to alter them. Such a policy helps respect the role of philanthropy in the life of a college but provides donors with clear boundaries regarding what they receive in exchange for their gifts.

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Recommendation Four: New Investments Should Be Balanced with Eliminations, Reductions, and Consolidations of Existing Services

While Selective College identified various areas of new investments, including facilities, personnel, and programs, there was no evidence that the elimination, reduction or consolidation of existing facilities, personnel, or programs. The need to remain competitive among peer institutions overshadowed the need to periodically and systematically examining the return on the investment of various programs or operations. Spending without committed resources is not a sustainable business model. The economics of small, moderately endowed, liberal arts and science colleges suggest that all aspects of the institution must be running at their fullest potential in order for the institution to be successful, viable, and demonstrate good stewardship of its resources.

One area for potential review is the scope of academic programs offered by colleges and universities. A large portfolio of basic and specialized academic offerings can lead to academic departments comprised of 1-2 faculty members enrolling 5-10 students. A balance between small and large departments with emphasize on creating cross-disciplinary courses and experiences for students also create opportunities to share budget, personnel, clerical support, and other resources. Another cost-sharing solutions may include joint faculty and staff appointments between program, joint ventures with regional peer institutions, and strong articulation agreements with pipeline colleges and universities.

On the administrative side, a number of possible solutions exist to free up existing resources to be invested in new endeavors. Using existing regional associations to share costs such as health care insurance, information technology and software purchases, and specialized facility maintenance positions, such as electricians, could provide cost savings. While additional 'feet on the street' are always welcomed in the development and admissions efforts, making sure that databases are being effectively used and that procedures exist to effectively use new human resources is important. Further, a review of whether an investment of $20,000 in digital marketing would produce more applicants than a $40,000 salaried admissions counselor should be considered. Investments in systems that maximize efficiencies may produce the desired results with less cost than new personnel. Whether it is in the academic or administrative side of the house, ensuring that existing expenditures are necessary and are producing the desired results is important and should be completed before new and additional investments are made.

FUTURE RESEARCH DIRECTIONS

The case study analysis of the strategic planning process at Selective College found that philanthropy influenced the development of administrative and academic goals. Further, the decision making process that created the strategic plan was revenue and feedback-focused and controlled by key administrative leaders. While specific to Selective College, the researchers assert the findings are useful to other liberal arts and science colleges that are engaging in a strategic planning process, especially in the context of an economic recession. The discussion of findings provides in-depth analysis and illustrative quotes to highlight how philanthropy influenced in the strategic planning process to inform future research among liberal arts and science colleges.

Future research to expand the knowledge of how philanthropy influences the strategic planning and administrative decision-making models should include other types of colleges and universities. Inclusion of public 4-year universities, research-intensive universities, and technical and community colleges

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would provide new perspectives on the existing literature. Further, placing financial resources and stress of colleges of universities as a construct for greater consideration, future research might understand if this matters in the strategic planning process. Finally, a longitudinal study to follow the outcomes of the strategic planning process and its influence on the comprehensive fundraising initiatives would better understand the relationship between these two areas. A longitudinal analysis would also illustrate how changes within the decision-making model and leadership affect the strategic planning process.

CONCLUSION

This case study of the strategic planning process at Selective College provides a unique perspective regarding how philanthropy and administrative decision-making models contribute to this dynamic and multi-faceted process. There was evidence that philanthropic support, and the desire for it, influenced facilities and peripheral academic and co-curricular initiatives. Further, the need to increase philanthropic support was matched by the need to increase net tuition, room and board, and fees from prospective students. The urgent need to increase revenue resulted in a strategic planning process that was not conducted in a fully collegial manner. Instead, feedback was sought and given, but all decisions were vetted by the administration and governing board in an effort to increase revenues.

The strategic planning process of a financially-concerned institution that strove to fully recover from a tremendous economic recession resulted in the emergence of a new decision-making model, the feedback and revenue model. It is likely that similar institutions will need to create new models, such as the feedback and revenue model, in order to withstand the new economic higher education climate. Seeking feedback from various constituencies as an institution makes financial decisions is a strategy that many higher education administrators and governing boards will look to in coming years.

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KEY TERMS AND DEFINITIONS

Administrators: Individuals who have some influence over institutional policy and how support of the institution is utilized and distributed.

Bureaucratic Model: "Assumes that decisions and planning take place by way of a coordinated division of labor, a standardization of rules and regulations, and a hierarchical chain of command" (Tierney, 2008, p. 151).

Campaign: A set period of time during which a set amount of money is raised for specifically mentioned projects and endeavors.

Capital Projects: The renovation of an existing facility or the construction of a new facility, including major changes or additions to the landscape of an institution.

Charitable Donations: Financial support of a non-profit organization or mission including, but not limited to, colleges, churches, hospitals, and youth programs.

Collegial Decision-Making Model: Calls for "decision making by consensus" (Baldridge, Curtis, Ecker, & Riley, 1977, p. 134) and allows for the full participation of the institution's constituencies.

Development Officers: Individuals who have the responsibility of advocating the institution's mission, values, and long-range plans in order to solicit philanthropic support for the institution.

Donor Incentives: A donor's reasons for giving.

Endowment: A corpus of funds which are restricted to support particular aspects of the institution including scholarships, professorships, lectureships, and the general operation of the college.

Institutional Mission: The direction, goals, and objectives for the institution.

Institutional Values: The common ethics, morals, principles, and standards an institution adheres to and embraces.

Philanthropists: Individuals who donate their time, money, and/or resources to support a non-profit cause or organization.

Philanthropy: The act of financially supporting a non-profit institution or mission.

Political Decision-Making Model: According to Bess and Dee (2008) a culture where the political model is utilized is "identified through its reliance on negotiation and bargaining among interest groups and coalitions within the organization" (p. 377).

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Chapter 71
E-Marketing for SMEs

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ABSTRACT

This article describes that though there are few studies conducted on SMEs' life cycle, there are no studies specifically done around the globe with focus on electronic marketing approaches for SMEs. SMEs are flexible, so they can respond quickly to changing marketing requirements. Four approaches explain marketing role in small firms: the stages/growth model, the management style model, the management function model and the contingency model. SMEs face-marketing problems due to limited financial base, market knowledge, branding activities, expertise and over dependence on marketing ability of the owner/manager. They adopt reactive-marketing rather than planned marketing. Therefore, they face difficulties to exploit opportunities available in the market. Thus, the article aims to develop new ways of marketing approaches to every element of the-marketing mix (price, place, product and promotion). Further, as SMEs generally use a "conservative" approach to marketing, the study findings reflect that adopting electronic marketing approach can help them to offer new improved product or innovative use of existing product.

INTRODUCTION

Though, there are few studies conducted on SMEs' life cycle, but there are no studies specifically done on electronic marketing approaches in Namibia or any other country around the globe with focus. SMEs are flexible and can respond more quickly than large organisations to changing marketing requirements. According to Siu and Kirby (1998), four approaches try to explain the role of marketing in small firms. They are the stages/growth model, management style model, management function model and contingency model. SMEs face-marketing problems which are a resultant function of the small firms including: a limited base, limited marketing activity, expertise and impact; an over dependence on marketing ability of the owner/manager; reactive rather than planned marketing and difficulties to exploiting marketing

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opportunities as well as lack of knowledge about the market. Some decision made by SMEs on which approach to be used do not match with the customers one, because SMEs do not conduct marketing research most often. In addition, SMEs known to apply traditional marketing approaches rather than innovative-marketing . Hence, the study aims to develop new ways of marketing approaches to every element of the-marketing mix (price, place, product and promotion). Secondly, SMEs might have using a "conservative" approach to marketing an existing product, basically, as entrepreneurs marketing approach can offer new improved product or innovative use of existing product. Further, the level of e-marketing practice reflects the extent to which information technology plays either a reinforcing, enhancing or transforming role in SMEs (Coviello, Brodie, Brookes & Palmer, 2003). Using a mixed research methods the aim of this research is to identify various marketing approaches used to market SMEs marketing mix, assess the innovative-marketing practices currently used by several of SMEs entrepreneurs to determine best marketing option to follow. It also delves into how to strategize the best e-marketing that offer new ways of marketing, replace existing ones, and then provides recommendations on various decision which can be made for the enhancing the benefit for customers. Thus, the focus of the research is on what are the types of marketing approaches that SMEs can use and which are the e-marketing advertising media that can optimal to replace the traditional ones for maximization of customers benefit.

LITERATURE REVIEW

SMEs can prove to be a major source of economic growth for many African countries if sufficient guidance and support on how best to overcome the challenges of adopting advanced marketing practices is available (Dlodlo & Dhurup, 2010). Further, marketing is an act of expertise, which mainstream enterprises find hard to play. Research has however revealed that any great competition needs dealing through successful innovation. As a result, firms need to take initiatives to deal with this growing global competition (Baporikar & Deshpande, 2017). It is hard to believe that movement to electronic marketing is spreading in the SMEs because of enhancing payback that is obvious day by day. Apart from worldwide prominence of SMEs, they face challenges in marketing in most of the countries, owing to changing business environment. Insufficient marketing ideas and weak attitude in leveraging complex marketing situations form operational blockages in selling the products. As a result, need persistently arises to improve the market setting which make up for an excellent marketing approach. Close observation of the-marketing challenges reveals that some of these challenges need addressing by identifying suitable approaches including electronic marketing approach. The focus of this paper is on the framework of electronic marketing approach for SMEs. Electronic marketing is the faster means of marketing in nowadays economy. One can sell and buy online while in one own house without having to step out. This means if SMEs can adopt the e-marketing approach it will help to reduce costs and enhance services. However, even though these benefits prevail in e-marketing , there are problems associated like lack of personal approach, dependability on technology, security-privacy issues, etc. According to Vuuren and Groenewald (2007), SME sector plays an important role towards contributing to the economic growth of an economy and averting the low gross national product, high unemployment and levels of poverty in countries. In addition, adoption of Internet marketing strategies if facilitated will contribute to the exponential growth of the SME sector. Despite its potential as a marketing tool, actual use of e-marketing has not met with expectations (Elliot & Boshoff, 2007).

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Table 1. Marketing Approaches

Marketing Approach	Description	Critique
Stages/growth model	-describes the development of a firm through several stage	-low predictive power -limited value as a framework for detailed analysis and planning
Management style approach	-marketing behavior is related to the motivation, belief, attitude and objectives of owner-manager	-ignores e.g. organizational structure, owner-manager's marketing decision process and behaviour
Management function approach	-acknowledges marketing as an important function and essential concept for small firm growth, survival and strategic development.	-too much or too little emphasis is put on the limitations and constraints of small firms when applying disciplinary foundation of marketing
Contingency approach	-tries to find balance between the limitations of small firms and marketing as a discipline	-variables are not clearly defined, are arbitrarily selected or cannot be measured effectively -is an outcome model, not a process model

Source: Siu and Kirby (1998)

In order to provide insights on how the adoption of a marketing approach in Italian SMEs could be encouraged, according to Marcati, Guido and Peluso (2010) it is important to understand: whether the entrepreneurs 'conception of marketing differs from that developed by researchers and which are the psychological factors capable of influencing the entrepreneurs' intention to adopt a marketing approach. This adoption of the-marketing approach is also crucial for these firms to reach a sustainable competitive advantage, Marcati, Guido and Peluso (2010). The study on SME's conception of marketing will verify whether the interpretation differs from that proposed by marketing researchers, to assess the psychological determinants of the entrepreneurs' intention to adopt a "marketing approach" by applying a traditional one to innovative way of marketing. According to Marcati, et al. (2010), yet, in the last few years, due to some drivers of market change (e.g., the global competition, the diffusion of ICT), their traditional factors of success have lost their strategic relevance in favor of other key factors, such as innovation and marketing orientation. Below presented in Table 1 are the approaches to marketing which generally in practice by the small firms.

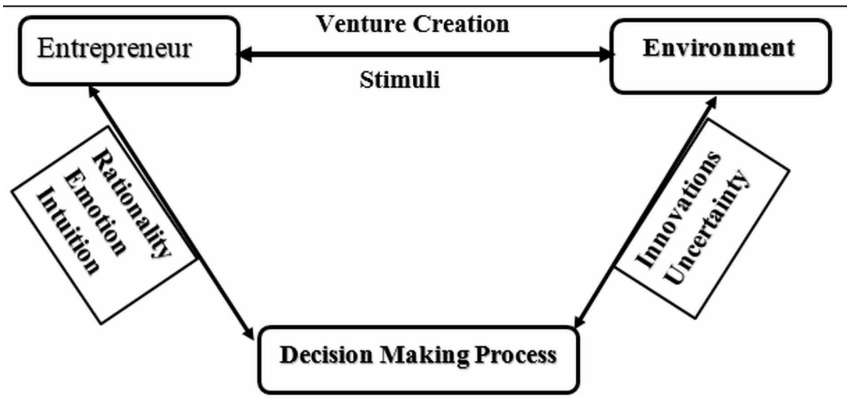
Since most SMEs will have a product or service which they will offer at a price and they will promote this through some kind of medium that reaches their market place, it can be easily determined that SMEs marketing can be described under the frameworks of the Four P's' (Carson and Gilmore, 2000). Further, contingency model of marketing information, tends to understate the role of informal information sources while overstating the role of computerized information resources (Wright and Ashill, 1998).

Decision-Making in SMEs

Managers of small firms tend to know all the employees personally, they participate in all aspects of managing the business, and there is no general sharing of the decision-making process. Therefore, the literature concerning the organizational decision identifies three components of the decision-making process: the environment, the decision-maker, most frequently in the case of SMEs the owner-manager and the strategic decision process itself (Vermeulen and Cursen, 2008; Ogarca, 2010). Figure 1 gives the decision making process in SMEs.

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Figure 1. Decision Making Process. Source: Adapted from Vermeulen and Cursen (2008)



The present article proposes a personal synthesis of the few works concerning the decision-making process in the SMEs. The approach will start from a large framework, concerning the decision and the organizational decision-making process, abridged in the second part to the area of SMEs (Ogarca, 2010).

RESEARCH DESIGN AND METHODOLOGY

The study uses mixed (qualitative and quantitative). The research methodology specifies how the researcher undertakes the study to achieve the stated objective. Herein it is also to determine how an SME owner-manager's education and experience, and entrepreneurial orientation influence the firm's strategic development. In doing so, necessary support through secondary research along with empirical research is there. The research design includes questionnaires for collecting data from SME operator/owners. The questionnaire addressed the research question on business information needs, information seeking patterns and the utilization of ICTs in the SME sector. The use of marketing networks is an underdeveloped area of research within SME-marketing and there is little descriptive detail or insight available in general and more so specific to Namibia. The population selected for this study consisted of manufacturing SMEs operating in the Khomas region (Windhoek). Based on random sample selection of five SMEs from the list, the respondents were manufacturing SME owner/managers. Data collection is by distributing questionnaires and interviews to employees/owners of SMEs in Windhoek. This meant primary data collection and observation. After the data collection, the completed questionnaires numbered, to make it easier for data capturing and to avoid omission and duplication of data, codification done of the responses to capture in a spreadsheet document. Then analysis was undertaken using Microsoft excel and presented by means of tables, graphs and charts.

The findings of this study are of significance to potential investors, policymakers and marketers as well as academics community. Policymakers and SMEs support organizations might find the results of this study useful to set up mechanism that equip many more Namibians SMEs to become more entrepreneurial, learning and market-oriented as well as to give relevant training on enhancing their innovativeness and new product offerings.The study will also inspire young entrepreneurs on how to market their products in future. The research design contains certain inherent limitations. Since only manufacturing SMEs operating in Namibia are studied, the findings are not generalizable to all sectors

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and firms operating in and/or outside Namibia. Finally, the results obtained might be indicative of the potential of similar analyses in explaining strategic development and revealing interesting avenues in the under-researched area of SMEs. It is consequently of significance to future researchers, entrepreneurs, and other stakeholders.

DISCUSSION

Decision-maker's parameters that affect the decision-making process are the set of personal values, specific training and experience in decision-making process. Ogarcă, (2010) commented that there are various impediments that make the previously presented model not suitable to be used in the understanding of the decision-making processes within a small and medium enterprise (although its valences are certain, predominant). The model conceived for the strategic decisions; the elements connected to the personal values, the influences exercised by the family, the entrepreneur's experience is ignored; it does not highlight very clearly the influence of some constraints connected to the financial resources or the time facto. Whilst marketing decision-making processes in the latter kind of organizations tend to be formal and highly structured, in small firms, such processes are simple, informal, instinctive, and, thus different from the theoretical paradigms developed in the managerial literature cited (Carson, 2000).

Carson and Gilmore (2000) stated that there is need of a pragmatic model of SME-marketing . In addition, in order to enhance the Internet technology readiness of Namibian SMEs, it is necessary to introduce through formal education and awareness tools right from national level. This will boost adoption of e-marketing . Adoption can rarely take off unless companies and individuals are educated about the opportunities offered by Internet related technologies (Stansfield & Grant, 2003) and adoption of e-marketing strategies can go a long way in representing the small business sector in the national economy as well as to stay ahead and maintain a competitive advantage (Steyn & Leonard, 2012). Hence, the proposed model and the preceding discussion is an amalgam of the following: adapting marketing techniques for SMEs, competency marketing, networking marketing, and innovative-marketing . Moreover, SMEs tend to relate better owing to their size and understand the needs of their valued customers or clients. How important is customer service, how is it generated, measured, and used by an SME to effectively create a competitive advantage depends upon the-marketing approach adopted (Baporikar & Deshpande, 2017).

Data Presentation and Interpretation

To whether SMEs do advertise the products online, 80 percent advertise and conduct it online while only 20per cent advertise at all neither traditional nor online. Though some firms do not make extra effort to advertise products, similarly, all these firms make use of their businesses to advertise. Figure 2 below depicts to what extent online advertisement is in vogue.

Demishkevich, (2015) commented that online-marketing provides a cheaper and faster way of increasing brand awareness and brand building.

On the issue, whether the firms create and form partnership the respondents' response is as shown in Figure 3.

On whether the respondents have formed partnerships are with customers and other businesses, the majority 60 per cent expressed that did not formed up any partnerships while 40 per cent expressed that they formed partnership with customers while have formed partnership with prime contractors and (cus-

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Figure 2. Online Advertisement

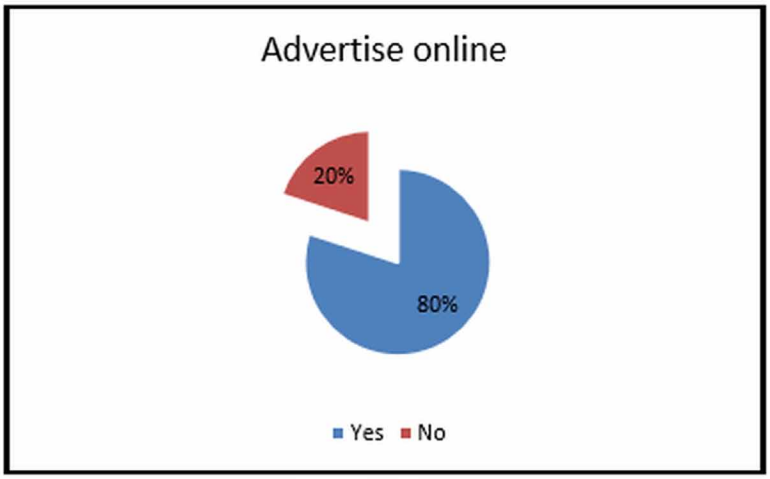


Figure 3. Formed partnership

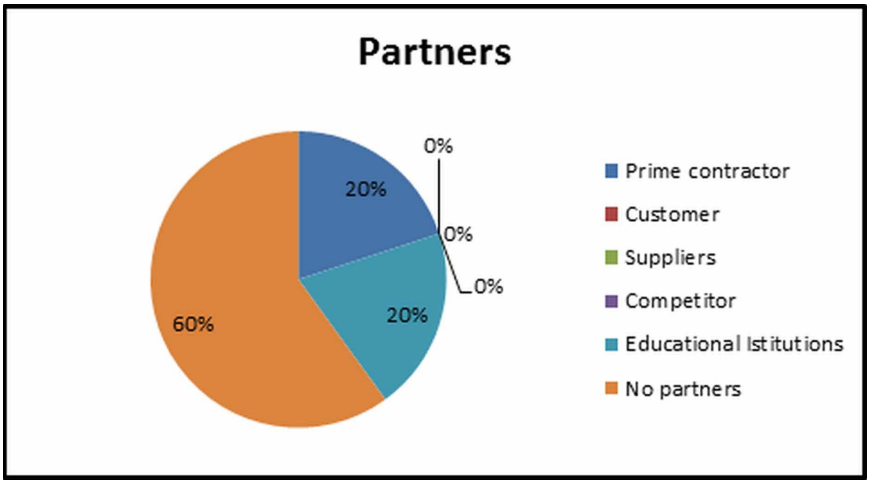
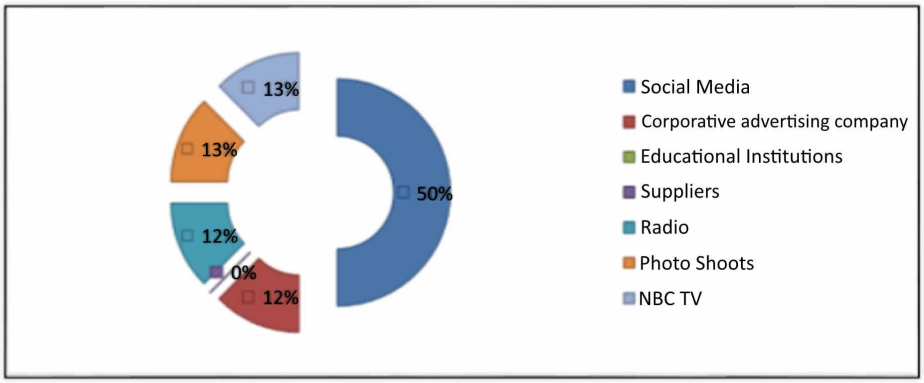


Figure 4. Advertisement Mode and Preference



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tomers) educational institutions, 20 per cent respectively. The highest percentage of 60 per cent expressed that either they dot value the partnership or they do not think positively about it. According to UNIDO (2004) in the early stages of a partnership program, there may be considerable investment against limited direct financial returns. This effects and the challenge is to address SME capability gap and needs.

The current question requested the respondents to state whether SMEs advertise online. About eighty percent do advertise online and twenty percent do not. The respondents also added that the companies themselves without outsourcing and undertake all designs and advertisements in house. Updating of the every company advertisement is weekly, by adding pictures of new arrivals. According to Gilmore (2011) e-marketing activities allow entrepreneurs to advertise their products and services more widely with less expense, to answer customer queries in several languages if need be, to use e-mail as a marketing tool and to provide on-line quotes.

How firms advertise and what is the mode of preference to advertise is the next issue. Figure 4 reflects the response.

As shown in Figure 3 the most useful social media is 50% to all when advertising. Thirteen percent make use of the photoshoot while some of them also using the radio. The modern days industrial customers can be captivated by innovative-marketing practices like digital media, creative product placement, brand consistency, internet as promotional tool to name a few, (Trivedi, 2013).

Marketing Approaches

On whether respondents understand the different market needs of SMEs, the respondents had mixed feeling on issues such as; the incubators do not have access to internet facilities, which can be of help to run the business to the fullest. They only make business for survival without profit. Therefore, there is a need for diversification because incubators are not a place for a business to settle down but a temporary shelter (5 years only).

Respondents described how marketing has changed in the 21st century, as there is improvement on customers' lifestyle. Reaching out to customers through social media, video, skype and photoshoot is much easier to technology enablement. Customers enjoys the trend for designing their traditional tailor made clothing. Some other companies have found a slight improvement from previous years. Unfortunately, the businesses, which operate traditionally claims to have no customers any more. Municipality's Incubators are charging high rental fees though the spaces are not adequate. It is high time to determine profit in less than 5 years of business. The respondents do understand entrepreneurship and the challenges of creating new businesses such as lack of support financially and no adequate space. Competition with Chinese of copyright and low-price charges for fake products. Let alone capital, there is an economic crisis in the whole country.

Stages/Growth Approach

To whether the businesses will grow with or without partners, they said that business would be able to grow without partners because the owners decide to make final decision on their own.

About 60 per cent believe that businesses with partners undergo conflicts while 40 per cent believe that partners contribute to business growth. Businesses keep communicating with their partners on how they support each other. According to (Mole et al., 2016) A resource-based theory perspective emphasises the competitive benefits to be gained from seeking and taking-up external business assistance.

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To what products for partners are: some partners are schools, which connected the individual parents to come buy their children's uniforms. The other business also expressed that partners assist with hard cash if need be, apart from solar grid.

To whether respondents you have ability to initiate mutual relations with new partner, our business is to make enough uniforms and our partners are to buy. The supplier solar partners are Supplying solar panels and inventers to make business successful.

Management Style Approach

To what extent various decisions made in order to benefit customers, one point is to expose its business to exhibition apart from normal business area. To keep to its best quality they can and to make sure to deliver on time. To what perceptions held in SMEs in marketing, the respondents commented that as businesses grew SMEs need enough space and make it a permanent hub.

To what decision-making process made to create and implement online-marketing strategy, respondents commented with mixed ideas that online-marketing strategies keep the customers updated to current trends. Every week/month marketers do take the latest pictures and place them in social media. Respondents also added that Instagram expose each finished product to the targeted customers. According to Demishkevich (2015: p23) small business owners with limited marketing and financial resources need to find the optimal way of promoting their businesses.

To what the small firms do to market themselves SMEs replied that the best marketing platform is to display their brands, to work hand in hand with print media, magazine, and newspapers and to be proactive, NBC's Business Today programme, pamphlets and social media.

To whether employees/managers give feedback to all the stakeholders, they said yes, because they keep to regular meetings for information exchange and control flow of information. The partners discuss most often, on how they support each other, all the time (unlimited).

This raises two issues for the small firm cannot afford a marketing "expert" could not get an assistance to lent money, do not make enough revenue in order to sponsor other marketing efforts. Some owner-managers may be unsure of their ability to deal with 'smart and sophisticated consultants' on equal terms, (Mole et al: 2016). This might include concerns about the expense of obtaining expert advice, doubts about whether it provides good value for money and concerns about the time needed to fully implement and benefit from the advice. Another concern whether there be enough marketing activities, the respondents expressed that they do modelling, exhibitions though they look forward to creating an activated website. Some companies believed to have conducted enough marketing activities without underwent extra mile.

In addition, to who makes final decision as partners, responded that the main company does it. SME owner/managers are doing marketing through their natural and inherent networking activity, through all their normal communication activities, such as interacting and participating in social, business and trade activities, Gilmore et al. (2001, p. 2).

Management Function Approach

Here the respondents should have to indicate whether they explore a new development of business ideas (new packaging and new products). They replied by saying that they are moving towards new trends to

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design bedlinen, clothes and carry bags matching with outfits. The businesses for solar panels always to bring the latest with latest solar systems.

To the question whether they have benefit to products during the past years, they responded that they advertise by use celebrities and improve on quality. The assistance by the government, which increased the needed sewing machines, had also improved on productivity. They added that they realized that adverts have also boosted customers. Although, those who do not add any value do not experienced improvements in this regard.

For the past years, on whether they have changed their product/service quite significant, the respondents replied confidently that there is a growth on clients by having fixed and occasional customers. Exposed at corporate and individual level. SMEs when asked whether current products find opportunities arising or they want to change to new products, some of them want to add new collections while some other are willing to increase their productivity to shortage of supply. Therefore, also designed additional product lines such as bedlinen. To what partners' products are: school uniforms and others are inverters, solar panels, batteries, regulators. In addition, design and build an operational marketing strategy for a start-up business or new product, making best use of limited resources to ensure that the firm can establish a viable presence in the market. The tailors' role is to design customers' own fashion.

Contingency Approval

To what specific products these enterprise concentrate on, some of them women and men official or if a customer chooses his/her own design for special events. Some respondents make seasonal and special events. The other ones make clothing and school jerseys. The solar company sells solar bulbs batteries, cylinder, solar panels, and solar geyser. By specifically design and build an operational marketing strategy for a start-up business or new product, this approach helps to make the best use of limited resources to ensure that the firm can establish a viable presence in the market.

Innovative-marketing Practices

Whether SMEs have professional background and work experience, the responses are in Table 2 below.

Many people get training in family businesses until they grow into that. Some of them received training for SMEs in how to grow their businesses. Entrepreneurs are equally curiosity, tailor can just observe and do the jobs from there they count on experience already. Those who inherited from family talents had picked up from the childhood. The majority of them were training in job-trainings though there are some of those who have gone through vocational and other trainings.

Figure 5 illustrates those respondents who believe that the training assist in educating SMEs by creating and implementing online-marketing strategy, which was, commented 6 per cent respectively: marketing and branding; awareness campaign; benchmarking and innovation marketing. In addition, to what training do you believe will education helping you in creating and implementing online-marketing strategy for their businesses, see the Figure 5.

To how SMEs would describe the-marketing mix and how do online-marketing fit into their marketing mix, the respondents the commented that marketing mix that fit into online-marketing is product, price, place and promotion which is 100 percent. The four P's are common. Because a product is sold at a certain place for a given price at either a normal outlet or exhibitions with either higher or special price. Further, according to product, promotion is to boost sales (Demishkevich, 2015). Here is promotional

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Table 2. Professional Background and Work Experience

Clothing Manufacturing and Self-Taught	Workshops More Education	Self-Taught and Lifetime Experience	Inherited Family Business and Self-Taught	Vocational And Other Training

Figure 5. SME Training

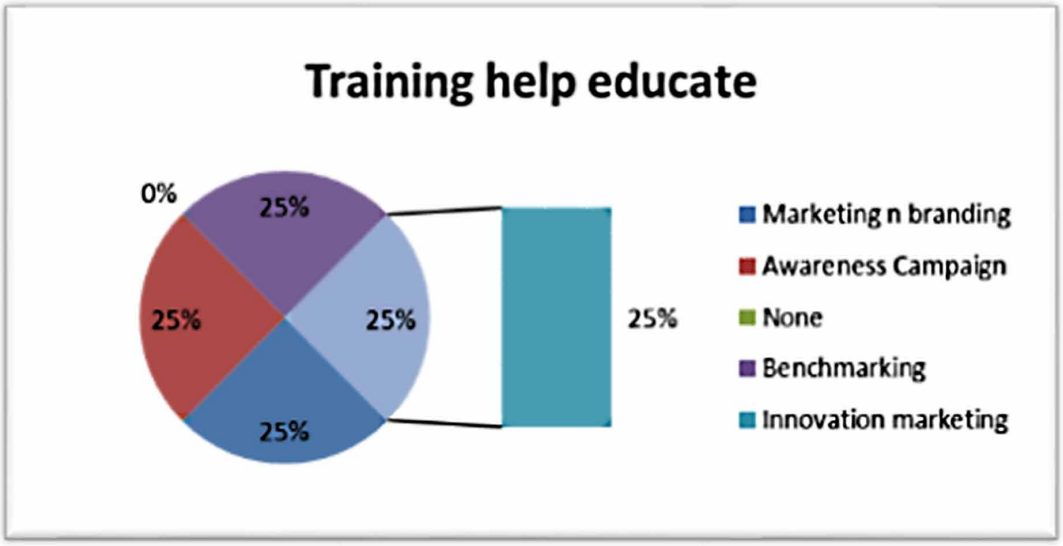
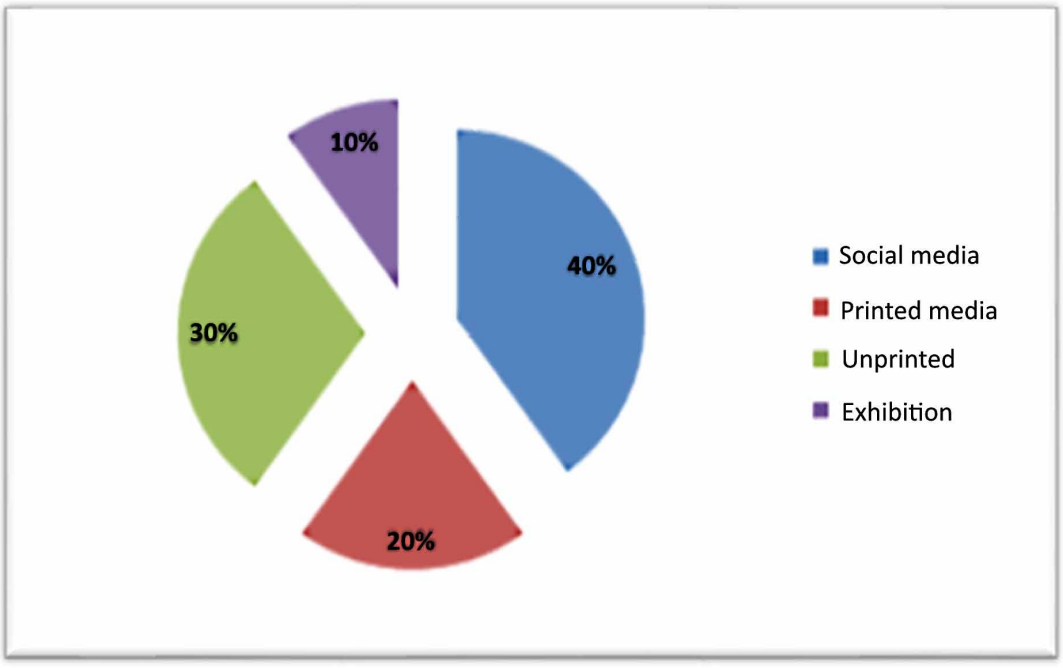


Figure 6. Advertisement Platform Use



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material for magazines, where there is promotional material for pay-per-click and promotional material for signage. However, when advertising online the products only displayed as pictures without prices that do not open too much competition.

The online-marketing strategy is being updated monthly 75 per cent and those who do it weekly are 25 per cent. These SMEs always put aside 5per cent of their revenue for advertising cost. The budget estimated by all lies between N$ 2 000 to N$5 000 per month depending on a growth of revenue. The owner of the companies is the one responsible of handling online-marketing for the entire company 75 per cent and 25 per cent are using Marketing officer. Most of what small business owners learned about marketing online was from doing it themselves and reading about it (Demishkevich, 2015). They also added that the person in charge of online-marketing has to update and attend interviews at NBC panels when necessary. Other responsibilities are to be a cameraperson, updating and save in a stick.

For the issue as to what advertisement platform SMEs use and prefer, see Figure 6.

Responses shown on Figure 6 indicates that SMEs who advertise by using social medias (Facebook/ Instagram) are 40 per cent, unprinted medias (photoshoot, emails, radios) 30 percent, printed (newspapers, banner) 20 per cent while exhibitions are only 10 per cent. The highest tool almost used by all is social media. According to Demishkevich (2015), the Internet marketing channels included search engine optimization, pay per click advertising, email marketing, social media marketing, online events, video marketing, online public relations, coupon sites, lead aggregators, display advertising, and mobile-marketing .

Then the question to the respondents was how often the advertisement is running and the response was that they update weekly by taking picture of each new product line on WhatsApp, Facebook etc. Removal from the web page every month of the old fashion products, which have become obsolete, is also crucial. Regarding what on-going operational routine relates to online-marketing , some businesses find themselves in a situation where demand exceeds supply. Some of them experienced slow response while competitors challenged some of them. Few businesses may suffer the copying of their brands, but they good thing is that they will not be able to destroy the originality of such brand because of its neatness.

To whether there were challenges when creating and implementing online-marketing strategy, the responses are in Table 3.

Table 3 indicates the various challenges that the SMEs are going through. Some of the said that they wait for too long to hear from customers back. Some customers do not necessarily differentiate the products and brands from various competitors. Many businesses are imitators of other competitors' "Copy Cat" in order to gain recognition. Hence, they are not able to meet customers' expectations, therefore, there are few loyal customers, and they just receive the walk-in customers. While some felt the marginalization of their businesses.

To what three specific things are most satisfactory with online-marketing efforts, response is in Table 4.

Table 3 indicated there are few specific such exposed at the incubators, good sales and brand awareness. Customers make quick response to the adverts, exposed at incubators as well as SMEs exhibition

Table 3. Challenges

Slow Reaction from Respondents	Products Unable to Distinguish from Various Competitors Without Brand	Copying of Other Brands Imitators	Lack of Outstanding Customer Satisfaction	Lack of Awareness

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Table 4. Satisfactory Specific Things

Exposure, Sales and Brand Awareness	Quick Response, Exposure, Market Improvement	Quality, Uniqueness, Original	Don't Know	Positive Response, Awareness

and from time-to-time, the market improves to high market share. They gain customer by providing quality goods and services. The findings showed that there were quite a number of factors contributing to SMEs' electronic marketing approach. The study further found out that there is a high level of e-marketing (advertising online) than the traditional one. Social media use is mostly to advertise weekly as a cheaper and no need of internet facilities such as Wi-Fi connection at the incubators. Approaches such as growth, management style, management function and contingency were showing positive. This also indicates that SMEs are happy and look forward to diversifying their businesses.

The next part presents findings from both secondary and primary research and finally draws recommendations.

Adapting Marketing Techniques for SMEs

In the past decades, major studies undertaken were on how the international marketing strategy consisting of adaptation or standardization. When going out of the domestic market, the competition plays a role in the decision of adapting or not their marketing mix: the Export Manager says that "when competition is intense we have to adapt our product as much as we can, we must be better, make the difference", Valassis and De Rosen (2013).

Competency Marketing

Issues that are more specific have an impact on the nature of competencies for SME decision-making. Technical competencies relate to the operational aspects of the tactical aspects of SME-marketing activity and decision-making competencies are more specific to the roles and issues important to SME overall management decision-making.

Network Marketing

This paper advocates that networking is an inherent tool of marketing which is wholly compatible with SME decision-making characteristics in relation to marketing activities, Demishkevich, M. (2015). Timescales within networking can vary enormously; some individuals may be networked continuously and frequently, whilst others may only be contacted infrequently and occasionally, (Carson and Gilmore 2000). Accordingly, the way to do marketing by networking is often in pre-determination by industry behaviours and norms through regular or irregular meeting occasions and industry activities or in just doing business. Demishkevich, (2015) commented that online-marketing provides a cheaper and faster way of increasing brand awareness and brand building. Therefore, the paper further commenting by advocating that networking is a marketing "competence and as such can be developed as a way of doing marketing for SMEs, that is, marketing by networking.

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Innovative-marketing

In defining innovative-marketing as "doing something new with ideas, products, service, or technology and refining these ideas to a market opportunity to meet the market demand in a new way", Kleindl et al. (1996, p. 214) demonstrate that although innovation can include new-product development, it incorporates innovative development in other aspects of marketing (Cummins et al.,2000). According to Gilmore, (2011), the individual person, who will adapt traditional marketing frameworks to suit the specific situation of his /her own firm, develops entrepreneurial marketing. The SMEs can easily bring in the innovative-marketing practices, as they do not have layers between the decision makers and the people who implement these decisions, Trivedi, (2013). Speed is a characteristic of the modern world, the factors which affect the internal environment and the external environment of an organization that the decision-maker must take into account, being very unstable, each of their changes urging a very quick reaction from an organization that wants to be performant, Ogarca, (2010).

According to Trivedi, (2013), the SMEs cannot generate revenue by selling same old products to the same old market in the same old way. Demishkevich, (2015) stated that in order to reach target audiences across different devices and platforms with the information they want, small business owners need to embrace online-marketing . Trivedi, (2013), further stated that the innovative-marketing techniques could then help the industries in building a niche for them in the market and stay ahead of time. Demishkevich, (2015) also added that Internet marketing offers numerous benefits when compared to traditional media channels. In practice, entrepreneurs usually focus on trying to be innovative, especially in relation to offering something in the market place and differentiating their company and products from the competitors, Gilmore, (2011). According to Carson and Gilmore (2013), innovative-marketing is not simply a focus on product innovation; instead, it covers the whole spectrum of marketing activity within an SME. The successful integration of Internet marketing into a firm's operations requires not only the knowledge of online-marketing , but also adequate IT infrastructure and the experience to know how the two work together. Digital marketing: Digital marketing encompasses wireless communications and digital television marketing activities in addition to Internet marketing channels cited (Li, Li, He, Ward, & Davies, 2011).

Electronic Marketing (eMarketing)

Electronic marketing is the use of Internet and its related technologies such as e-mail, search marketing, real-time communication to help achieve-marketing objectives in conjunction with other marketing communication tools cited (El-Gohary, 2012). According to Gilmore, (2011) e-marketing activities allow entrepreneurs to advertise their products and services more widely with less expense, to answer customer queries in several languages if need be, to use e-mail as a marketing tool and to provide on-line quotes.

Technology and SMEs

The introduction of new technology has changed the way business operates in the global world. According to Dzisil and Ofosu (2014), the SMEs can use social media to create a viral market for their products and services. The roles of technology in the process of bridging trade barriers include improving and diversifying methods of communication, widening the advertisement platform and ensuring efficient and timely delivery of goods and services, Dzisil and Ofosu (2014). According to Chiware, ERT (2007),

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Table 5. Approaches and Critique

Marketing Approach	Description	Critique
Stages/growth model	-describes the development of a firm through several stage	-low predictive power -limited value as a framework for detailed analysis and planning
Management style approach	-marketing behavior is related to the motivation, belief, attitude and objectives of owner-manager	-ignores e.g. organizational structure, owner-manager's marketing decision process and behaviour
Management function approach	-acknowledges marketing as an important function and essential concept for small firm growth, survival and strategic development.	-too much or too little emphasis is put on the limitations and constraints of small firms when applying disciplinary foundation of marketing
Contingency approach	-tries to find balance between the limitations of small firms and marketing as a discipline	-variables are not clearly defined, are arbitrarily selected or cannot be measured effectively -is an outcome model, not a process model

Source: Siu and Kirby (1998)

therefore, findings of some authors indicated that the most widely used means of communicating with SMEs are telephones, faxes and mobile phones, while the least used means are e-mail and the internet.

Internet Marketing (IM)

Internet marketing is the use of Internet and related technologies for creating, communicating, and delivering value to customers. Internet marketing can incorporate website, search engine-marketing , social media marketing, content marketing, email marketing, mobile-marketing , and banner advertising cited (Eida & El-Gohary, 2013; Jarvinen, Tollinen, Karjaluoto, & Jayawardhena, 2012). The SMEs have traditionally looked domestic market as their focus area and now times are changing they are looking forward to get into international business. The study conducted is at SMEs on electronic marketing approaches. The study collected data using structured questionnaires completed by a sample of five businesses. Table 5 gives first the findings from literature review and the critique thereof.

Findings from primary research are according to the research questions and objectives.

1. **Research Objective One:** Identify various marketing approaches used to market SMEs marketing mix:
    - Stages/growth model was looking at making the decisions in order to benefit customers.
    - **Management Style Approach:** SME owner-managers have individual management styles and in the absence of a marketing plan, they can find themselves using "self-marketing" of themselves as a means of promoting their businesses. Self-marketing can be defined as "varied activities undertaken by individuals to make themselves known in the marketplace", Resnick et al. (2016).
    - The-marketing function approach in SMEs is gets hindered by constraints such as poor cash flow, lack of marketing expertise, business size, tactical customer-related problems, and strategic customer-related problems, O'Dwyer et al. (2017, p. 2) cited (Doole et al., 2006; Chaston, 1998; Carson, 1985).
    - Management function approach, planning the managerial functions of marketing (planning, organization, control) are related to customers' problems whose needs have to be met on long

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term in order to obtain the optimal planned profit, Minculete et al., (2014) cited (Schneider, 2005).
    - Contingency approach: the study then concentrated on specific products or if they planned to add to their products lines for these SMEs.
2. **Research Objective Two:** To assess the innovative-marketing practices of SMEs currently used by various entrepreneurs concludes on following the best marketing option. The professional background and work experience are Self-taught and few went through vocational and other trainings. E-marketing activities allow entrepreneurs to advertise their products and services more widely with less expense, to answer customer queries in several languages if need be, to use e-mail as a marketing tool and to provide on-line quotes, Gilmore (2017, p. 6).
3. **Research Objective Three:** To strategize the best e-marketing which offer new ways of marketing replacing the existing ones? Social media is the most useful is 50per cent to all when advertising. This led the firms to create or enhance transactions that gathered and used customer information. As a result, the businesses had a better understanding of customer's needs and what customers value by using their phone (Heierli, 2008).
4. **Research Objective Four:** The various choices are in order to benefit customers by exposing SMEs business to exhibitions apart from normal business area. SMEs to keep to its best quality they can and to make sure to deliver on time. The perceptions held in SMEs in marketing are that businesses grew SMEs need enough space and make it a permanent hub.

RECOMMENDATIONS

- Municipality must build permanent shelter graduated SMEs and keep for incubators for infant SMEs.
- There must be internet facilities for SMEs on only to their phones' data instead phone or to use data on their phones as well as to have updated company websites
- The business outlets need adequate spaces accommodate the employees and equipment.
- Allow SMEs to put posters for their products so that the passers-by can easily see them.
- Protection to SMEs is required from imitators of their brands.

IMPLICATIONS OF THE STUDY

Saffu, Walker and Hinson (2008) identify increased use of the Internet for conducting business as one of the significant trends in the past decade. This necessitates the integration of Internet-driven marketing principles such as emarketing into SMEs mainstream business practices. This research study therefore will give a positive impact on the SMEs so that they can implement better marketing policies clubbed with branding through the convenience of electronic medium. Further, eenterprises will be able to know and design the "customer focused" message so that they can base their branding philosophy relating to products. SMEs also will be able to design the brands to give message of their ability and it would thus be a strong instrument to earn revenue, grow and to survive in the business. In addition, policy makers may be able to set methodical trend for designing the brands and thus their branding policies will bring sustainability in SMES and specific line of businesses (Baporikar & Deshpande, 2017). Last but not the least SMEs may find it in effect functional to devise policies by using electronic marketing as core

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and branding as complimentary approaches. Moreover, the new way of assimilating the desired brand values into the whole business requires systems, structures, plans based on comprehensive gap analysis, and a mobilisation programme designed to exploit the particular skills of brand experts to engage hearts and minds of everyone as 'brand capital generators' (Gilmore, 2001). This will enable skilled people's choice to decide where to work, investors' choice of investment opportunities and customers' choice of what to buy and where to buy it through increase in access due to electronic marketing approach.

This choice means that your stakeholders have both the right and the opportunity to understand and influence what SMEs do and does not do. Thus, SMEs that put the emphasis on customers, employees and shareholders significantly outperformed those that focused on only one or two of these groups (Duncan and Moriarty, 1997). Hence, by adoption of this innovative and mixed proposition and a high level of service delivery, SMEs will be able to attract consumers away from ingrained primary relationships and generate a lot of value from those customers by cross selling. For this, SMES need to do substantial investment in supplementing its telephone network with Internet and mobile phone services. An emphasis on constantly updating the website content within the framework of a strict brand template and based on constant customer feedback is crucial. Trying to make all channels work as seamlessly as possible within the constraints of technology by resisting an inflexible approach is also essential.

CONCLUSION

This study undertaken intended to develop new ways of marketing approaches to every element of the-marketing mix (price, place, product and promotion). Secondly, SMEs are using approaches, which are Stages/growth model (how the business develop in various stages), Management style approaches (how owners/managers are motivated in order to reach their objectives), Management function approach (realization on business growth or survival) and Contingency approach (what are the limitations or marketing as discipline). These SMEs have made use mostly social media as cheaper and more convenient in marketing an existing product or offer new improved product. SMEs made important decisions in order to benefit customers such as to expose its business to exhibitions apart from normal business area. They decided also to keep to its best quality they can and to make sure to deliver on time. Finally, the study also indicated that SMEs are happy and look forward to diversifying their businesses. The study involved e-marketing approaches for SMEs in Namibia. The results of the study have shown that social media was highly adopted in this study such as Facebook and Instagram, as an inexpensive means to connect with customers. The study, therefore found that SMEs are happy with incubators initiative. The study concluded that SMEs brands lack protection. Further studies will look at the exploration of Internet marketing practices of small business owners in different industries.

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Chapter 72
Fostering Environmental Performance Management within Indian SMEs

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ABSTRACT

Research and discussions on environmental sustainability of businesses generally focus on large corporations. Their environmental impacts are more likely to be noticed while small and medium enterprises (SME) are largely ignored. With a small scale of operations, SMEs are generally perceived to have less environmental impacts. However, as larger corporations outsource their manufacturing to SMEs the environmental burden shifts within their supply chain. This research was conducted within manufacturing SMEs in industrial markets (B2B) in Pune, India. In depth interviews with large and small firms helped develop the conceptual model and the questionnaire. Responses from 60 SMEs were analysed. The research identified factors like owner awareness, barriers and influencers to green practices and categorized environmental practices within product life cycle. The results showed that owners with high awareness levels had advanced environmental activities. The strength of barriers and influencers was established and the author makes recommendations based on these findings.

INTRODUCTION

Why and when should businesses be attracted towards environmental practices? Can they be encouraged to improve environmental performance? Much of current research directs such questions towards large enterprises and less towards small businesses. However, entrepreneurs operate in the same business environment as large firms and small enterprises are no less connected with the industry environment relation.

Even as the link between human activities and climate change is debated, opinion on reduction of environmental impact of industry is in agreement. From the 1972 United Nations Conference on the Human Environment at Stockholm to the more recent one on Sustainable Development in 2012, industry awareness and response has grown. Our understanding of environmental impacts has improved and the

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approaches towards mitigation have evolved. However, even as environmental sustainability gains importance, pursuing 'green' does not automatically save costs or lead to other business benefits (Reinhardt, 1999). This has slowed the diffusion within industry and particularly in small and medium enterprises (SMEs). Their resource constraints and limited managerial capabilities restrict owner attention to business operations and environmental activities within SMEs are often limited to compliance (Williamson & Lynch-Wood, 2006). In India, a complex regulatory framework and unsupportive agencies may be keeping SMEs away from a huge opportunity to improve the country's environment.

As the 'Make in India'[1] appeal, made by the new Indian Prime Minister, gains international attention, Indian SMEs, as suppliers in global supply chains, are expected to gain significantly in the process The recent investments by global giants suggests a positive and growing response[2] towards the campaign. This impending growth in the SME sector offers compelling reason to focus on the environmental practices within the Indian SMEs and offer a facilitative atmosphere for improvement. However, extant research within SMEs is sparse as little research is published. Of this, most focus on polluting industries and technological solutions. A deeper understanding of the SME sector is needed to guide policy and regulation. To contribute to overcoming this deficiency, this author conducted a study in the Pune region, an engineering SME belt in western India.

INDIAN SME SECTOR AND THE ENVIRONMENT

While SMEs have varying definitions in different countries, their characteristics are similar. Often these firms come into existence because of some particular expertise of the owner and are run single-handedly by them. Moreover, owners have low formal business experience (Deloitte, 2008). In this study the definition employed is from the 2006 Micro Small and Medium Enterprises Development Act (MSMED) of India. This defines and classifies SMEs on their investments in plant and machinery into micro, small and medium enterprises (Ministry of MSME, 2012).

Without being modest, the Indian SME sector is huge. An estimated 44.7 million units spread across a country of about 3.2 million square kilometres, inhabited by about 1.2 billion people living in 28 different states. They are significant contributors to employment, export earnings and the GDP. Their presence is a precondition for large industry, to which they serve as suppliers. This sector contributes to about 8% of the GDP, 45% of the manufactured output and 40% of exports (Special Task Force, 2010). Their sheer number alone makes offers a huge potential for improving the environment.

ENVIRONMENT AND THE REGULATORY FRAMEWORK IN INDIA

The environmental regulations in India can be broadly classified into regulatory controls and liability laws. Acceptable limits of pollution are set and harmful polluting industries are closely monitored. The liability laws can impose fines or order closure of defaulting industries. The Ministry of Environment and Forest (MoEF) governs environmental regulatory mechanism in India. They are the policy-makers while the monitoring responsibility lies with the Central Pollution Control Board (CPCB). Each state has its counterpart – the State Pollution Control Boards (SPCB) - responsible for monitoring industrial performance in their own state. Depending on the industry, a firm may require annual certification and periodic audits. The MoEF has categorized industries on their potential to pollute, into Red, Orange and

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Green. Firms in the red list are the most polluting and under close observation from the SPCBs. The National Environmental Policy (NEP) of 2006 brings out policies, principles and rules to implement environmental rules and regulations (MoEF, GOI, 2006) and encourages industries to adopt standardized environmental management practices by acquiring ISO 14000.

REVIEW OF LITERATURE

Even though environmental sustainability within SMEs is less researched than large firms, there are studies available from several countries. There is a general agreement among researchers about a scope for improvement of SME's environmental performance and that green practices of large firms may not be appropriate for SMEs due to specific constraints (Hitchens, 2004). Similarly, the barriers and influencers of environmental performance in SMEs seem to converge within many studies. The characteristics brought about by small size do not favour implementation of environmental initiatives, especially when they do not directly affect the firm's business. As a result, environmental management systems (EMS) are not widespread in SMEs.

The research conducted within the EU has contributed to the understanding of green behaviour in SMEs. Particularly the Organisation for Economic Co-operation and Development (OECD) has published studies and reports on greening SMEs (OECD, 2007). Elsewhere, studies have identified the motivators (Smith & Duff, 2000) (Moorthy & al, 2012), enablers (Gadenne, Kennedy, & McKeiver, 2009), barriers (Iraldo, Testa, & Frey, 2010), environmental technologies (Shrivastava, 1995) (Hobbs, 2000), strategies (Fischer & Schot, 1993) (Orsato, 2006) and what competitive advantages (Porter & van der Linde, 1995) (Ghemavat, 2006) a firm could stand to gain (Bianchi & Noci, 1996) (Hitchens, 2004).

As ownership and management often converge in SMEs, the owner has a major impact on the performance of the business. A number ofstudies indicate that awareness and knowledge of the SME owner is a major barrier to green performance (Gibson & Casser, 2005) (Iraldo, Testa, & Frey, 2010) (Ortiz Avram & Kühne, 2008). Gerrans and Hutchinson (2000) suggest that SME owners are generally unaware of current environmental standards while Williamson et al (2006) showed a low understanding of legislation within SMEs. Another study suggests that SMEs owners lack managerial training and experience which and tend to approach business through a process of trial and error and this is likely to be difficult in face of complex business decisions (Farsi & Toghraee, 2014). Similar conclusions are drawn by in other studies that business complexities take up a large portion of the owner's time which makes them focus on operational issues rather than strategic objectives (Bianchi & Noci, 1996) (Gelderen, Frese, & Thurik, 2000) (Walker & Brown, 2004) (Bognanno, 2012). The Deloitte-CII Report on SMEs in India (2008) reports that SMEs are incapable of integrating environmental management and corporate responsibility into business strategy. Although it may be more difficult for SMEs to recognize gains given their smaller size and scale (Millard, 2011), SMEs will be better able to take advantage of green opportunities due to their flexibility (Von Weltzien Heivik, 2010).

Among the influencers, compliance and cost reduction are the major ones for SMEs. Since competitiveness is a business imperative green practices with economic benefits are pursued by SMEs (Bansal & Roth, 2000). Thus practices of reducing material consumption, energy and waste, which lower costs and benefit the environment, are prevalent. However, investments which do not offer cost or business benefits are ignored (Esty & Winston, 2009) (Gadenne, Kennedy, & McKeiver, 2009). Clean technologies are unattractive when their pay back is longer than conventional technologies. Some studies suggest

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that eenvironmental performance imposes financial burden on SMEs (Williamson & Lynch-Wood, 2006) (Simpson, Taylor, & Barker, 2004) which can be set off if demanded by customers (Lewis & Cassells, 2010). When customers do not ask for it, environmental performance turns into an unnecessary cost (Hillary, 2004).

Many studies show that improving environmental performance in SMEs may provide greater overall benefits than other measures aimed at fewer, but larger, businesses (Robinson & Stubberud, 2013). Several studies highlight the role of governance on healthy SMEs. A study from Venezuela (Fernandez-Vine, Gomez-Navarro, & Capuz-Rizo, 2010) shows that Public Administration is a key stakeholder and they should improve its tools to facilitate greener SMEs. An interesting finding from Philippines suggests that if the entrepreneur has a large asset size at stake or is advanced in age, he or she is more inclined to undertake environmental initiatives in the enterprise (Rao, 2008).

Even as studies from several countries are available (Chen & Lai, 2006) (OECD, 2007) (Megacom, 2008) (Ortiz Avram & Kühne, 2008) (Lee, 2009) (Lewis & Cassells, 2010) (Weerasiri & Zhengang, 2012) across various industries, literature on green SMEs in India is sparse. The ones available in India focus more on the technology aspects or study practices like energy efficiency, waste reduction (Gopichandran, Shah, & Patel, 2013), clean technologies (Sangwan, 2011) and supply chain (Raghavendran, Xavier, & Israel, 2012). Raju (2002) argues that SMEs in India require globally compatible facilitation in order to be competitive both domestically and internationally, suggesting stakeholder participation for environmental management within them.

OBJECTIVES

The primary objective of this research was to improve the knowledge on environmental practices within engineering SMEs in India. To gain these insights, the research set out to:

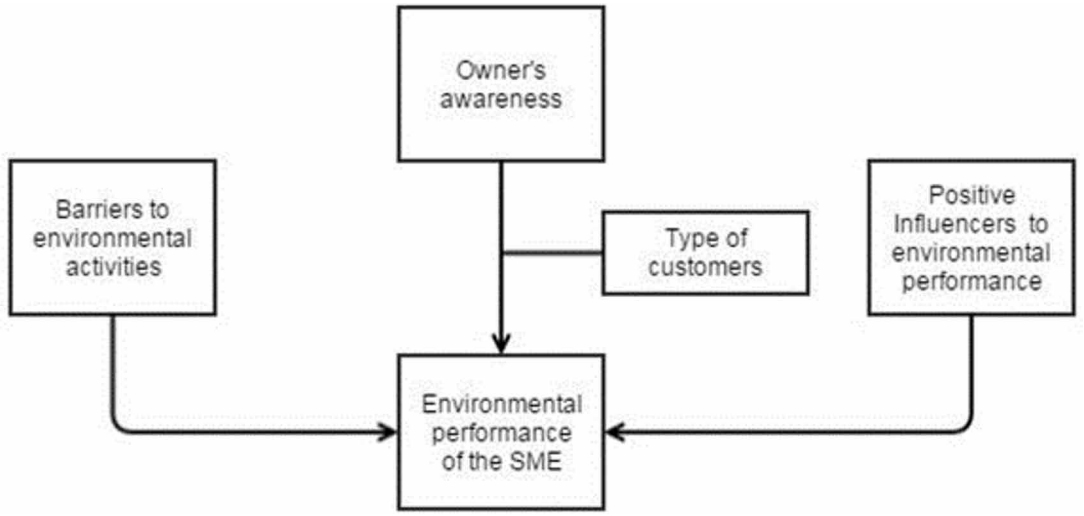
1. Study the environmental activities within each stage of the product life cycle;
2. Understand the influencers and barriers to green activities for SMEs;
3. Understand the role of owner awareness in the green performance of the firm.

METHODS

Starting with an exploratory study, interviews were conducted with eight SME owners and five sustainability managers in large companies. The large companies were customers of SMEs and provided insights from this perspective. Based on findings from the exploratory phase, a conceptual framework was developed and questionnaire prepared for data collection. The questionnaire comprised of five sections each with questions on environmental activities within the product life cycle. It was sent out to over 500 firms, drawn from three sampling frames. Respondents could answer it on-line, on a printed copy or over email. From the responses, those with over 33% unanswered questions were removed. This left 60 responses which were taken up for further analysis. The data were analyzed with a statistical computer application.

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Figure 1. Conceptual framework



SAMPLE SELECTION

The respondents were drawn from the Pune industrial region based on three qualification criteria. The respondents must be (i) engineering firms with manufacturing as a principal activity (ii) primarily serving industrial markets (b2b) (iii) in current business for over 5 years. This disqualified SMEs engaged mainly in trading, services or consumer businesses. The sample thus represented SMEs that operate in global supply chains of large corporations.

CONCEPTUAL FRAMEWORK AND HYPOTHESES

A conceptual framework was developed based on the exploratory interviews and survey of literature (see Figure 1). This suggested that various barriers hamper an SME's immersion in environmental practices while on the other hand some factors could encourage them. Studies show that the owner's awareness is an independent variable affecting the green activities. The conceptual framework estimates a relation between the green performance for a firm and the barriers, influencers and owner awareness. Two hypotheses are proposed in the framework. The first being that owner's level of environmental awareness and the firm's Green performance are correlated.

The second hypothesis was based on exploratory interviews which suggested that the type of customers served can affect the green performance. The hypothesis proposes that SMEs serving mainly large customers are likely to have a higher level of Green Performance.

The questionnaire had 32 sets of questions grouped on the generic product life cycle. It included questions on environmental practices within each stage of the product life cycle. Thus questions spanned the design, sourcing, manufacture, distribution, sales and consumption stages of the product. A GreenScore was computed for the firm based on the responses. Respondents were asked to rate the barriers and influencers in their adoption of green practices. The barriers and influencers were prepared based on studies from other countries and from insights gained from the exploratory interviews.

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RESULTS AND DISCUSSION

The 60 respondents drawn were from engineering, electrical and electronics, plastics and packaging, chemical and other industries. The number of firms from each industry is shown in Table 1.

As regulation is specific to the nature of industry, this was considered important. The respondents were grouped according to the type of customers they served (Table 2).

SMEs cluster around large manufacturing companies and operate within the supply chain of large enterprises. Pune is the manufacturing base for many large multinational firms, including major automobile manufacturers. Many SMEs are suppliers to these firms directly or through another supplier. The region has very few government companies and only 8.3% respondents served traders or government organizations.

A firm's level of awareness was computed from responses to one set of questions. The owner's awareness of environment terms, practices and impacts of industry on environment and knowledge of clean-tech, GRI etc were asked and scored. The scores ranged from 0 to 19, 0 being the lowest awareness. These were clubbed into three Levels of Awareness. Majority of the SMEs (51.7%) had a moderate level of awareness (Table 3).

Table 1. Respondents by industry

Industry	Percentage of Respondents
Engineering – mechanical, automotive	55
Electrical, Electronics	17
Plastics, Packaging	12
Chemical	8
Others	8
Total	**100**

Table 2. Grouping by customer type

Grouping Respondents by Type of Customers	Percentage of Firms
Cust_Type A: Serving mainly large customers	63.3
Cust_Type B: Serving mainly small and medium customers	28.3
Cust_Type C: Serving traders or government customers	8.3
Total	**100**

Table 3. Grouping by level of awareness of the environment

Grouping Respondents by Level of Awareness	Percent
High awareness	20
Moderate awareness	51.7
Low awareness	28.3
Total	**100**

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Five sets of questions checked the green practices within the product life cycle. Each stage was given marks and the total of all stages was computed to yield the GreenScore. A high GreenScore indicated more environmental activities. The GreenScores had a mean = 15.93 and $\sigma = 12.463$.

HYPOTHESES TESTED

The first hypothesis which proposes that SMEs serving mainly large customers are likely to have higher GreenScores was tested statistically. Since the GreenScores were not normally distributed, the Kruskal-Wallis non-parametric ANOVA conducted on the GreenScores and customer type. Table 4 shows the mean and median GreenScores of respondents by their customer types. In this case the null hypothesis was that the median GreenScores are not different between the three Cust_Types A, B and C. The test rejected the hypothesis with a $\chi^2 = 4.095$, p= .129 suggesting that GreenScores do not vary significantly between the types of customers (Table 4).

This shows that SMEs serving small, large or other customers are not likely to have different Green-Scores. The explanation suggested for this is that SMEs are usually a part of the supply chain of a large customer, even if they directly supply small customers. Since they are expected to meet the requirements of the end customer, this imposes similar conditions on them, as large customers. Therefore, irrespective of the type of customers they serve the mean GreenScores do not vary significantly. For example, one firm making electrical transformers supplied transformers to SME clients. These SMEs made sub-assemblies and supplied them to a large manufacturer of microwave ovens and washing machines. Because of this, the transformer manufacturer had to operate at standards specified by the end customer.

The second hypothesis proposed that the owner's level of environmental awareness and the firm's GreenScores are correlated. The hypothesis was tested with the Kruskal-Wallis non-parametric ANOVA. The mean and median GreenScores are shown in Table 5 for the three levels of awareness.

Table 4. Cross tabulation of GreenScores for each customer type grouping

Cust_Type	GreenScore	
	Mean	Median
Cust_Type A: Mainly Large	21.29	21.5
Cust_Type B: Mainly Small	14.88	18
Cust_Type C: Traders or government	14.8	14

Table 5. GreenScores shown for each level of awareness grouping

Level of Awareness	GreenScore	
	Mean	Median
High	35.67	35.5
Moderate	22.96	23
Low	7.2	9

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The test showed a highly significant difference in the median GreenScores between the three levels of awareness, with $\chi 2$ of 19.728 and the p value .000. This accepts the hypothesis proposed that GreenScores of SMEs with varying owner awareness are different. This reinforces the findings in another section, where 60% of the owners felt (strongly or somewhat) that their own awareness about the environment had influenced them in environmental practices. The author suggests that this is an important correlation, especially for regulators and policy makers. For Indian SMEs to improve environmental sustainability practices, increasing the owner's awareness must be addressed. Upon a cursory check in the marketplace for SME specific environmental education or training programs, the author did not find any being currently offered or conducted in the past. Many training firms offer EMS training, but these are suited towards large organizational requirements and can get too resource intensive or complex for small firms.

BARRIERS TO ENVIRONMENTAL MANAGEMENT IN SMEs

The diversity within SMEs makes it difficult to identify common barriers to green performance. From prior research and exploratory interviews, eight barriers were identified. These were categorized as internal and external. This is considered important since the SME would have some control on the internal barriers, while external ones would need a response from the SME. The respondents were asked to rate them on a four point Likert scale. Table 6 shows the responses in percentage of firms.

Among the internal barriers, finance availability ranked first. Further questions pointed to long cash cycles which discourage spending on non-productive activities. In India, SMEs have various financial challenges of access, high borrowing rates, high transaction costs etc. (Thampy, 2010) (InfoDev, 2012). This is a key issue for SMEs which is responsible for adoption of environmental practices. This also suggests an explanation why high awareness may not result into positive behaviour for the environment. Knowledge and awareness ranked second which showed that there is an awareness of non-awareness. In other sets of questions too awareness ranked high. All the internal barriers can be remedied by the SMEs themselves, when they are able to identify and acknowledge their presence.

Table 6. Barriers to green practices

Barriers		Strongly Responsible	Somewhat Responsible	May have been Responsible	Not Responsible
Internal	Finances are locked up in business activities	**29.3**	**29.3**	12.1	**29.3**
	Lack of knowledge, awareness	17.5	**42.1**	19.3	21.1
	Lack of required skills	17.5	**35.1**	21.1	26.3
	Lack of time	13.8	31.0	8.6	**46.6**
External	Lack of government support	29.8	**33.3**	7.0	31.6
	Unattractive Return on Investment	22.4	**37.9**	10.3	29.3
	Lack of industry support	21.1	**35.1**	12.3	33.3
	Competitive pressures	17.5	**43.9**	7.0	31.6

Note: Responses shown in percent of firms

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Among the external ones, 52% agreed (strongly or somewhat) that they wanted more government support. When asked about the nature or form of support, responses ranged from helping understand laws and rules to identifying technologies, preferential financing, subsidies and making enforcement stricter. In one question 87% firms felt their competitors do not strictly comply with regulations. This meant that they paid less costs of prevention effectively reducing motivation of those who complied. This was corroborated in the interviews, one respondent was said that SPCB employees had low awareness. The findings point to the government's role in making SME specific regulations and in incentivizing performance. This may still be an 'end of pipe' approach but can lead to an improvement. The next external barrier of unattractive return on investment too, can be remedied by policy interventions. Most respondents felt that at current rates of financing, spending on non-productive activities is not attractive. Green financing was suggested by some respondents which will help improve the return on investment.

There is consensus on industry support – the role of regional trade associations and chambers of commerce. A large number of SMEs are members of local associations. Such organizations undertake training programs, share best practices and make representations to government on taxation or similar issues. In Pune, the local chamber of commerce is a widely recognized and has been a special SME cell to address their problems. However, they have not been active in environmental issues of SMEs, which is reflected in 56% respondents agreeing to it.

INFLUENCERS OF ENVIRONMENTAL MANAGEMENT IN SMEs

The potential to save costs is a strong influencer for green practices. Energy saving, waste reduction and pollution prevention reduce costs and are popular practices with SMEs. To establish the other factors which have the potential to influence green behaviour, questions pertaining to internal and external influencers were asked. Responses were on a four point Likert scale and are shown in Table 7.

Personal awareness stood out as the strongest influencer among the respondents. Over 60% of the owners felt (strongly or somewhat) that their own awareness about the environment had influenced them

Table 7. Influencers of green practices

	Influencers	Strongly Influenced	Somewhat Influenced	May have Influenced	No Influence
Internal	Personal awareness	24.6	**35.1**	21.1	22.8
	Employees	1.7	15.3	13.6	**69.5**
External	Regulatory Bodies (PCBs)	15.5	22.4	13.8	**50.0**
	Customers	13.8	22.4	17.2	**48.3**
	Investors	3.5	1.8	1.8	**96.5**
	Society/community	1.7	10.3	22.4	**67.2**
	Suppliers	1.7	10.2	5.1	**83.1**
	Joint venture partners	1.7	3.4	6.9	**87.9**
	Insurance firms	0.0	1.7	5.1	**93.2**
	Bankers	0.0	5.1	3.4	**91.5**

Note: Responses shown in percent of firms

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in environmental practices. This supports the earlier response of low awareness as a barrier. The second influencer is customers. As discussed earlier as SMEs form a part of the supply chain of large firms, their environmental targets need support from their suppliers. Many companies thus qualify vendors on quality and environmental measures. The responses showed that employees too influence green practices. They are part of society which affects their choices and preferences.

Among external influencers, it is interesting to note that currently, insurers have little influence. Lower environmental risks of clients will be beneficial for insurers and could be incentivized. This suggests that very few SMEs insure themselves against environmental risks. There is no information available currently on this and could be basis for further research. For large project financing, many banks require environmental impact assessment of projects. This has influenced large firms to conduct them and also to choose environmentally favourable technologies. Similar conditions appropriately scaled for SMEs could be useful for banks for SME funding.

CONCLUSION AND RECOMMENDATIONS

SMEs by their sheer number have a huge potential of reducing environmental impacts. Much of the potential is not yet realized. In India, with the enforcement agencies understaffed and under skilled (Sahu, 2010), regulators alone cannot be expected to make a transformation. A favourable ecosystem specifically considering the challenges and constraints in which small firms operate, would facilitate the change. From the analysis and various responses and suggestions received in the personal interviews, some points for policy makers are suggested, as follows:

1. **Regulators & SMEs:** 53% respondents strongly agreed that environmental regulations and SPCB working must be tailored for SMEs. Further, some responded that the staff and officials themselves need to be more aware of industry specific regulation and environment. 47% strongly felt that SPCBS have the most important role to play for SMEs. Given the number of SMEs and the potential for them to collectively improve environment, the following recommendations are made:
    a. Greening the huge number of SMEs in India requires a significant commitment, resources and a top down approach. The MoEF must strategically address SMEs within the system. As the findings show, SMEs are not happy being clubbed with large organizations. While regulating the SMEs, the MoEF must consider the constraints they face to build a separate framework. The monitoring agencies and state authorities must be directed to deal with SME compliance in a facilitative manner;
    b. The SPCB employees require training and need to be empowered with tools and techniques for dealing with SMEs. Many respondents complained of the lack of expertise of the officers who visit them. It is imperative that they improve their credibility since SMEs often lack the requisite capabilities. Substantial investment in laboratories and infrastructure is required to cater to the large numbers. Moreover, SPCBs must increase their presence in SME clusters;
2. **Encouraging Green practices through financial institutions:** Financial issues within SMEs are well researched in most countries. The responses in this study suggest that access to finance is a major barrier for greening. The Reserve Bank of India has mandated Indian banks to treat this as a "priority sector" (RBI, 2012). Taking these initiatives further, the following recommendations are made:

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a. Lack of sources of green finance was a concern raised by some respondents and industry experts. Green financing for SMEs can be offered through lower interest rates or longer repayment periods. Investments in pollution control equipment, clean technologies and green projects can be encouraged through such schemes;
b. A majority of engineering SMEs undertake debt financing for their business. Banks and lending institutions are thus in a unique position to divert their attention to environmental performance. While evaluating funding applications, they could make it mandatory to submit an environmental report. This will help bring into perspective a hitherto ignored aspect of business. This would be beneficial for banks too since they can evaluate the environmental risks that their potential client is being exposed to;
c. Insurance Regulatory and Development Authority, a body constituted by an act of the parliament, can mandate setting lower insurance premium for lower environmental risks. The penetration of insurance is low in India (India Brand Equity Foundation, 2015), most lending institutions make it a requirement. Lower premia can encourage green practices since SMEs are seeking ways to lower costs;

3. **Certification incentives:** Like the subsidy for ISO 9000 certification some years back, environmental certification needs to be subsidized. The certifications ISO 14001, are challenging and can potentially disrupt an SME's day to day operations. Subsidies can offer a financial incentive to undertake it. SMEs exporting to the European Union (EU) have realized the need of being certified. The EU's Eco-Management and Audit Scheme (EMAS, 2013), will require compliance from SME exporters. The unprepared SMEs can stand to lose export opportunities;
4. **Environmental Facilitation Cells:** Various industry associations in India have been active and influential in improving productivity and safety in India. In particular, CII (Confederation of Indian Industries) and FICCI (Federation of Indian Chambers of Commerce and Industry) have played exemplary roles. They comprise of most of Indian business houses and it is in their interest when their suppliers go green. Such organizations can take up the establishment of facilitation cells to be put up in SME clusters. The primary role of such cells would be to impart environmental awareness and training programs and provide support in compliance. Paid services can be offered to SMEs for identifying areas of improvement, technologies to mitigate environmental risks and securing business benefits from voluntary practices. Moreover, such cells can provide employment to environmental engineers and can help undertake research.

As improvements in environmental performance may not necessarily hold business benefits, SMEs tend to overlook them. This would leave out an immense opportunity to improve the environment for India. With the 'Make in India' campaign attracting new investments, it is time for Indian SMEs to focus attention on their environmental practices. If they do not do so now, they may lose the new business opportunities. India's GDP will benefit from the increased business as would her environment from the improved practices.

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ENDNOTES

[1] http://www.makeinindia.com/ A national program aimed to facilitate investment and provide best-in-class manufacturing infrastructure.

[2] http://www.business-standard.com/article/companies/ikea-responds-to-modi-s-make-in-india-call-to-double-sourcing-by-2020-114121001064_1.html.

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Chapter 73
Coping Better with the Project´s Unknown Unknowns:
New Competences for Overcoming Uncertainty in Projects

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ABSTRACT

It is the goal of management to overcome and delete uncertainty. Uncertainty is seen as an obstacle and threat for successful management. However projects are full of uncertainty. Successful project management therefore aims to overcome and ideally delete uncertainty as far as possible. In project management, uncertainty and risk are often used synonymously. Current project management methodology contains only technics how to manage risk in projects. The assessment of risks is based on the precondition of stable conditions and the idea that the influencing parameters are known, assessable and calculable. Since more than 2,000 years it is the aim of the Western cultures to master the nature by natural sciences and mathematics. In the last three centuries of Modern Philosophy the perspective developed that analytical scientific know how (episteme) and technical skills (techne) can master any kind of complexity and risk. The third traditional Aristotelian competence, the practical wisdom (phronesis) however was perceived as not acknowledgeable.

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INTRODUCTION

Management is defined as the organization, co-ordination, planning and control of activities in order to achieve defined objectives. It is the aim of the management of organizations to build and keep continuity and stability. This is done by objectives, and with the standardization of stable processes, with fixed procedures and pre-defined resources. Herewith the management aims to avoid uncertainty, as uncertainty is perceived as a threat for management as it could endanger the planning and steering of stability. This conceptual approach is also valid for the management of projects. Project management practice however shows that projects are full of uncertainty and that overcoming this uncertainty is nearly impossible.

A project is a temporary endeavor undertaken to create a unique product, service or result. However this uniqueness - in contrast to routine processes - leads to the fact that projects are full of uncertainty (e.g. developing a new product that is to be launched far in the future, a new constellation of team members or a lack experience in a new business segment). As a consequence uncertainty is an inevitable, typical characteristic of projects. The management of project aims to overcome and delete this uncertainty as far as possible. With the help of pre-defined project phases, standardized tools and good-practice methods the project processes shall be made predictable, plannable and calculable. This strategy of elimination of uncertainty is also applied when it comes to tasks that are not completely plannable as it is the case in projects.

Since the global increase of volatility, uncertainty, complexity and ambiguity (described with the acronym VUCA in the 1990s) of the general conditions, uncertainties in projects and their impact on the project results get increasingly in the light of the awareness of the senior management. These uncertainties demand for a new type of project manager who not only minimizes the upcoming uncertainties in the project but who also foresees and realizes the opportunities that derive out of the project uncertainties (Lechler, 2013; Dalcher, 2014). This new connotation of uncertainty containing both the chance for opportunity as well as for risk demands for a new attitude towards uncertainty.

The following chapter first examines the concept of uncertainty and of risk. It lays down the current risk management approach in project management and explores the potential for professional uncertainty management in projects. The analysis of Aristotle´s classification of knowledge and evolution of his concept in the West in the last 2,000 years shows that one of the three competences, namely phronesis was abolished in the last 300 years. In addition the concept of dealing with uncertainty in the Eastern societies as well as in current business management is analysed concening their management of uncertainty. The comparison shows the need for a new competence of opportunity management in addition to risk management in projects.

It is the aim of this chapter to raise the awareness for a new, so far disregarded competence of project managers, namely the capability to differentiate between uncertainty and risk. This is the basis to develop a further competence, namely to turn uncertainty into a potential opportunity. The significance of these new competences is that they lead to a redefinition of the project managers´ role from the one of passive execution of the corporate strategy to the active formation of the future of the organisation. This has consequences in the education, qualification and long-term career development of project managers in organisations as well as of those responsible for the governance of projects.

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UNCERTAINTY MANAGEMENT IN PROJECTS

Differentiation between Uncertainty and Risk

Generally, uncertainty and risk are often used synonymously in project management as both terms are often used interchangeably. However, both concepts have a different meaning.

In a news briefing in 2002 the US Secretary of Defense Donald Rumsfeld said about the lack of evidence by supplying weapons for the mass destruction to terrorist groups in Iraque: "Reports that say that something hasn't happened are always interesting to me, because as we know, there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns – the ones we don't know we don't know. And if one looks throughout the history of our country and other free countries, it is the latter category that tend to be the difficult ones. (US Defense Government, 2002)

From this speech in 2002 the terms "known knowns", "known unknowns", "unknown knowns" and "unknown unknowns" arised in the management theory (De Meyer., Loch, & Pich, 2002; Cleden, 2009; Winch & Maytorena, 2012; Sanderson, 2012). However this theoretical differentiation between the four different qualities of risk does not have an impact on project risk management in practice.

In the 1920s and 1930s the management theorists Frank Knight ("Risk, Uncertainty and Profit" 1921) and the economist John Maynard Keynes ("General Theory of Employment, Interest and Money" 1936 and "General Theory of Employment" 1937) differenciated between the two concepts of uncertainty and risk.

"The essential fact is that 'risk' means in some cases a quantity susceptible of measurement" (Knight, 1921). This quantifyable measurement can be expressed by mathematical statistical probabilities "[…] risks […] were supposed to be capable of an exact actuarial computation" (Keynes 1937). In comparison to uncertainty that has no scientific basis to calculate a probability. "We simply do not know" (Keynes, 1937). Knight recommends to restrict the term 'uncertainty' to cases of the non-quantitative type (Knight, 1921). Further on Knight forecasted the dispute on the forms and consequences of uncertainty as an important task of economic scientific development. He warned that it is the *true uncertainty* that prevents the theoretically perfect outworking of economic success (Knight, 1921). The authors indicated already in the 1920s the great meaning of uncertainty on economic decisions.

In today's project management literature risk is defined as an "uncertain event or condition that, if it occurs, causes a significant positive or negative effect on the project objective" (Project Management Institute, 2008). Risks are events, circumstances, situations or conditions that might occur with a specific probability and have a potential negative impact on meeting predefined project objectives. Risks are the so-called "known unknowns" and can be separated from uncertainty if they are measurable, calculable and predictable for the course of the project (Cleden, 2012; Lechler, 2013).

In comparison to uncertainty in project management: Uncertainty can be defined as all unknown or unexpected project situations with a potential significant impact on the project. Uncertainties are unknown, not foreseeable and not predictable with the set of tools and instruments for the course of the project, with other words the so-called "unknown unknowns" or "black swans".

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As project reality shows unexpected events often occur during a project (Pinto, 2007). Risk management limits the impact of the unexpected events and prevents these events from happening. Accordingly, it is generally assumed that risk management contributes to the success of the project (Olsson, 2007).

The standardized project management processes contain the aspect of risk management: Project risk management holds a strong position in the project management theory and methodology (APM, 2006; ICB 3.0 of IPMA; PMBok by PMI, 2008). Also the academic studies on project management concentrate on managing and avoiding risks. None of the project management standards copes with the aspect of uncertainty.

The analytical methods applied provide the backbone for the risk management approaches, and have the benefit of producing an assessment of a known risk situation relatively quickly, including economic measures of gains or losses (Thamhain, 2013).

In a survey of 171 articles in project management published between 2000 and 2010 Zhang summarizes that "risk is epistemologically probabilistic (...). A basic epistemological model in the analysis of project risk is the risk events-consequence link. Risk events stand forall possible events, situations, or circumstances whose occurrence can logically lead to the materialization of a certain consequences. This logic is universal and recognized, and objective and leads to the design of quantitative or semi-quantitative techniques to improve the efficiency and effectiveness of risk analysis" (Zhang, 2011). He states that "identifying and analyzing risks … could negatively influence the process of the actualization" (Zhang, 2011, p. 9).

New information technology systems support project managers in becoming more effective in identying and describing risks analytically (like critical path analysis, earned value analysis, risk-impact matrices, online databases for categorizing and sorting risks, Monte Carlo analysis) all designed to make project-based results more predictable (Thamhain, 2013). Concluding it can be stated that the paradigm of systematic RM is predominantly focused on anticipated risks (Lehtiranta, 2014).

The objective of project risk management is to transfer the uncertainties into project risks in order to make them plannable and controllable (Korhonen et al., 2014; Howell et al., 2010; Yang et al., 2014; Creasy, Anatatmula 2013; Zwikael et al., 2014; Ghapanchi et al., 2012; Krane et al., 2010). To incorporate the uncertainties in project modeling this is done by stochastic networks where activity costs and durations are not deterministic but follow certain probability distributions (Acebes et al., 2014; Jani, 2011).

García-Fernández and Garijo highlight the limits of this approach in dealing with uncertainty. The traditional capital budgeting tools such as NPV or ROI have proven to be suitable enough to value the profitability of projects without uncertainty. The strategy for implementing such projects is completely defined before the start up. "However, these methods fail when they are used to evaluate projects that are subject to significant uncertainties, such as demand, costs and prices, or unexpected events, which can change the course of the project" (García-Fernández, Garijo 2010, p. 464).

Thamhain and Zhang demand a more professional approach in dealing with the hidden, less-obvious aspects of uncertainty, and in proactively coping with risks in the early stages. Uncertainties, ambiguities and risk factors that are often connected. They are non-linear and can develop into issues that ultimately affect the project performance (Thamhain 2013; Zhang, 2014; Fan 2014).

This chapter shows that in the economic theory there is a differentiation between uncertainty and risk, but that there is no differentiation between risk and uncertainty in project management theory. Today´s project management standards offer tools and techniques for risk management. But these methods fail when a project manager is confronted with uncertainty in projects. Therefore today´s risk management in projects is critized as the next chapter shows.

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Risk Management in Today´s Project Management Practice

Critique on today´s application of project risk management is formulated as follows: "We suggest that the inappropriate use of project risk management techniques may be part of the problem rather than part of the solution here, and that we need to rethink project risk management from first principles" (Winch & Maytorena 2012, p. 355; Lenfle 2011; Cleden 2009). They critize the strong focus on risks in projects and the neglect of uncertainties. It can be stated that there is no differentation between uncertainty and risk in projects. "There is a tendency to conflate these terms and to use them interchangeably, which in effect means that uncertainty is either treated in the same way as risk or ignored" (Sanderson, 2012, p. 434; Hartono et al., 2014). In addition it is not clear how to manage these unknown-unknowns (Lechler et al., 2012, p. 60).

The main critique is that the positive potentials lying in the uncertainties are not seen with the currently existing approach. Situations of uncertainty are not negative per se. They definitely lead to project changes, but could even to improve the initial value proposition of a project. The potential possibility to improve the value of a project is called 'opportunity'. However the management of opportunities differs from the management of risks. The exploitation of an opportunity requires significant changes that go beyond modifications of a baseline" (Lechler et al., 2013, p. 18; Lehtiranta, 2014; Sanderson, 2012; Perminova, 2008; De Meyer et al., 2002).

The sources of uncertainty can be issues as contextual dynamics, the business or geographic context of the company or its subsidiaries, technical innovations, new norms, laws or regulations, cooperation and contracts with suppliers or third parties, market turbulence, all these are examples of uncertainty sources arising from the broader business and societal environment in which the organization operates (Martinsuo, 2014; Petit 2012). The management of theses contextual uncertainties has an important meaning for the success of a project, which is even more true for the management of megaprojects (Sanderson, 2012).

In reality projects are often separated from the remaining organisation. They are seen as a "lonely phenomenon, with neither history nor future […].The perspective is from the inside […]. In this perspective, the players and actions of the environment do not appear in their own right, rather through their relationship with the project in question. The historical and organizational contexts of the project are taken for granted, or simply not included in the analysis" (Engwall, 2003, p. 793).

Today´s paradigma in Western project management is: the more detailed a project plan the better the control of the project. However, the intense preoccupation with planning is linked to the project failure as detailed, rigid plans are limiting the freedom to make important decisions in projects. In addition it encouraging an attitude "where low level products become ends in themselves, instead of contributing to a greater goal" (Pollack, 2007, p. 271; Eschenbruch, 2013; Grösser, 2011).

This leads to "future outcomes as statistical shadows of the past" (Sanderson, 2012, p. 435; Scheurer & Ribeiro, 2012). Future developments are seen in the light of the past. Uncertainty arises often during the course of the project and not at its beginning. In addition to the traditional approach of project management to put emphasis on assuring conformance to time, budget and scope constraints. Continuous improvement, customer-oriented thinking or reflective learning are often left behind. "This leads to the fact that project companies become less flexible, unable to accumulate knowledge and experience necessary for coping with uncertainty" (Perminova et al., 2008, p.74).

Futher complexity is caused by the contingencies occurring in a project. "Unchecked contingencies tend to cascade and penetrate wider project areas. Contingencies occurring anywhere in a project have

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the tendency to penetrate into multiple subsystems (domino effect) and eventually affect over-all project performance" (Thamhain, 2013, p. 31; Scheurer & Ribeiro, 2012).

Concluding it can be stated that the straight application of the risk management techniques is not sufficient for adaquately dealing with today´s uncertain project environments.

Exploring the Potential of Uncertainty Management in Project Practice

A stronger focus on the management of uncertainties by the project managers might function as a lens through which one can gain new and important insights (Munthe et al., 2014; p. 214).

However, there is only few research that focuses on the analysis of the potential that lies in uncertainty in projects. Lechler at al. analysed 42 qualitative case studies concerning the potentials of uncertainty in projects.

They show that:

- The opportunities to create additional value for the projects by uncertainty become obvious in the project execution phase;
- Project managers who are able to differentiate between uncertainty and risk in projects will be able to identify new potentials in their projects with a higher probability;
- Project managers with a business perspective are more capable to classify uncertainty appropriately and the potential for increasing the value for a project (Lechler et al., 2013).

As a consequence Lechler demands a new set of business competences for project managers. These competences contain a fundamental understanding of the specific industry branch and the company´s competitive situation to be able to realize new opportunities that emerge in the course of the project. As a consequence the senior management has to give to the project managers more power, to enlarge the capabilities and competences of their project managers and to strengthen the interactions between corporate strategy and project management (Lechler, 2013, p. 102).

Several researchers see the capability to successfully cope with unexpected events as the ability to cope with changes. These project managers seem to exercise the art of 'managing the unexpected' parallel to executing the plan (Söderholm, 2008, p. 81; Thamhain, 2013, p. 29). This corresponds to a set of personality traits of project managers that are able to act both formal and intuitive. These managers are able to lead projects with less data and to rely more on their intuition. (Cohen et al., 2013, p. 83).

Judging the relevance of information is an intuitive process rather than a rational one (Perminova et al., 2008, p. 77) and confirms the need for 'gut-feeling' approaches that can capture weak signals without having a specific focus in mind (Williams et al., 2012, p. 47).

The results demand for a higher appretiation of practical knowledge in dealing with uncertainty in projects. Professional experience is defined as the familiarity with circumstances and procedures. Experience cannot prevent the upcoming of an unexpected event, but can support the appropriate reaction" (Syben, 2014, p. 83).

This capability of identifying new opportunities in uncertainty demands for a different personality of project managers, different competences, organizational flexibility and freedom. Risk managers in projects are typically risk avoidant, conservative, precise and careful. These characteristics are not required when it comes to the management of opportunities. An opportunity manager should typically be open-minded, visionary, innovative, flexible and fast. By comparing these personality types it can be stated

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that the roles of the risk and the opportunity manager should be carried out by two different individuals in a project. Particularly the opportunity manager should have strong links into the organisation and a deep understand of the corporate strategy and its competitive situation.

This chapter showed that the role of the opportunity manager who identifies the potential lying in project´s uncertainty was so far neglected in project management. The capability to successfully cope with the unexpected corresponds to project managers that are able to act both formal and intuitive and shows the need for 'gut-feeling' approaches.

HISTORICAL EVOLUTION OF KNOWLEDGE

The following chapter shall analyse how the classic concept of knowledge developed and changed its meaning in the course of the last 2,500 years in the Western culture.

Aristotle´s Classification to Knowledge

In ancient Greece it was the aim of the researchers to understand the fundamental laws of nature by mathematics, natural sciences and philosophy.

The ancient Greek formular *panta rhei* ("everything flows") describes the mental attitude of the mindset, first defined by the Greek Heraclitus (535 – 475 BC). The following sentence demonstrates the idea of continuous change: "Everything changes and nothing remains still ... and ... you cannot step twice into the same stream."

This sentence expresses the attitude that everything is always changing following the course of nature. The ideal is to create a mental attitude to cope with the changes. This attitude is very similar to the concept of the Chinese *I Ging* and the Japanese *Hōjōki* which will be explained in a later chapter. However it can be stated that in ancient Greece the people were aware of the continuous change and the resulting uncertainties in life as the logical consequence of the change.

The Greek philosopher and scientist Aristotle (384 – 322 BC) researched in nearly all fields of science as physics, biology, zoology, metaphysics, logic, ethics, aesthetics, poetry, theater, music, rhetoric, linguistics, politics and government and constituted the first comprehensive system of Western philosophy. One of the questions Aristotle tried to answer is the classification in general and of knowledge. In the Nicomachean Ethics Aristotle differentiates between three fundamental approaches to knowledge: *episteme, techné and phrónēsis*.

Episteme means "to know" in Greek. It is related to the scientific knowledge and is universal, invariable, context-independent and based on general analytical rationality.

Techné is the Greek word for craftsmanship, craft, or art. It is the set of principles, or rational methods involved in the production of an object or the accomplishment of an end. Techné resembles episteme in implying knowledge of principles, but differs in that its aim is making or doing, not disinterested understanding. Its characteristic is pragmatic, variable, context-dependent and production oriented. For the ancient Greeks techné was looked at negative when it appeared in art, whereas when used as craftmanship it was regarded positive. Aristotle regarded techné as an imperfect human representation of nature. According to Eikeland, in human relations techné is the mastery of influencing, manipulating, and using other human beings (Eikeland, 2008, p. 98).

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Phrónēsis means prudence, practical wisdom or judgement in English. It´s quality is pragmatic, context dependent, action-oriented and assigned to praxis, or doing. Phrónēsis deals with particulars. According to Eikeland phrónēsis can be defined as an intellectual virtue, being prescriptive, and deliberate (Eikeland, 2008, pp. 97-101). Eikeland sees in phrónēsis aspects of deliberate excellence, critical and situational understanding, quicknesss of mind and cleverness (Eikeland, 2008, p. 103).

Phrónēsis goes beyond both analytical, scientific acknowledge (episteme) and technical knowledge or know-how (techne) as it involves the capability of judgments and decisions made in the manner of a virtuous social and political actor (Flyvbjerg, 2001). He argues that Phrónēsis is an important part of social practice and that the attempts to reduce social sciences to episteme or techne, or to comprehend them in those terms, are misguiding.

Phrónēsis is an intellectual virtue that concerns values and is commonly involved in practices of planning. Therefore, that any attempts to reduce planning research to episteme or techne or to comprehend planning practices in those terms are misguided (Flyvbjerg, 2004).

For the reason of completeness it must be added that Aristotle defined two more competences: sophia (philosophical wisdom) and nous (intuitive mind; rationality). He distinguished sophia and phrónēsis in the way that sophia involves the reasoning concerning universal truths, while phrónēsis includes rational thinking.

In summary it can be stated Aristotle differenciated three fundamental forms of knowledge: episteme (the theoretical know why), techné (the technical know how) and phrónēsis (the practical knowledge).

Evolution of Aristotle´s Concept of Knowledge in the Western Societies

Already since Plato the Western philosophers and scientists are unified by the aspiration to detect the universal truth, where the concept of Absolutism derived from. The emphasis on universality of the modern science and the philosophers' "quest for certainty" however ignored the practical issues in preference for theoretical issues. The pursuit of absolutism and theoretical arguments that lack practicality is one of the main defects of modern philosophy (Toulmin, 1990).

The guiding principle in the West is the mastery of nature, accompanied by the conviction that one can, in principle "master all things by calculation" (Weber, 1919/1988). Thus, the "maturity of mankind" advocated in the enlightenment era, the "disenchantment" of the world (Weber, 1919/1988) was mainly directed to the disenchantment of nature by calculation. Therefore the natural sciences became the model for all sciences.

This development led to the fact that Aristotle´s third principle of practical knowledge *phrónēsis* was neglected and forgotten after more than 2,000 years. The concept of phrónēsis plays no role in today´s social sciences. The core of phrónēsis is the reflexive analysis and discussion of values and interests, which is the prerequisite for an enlightened political, economical and cultural development in any society (Flybjerg, 2012). The concept of episteme is found in the words 'epistemology' and techne in 'technology' and ´technical'. However the concept phrónēsis was neglected as the lack of the word already shows. It can be stated that the modern Western societies do not show sufficient appreciation for practical knowledge. Since the raise of the industrialisation in Europe the third Aristotle competence practical knowledge was delegated to the low appreciated profession of craftsmen. Today practical knowledge is not part of academic education or training.

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Summarized it can be stated that Aristotle´s concept of phrónēsis as practical knowledge was neglected by the Western cultures in the last 300 years. This leads to an imbalance between the three classic intellectual virtues in favour of the two knowledge concepts episteme and techne.

COMPARISON OF THE WESTERN AND EASTERN APPROACH TO UNCERTAINTY

The following chapter analyses the differences between the Western and the Eastern cultures in their approaches towards dealing with uncertainty.

Western Approach to Uncertainty

The concept of the Western philosophy can be well described with Aristotle who noted: "But we only deliberate about things which seem to admit of issuing in two ways; as for those things which cannot in the past, present, or future be otherwise, no one deliberate about them, if he supposes that they are such; for nothing would be gained by it." (Aristotle, 1357). It is therefore the "issuing in two ways" or in other words: the uncertainty of the outcome, that challenges philosophers and scientists ever since.

The evolution from the traditional agrarian society to the modern industrial society can be described as the transition from stability and certainty into change and uncertainty. Hallmark of modern societies is the "destruction of the old certainties" (Bonß, 2010) by dissolving traditional communitization, experiences of agricultural and handcraft work (Giddens, 1995; Joas & Knöbl, 2004; Nassehi, 2006; Wehling, 1992).

In Europe, this perspective became the guideline for the behavioral demands of the individuals (Weber, 1919/1988). Economic action particularly relies on the calculation of future developments, thus requiring computability of opportunities and risks on the market. The postulatation of rationality in conduct has a long tradition in the modern social sciences, particularly with regard to dealing with uncertainty. In the economic sciences in particular the researchers focused this aspect with the decision theory under uncertainty. It can be stated that the established theories rally around the poles "mastering uncertainty" and "powerlessness against uncertainty" (Neumer, 2009). However it is the aim of mankind to reach the status of "coping with uncertainty in acting". Whereas the guiding principles of "mastery of nature" and "production of certainty" connected to it have been valued as the comprehensive signum for economically successful human action. Uncertainty received the signum of powerlessness and was interpreted as the consequence of individual resp. collective failure to control the environment.

The industrial societies have developed a great repertoire of strategies to overcome uncertainty. Among the most important are science, technology, and organization. Especially the natural sciences became the epitome of the ability to progressively master the nature's secrets. Technological progress was seen as proof that it is possible to systematically master the given conditions of nature. This is evident in technological developments geared to seal themselves off to a large extent from the potential "risk factor man" (e.g. the autonomous self-driving car). In organizations, companies still follow the guiding principles of Taylorism to largely eliminate the subjective side of the workforce. In this context, uncertainty appears as a deficiency and a disturbing factor that should be eliminated. This can best be effected if the technical and organizational processes are stable and if the internal and external influences are known and can be controlled.

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Uncertainty as the lack of security causes a feeling of fear in human beings. Both uncertainty and fear are indefinite feelings without reference to an object or situation. In comparison to anxiety and risk, which both refer to a defined situation (e.g. to fly in an airplane) or a precise object (e.g. dogs) (Hofstede, 2001). Uncertainty is not linked to probability, but risk is linked to probablility. Uncertainty refers to situations where everything could happen. As soon as uncertainty turns into a risk by becoming more concrete and precise and calculable, people lose their fear. Now it is the risk that can become the source for a negative feeling, now called anxiety. Dealing with this anxiety can be trained in routines like driving a motorbike or sporty activities like climbing montains (Hofstede, 2001). Routines are the basis to build up established practices in normal situations (see the checklist procedure of pilotes in airplanes before taking-off). More important routines help people to familiarize with critical incidents (e.g. fire or earthquake alarm) and to react in an appropriate, good-practice standard procedure in critical situations (e.g. Man-Over-Board training in off-shore sailing). This training of routines gives people, and particularly the employees, customers and the senior management of the organisation the certainty to react in the appropriate way in critical situations.

Eastern Approach of Dealing with Uncertainty

One of the pioneers in examining the intercultural differences between societies, the Dutch Geert Hofstede, was the first who defined uncertainty avoidance as one so-called cultural standards. Although his approach is critized as being related to the company IBM, as old-fashioned in its wording and in stereotyping the national cultures, the cultural dimension “uncertainty avoidance” is used also within other cultural theories.

The GLOBE study from 2004 elaborated nine cultural dimensions, one of them named also “uncertainty avoidance”. In this study uncertainty avoidance is defined as “the extent to which a society, organization, or group relies on social norms, rules, and procedures to alleviate the unpredictability of future events” (House, 2004).

The Globe study differentiates between societies that have a high uncertainty avoidance orientation as Germanic cultures, who tend to prevent all sorts of uncertainty in private and business life. In comparison to the Arabian, Chinese and Latin American cultures that tend to be more relaxed towards uncertainty in life as well as in business. This positive attitude towards uncertainty in the Eastern cultures encourages to analyse how the different approaches to uncertainty could develop in the different cultures in the past centuries.

The concept of uncertainty in China is directly linked to ”I Ging - Book of Changes“, a 3,000 year old ancient text and the oldest and most important book of the Chinese classics, also called the “Chinese Bible”. Its fundamental principle is the law of Changes which says that everything is always changing. Influenced by the observation of the course of nature the unknown authors of the I Ging detected that change follows a specific structure. The I Ging is a collection of 64 oracle signs and describes the 64 stages of change between Yin and Yang. In the course of the times the I Ging turned from an oracle book into the book of wisdom as it contains all stages of human life. In detecting the own situation in one of the signs the reader of the I Ging could derive his action and therefore master the specific situation (I Gin, 2006, p. 12). Translated for first time into a foreign language in 1924 by the German missioner R. Wilhelm he stated “what makes the system of thought of this book so interesting is the fact that it takes the fundamental principal from a primitive concept – without being primitive - and developed them

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further, that is what we Europeans seem to have lost in the course of development." The I Ging had influence on several European philosophers like C.G. Jung and H. Hesse who used it as a guidebook.

The I Ging had a great influence on the two main Chinese philosophies, the Confucianism and the Taoism, both created around 500 BC in China. These two philosophical concepts still represent the basis of Chinese thinking until today. On the basis of the I Ging the Chinese developed a contrary approach in comparison to the Western concept of strategy making: the attitude to take a long view on an opportunity, to carefully observe the environment and the situation, and then to use the appropriate moment (Sun Tzu, 2010; Jullien, 2006).

To better understand the nature of change the Chinese started to observe the changes in nature as shown e.g. in the seasons. On this basis they derived a concept of the patterns of change. This was further developed into a general applicable concept, the so-called Five Elements. The Five Elements is a conceptual scheme developed in the first century to explain the interactions between phenomena. The Five Elements represent a good example for the Chinese approach to dealing with uncertainty by trying to understand the concept that stands behind the changes and deriving a general model. It finds its application in various fields like architecture or medicine which underline the universal concept of the model. It can be stated that the two thousand years of experience give the Chinese people a feeling of security in dealing with uncertainty.

In his "speech in front of managers about the effectiveness and efficiency in China and the West" Jullien describes this approach as thousands of years of experience of dealing with uncertainty, ambiguity, and risk (Jullien, 2006). He states the difference between the East and the West in the way that the ancient Greeks first defined a model, on this basis they defined an objective and then planned to realize the plan. First the model, then the realization of the model, which corresponds to the Western concept of a strong mind to create a plan followed by a strong will to realize this ideal. Whereas the Chinese general approach is to judge and assess a situation particularly concerning its potentials and then to determine what to do next. This approach is by far more variable as the situation can steadily change as well as the environmental factors and the goal that can be reached in the situation. This circumstantial Chinese approach is often misunderstood and misinterpreted by Westerners as being passive and without a specific objective (Jullien, 1999; Jullien, 2006).

As a consequence Qi states in his "Anbang Qi's reflections on David Hillson's Risk Doctor briefing" that Chinese project managers pay more attention to risk management in projects as projects in their nature are uncertain. They put more focus on reviews and the re-planning of the project. It is perceived as the main task of the project manager to manage the changes that originate from uncertainty in order to prevent that they become risks. In Chinese thinking it is the main task of a manager to turn bad external events into good, positive things (and vice versa). According to this idea, all project objectives, project scope, time, quality and cost, are modifiable in the course of the project process. Therefore it is the main task of a project manager to concentrate on the change management to cope with these modifications. In fact Qi states that a project manager should mainly focus on managing the uncertainties, changes and risks. In comparison to the certainties as they do not need to be managed (Qi, 2011).

A further competence in dealing with uncertainty that is more developed in the Eastern cultures than in the Western societies is the capability to cope with ambiguity. The ambivalence of the contrary and the dialectic of the thinking led to the well-developed ambiguity tolerance of the people in China but also in India. Chauhan shows in a study between managers in India and Fiji that the Indian managers demonstrated a higher level of tolerance of ambiguity and greater adaptability to deal with ambiguity and had a greater managerial effectiveness (Chauhan, 2014). First research started in 1995 by analysing

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the correlation between managerial effectiveness and their level of tolerance of ambiguity (Furnham 1995). These findings could have relevance for human resource managers, particularly in designing training programs for project managers.

The Japanese equivalent to the ancient Greek principle of panta rhei is Hōjōki, an important work by Kamo no Chōmei. Written in 1212, it displays the Buddhist concept of impermanence through the description of various disasters that befall the people of Kyoto. Considered as a Japanese literary classic, the work is part of the Japanese school curriculum. The opening sentence of Hōjōki is famous as an expression of mujō, the transience of things:

The current of the flowing river does not cease, and yet the water is not the same water as before. The foam that floats on stagnant pools, now vanishing, now forming, never stays the same for long. So, too, it is with the people and dwellings of the world.

The similarity to the Greek concept of *penta rhei* and the picture of the river as symbol for change are striving. However it is wrong to derive from the flow of nature the acceptance of uncertainty in the case of the Japanese culture. Japan displays in this concern an exception in the Eastern cultures. Measured in the cultural dimension uncertainty avoidance, the majority of Japanese people show a very high tendency to avoid uncertain situations.

Indicators of this tendency can be seen in the life-long employment policy at the professional level (so-called "shuushin koyou"), in the long-term relationship networks between customer and suppliers (so-called "keiretsu") or in the transfer of employees to the suppliers or to subsidiaries (Berger, 2009). The Japanese society consists of a wide set of complex rules, formal structures and defined rituals in language, behaviour and values, with great impact on business and private life. The reasons for the creation of these strictly ritualized behaviours can only be assumed. Hypotheses say that it could lie in the local hostile environmental conditions like earthquakes, tsunamis and volcano eruptions that created over the centuries the feeling of fear and uncertainty in the people. To survive in this natural environment the people had to co-operate and build up networks to support each other.

However the success of the Japanese motor company Toyota in the competitive global automotive industry shows that it is possible to build up managerial effectiveness and strengths despite a high level of uncertainty avoidance in the national culture. In the 1990s the global benchmark study by the MIT published in the book "the machine that changed the world" (Womack, Jones, Ross 1991) showed the differences in the key performance indicators between the US-American, European and Japanese car manufacturers.

The deeper analysis of Toyota´s production and management system shows that the company´s management puts a lot of effort in its knowledge assets, the so-called Toyota "kata" (translated with "pattern" or "way of doing things"). The kata consist of a set of routines that are daily practiced to improve the corporate quality and efficiency and routines in the dialogue between manager and employee. Toyota´s management stresses the importance of the improvement kata routines for the firm's corporate development as they enable the continuous improvement process and knowledge creation by preserving efficiency and fostering creativity (Rother, 2009; Ichijo et al., 2006). The second element is the so-called "Coaching-Kata". As in sports or music practicing should be done under periodic observation and correction by an experienced coach, who spots old behavior and helps the learner to practice the desired behaviors. Without coaching the learner would not practice the right pattern, or practice ineffectively.

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Without coaching, a change of mindset is unlikely to occur. Toyota developed the Coaching Kata is a practice routine for teaching the scientific working patterns like its Improvement Kata (Rother, 2009).

The two katas of Toyota are symbols of the high level of uncertainty avoidance in the Japanese culture. However in comparison to the standardization of the business processes of the Western companies who aim as well to manage the uncertainty in their operations, Toyota developed an approach of standardized routines in solving the daily problems in business operations and in coaching its employees. With these two routines Toyota established a strong organizational culture of improvement, adaptiveness and innovation. With that Toyota built an ongoing, sustainable process of developing scientific skills and mindsets in their people, through the work itself.

Referring to the model of routines to cope with uncertainty it seems that Toyota build a successful approach to turn its cultural weakness of uncertainty avoidance into corporate strengths. By continuously optimizing its two kata routines Toyota developed a unique strategy of leading the employees and solving problems. Since 2008 Toyota is the biggest car manufacturer worldwide in terms of volume and turnover.

This chapter showed that uncertainty is interpreted in Western societies as a lack of security which causes fear. Routines to teach people how to deal with calculable risks and give people the feeling of certainty. In comparison the eastern cultures perceive uncertainty as part of life and therefore developed an attitude and specific strategies to cope with it.

CURRENT TRENDS OF UNCERTAINTY MANAGEMENT IN BUSINESS

The last 15 years since the late 1990s are characterized by the sudden decline of large established companies like Kodak, Nokia or Sony. These multinational corporations failed although they managed their business with all up-to date management tools. Reason for their failure is the sudden success of the so-called "disruptive innovations" of new high-tech products like the digital camera, the smartphone or the MP3 player (Christensen, 2011). A disruptive innovation creates a new need and disrupts the existing market by displacing the earlier technology. These are products or services that the market does not expect. In many cases the disruptive innovations derive from new competitors like Apple or LG or start-up companies that inhabit different internal value networks.

This unexpected success of the disruptive innovations increases the level of uncertainty in the business world. The management style and techniques of the 20th century seem to have reached their limits. The new type of manager that is able to cope with these new uncertainties is the entrepreneur who intuitively applies a new of way of thinking.

Sarasvathy interviewed 27 entrepreneurs and let them solve cases. In this research he detected a new business approach that he called effectuation. Effectuation is a way of thinking that supports the process of opportunity identification and new venture creation. It includes decision-making principles that these entrepreneurs employ in situations of uncertainty, whereas causal reasoning is used when the future is predictable. He defined the following principles of effectuation that are:

- Entrepreneurs start with what they have. They look at who they are, what they know and who they know. They look at the 3F's friends, family and fools. From this point they look at their abilities. The entrepreneur does not start with a given goal, but with the tools he or she has.
- An entrepreneur does not focus on possible profits, but on the possible losses and how to minimize the loss.

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- Entrepreneurs cooperate with parties they can trust. These parties can limit the affordable loss by giving pre-commitment.
- Entrepreneurs look at how to leverage contingencies. Surprises are not necessarily seen as something bad, but as opportunities to find new markets.
- Here all the previous principles are put together. The future cannot be predicted, but the entrepreneur tries to control some of the factors which determine the future (Savasvathy 2001).

It can be stated that the key competence of this new type of entrepreneur is the competence to cope with uncertainty in the way that they seek for the opportunities in situations and have a stepwise, flexible, resource-based, loss-reducing approach. These principles are similar to the attitude of Chinese management described above.

CALL FOR NEW COMPETENCES IN RISK MANAGEMENT

Since the 1980s, a change in dealing with uncertainty is taking shape in the Western societies. Uncertainty is emerging in a new form in those areas where the strategy of elimination of uncertainty had been eminently successful in the past.

Increasingly complex and interconnected technological systems give rise to new imponderabilities due to a great number of internal and external influence factors that are not completely predictable and controllable (Böhle & Rose, 1992; Pfeiffer, 2007; Weyer & Grote, 2012). New models of organization, particularly the decentralization of enterprises, not only lead to a heightened flexibility but also boost the internal dynamics and self-organization. Moreover, with the expansion of services the interface between organization and market becomes fluent, there is a blurring of boundaries and imponderabilities originating from market and customer relations are imported into the organization (Heidling, 2011). Particularly service work with direct contact to customers implies fundamental uncertainties, much more so than production and administration work (Böhle, 2011; Dunkel & Weihrich, 2012).

These trends are apparent in project work as a whole: the more projects differ from a reproduction of the known, in terms of their contents and targets, their procedures, their personal and material resources, their participating partners and the preconditions of their environment and application, the more uncertainty becomes a substantial parameter of project work (Løwendahl, 1995; Shenhar & Dvir, 1996; De Meyer et al., 2002; Sommer & Loch, 2004; Söderlund, 2011). The methods of planning and measurement to evaluate the results seem to be successful if the targets, procedures and the end product can be defined exactly in advance, before the project starts. However, the projects are often very different from its planning because the projects turn out to be much more complex, unpredictable and multidimensional than its planning (Winter et al., 2006). The differences between planning and the realization are most apparent if the project targets are only roughly defined, if the project results are not material artifacts but rather concepts or models comprising different variations, if the measurement of project success has qualitative criteria, and if partners from different cultures participate in the project whose cooperation has to be established mainly by discursive procedures (Atkinson et al., 2006). In these projects, the project management is challenged to develop adequate management forms for dealing with the information gaps and the participants' different points of view and interpretations. Project management prefers the dimension of risk ("known unknowns") to the dimension of uncertainty ("unknown unknowns"). This

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is often accompanied by an intermingling of the two dimensions, both in project management textbooks and in the project managers' practical action (Lechler, 2013). An important consequence is: since risks are mostly connected to negative outcomes, the positive potential of uncertainties is often neglected (Lechler, 2013). More critical objections to the formally oriented methods of risk management are linked to this observation.

- Because of its strong affinity to planning, project management tends to lean towards routines (risk identification and analysis, monitoring, control) (Geraldi et al., 2010).
- Standardized routines of planning are strongly tied to states known from the past in their scenario drafts, which reduces their prognostic value ("future outcomes as statistical shadows of the past" (Sanderson, 2012, p. 435)).
- Reflexive modes of action are insufficiently developed on the project participants, although these modes of action are especially able to improve the coping with uncertain situations in the course of the project (Perminova, 2007).

Empirical research has shown that purposeful utilization of uncertainty during the implementation of projects can contribute to an enhancement in value compared to the original planning. According to the results, project managers who are able to differentiate between risk and uncertainty will also be capable to identify such positive potentials in projects with a higher probability (Lechler, 2013). In order to make use of these potentials, especially context-related competencies and correspondent problem-oriented modes of action are of vital significance (Lechler et al., 2013; Perminova et al., 2008; Söderholm, 2008; Jaafari, 2003).

Analyses of project managers show that those being capable to integrate the diverse perspectives into their project conception, repeatedly establish shared viewpoints of all project participants in the different stages of the project, "read" situations occurring in the course of the project, deal with the respective preconditions of the political environment, and develop qualitative valuation standards are those to complement the conventional quantitative ones (Winter et al., 2006; Atkinson et al., 2006; Pollack, 2007). In this context a fundamental change of perspectives in project management is called for: from the common "triple constraint management" to a "business value optimization" (Lechler et al., 2013, p. 102).

Empirical findings come from several research projects about the work action of project leaders and project team members (Böhle, 2013; Heidling, 2012; Meil et al., 2004). The statements of the project members (mechanical engineers, electrical engineers) were gathered in two research projects conducted between 2008 and 2015. Among others, the research projects also covered two small and medium-size enterprises in Germany. These SMEs are producing technological goods and services in joint projects with big companies from plant engineering, iron and steel industry, automotive industry and aerospace industry. The empirical results were gained with methods of qualitative social research, with the concept of experience-based action as heuristic instrument. 35 guideline-based qualitative interviews were conducted in addition to several feedback workshops and group discussions.

According to this research project actors are able to cope with uncertainties by means of an experience-based subjectifying mode of action (as opposed to a planned objectifying mode of action). Experience-based subjectifying work action includes the following four dimensions and is illustrated by citations of project managers participating in the reseach (Böhle, 2009; Böhle, 2013):

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1. *Dialogical-exploratory proceeding* makes it possible to gradually feel one's way and make discoveries within the concrete work process. "In the best case you can just set project milestones [...]. In our case where specific physical conditions must be reached no other proceeding would be possible. There are so many little side conditions that nobody can foresee in advance, no chance".
2. This is accompanied by an *associative metaphorical thinking*: an event evokes associations, images and ideas that show the way to new solutions. "I see it as in a film" or "I not only go through it in my thought, but I put myself in the situation and see things from this perspective"
3. A kind of *sensual perception* related to feeling and sensation permits to integrate sensory impressions as noise, vibrations, atmospheres and moods into the processing of information. This perception comprises all senses and also includes physical sensations: "[...] you have your idea how the production should run. Basically all business processes are the same in all companies, but every company is a little different. This you mus see. You must smell the specific procedures in a company".
4. Finally, a specific *relation to environment* characterized by closeness, attachment and unity. The central feature is the ‚joint action' which includes co-operation with or referring to material objects: "there is a meeting every morning at 9 a.m. No tools. Just: what was finished yesterday? What new problems appeared? There is technical discussion. […] No specific scheme. The discussion is defined by the previous day – what was good, what was bad, what needs improvement? […] This works well for me as I can handle the situation. This is in my head. There is nothing to cross in a paper, no list to check. Just on the basis of the situation which we try to handle".

As a complement to planned rational action which is suitable for successful use in foreseeable tasks, experience-based subjectifying action is particularly suited to deal with unforeseeable situations. This does not mean that the model of instrumental planned rational action is invalidated, but should be complemented by the experience-based subjectifying action.

The authors' empirical findings show that an important competency of successful project leaders is to "see the picture" of the course and results of the project and to "foresee the developments". They typically remark that they "see it like a movie running" or that they "not only play it through in thought but really get immersed in the situation". If customers' requests change during the project, they don't see this as a disturbing factor; they rather say that this is the "nature of things". They have the attitude that what is really needed or suited is often not known beforehand but will transpire in the course of the practical execution of the project. They do not classify deviations from the original project target *per se* as a lack of reliability or deficiency of planning, rather they will check whether there are also positive effects of it. This may refer to the contents but also to the temporal and the financial aspects. Of course, this is never a carte blanche for desultoriness or arbitrariness. Project success can be met by means of conventional planned action, but they may require other procedures and competencies, as shown above (Meil et al., 2004; Heidling, 2012; Pander, 2010; Pommeranz, 2011).

SUMMARY

The aim of management is to build and keep stability in the organisation and herewith to overcome uncertainty. This is done by objectives, standarized procedures and control, which is also applied in project management. The concept of planning and standardization is based on past experience however

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it reaches its limits by coping with uncertainties in projects. The focus on planning and controlling prevents flexibility to handle the changing circumstances in the course projects which lead to uncertainty. These uncertainties demand for a new type of project manager who not only sees the risks but also the opportunities that derive from uncertainty which demands for a new attitude towards uncertainty.

Project managers are not educated in differentiating uncertainty from risk, neither in using uncertainty and turning it into a project benefit and herewith to increase the project value.

A retrospective view to Aristotle knowledge areas shows that he distiguished between the three main knowledge areas: *episteme* (know why), *techné* (know how) and *phrónesis* (practical knowledge). Where the first two built the basis for today´s education in social, technical and natural sciences, the third competence was neglected in the Western societies. The destruction of the old certainties through the modern industrial societies led to the focus on rationality in mastering the nature and therefore recreating the feeling of certainty.

In comparison to the Eastern cultures that remained in their tradition of coping with uncertainty by accepting the principle of continuous change, observing it and creating a general applicable model of change. Both the Chinese and the Indian societies developed cultural strategies that lead to an uncertainty accepting attitude. Whereas the Japanese society shows high uncertainty avoidance tendency which in the case of the motor company Toyota led to a management routine-based corporate culture of problem solution and continuous improvement.

The rapid technological change of the last 20 years caused by the fast success of disruptive innovations lead to the search for a new entrepreneurial management style that is able to cope with change. This new competence called effectuation enables to deal with uncertainties by seeing the opportunities and approaching them step-wise. This proceeding is similar to the Chinese management tradition.

According to the findings of the authors experience-based subjectifying work proves to be an important strategy for dealing with uncertainty in projects. The four aspects are: dialogical-exploratory proceeding, associative metaphorical thinking, sensual perception and relation to environment. This experience-based subjectifying work competence can be compared with the third traditional Aristotelian competence *phrónesis* (practical knowledge), which was neglected in the Western societies in last centuries.

The authors demand for a holistic approach to deal with uncertainty by referring to strengthening the practical capabilities of awareness, intuition, perception of weak signals and associated intuitive thinking. These capabilities could be interpreted as the third competence category *phrónesis* and should have high relevance for the selection of personnel in project management and designing training programs for project managers.

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KEY TERMS AND DEFINITIONS

Episteme: Means "to know" in ancient Greek. It is related to the scientific knowledge and is universal, invariable, context-independent and based on general analytical rationality.

Opportunity: Events, circumstances, situations or conditions that might occur in the course of a project and have a favorable or advantageous impact on a project.

Opportunity Management: The identification, analysis, assessment, planning, monitoring and controlling of opportunites related to a project.

Phrónēsis: Ancient Greek, can be translated with practical wisdom, judgement, or the virtue of practical thought.

Risk: Events, circumstances, situations or conditions that might occur with a specific probability and have a potential negative impact on meeting the predefined project objectives. Risks are to be separated from uncertainty if they are measurable, calculable and predictable.

Risk Management: The identification, analysis, assessment, planning, monitoring and controlling of risks related to a project. Risk management limits the impact of the unexpected events and prevents these events from happening. It is generally assumed that risk management contributes to the success of an undertaking.

Techne: The ancient Greek word for craftsmanship, or technical skills. It is the set of principles or rational methods involved in the production of an object or the accomplishment of an end.

Uncertainty: All unknown or unexpected situations with a potential significant impact on the project. Uncertainties are unknown, not foreseeable and not predictable with the existing set of tools and instruments. Uncertainty has no scientific basis to calculate its probability.

Unknown Unknowns: The not identified facts that a person is not aware of not knowing.

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Chapter 74
Entrepreneurial Action as Metaphorical Process and its Metaphorics

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ABSTRACT

The objective of this paper is to formulate new approach to entrepreneurship and its result that is challenged by appearance of novel spheres of entrepreneurial activity related to social innovations, social networks, solution for corporate management and people`s wellbeing, production of gadget for precarious wants. These items inspire the study of axiological bases of value created by entrepreneurs. This purpose suggests addressing and revisiting the notions of entrepreneurial action and value. Their complete conceptualization applying to nascent new economy is unlikely to be possible. With this in mind, we focused on searching for metaphors that can cast light on the specifics of newly-emerging phenomena related to entrepreneurial action and value created by it. Using the theory of metaphor, we find that entrepreneurial action is of metaphorical nature itself. In the article, the creation of value is described by means of the transferal of enterprising constituents of entrepreneur's identity onto produced things. We specify these constituents as referred to the different periods of entrepreneurial history. The identification of the constituents was based on the theory of pillars and carriers of institutions by W. R. Scott. The metaphors of appropriateness, utility and wellbeing were proposed for the different periods of the development of value. The metaphor of rhetoric was defined as a root metaphor for all moduses of entrepreneurial action considered as a process of convincing on the value of things produced. Special metaphors for entrepreneurial action for each period of value development were also proposed. The metaphor of performative rhetoric was considered as shedding light on dominant modus of entrepreneurial action and modus of value under conditions of knowledge society.

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INTRODUCTION

Entrepreneurship is a phenomenon that is difficult to describe with terms of static reality so it must be treated as a dynamic process. With this in mind, the use of the movement metaphor with its well-known aporias is also relevant. In fact, viewing the entrepreneurial process as a manifestation of movement of economy underlies the most prominent twentieth century achievements in comprehending both entrepreneurship and economics as a whole.

Considered metaphorically, movement means communication of the present and future. The entrepreneur causes a new reality to emerge. This reality represents a modification of the former reality performed by selecting and implementing one of the numerous opportunities. Most definitions of entrepreneurship aimed at capturing the essence of entrepreneurial movement are confined to revealing these alternatives. The essential divergences in authors' views are found in their approaches to identifying the nature of opportunities and the mechanism of communication of the present reality with the future reality, which is created as a result of employing one of the opportunities.

Two basic concepts have been developed to address the nature of opportunities, viz. the objectivist and subjectivist concepts. Advocates of the objectivist concept claim that the role of the entrepreneur is to reveal the available but still unnoticed opportunities (Shane & Venkataraman 2000, p. 220), which is possible due to the entrepreneur's distinctive feature, i.e. alertness (Kirtzner, 1973, p. 67; Foss & Klein, 2010). Representatives of the subjectivist concept are focused on the subjective nature of opportunities, which are created by the entrepreneur (Alvarez & Barney, 2007).

The issue of connection of the future and present realities is raised with two essentially different approaches (Burrell & Morgan, 1979, pp. 10-20), which can be defined as constructivist and regulative approaches. According to the constructivist approach, the image of the future is exogenous in relation to the present. It is obvious that creation of such future requires searching for relevant resources. In this context, an objective, which determines the process of resource supply and impact the process as a cause, emerges. S. Sarasvathy employs the term "causation" to define this type of relation (2001).

In fact, causation is typical of the bureaucratized mechanism of business planning that functions and reproduces itself in a certain institutional environment of corporate capitalism. However, the logic is also inherent to entrepreneurs, especially those of them who developed in such an environment. This situation confirms the principles of institutional isomorphism (DiMaggio & Powell, 1983).

The logic of causation is based on "…fantasy that entrepreneurship — and, more broadly, creativity — can be systematized... that success in the startup game can be not only taught but rationalized, made predictable…" (Lewis-Kraus & Gideon, 2014).

In this paper, we do not provide a detailed analysis of the technological, social, economic, and political conditions that justify and facilitate the emergence and distribution of the stated logic; however, we should emphasize the fact that in the framework of this logic, opportunities are secondary in relation to a particular objective embodied in a project of obviously constructivist nature.

Another logic, i.e. the regulative approach is endogenous in relation to the present reality and driven by abstract idea (viz. the idea of profit that is made from what is available at the moment) rather than by particularly imagery of the desirable future. In this case, any new properties of the available resources or new properties of the available elements of the external environment metamorphose into opportunities. If the focusing on discovery of new properties of capital facilitated the achievements of the modern Austrian economic theory followers, then focusing on market environment is typical of both early Austrians and most of entrepreneurial theories that consider capital as an inherent market economy phenomenon. The

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marketing practical orientation of economics also permeate the works of sociologists whose studies lie in the framework of the environmentalist and especially populationist approach (Hannan & Freeman, 1977).

Accounting for all the differences in focusing, in the first case on heterogeneous resources in the entrepreneurial organization, and on parameters of the market environment – on the second case, the focal points have one common feature, which is the fact that entrepreneurial activity is considered as routine work on constant redefinition of properties of the internal and external resources as well as updating new ones (previously neglected). Put in other terms, this is a work on constant reshuffling (Lachmann, 1956: 13) of resources and producing of subjective judgments (Foss, Foss & Klein, 2007; Foss et al., 2006). The logic, objectives and images of the future are extracted from the present reality by the entrepreneur and defined as "effectuation" by S. Sarasvathy. The directions of activity are identified by means of routine practices of searching for prospects with the present reality. This approach, based on a continuous flow of practices, appears to be prospective, especially if it is focused not on external or internal conditions of entrepreneurial activity, but on its product regarded as the outcome of the functioning of the entire network locked into this product. This view was proposed by M. Callon and his colleagues and is being developed by them within the economics of qualities (Callon, Meadel, & Rabeharisoa, 2000). However, it vests the entire network and all its heterogeneous participants with agency, which makes it impossible to overcome uncertainty of such a personage as the entrepreneur and to solve the classical problems related to domain of entrepreneurial studies. Yet we assume that endowing the whole network with properties (e.g. an ability to create value), traditionally ascribed to the entrepreneur, is the most interesting aspect of the concept and forestalling for subsequent definitions of entrepreneurship.

Thus, the constructivist and regulative approaches demonstrate opposing views on the entrepreneur and his function. Under the constructivist approach, the entrepreneur is perceived as a hero, demiurge, and star personage, who can withdraw from business and delegate the current operations to hired managers soon after launching the project. Conversely, the regulative approach based on effectuation makes the implementation of the entrepreneurial function an integral and permanent component of the narrative regarding the operating business. It is important that this function is not rigidly bound with the nominal entrepreneur as it occurs in the constructivist interpretation. The regulative interpretation reveals the endogeneity of entrepreneurship in relation to an operating enterprise as well as the embeddedness of entrepreneurship in the organizational body of business. The former and the latter contribute to expanding the subject scope of research problems of entrepreneurial studies and enhance their relevance to the actual needs of business community and society. Consequently, scientific discourse is complemented with issues regarding the nature and formation of the entrepreneurial team, unproductive entrepreneurial activity of members of the entrepreneurial organization, intrapreneurship, searching for hidden and unused resources, etc.

The literature review carried out reveals that emphasis on the dynamic nature of entrepreneurship, incorporating the expressed and implied metaphor of movement, makes it possible to identify essential distinctions within the phenomenon of entrepreneurship. These distinctions are related to discovery and creation of entrepreneurial opportunities (Casson & Wadeson, 2007), effectuation and causation as styles of the behavior of entrepreneurs in different conditions (Dew et al., 2015; Brettel et al., 2011), the role of risk and uncertainty in business (Klein, 2008) and led to appearance of numerous scientific schools developing the Austrian economic theory (especially, its latest radical subjectivist version), the strategic theory of the firm, the population and selection theory and many others appeared on the basis of these distinctions.

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Referring to entrepreneurship as a crucial factor for economic growth and change, the metaphor of movement creates grounds for researchers to study the "windows of opportunities", through which resources and activities are allotted and which impact the rates and meanings of made transformations. However, the metaphor of movement, being a means of connecting the present reality with the future, cannot extend investigation beyond the frames of the metaphorical level of cognition. The reason for this is linked to the fact that one of the poles of such a connection (viz. the future) is not reality and, in fact, appears to be a metaphor because endowing the future with ontology is metaphorical ipso facto. Furthermore, this cyclic metaphorics results in a metaphor again. In this case, it is the metaphor of creativity. Entrepreneurship based on the metaphor of movement is endowed with the power to create a new reality. Studying entrepreneurship in framework of creativity terms leads to the fusion of categories of entrepreneurial activity with definitions of human activity *in abstracto*. Consequently, the phenomenon, which is responsible for social and economic dynamics, is deprived of its sociohistorical distinctive features and works as a special extra-historical and extra-social force, steered by overall principles of creativity and activity as such. This situation requires deploying metaphors of entrepreneurship, which (at the pre-theoretical stage) would manifest the general image of entrepreneurship as a unique dynamic social phenomenon and characterized not only by uniform differentiation between the present and future, but also by ontological and structural differentiation, which accentuates its properties as a special type of social action.

Hence in next sections of the paper we address the following questions:

1. What metaphors constitute the general image of entrepreneurship?
2. What metaphors can identify modes and means of activity of the entrepreneur as special social actor?
3. What metaphors of entrepreneurship and methods of achieving its goals can facilitate the conceptualization of the modern distinctive features of entrepreneurship?

Due to their rhetorical nature, metaphors maintain a certain perception of a subject under study and conceal its properties that do not belong to the created zone of clarity (Lakoff & Johnsen, 1980: 13-15). Therefore, not appropriately chosen metaphors can deprive a phenomenon under study of its specific features, which are currently important. Other metaphors can serve as "ontological windows" (Mäki, 2001) that make it possible to objectify a phenomenon, denoted by contemporary discourse, or to frame the perception of this phenomenon due to the discovery of the structural similarity of internal properties of the studied object and properties of already known objects.

This paper considers the metaphorical nature of entrepreneurial action, i.e. the orientational, ontological and structural metaphors of entrepreneurship and metaphors for value created by entrepreneurs under different historical conditions. The study of these metaphors is timely in the context of the obvious need for comprehending the conceptually new forms of entrepreneurship emerging these days.

METAPHORICITY OF ENTREPRENEURIAL ACTION FROM PRAGMATIC PERSPECTIVE

As it was previously stated, the cluster of pre-theoretical representations of entrepreneurship, composed of metaphors of movement, creativity, invention, etc., instills the creation of concepts that are deprived

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of any social content. In fact, this social content is reduced to human activity in general. L. Von Mises, for example, considered this reduction not to be a disadvantage but an advantage within his understanding of entrepreneurship (Mises L., 1998, pp. 1-3).

It is necessary to note that the reduction of the essence of entrepreneurship to universal definitions of human activity is often performed ahead of the definitions of human activity, which are derived from the multitude of realia, actually existing at the given stage of the history of human society. For example, the popular contemporary metaphors of creativity such as "creative destruction" (Schumpeter, 1994), "imagination" (Shackle, 1979), "empathy" (Chiles et al., 2010), "team work" (Alchian & Demsetz, 1972) had been adopted for scientific use before the entrepreneurial realia started to universally correspond to the phenomena, denoted by those metaphors. This predictive ascription of features becoming attributes of any human activity to entrepreneurship is manifested through heroisation of entrepreneur and endowing him with special cognitive abilities, which are not so conspicuous in the activity of other professionals (Foss & Garzarelli, 2007). However, in any case reductionism deprives entrepreneurship of its social content, turning the categories of entrepreneurial action into anticipations of new definitions of the essence of human activity per se.

Analyzing the dialectics of equating entrepreneurship with human activity, it is possible to note two opposing methods of implementation of this process in various social and historical conditions. The methods are based on the fact that metaphors are capable of successful migration between the definiendum and definiens. At the beginning of the capitalist era naturalization of entrepreneurship was based on applying the metaphor of human activity to it, then, in the course of transformation of entrepreneurship into a regular phenomenon - i.e. the "common sense" of the contemporary society, the reduction assumes an opposite character, viz. entrepreneurship itself turns into a common metaphor encompassing any activity (Szeman, 2015). This is another example of the "cyclic" metaphorics, where the poor choice of metaphor brings the researcher not to the trace of concepts, but to the further metaphorical representation.

In fact, the classical theory of metaphor does not sufficiently serve the purpose of breaking this circle and distinguishing metaphors, leading to conceptualization of an object, from metaphors, generating circles of autoreference (MacCormac, 1985, pp. 46-50). For this purpose, it is required to resort to metatheory, which is, according to MacCormac, is semantic theory (1985, p. 50) that appeals to objects themselves and interactions among people related to those objects. According to Ch. W. Morris, this theory, which extends beyond semantics as relation of the sign (in our case, metaphors) to the object, including relation of these signs to the activity of subjects interpreting them, appears to be pragmatics (Morris, 1938). Pragmatics implies research of signs with regard to their involvement into the world of human values, in which human activity evolves. Here, the frames of the theory of metaphor cease to work because it developed as a linguistic theory with the cognitive science and computer science as being its adjacent areas and scope of implementation. Areas, close to metaphor research - such as the theory of frames - also have their origins within linguistics, cognitive psychology, and research of artificial intelligence. However, theorists of metaphorics highlight the metaphorical character of not only the language and consciousness but also of the action. For instance, Lakoff and Johnson specify that "… since metaphorical expressions in our language are tied to metaphorical concepts in a systematic way, we can use metaphorical linguistic expressions to study the nature of metaphorical concepts and to gain an understanding of the metaphorical nature of our activities…" (1980, p. 8).

Unfortunately, the capacity of those areas of knowledge, which are engaged in the theory of metaphor, is insufficient to analyze the "metaphorical nature of our activities". Therefore, this "nature" (under another label) is studied by other sciences, where human action and related meanings are a special object

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of the analysis. Here we mean the research on practices that include daily routine activities, and where the main focus of researcher is on the transfer of the sense (literal meaning of the word "metaphor") of one action onto another action and simultaneous creation of a new sense. Here, we again arrive at the theory of frames, theory of practices, phenomenology, and actor-network theory that ensures the "action by network" by means of action translation from one actant to another.

Thus, entrepreneurship cannot be comprehended on the basis of syntactic sciences (studying relations between signs), nor can it be comprehended within semantics (relation of signs to objects, which are isolated from human activity and values generated by it. The first generates tautologies; the second breaks the perception of an object into a set of metaphors (for example, entrepreneurship "as" an occupation, entrepreneurship as a social group, etc.), which are applicable to nearly any activity. Respectively, entrepreneurship cannot be comprehended out of its pragmatics that demands transition from the abstractions of "entrepreneur" and "entrepreneurship" to the action behind them. For this reason, the term "entrepreneurial action" has been actively incorporated into the recent studies (Forsell & Paloniemi, 2010; Johannisson, 1989; McMullen & Shepperd, 2006; Berglund, 2005; Klein, 2008; Kato & Wiklund, 2011).

In the rest of this section we will limit ourselves with the case of contemporary Austrian economic theory. Dissatisfaction with the description of entrepreneurship through its functions without due understanding of how these functions are implemented has led representatives of this school to the need for a definition of what encompasses every-day entrepreneurial practices in comparison to projection, management, calculation practices, etc. Without this, the entrepreneur would act as an incidental character responsible only for launching an enterprise, after which the entrepreneur is dissolved in the figures of the manager or the owner. L. Lachman brought the entrepreneur back to the everyday life of the enterprise using metaphor of reshuffling to designate his routine actions (Lachmann, 1956: 13; Chiles et al., 2010, pp. 22-26). Subsequent Austrian studies developed this metaphor by linking it to the heterogeneity of properties of the capital exploited in business (Foss et al., 2007; Agarwal et al., 2009).

According to the Austrian approach, the concept of capital does not reflect physical properties of things, but rather shows various alternative areas of their profitable use (Foss et al., 2007, pp. 1169-1171). Discovery of a new line of business in the course of the enterprise's current activity and introduction of this line into production process affects the relations of property and related contracts. Revision and change of these relations and contracts, which lead to emergence of a new combination of resources, is beyond the management scope and requires an entrepreneurial solution. Therefore, perpetual reshuffling and subjective judgement linked to discovery of new properties of capital and their constant recombination are the entrepreneur's constant and routine operations. If they are performed by the manager, it means that the manager does the work of the entrepreneur.

The disadvantage of the approach to entrepreneurial action based on the metaphors of judgement and reshuffling lies in the fact that they remain within syntax and semantics, disregarding the valuable specifics of this action. Implementation of the pragmatic approach with its inherent axiological methodology, compared to the typical of the Austrian school praxeological methodology, arrives at the paradox that considering entrepreneurial action in the light of value metaphorics metamorphoses this action into a metaphor itself. In other words, entrepreneurial action is metaphoric because it itself is a process of transferring properties of some unclear objects ("reshuffling", "subjective judgement", "discovery", "creative disruption"," entrepreneurial organization of heterogeneous capital, etc.) to other equally fuzzy objects (viz. prices, profit, cost, interest rates and so forth).

With this in mind, understanding the essence of this transfer is impossible without new metaphors. The same difficulty, which Lakoff G. and Johnsen M. connected with the paradoxical definition of the

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concept of metaphor occurs "…when the scientific subject matter is metaphor itself, it should be no surprise that such an enterprise has to make use of metaphor, as it is embodied in the mind, to construct a scientific understanding of what metaphor is" (Lakoff and Johnsen 1980). The situation, confronted in the course of implementation of pragmatics in the research of entrepreneurial action, differs from the regular autoreference that is commonplace for its description within the framework of syntax and semantics.

In this case, the "entrepreneurial action" as a metaphor is not just an image or designation of some object, but a "practical metaphor" or expression of the real process of transferring properties from one object onto another. This situation can be defined as internal metaphoricity of entrepreneurial action. This is an important provision, which is reflected in the currently experienced linguistic and phenomenological turns of the economics and studies of entrepreneurship (Berglund, 2005; Klamer, 2007; Klamer & Leonard, 1994; Steyaert, 2004; McCloskey, 1998; Felin & Zenger, 2009).

One of the initiators of this turn D. McCloskey notes that the language of the theorists of economy and entrepreneurship is metaphorical (the human capital, for example) as well as the language of actors involved, by means of which they prove, formulate, and put into practice their actions (McCloskey, 2007: 1-3). The second situation, which should be especially emphasized with regard to the metaphorical essence of entrepreneurial action and expanding our idea of metaphor in general, consists in the fact that the metaphor represents something third in relation to both the considered object, and an object, whose properties are transferred onto the considered object. Metaphor is not an object serving as the starting point for research, but rather its image – from the perspective of metaphor as a linguistic phenomenon – and a cognitive action of transferring this image for the purpose of cognizing the studied object – from the point of view of metaphor as a cognitive instrument of knowledge.

This provides us with a new view on entrepreneurial action as a metaphorical action, which, alongside the cognitive action, represents the process of transferring properties from one object onto a new object and thereby gaining new properties. We will lay aside for a while the arising difficulty related to defining the poles, between which this action revolves. However, we will concentrate on the action itself, assuming that detection of these poles is part of the disclosure of the metaphorical nature of action. In this regard, first of all, we will remember that from the pragmatic perspective, any action of man is connected not merely with meanings and notions but also with values. The axiological nature of this approach (compared to the syntactic and semantic approaches) means that it is impossible to completely encompass entrepreneurial action in terms of purpose-driven rationality. The latter approach actually treats entrepreneurial action as action subordinated to a definite purpose, that is to say, gaining profit. However, it forgets that profit is a value, and it is not endowed by nature; on the contrary, it can only be generated in the process of transferring properties, which does prove to be entrepreneurial action itself. It turns out that according to its metaphorical logic, entrepreneurial action is simultaneously the process transferring properties and the process of creating a new value. This is an obvious contradiction and relevant metaphors are required for conveying this. So, from a large realm of metaphors related to entrepreneurship we ought to select and formulate those with axiological nature and that are able to reflect the intrinsic process of sense-making as universal base for value-creation.

All metaphors grasp and represent - as an object (objectivize) - the properties, which are due to be cognized with help of an image of the object, which has already been predefined and used as a template. There are three types of metaphors appropriate to our search. They are orientational, ontological and structural metaphors according to Lakoff G. and Johnsen (1980). The orientational metaphors illuminate spatio-temporal characteristics of an object. The ontological metaphors grasp objects, events, actions, or states as entities thus isolating object under consideration and familiarize with them within a certain

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frame designated by predefined object as a ready cognitive pattern. The structural metaphors focus on design of an object. If this object presents a process the metaphor shows its stages and the transformations of a content caused by it from the perspective of the template.

The specific of use of metaphors as pre-theoretical instrument of cognition is in that they often are not objects as such, but their concepts from various sciences. For example, G. Morgan considers sociological, philosophical and psychological concepts of accomplishment, enactment, sense-making, instrument of domination, reification, alienation as metaphors for organization (Morgan, 1980). Having this in mind, we can come over to the metaphorics of entrepreneurship which shall correspond, we hope, to its value and pragmatic paradigm. This metaphorics we designated could be named for brevity as *where-mephafors* for ontological metaphorics and *what- and how- mephafors* for ontological and structural metaphorics correspondingly.

WHERE-METAPHORS: ENTREPRENEURIAL ACTION AS THE PRACTICAL METAPHORICAL PROCESS OF SPATIOTEMPORAL TRANSITION

The holistic image of entrepreneurship developed gradually, beginning with simple metaphors related to the focus and location of actions to be performed. Metaphors of this type still form the basis of business terminology. Before metamorphosing into the regular terms, the words "adventure", "expedition," campaign", and similar ones were intended for the spatial and temporal separation of the source of the merchant's profit from the place of life, customary for people of traditional society, and the expression of the principle mediation of the process of gaining profit (for example, by designing a plan, or a project). The contemporary words "enterprise" and "entrepreneur" are also etymologically related to relocating the action into some future reality. The metaphors underlying them are not yet capable of expressing the own ontology of entrepreneurship and are focused on the distinctions of this phenomenon from its predecessors.

The distinctive feature of the first group of metaphors, within which any new social phenomenon manifests itself, usually refers to the class of orientational metaphors (Lakoff & Johnsen, 1980). These metaphors indicate the position of the given phenomenon in relation to the understandable and customary and include such metaphors as "post-Fordist worker", "higher education", "political superstructure". Despite their superficial nature, the orientational metaphors of entrepreneurship helped to form the first fundamental concepts of economy based on entrepreneurship.

Among these phenomena, it is important to mention the concept of comparative advantages and the concept of the different time value of goods. According to these theories, the source of surplus value is discrepancy in productivity under different technological or geographic conditions (spatial transition) and abstinence from consumption and roundaboutness of production (temporal transition). Consequently, we observe here the "weak" interpretation of entrepreneurial action, which is typical of these theories. The function of entrepreneurial action here is restricted to transferring what has already been potentially created to a place in time or space where it is more valuable. Time and space themselves are endowed with value-creating properties. The entrepreneur – through his action – merely facilitates these properties to come into practice.

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WHAT-METAPHORS AND THEIR EVOLUTION

A more profound entrepreneurship metaphor is the metaphor of "mistery"[1] which was applied to occupations based on special professional skills (smithcraft, gold-work, fictile craft, etc.). Under conditions of dominance of recipe knowledge, creation of a higher value as a result of performing routine actions in accordance with carefully prescribed rules were perceived as a miraculous action with mystic rites and ceremonies. Here, it is important to emphasize that the metaphor "mistery" endows the process of creating value with its own ontology; in contrast to the widespread orientational metaphors associated with the movement "out of", "forwards" or "towards", the process of creating value is enclosed here within the action itself, and not within the circumstances of its place and time. Transition from recipe to scientific knowledge does not abolish the mystical nature of value creation; on the contrary, it strengthens this nature. For instance, now these are the engineering activities that are understandable, not even ritually related to the world of values, and performed according to the laws of science; but they result in something that has nothing to do with science, viz. value, which has no matter of nature or engineering. This metaphor appears to be especially relevant under conditions of knowledge society; when entrepreneurship, dealing with high technologies, creates high value of the produced things based on their increased complexity. However, technical complexity and value still remain heterogeneous entities.

Now then, things (and the special features of such things as business plans, financial reports and calculations, marketing questionnaires, bank accounts, etc.) do not disable the fact that they are simply things and instrumental manipulations with them, being involved in entrepreneurial action, become intermediaries in the process of creating a completely different phenomenon, i.e. value. Using objects of the physical world in order to obtain a supernatural effect is a characteristic feature of magic. From this point of view, entrepreneurship acts as an everyday practical magic, creating this pretersensual thing termed "value".

The ontological metaphor of magic introduces entrepreneurial action into the discourse of axiology. It opposes the world of values to the world of physical actions and things, and points to the existence of a special transition between them, through which entrepreneurial action translates natural properties of the goods involved into social properties, such as the value categories of economy (Baryshev & Barysheva, 2016a).

From the ontological perspective, this metaphorics is far from analogizing entrepreneurship to a dangerous journey in a hostile environment with the key metaphor of risk being engaged – a metaphor included in the cluster of orientational "adventurous" metaphors of entrepreneurship. The difference here consists in the fact that "magic" focuses on discovery of significant definitions of entrepreneurship within the action itself, whereas "risk" tends to search for outside the action. Undoubtedly, risk is present in entrepreneurial activity but, under the contemporary conditions of knowledge society as society of total risk, the amount of risk in entrepreneurial activity is not higher than in any other human activity. A special right for the risk of entrepreneurs of the era of a rise of contemporary economy was absolutized by writers and theorists of the contemporary economy, predominantly with the aim of glorifying its main character, who ran his business in the environment of adverse relics of traditional institutions and still absent market institutions designed to guarantee contracts and ensure business protection.

In the light of the metaphor of magic, the entrepreneur is deprived of direct contact with the external environment and does not have the ability to directly create value. The risk accompanying entrepreneurial action lies specifically in the principled mediation of the process of creating a new or additional value by means of perfectly controlled things. However, any mundane and seemingly dependable thing, acting as a

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"representative" of the entrepreneur in the creation of value, appears to be a "traitor" a la Latour. As part of entrepreneurial action, the following three similar mediations can be distinguished. First, "interface" in the form of mental (verbal) or - under contemporary conditions - mathematical and computer models of the process of profit-making. Second, these are procedures and operations, the rule-based application of which should ensure real value creation with help of the existing "interface". These two mediations were characteristic features of all the periods of entrepreneurial activity development. However, under modern conditions, they have been significantly modified by a new mediation, which is associated with the effect of an "interpretative loop" (Baryshev & Kashpur, 2017). This phenomenon consists in fact that the entrepreneur does not deal with things and procedures directly, but predominantly with their interpretations created by his employees.

Subjected to the effect of an "interpretative loop", the entrepreneur increasingly deals with mental abilities of his employees, who now discover and interpret properties of the elements of capital themselves. As a result, instead of the former physical reality of his enterprise, which he exclusively interpreted for the purpose of generating his subjective judgments and performing reshufflings, the entrepreneur now faces its numerous interpretations performed by his intellectual workers such as programmers, financial analysts, designers, marketing managers, HR-specialists, employee advocates, quality control analysts, and others. Representing the subjective judgments of the modern enterprise employees, these interpretations are transfixed with personal intentions of these creative workers with their new personal qualities, viz. nihilism, opportunism, cynicism, idle talk and curiosity, which entered into production, became a professional qualification, and were put to work (Virno 2004, pp. 85-93). As we see, the risk of uncertainty becomes an internal property of entrepreneurial activity. All this has far-reaching consequences, which we do not study in the framework of this paper. We can only note that the effect of the interpretive loop significantly changes the metaphor of magic. Now the entrepreneur is a magician who finds himself inside the magical reality he created. This magic of the magic or double magic compels us to search for new metaphors of entrepreneurial action, which appear to be a further development of the idea of the dual nature of the reality operated by the entrepreneur.

This duality (the up-to-date version) is that now "dependable resources" are becoming rather independent and manipulations involving them are increasingly unpredictable in terms of their value effect. This situation changes the very image of value, at which the entrepreneurial action is aimed. In the period of physical capitalism (Lash, 2007) this value was economic value a la economic determinism by Polanyi (1947a; 1947b) and the social relations generated during its creation were of instrumental and secondary character. This is how capitalism worked and works as a system of production of economic value. In modern capitalism "relations" move forward from background increasingly becoming the object of the entrepreneurial activity. It is this that made capitalism metaphysical (Lash, 2007).

Currently, in order to avoid being strangled by the interpretative loop, the entrepreneur must, firstly, create a new value of his intellectual resources by ensuring their compatibility and designing unique combinations (networks) integrating these intellectual resources (the brightest examples are networks created by Steve Jobs, Bill Gates and other founders of intellect-based enterprises). Then, enterprises become the holders of "sustainable competitive advantages" (SCA) (Srivastava, Franklin & Martinette, 2013; Peteraf, 1993), which sources are defined as so-called VRIN-resources (Barney, 1991; Kozlenkova, Samaha & Palmatier, 2014). "VRIN" implies valuable, rare, inimitable, and non-substitutable properties, which can characterize only unique combinations of human mental models. (Foss et al., 2008). Copying these combinations is impossible for rival companies at a particular moment.

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Being a participant of a network that he has created, the entrepreneur becomes a subject of the processes of self-creation as well as creation ex nihil (virtually, from "relations" or "networks"). Thus, self-creation and network creation of value are transformed into the new ontological metaphor of entrepreneurship. The role of one of the poles of this process from the value side is assumed by social value ("social entrepreneurship"[2]), and on the part of disposable things and direct manipulation of these things, the role of the other pole is performed by "auto entrepreneurship" as an activity of investing personal qualities in a business project as a self-increasing network. New axiological meaning of this kind of networks and their historical specifity is the domain of the how-metaphors of entrepreneurial action to be considered below.

HOW-METAPHORS OF ENTREPRENEURIAL ACTION AND VALUE GENERATED BY IT

In order to approach to conceptualization of entrepreneurial action it is not enough to analyze it as process of value-creation even though we have grasped all material instruments and procedures of these processes. Callon and Muniesa consider value-creation as result of the work of calculative devices (2003). The study of idiographic practices of calculation in this context is very important for the comprehension of certain form of value, but we are interested in historical distinction of this axiological phenomenon. We strive to understand what namely is subjected to the process of metaphorical transferal and how this transferal is carried out rather than what is used for making value-formation visible and how it is applied. Therefore, it is the axiological nature of value, the track of which we hope to get on with the help of how-metaphors for entrepreneurial action. These structural metaphors ought to be found for main structural components of entrepreneurial action. So, this metaphorics is focused on the core enterprising property of entrepreneur, the immediate process of this property`s agency, the result of this agency and the process as a whole unifying these components. All these elements are characterized by how-specifics, viz, what property of entrepreneur does make him able to create value? How does entrepreneur perceive conditions, which he is immersed in? What is the meaning of his activity in certain social circumstances? How do the results of this activity behave or what is the modus of their agency?

For the sake of brevity, we put the following provisions as axioms. First, the social properties of product cannot help bearing the traces of its creator`s social traits. Second, taking into account that society functions by virtue of distributed knowledge, to which axiological knowledge of values also belongs, value-creation cannot be merely the process of transferring properties of a creator, but a process of convincing the receivers (customers and clients) of a thing he has produced of its value. "To convince and to prove" turns to be the main motto of a value-creation action. Third, from axiological point of view, the process of value-creation has different forms depending on each society's specific ways of convincing people of the value of a good or service.

In compliance with these provisions, we address firstly the working properties of entrepreneur. Ordinarily, in the early modern period, entrepreneurship is an institutionalized phenomenon. So, the social identity of entrepreneur can be analyzed in the context of the institutional theory which singles out the regulative, normative and cognitive bases (pillars) of institutions (W.R. Scott, 2008, p. 51). It allows identifying the corresponding properties of entrepreneurial identity. Thus, the regulative basis, represented by coercive mechanisms (laws, rules, assignments and sanctions), determines the status distinctions of economic actors. Hence, entrepreneurs' status is a regulative property of their identity. The normative

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basis shapes in general economic actor as a bearer of a social role which personifies for entrepreneur in particular economic norms (interest rates, prices, etc.) and determines his behavior in market, i.e. normative, environment. Except his status and role, entrepreneurs have their inherent self (Berglund, 2005, pp. 35-36) or subjectivity (Szeman, 2015, pp. 475–476.), which provides the implementation of status assignments and runs role behavior. With the cognitive base of institutions playing the dominant role, subjectivity can become an autonomous feature of the entrepreneur's identity whose activity unfolds loosely in networking with subjectivity of other actors passing by regulative assignments and market norms. Being particular constituents of entrepreneurial identity, subjectivity, role, and status co-habit within it simultaneously, but in different rates depending on the certain social conditions. From here, the variety of metaphors for an entrepreneur belonging to the clusters of role, status and subjectivity or personality arise, e. g. innovator, merchant in the First Guild, charismatic leader, correspondingly.

As for the functioning of immediate process of an entrepreneurial action and the result of it, they can be described with different modi of rhetoric stemming from verbal rhetoric as their common root. Thus, a status-based entrepreneurial action creates authorized value by convincing consumers of the fact that goods comply with regulations establishing what a good befits their state. In addition, all price proportions are kept in place in accordance with the stable order of goods which is sacralized and sustained by secular and ecclesiastical authorities. So, the most suitable metaphor for value in these circumstances is appropriateness. It illuminates the axiological properties of traditional values and does not allow to extrapolate views engendered by industrial society beyond its boundaries. Further, metaphors for an immediate activity under these conditions turn out to be the verbal rhetoric (literally proving that thing is befitting one`s state by words) and institutional rhetoric (that refers to authority and commanding assignment that is habitual up to now in industries under the strict control of a government, e.g. pharmacy).

When driven by the normative pillars, role-based entrepreneurial actions create a type of value known as market (economic) value through convincing buyers of the utility of offered things. It is obviously that utility is a metaphor and even a synonym for value here. Utility becomes to play this metaphorical role when traditional order of the social world ruins and status absence of the alternativeness of goods disappears. The new society requires complex means making possible to produce equivalent replacements of some goods to others or their combinations within the relatively stable continuum of wants and needs. Comprehensive commodity exchangeability obtains its metaphorical substantiation in utility. The functioning of utility as a base and measure for value supposes possibility of single space for commensuration of all goods simultaneously which implies at least preservation of their qualities unchanged during the time sufficient for this commensuration[2]. It is possible to be under conditions of the relatively slow rates of requalification a la Michel Callon. A metaphor for the immediate activity in the case of the entrepreneurial action under these conditions is the reified technological rhetoric which substantiates value (and utility that is the same here) of goods with the help of arguments embodied in technical matching and affordance of things (Baryshev, 2017) in processes of production and consumption and by means of the persuasiveness of calculative devices (Callon & Muniesa, 2003).

Entrepreneurial actions, based on the cognitive "pillar" which includes personal knowledge, preferences, tastes, life styles are totally driven by subjective constituent of entrepreneurs` identity and addresses outright other people`s subjectivity. In this case value generated by such entrepreneurs ceases to have its axiological meaning as means for the maintenance of humans` life but is aimed to their lifeworld directly.

So, [in the late capitalism] the very humans` lifeworld commences to be the object of entrepreneurial constructionist activity. The most appropriate metaphor for value generated in this context is wellbeing[4]. It permits to gain much broader comprehension of humans` identity than above mentioned metaphors of

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appropriateness and utility because the very base of these notions (appropriateness to what? utility for what?) is open for transformations put into practice by entrepreneurs now. This makes impossible to use appropriateness and utility as meaningful metaphors for value. This axiological shift of entrepreneurial action`s objective from the production of means of living to creation ways of life shapes new views for economy, e.g. economics of meaning (Karlsson, Loewenstein & McCafferty, 2004), economics of happiness (Weimann, Knabe & Schöb, 2015).

The cognitive base of this economy emancipating subjectivity from role and status limitations allows to create any network configurations of mental models of creators in the process of entrepreneurial action and thus generate the perpetual flow of innovations which in turn engenders new configurations of people`s subjectivities within their new lifeworlds and lifestyles. In this economy entrepreneurs convince of value of their results such as "solutions" for unfolding new lifestyles on the base of new devices or digital platforms for unwinding social networks by performative properties of their social action.

Thus, the immediate entrepreneurial action is metaphorized as performative rhetoric that can be understood as convincing of value of new social object by self-involvement into it[5]. Otherwise stated, entrepreneurial action convinces people to assume a certain lifestyle as a part of their lifeworld by constant support of the proposed lifestyle on the base of the unique network of entrepreneurs` team which is enacted into the total network of new lifestyle due to the "locking dog" ("device", "platform", or other solution as algorithm PageRank in the case of Google) that underpins the lifestyle considered and locks its total network. However, it is not the "locking dog" itself that endues networks with social value. It can merely be something that is social value *in potentia* as, for example, man power is economic value *in potentia* as in the case of "physical" capitalism. In a similar vein, for the conditions of cognitive capitalism desired *proto-value* is the unique primordial network of subjectivities (mental models of initial creators and their successors) created by the entrepreneur. So, the secret of a perfomative rhetoric is in that primary entrepreneurial network functions within the total network of generated lifeworld, i.e. value *in potentia* unfolds into a reliable social network object, which exhibits real social value for all the participant of the network as well as outer beneficiaries.

Aforesaid allows to identify how-metaphors for wholeness of entrepreneurial action under domination of the considered institutional bases. They are implementation – for regulative base, reification and alienation – for normative one and enactment for the condition of social life based on entrepreneurial subjectivity.

CONCLUSION

New phenomena in entrepreneurship and social properties of products they deliver go beyond the terms of utilitarian logic which served a reliable ground for economic thought and entrepreneurial studies since the rise of industrial society. Now it is necessary to find new metaphors and built concepts on their base in order to describe and comprehend knowledge society with its gadgets and social network which are precarious in the terms of utility. Thus, in the first place these metaphors and concepts are meant to express axiological nature of the nascent world and its habitant including entrepreneurs who during last 200-300 years were responsible for creation not only economic value, but also moral values.

Inspired with this challenge, we addressed the metaphorics of entrepreneurial action and have found that it is of metaphorical nature itself. It creates value by transferring sense and enterprising properties of entrepreneur`s identity onto produced things. It is an answer the question about the specific instruments

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of entrepreneurs` job. Entrepreneurial status, role and personal subjectivity are those instruments. By means of each instrument one can create only particular modus of value. So, status facilitates to produce value that can be metaphorically grasped as appropriateness; role is meant for making utility; subjectivity, when it acts beyond status and role restriction, engenders network of lifeworlds and can be metaphorized as wellbeing. Corresponding metaphors for agency of enterprising properties of entrepreneur as instruments of his action are implementation (of assignments) and verbal justification (rhetoric) of the appropriateness of goods to the status of buyers; reification and the use of things` rhetorical power of persuasion of utility; performativity and conviction of wellbeing ensured by complex network objects supported by constant entrepreneur`s involvement into it.

This metaphorics of entrepreneurial action sheds light on specificity of entrepreneurships under the condition of arising knowledge economy and of the forms of value relevant to it. However, knowing that all constituents of entrepreneurial identity co-exit side by side, but in different proportions, we must be aware of axiological complexity of this economy and variety of the moduses of entrepreneurship within it.

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ENDNOTES

1 The definition of mistery from Collins English Dictionary: mistery - noun (archaic) (pl) -teries 1.a trade, occupation, or craft 2. a guild of craftsmen mystery (Collins English Dictionary 2015).

2 In this in this respect, the entrepreneur becomes a "social entrepreneur" in the broadest sense of this word (Baryshev and Barysheva, 2016b)

3 The flip side of this stability of commodity qualities which reflects entrepreneurs` focusing on relatively constant consumers` needs and wants under the premises of 1) manpower being the major working agent of production and 2) consumption being reduced predominantly to the satisfaction of physical needs is possibility of the representation of abstract labour as a substance of value in the framework of a fictitious common society`s fund of labour which is ultimately distributed according to K. Marx in compliance with the utilities of goods by the "invisible hand" of market, i.e. capitalist competition. This order of economy and society is selfsame "physical capitalism" by S. Lash and "economical determinism" by K. Polanyi.

4 That is why there was no need to use this notion neither as a metaphor nor as a strict category for the socioeconomic studies of classical capitalism (Baryshev, Barysheva and Casati, 2016).

5 This is the main distinction between entrepreneurs and economists related to performativity (Callon, 2007).

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Chapter 75
Knowledge Leakage when SMEs Participate in Supply Chains:
What Is It About and How Can It Occur?

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ABSTRACT

The advantages of sharing knowledge when participating in a Supply Chain (SC) are well established in the literature, but the challenge of knowledge leakage, and how to manage it, is still in its infancy. In order to increase the understanding of knowledge leakage, when SMEs participate in SCs, this study describes types of knowledge that may leak away, how they are valued, and how knowledge leakage can occur. The result includes two frameworks that also have shown to be potentially useful for examining the maturity of a specific SME with regard to knowledge leakages when participating in the SC.

INTRODUCTION

In order to remain competitive, knowledge is a critical resource for all types of companies, not least for small and medium-sized enterprises (SMEs) (e.g. Blomqvist, Hurmelina and Seppänen, 2005; Nunes, Annansingh and Eaglestone, 2006; Annansingh, 2012). Modern organizations must be proficient learners in order to survive. "The ability to learn faster than your competitors is your only lasting competitive advantage" as put by a HR manager in Sweden. Knowledge Management (KM) and Supply Chain Management (SCM) are two management concepts that aim to support the company in its efforts to efficiently meet the requirements of a fast changing world, in order to be competitive.

Creating value through supply chain integration has become a potential way to improve and secure a competitive advantage (Li, Ragu-Nathan, Ragu-Nathan and Rao, 2006). A Supply Chain (SC) includes tangible resources and assets, as well as intangibles, such as knowledge (Wu, 2008). The consequences of knowledge sharing and knowledge creation are tangible and include improved employee and customer satisfaction, as well as an enhanced image and increased share valuation (Coulson-Thomas, 2004). "Knowledge is becoming the only resource capable of offering competitive advantage and continued

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growth and prosperity for supply chain partners" (Wu, 2008, p. 241). This means that to achieve the goals associated with collaboration, for example, in SC, knowledge sharing is needed (Ritala, Olander Michailova and Husted, 2015). When working in a SC "… knowledge or experience leaking away from its origin may lead to a loss of competitive advantage for an organization" (Mohamed, Coles, Mynors, Chan, Grantham and Walsh, 2007, p. 456), but it can also be positive, in the form of knowledge spillover between cooperation partners (Ferdinand and Simm, 2007). Accordingly, organizations that are parts of SCs need to be aware of and prepared for knowledge leakage and its consequences for the collaboration and the business. This takes us back to KM.

Successful KM that contributes to improved organizational effectiveness requires that the appropriate knowledge is provided to those that need it, at the right time (Jennex, Smolni and Croasdell, 2007), and includes knowledge reuse and learning, i.e., knowledge creation. Accordingly, KM work in SMEs concerns "… the processes and structures provided in SMEs to support different knowledge processes, such as transfer, storage and creation." (Durst and Edvardsson, 2012, pp. 879-880). Already in 2001, McAdam and Reid (2001) stated that KM was developed in and for large organizations to be subsequently applied in SMEs. Eleven years later, Durst and Edvardsson (2012) conclude that little has happened and that there is still a strong need for more research on KM in SMEs. However, despite the need of KM processes related to knowledge leakage and the fact that KM processes have intensively been studied, the study of knowledge leakage appears to be underdeveloped (Parker, 2012; Ahmad, Bousa and Scheepers, 2014; Durst, Aggestam and Aisenberg Ferenhof, 2015).

The goal of this study is to spread further light on knowledge leakage when SMEs participate in SCs or, more precisely, *what types of knowledge may leak away, how they are valued, and how knowledge leakage can occur*. From the perspective of the framework, proposed by Durst et al. (2015), to organize knowledge leakage research, this paper contributes to the conceptual "Interaction" domain. Furthermore, the paper´s scope is in line with the research directions proposed by Durst and Edvardsson (2012), in order to develop a greater understanding of knowledge management in SMEs. The paper uses the recommendation of the European Commission and defines a SME as a company that employs fewer than 250 persons and has an annual turnover not exceeding 50 million euros or an annual balance sheet not exceeding 43 million euros (the European Commission, 2003).

This paper aims to further increase the understanding of knowledge leakage when SMEs participate in SCs, and hence contributes to more efficient SCM as well as increased knowledge concerning knowledge leakage. To achieve this goal, an extensive literature review and an empirical study have been conducted. The empirical study included five SMEs and was performed as qualitative deep interviews. The results of this paper are

- A framework describing what types of knowledge have the potential to leak away when a SME participates in a SC and how SMEs value these different types of knowledge leakage
- A framework describing how knowledge leakage can occur from a SME when participating in a SC.

The work also shows the potentials for using the developed frameworks as analysis tools for examining the maturity of a specific SME concerning knowledge leakage when participating in a SC.

The paper is organized as follows; the next section briefly discussed the related literature. Then the method is described, followed by a section where the results are included. Finally, we present the conclusions as well as the theoretical and practical implications.

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SETTING THE SCENE

This paper aims to spread further light on knowledge leakage when SMEs participate in SCs. In this section, we briefly set the scene with a short introduction to SCM and knowledge leakage, and characterize SMEs in order to further explain why they cannot be considered as "little big firms."

Supply Chain Management (SCM)

The management concept Supply Chain Management (SCM) aims to increase collaboration in which the sharing of knowledge is critical. Companies that cooperate through the sharing of knowledge can achieve advantages, such as increased innovation possibilities (Brusoni, Prencipe and Pavitt, 2001). SCM concerns steering supply chains from a holistic approach that includes the material and information flows between companies (Mattson, 2012). SCM is based on partners working together to streamline and improve their supply chains' competitiveness (Fawcett, Ellram and Ogdene, 2007) and emphasizes the importance of integrating the own company flows with partners in the SC. Today, the competitive situation is more about competition between supply chains rather than between companies (Björklund, 2012 and Singh, 2011). Therefore, companies must develop deeper relations with both suppliers and customers (Hadaya and Cassivi, 2009; Mattson, 2012). "This implies that the SC strategy needs to incorporate several solutions each appropriate to a specific product or market condition and this concern both the supply, operating and distribution parts of the SC strategy." (Hilletoft, 2009, p. 17). Hence, knowledge about customers' needs and satisfaction, the market and the suppliers is critical. The driving force behind this is to improve capacity and to be more competitive, in order to meet increased market demands, such as those posed by global competition, outsourcing and the increased level of customer-specific products (Hadaya and Cassivi, 2009). Hadaya and Cassivi (2009) describe knowledge sharing as a possibility to route and steer SC processes and hence achieve a better position. Sufficient knowledge sharing is the most critical success factor for SCM (Hadaya and Cassivi, 2009; Ke and Wei, 2007).

Knowledge Leakage

Knowledge leakage is closely related to knowledge sharing, which concerns an individual´s willingness to share with others his/her created or acquired knowledge (Bock, Zmud, Kim and Lee, 2005). Accordingly, in sharing knowledge intentionally, there is also a risk for unintentional knowledge sharing, i.e., knowledge leakage. Knowledge sharing concerns sharing knowledge strategically and deliberately, while knowledge leakage is an unintentional activity (Ritala et al., 2015) not sanctioned from the strategic level. Frishammar, Ericsson and Patel, (2015) define knowledge as "…the loss of knowledge intended to stay within a firm´s boundaries" (Frishammar et al., 2015, p. 85), which also emphasizes the unintentional aspect. This definition suggests that knowledge leakage can comprise both the core knowledge and the non-core knowledge of a firm. Anand and Goyal (2009) stress that the difference between knowledge leakage and information leakage is primarily that the former puts a stronger emphasis on the core resources of companies. As mentioned above, knowledge leakage, in the sense of knowledge leaking away from its origin, can occur in different situations and be positive, when the organization benefits from it, or negative, when it is detrimental to the organization (Mohamed et al., 2007). This clarifies that knowledge leakage does not necessarily have a negative connotation. In collaboration, for instance, positive knowledge leakage can occur in the form of knowledge spillover between cooperation

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partners (Ferdinand and Simm, 2007). On the other hand, negative knowledge leakage can occur when, for example, an actor, intentionally or not, leaks knowledge about the local firm to another firm/ actor.

Two types of knowledge leakage can be identified (Durst and Aisenberg Ferenhof, 2014):

- When an employee resigns or is dismissed from a company and takes certain knowledge with him/ her,
- When knowledge is shared/leaked to others, but also still remains in the firm.

The second type is the focus of this paper. From the perspective of SMEs participating in SCs, we define knowledge leakage as "… the extent to which the focal firm's private knowledge is intentionally appropriated by or unintentionally transferred to partners" (Jiang, Bao and Jiang, 2013, p. 984). It concerns the interactions between SMEs and their suppliers and customers, through whom knowledge can also be spread outside the supply chain (Coles, Walsh, Mynors, Grantham, Chan and Mohamed 2006). Similar to large companies, SMEs need to achieve efficiency in their supply chain collaborations. Since how well suppliers and customers are performing affect a company's competitiveness, there is a need to create efficiency through coordination (Singh, 2011). Valkokari and Helander (2007) argue that supply chains, through which SMEs often interact, are hierarchical with a large global company that sets the terms. This illustrates that SMEs have less room to maneuver, compared to larger companies, and therefore also have other prerequisites.

SMEs

SMEs cannot be considered as "little big firms", since they differ from large companies in ways other than size (Coyote, Ricceri and Guthrie, 2012). For example, aspects such as the way in which knowledge resources are managed (Hutchison and Quintas, 2008) and how they work with performance measurements (Hudson, Smart and Bourne, 2001) are different, compared to larger companies. Furthermore, there are also differences regarding innovation; SMEs tend to focus more on incremental rather than progressive innovations (Oke, Burke and Myers, 2007). To sum up aspects that distinguish SMEs from larger companies we use the list from Hudson et al., (2001, p. 1105):

- Personalized management with little devolution of authority;
- Severe resource limitations in terms of management and manpower, as well as finance;
- Reliance on a small number of customers, and operating in limited markets;
- Flat, flexible structures;
- High innovatory potential;
- Reactive, fire-fighting mentality;
- Informal, dynamics strategies

Furthermore, McAdam and Reid (2001) argue that SMEs generally do not focus on achieving organizational improvement through strategic planning, but choose to concentrate their resources on their customer markets. The approach taken is the result of informal and dynamic processes in which decisions and actions are integrated (Coyte et al., 2012) and that control is achieved through informal and frequent interactions (Davila, 2005). KM work and processes are no exception. The lack of KM processes in SMEs makes them more sensitive to knowledge leakage. In addition, both management and employees

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do not adequately understand the importance of knowledge for maintaining competitiveness, as well as for development and survival in the market place (Nunes et al., 2006). Furthermore, companies do not apply any systematic effort to identify and protect their knowledge (Ahmad et al., 2014). Compared to larger companies, SMEs are more exposed to knowledge leakage and are also more vulnerable to the negative effects that can occur (Nunes et al., 2006). This is not surprising, since SMEs are characterized by having more limited resources (O´Gorman, 2006; McAdam and Reid, 2001). Hence, it is especially critical for SMEs to work with knowledge retention (Durst and Aisenberg Ferenhof, 2014). Furthermore, Nunes et al., (2006) argue that the vulnerability of SMEs is due to the fact that they generally do not work with knowledge retention processes, or use KM-strategies, and that they also have a high staff turnover. The need for SMEs to have a KM-strategy, in order to manage knowledge leakage, is clear (Annansingh, 2012).

RESEARCH METHOD

To achieve the aim of further increasing the understanding of knowledge leakage when SMEs participate in SCs, we have conducted a qualitative study that includes both theoretical and empirical data. A literature review creates a firm foundation for theory development (Webster and Watson, 2002; Forsberg and Wengström, 2013). Hence, the result from the literature review formed the basis for the empirical study.

The analysis tools, evolved from the literature review and used when analyzing the empirical data, are described below. After that, a short description of the empirical study, and the included respondents and companies, is given.

The Analysis Tools Developed from the Theory

Based on the literature review, two analysis tools, for use in the empirical analysis, were developed. The aim of the first tool was to examine types of knowledge leakage when SMEs participate in SCs and the aim of the second tool was to examine how knowledge leakage may occur when SMEs participate in SCs.

Analysis Tool 1: Examine Types of Knowledge Leakage

Previous research shows that SMEs are more sensitive to the negative effects of knowledge leakages than large companies (e.g. Nunes et al., 2006). The negative effects of leakages can result in reduced opportunities for innovation, loss of competitive advantage and revenue, damaged reputation, and reduced productivity and efficiency (Hamel, 1991; Heiman and Nickerson, 2004; Ahmad et al., 2014).

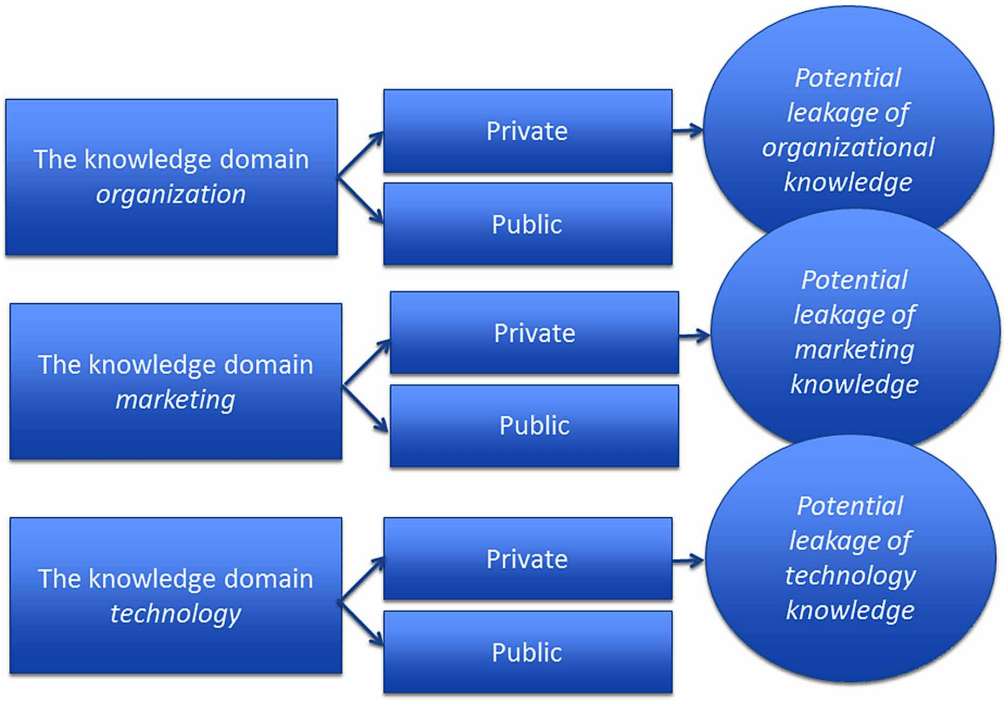
In strategic alliances, such as SCs, knowledge sharing includes both public knowledge, which is non-exclusive, meaning that both partners can access and use it, and private knowledge, which is exclusively owned by the focal firm (Jiang et al., 2013). Knowledge sharing in SCs includes both explicit and tacit knowledge and "… the sharing of such tacit knowledge across organizations becomes an important activity." (Wu and Lin, 2013, p. 672). However, based on the definition of knowledge leakage in this paper, the focus here is on leakages of private knowledge. Today, private knowledge is the most important strategic source of competitive advantages (e.g. Grant 1996; Grant and Baden-Fulle, 2004; Jiang et al., 2013). Therefore, to achieve sustainable competitive advantage from sharing tacit knowledge, "…

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organizations should intensify their search for ways to achieve effective knowledge sharing and to prevent the loss of knowledge during the sharing process." (Wu and Lin, 2013, p.681).

Based on existing research, we have developed an analysis tool (Figure 1) for use in the analysis of the empirical data, in order to examine what types of knowledge leakage SMEs participating in SCs experience and how they value them. "Obviously it is important to examine what knowledge can relate to in an organization." (Beijerse, 2000, p. 166). From this perspective, Beijerse (2000) shows the usefulness of the three knowledge domains: organization, marketing, and technology (Nonaka and Takeuchi, 1997). The knowledge domain *organization* concerns aspects such as management, policy, culture, personnel, internal processes, alliances and teamwork; the knowledge domain *marketing* focuses on competition, suppliers, customers, markets, target groups, consumers, clients, users, interested parties, sales, after sales, trade and distribution, and relations management; and the third knowledge domain *technology* concerns knowledge of products, research and development, core competencies, technological development, information and communications technology, as well as product development and assembly (Beijerse, 2000). From a SCM perspective, these knowledge domains cover the whole SC and its management, where the marketing domain focuses on the SC, the technology domain on the enablers and the organization domain on the management perspective. Hence, these knowledge domains have been used as a base when developing the tool. Further reasons for choosing these domains are that they embody the type of knowledge leakage that can occur in this context, without being too detailed, and that they are based on Nonaka and Takeuchi (1997), who are often referred to in the KM area and have shown potential for being useful (Beijerse, 2000). Since the focus is on leakages of private knowledge, the analysis tool must admit to separate between private and public knowledge and accordingly this perspective is included. The developed analysis tool is presented in Figure 1.

Figure 1. Analysis tool for examining types of knowledge leakage when SMEs participate in SCs



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This analysis tool was used when the empirical data was qualitative analyzed in order to examine and understand what types of knowledge have the potential to leak away when a SME participates in a SC and how SMEs value these different types of knowledge leakage.

Analysis Tool 2: Examine How Knowledge Leakage can Occur

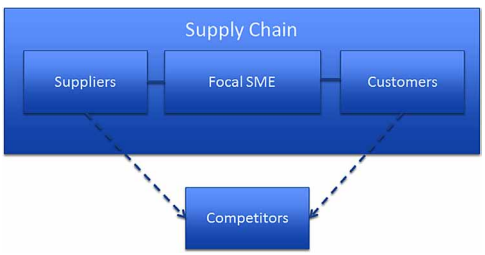
Knowledge leakage can occur from a company to its suppliers and customers, as well as to the company's competitors (Cole et al., 2006). This can happen through informal meetings or when staff feels pride and enthusiasm in a new idea or product (Ritala et al., 2015). The risk of knowledge leakage increases, for example, when a strategy for knowledge sharing is missing (Ritala et al., 2015) or if the knowledge management strategies are not anchored among the company's employees (Annansingh, 2012). Unclear or overlapping organizational boundaries, as well as ICT tools, are other reasons for knowledge leakage (Annansingh, 2012). The increasing use of Internet-based applications in the form of social media also increases the risk of knowledge leakage. With respect to knowledge type, IT has different capabilities (e.g. Blodgood and Salisbury, 2001; Nonaka and Takeuchi, 1995) and two generic capabilities can be identified (Hansen, Ireland an d Hoskisson, 1999):

- Codification of knowledge, and
- Network creation.

Knowledge codification and storage is more appropriate for explicit knowledge, while network creation, as a means of enabling people to share their knowledge directly, is more appropriate for tacit knowledge (e.g. Davenport and Prusak 1998; Blodgood and Salisbury 2001). From the perspective of sharing tacit knowledge through ICT, a key is the degree to which tacit knowledge can be captured and transformed into explicit knowledge (Gore & Gore, 1999). This can be compared to one of the knowledge conversion modes in the learning spiral of Nonaka and Takeuchi (1995). However, in the effort to codify tacit knowledge, its critical components can be lost, and actual knowledge can also be more easily imitated by external entities/organizations (Blodgood and Salisbury, 2001). This means that potential knowledge leakage through ICT tools is more relevant for some types of knowledge.

SCM concerns steering supply chains from a holistic approach that includes the material and information flows between companies (Mattson, 2012) and the importance of developing deep relations with both suppliers and customers is clear. Potential situations illustrating how knowledge leakage may occur when SMEs participate in SCs, as described in the literature, are analyzed and summarized in a conceptual model (Figure 2). This model is used as an analysis tool in the empirical study.

Figure 2. Analysis tool for examining how knowledge leakage can occur when SMEs participate in SCs



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This analysis tool was used when the empirical data was analyzed in order to examine and understand how knowledge leakage can occur from a SME when participating in a SC.

The Empirical Study

The empirical study consists of five in-depth interviews with four CEOs and one Site Manager from five different Swedish companies. The work with developing the interview guide was based on the literature review and our aim to examine what types of knowledge may leak away, how they are valued, and how knowledge leakage can occur. The interviews were semi-structured to allow for in-depth supplementary questions to the answers (Lantz, 2013). Therefore, the interview guide was structured into five question areas: Introduction, Collaboration in SCs, Knowledge, Knowledge sharing, and Potential risks with knowledge sharing. The interviews, which were performed in March 2015, were recorded and the relevant parts, from the perspective of the goal, were transcribed and sent back to the respondents, in order to validate their correctness.

The following five companies and respondents were included in the empirical study:

- Company 1 is a furniture manufacturer in a small Swedish town. The company produces custom-adapted office furniture and its headquarters and production facility are situated in the town of origin. Besides office furniture, the company also manufactures furnishings for reception areas, conference environments and lounge rooms. The company is a family-owned business with approximately 70 employees and an annual turnover of approx. 100 million SEK. The objective is to triple its turnover within three years, by investing in and developing three market areas:
    - The domestic market (Scandinavia)
    - The European market
    - The Asian market.

The company has recently invested in a new factory in the same town and expects to increase the number of employees to 100 at the end of the year. The respondent is the company´s CEO who has also been an owner since 1983. The interview was conducted in the company´s main office.

- Company 2 is a furniture manufacturer in a small Swedish town. It has always been family-owned and is now being run by the third generation. The company's offices and production facility are situated in the town of origin. Their focus is manufacturing tables and chairs using wood as the core material. The company's products are mainly oriented towards domestic environments, but during the past few years, it has worked towards public environments. Its markets are in Sweden, Norway and Finland. The company has approximately 20 employees and an annual turnover of approx. 32 million SEK. The respondent is the company´s CEO, a position held since 1995. The interview was conducted in the company´s main office.
- Company 3 operates in two small Swedish towns. Its production consists of making metal cuttings in cast iron, steel and aluminum and includes, for example, links to 4-wheel drives, main bearings, engine manifolds and industrial robot parts. In one of the towns, the company also does prototyping. Its customers are in the automotive as well as telecommunications industries, amongst others. The company has approximately 120 employees and an annual turnover of approx. 392 million

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SEK. The company is part of a concern, which has 1200 employees and an annual turnover of approx. 1,5 milliards SEK. The respondent is the company´s site manager, a position held since September 2014. The interview was conducted in the company´s main office.

- Company 4 is a family-owned business in a Swedish town. Initially, production consisted of copper jugs, kettles, buckets, etc. Since the 1920s, the company has manufactured stainless steel products and is today an expert in this field. Its product line consists of customized ventilation, heating and sanitation items, but also handles subcontracted parts for industrial use, as well as large kitchen fittings. Two thirds of the company´s production consists of its own products. Its largest customers are in the food and pharmaceutical industries. The company has approximately 100 employees and an annual turnover of approx. 145 million SEK. The respondent is the company´s CEO, a position held since taking over from his father in1989. The interview was conducted in the company´s main office.
- Company 5 was founded in a Swedish town. As part of a global group, which has 18 sales offices and five production plants worldwide, the company develops and produces quick coupling solutions. The total number of employees for the group is approximately 550, of which approximately 280 are based in the Swedish town where the company was founded. The company has five main production areas: hydraulics, high-pressure hydraulics, fluids, medium pressure, breathing air and multi-couplers. In addition, the company is quality and environmentally certified according to ISO 9001 and ISO 14001 and has an annual turnover of approx. 575 million SEK. The respondent, whose grandfather started the company, is the firm´s CEO, a position held since 2011. The respondent is the third generation leading the company. The interview was conducted in the company´s main office. The reason for including this company in the study, despite it having 280 employees and an annual turnover of approx. 575 million SEK, is that its growth has occurred relatively recently.

RESULTS

The empirical study confirms the theory embedded in the analysis tools and has added some new aspects. First we describe what the qualitative analysis of the empirical data has shown for each company, and secondly we describe types of knowledge that may leak away, how they are valued, and how knowledge leakage can occur. The descriptions also include the first versions of the two frameworks in the form of the accordingly updated analysis tools.

The Empirical Result

The following section presents the results for each company. Citations from the respondents have been translated from Swedish and are written in italics.

- Company 1 collaborates with suppliers in joint product development and in outsourcing elements and parts to collaborative specialist partners. The company has experienced knowledge leakage several times, both through suppliers and customers. The respondent also highlights that the potential negative effects of such leakage are the loss of competitive advantages and revenue. As a concrete example, the respondent describes how the company shared product drawings with one

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of its suppliers, who in turn sent them to competing companies, in order to acquire new customers and thereby increase its own revenues. Another example, not limited to its collaboration in a SC, is in connection with an exhibition abroad. A competing company took pictures of the company´s furniture, despite it being forbidden, and started to produce copies of the furniture. The competitor located production in low-wage countries, which meant the copied products could be sold for a lower price. Consequently, the competing company gained customers that Company 1 had hoped to obtain. Although aware that knowledge leakage can occur in collaborative relationships, the company does not use formal agreements when it collaborates with others. This is because developing these agreements is time and resource intensive. The respondent instead means that both his company and the cooperating enterprise benefit from and are thus dependent on such cooperation continuing. However, there are exceptions. For example, it happens that the company uses formal agreements when customer orders are of considerable value or highly complex. The company is open about the design and construction of its products, since it is necessary for the marketing process, but has chosen to blur details of the products before posting pictures and drawings on its website. The respondent believes that this will hamper plagiarism. Product development and product knowledge are critical for the company, i.e., the technological domain (our remark). However, from the perspective of the technological domain, the machines used are not unique in the furniture industry; instead it concerns the skills and knowledge of the employees. "*It would be devastating if they stop.*" From the perspective of the company´s ability to grow and develop, the aspects of customer contacts and marketing have also increased in value. The respondent values technological knowledge leakage as the most critical one to protect against.

- Company 2 has widespread collaboration with suppliers and customers. A current example is the interaction with a large retailer to establish the look of the range in 2020. Knowledge is crucial for the company and the preservation of employees' knowledge is "*…a key issue for survival*". Culture and employees are highlighted as being very important. The company's core competence resides in its knowledge about the manufacture of wooden furniture and its unique knowledge concerning a special surface treatment and the manufacture of specially designed fittings. This knowledge makes the company competitive and is something it does not share outside the company. As such, this knowledge can be compared with private knowledge in the technological domain (our remark) and is also the type of knowledge that the respondent, together with organizational knowledge, values as the most critical to protect. The company does not consider knowledge leakage as a risk and, consequently, there are no discussions concerning what knowledge to share and what knowledge to protect. The respondent considers that he is a person with an open attitude, which is also reflected in the company and its collaborative relationships. This means that the company does not conceal any knowledge or information from its partners in the supply chain. However, during the interview, it became obvious that there is critical knowledge, which gives the company competitive advantages, that the respondent does not want to share, or lose through leakage. Our interpretation is that the company has not previously, to any great extent, considered the potential risks with knowledge leakage. The respondent also explains that he sees it as a matter of course that the company's subcontractors resell solutions they have developed together. However, with respect to a surface treatment for a linoleum table that the company is trying to develop in cooperation with a subcontractor, the respondent explains that this would mean a competitive advantage and, consequently, does not want it spread. The company has not experienced any adverse effects linked to knowledge sharing and cannot speculate on what it would mean if the company

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were exposed to knowledge leakage. Based on the respondent's answers to other questions, our interpretation is that knowledge leakage of the company's technological expertise could result in negative effects, such as loss of competitive advantage and revenue.

- Company 3 interacts with both suppliers and customers. It also has bigger customers that require the company to use subcontractors assigned by the customer. In such cases, the customer assists the company in establishing a cooperative relationship. Such cooperation may involve reducing processing times and streamlining manufacturing together with the customer and supplier. The company also has some collaboration with other suppliers, in addition to those specified by the customer. The respondent explains that the company has not experienced knowledge leakage. Notably, the respondent has only been the company´s site manager since September 2014. The respondent elaborated explaining that the leakage of the technological knowledge of metal spraying would be very undesirable. Speculating on the negative effects this would mean for the company, the respondent acknowledged; "*…it would mean the nail in the coffin here*", since the company would probably lose more business and thus revenue and competitiveness, which, according to e.g., Hamel (1991), Heiman and Nickerson (2004) and Ahmad et al., (2014) are two of the negative effects of knowledge leakage. However, the respondent argued that the financial requirements in themselves are a protection against plagiarism of the plant, since it will require an investment of approx. 35 million SEK. Knowledge of the company's core machining and metal spraying process is of great importance. The metallic spraying process is invaluable for the company because it makes the company unique and contributes to competitiveness. Hence, the respondent considers technological knowledge as the one most critical to protect. Regarding the other two domains, organizational and market-oriented knowledge, the company, according to the respondent, does not have any unique knowledge and thus protecting these domains is not important. The company´s organization is not formed in any unique way and its market is open and mainly consigned to the Internet.
- Company 4 collaborates with both suppliers and customers in SCs. "*If companies do not cooperate today, it is devastating*", according to the respondent. In the collaboration, the respondent emphasized the importance of mutual trust and transparency and, for example, their use of the concept "co-supplier" instead of "subcontractor". For the company, knowledge of all the three domains, organization, marketing and technology, is critically important. The respondent argued that employees, customers and production are needed in the right combination for the business to be unique and successful. It is important to protect all knowledge that is coupled to these areas against leakage. The respondent regards knowledge leakage as a risk. If knowledge of the company's customers and products were distributed to another similar firm, it would mean devastating consequences for the company. Company 4 both produces its own products and outsources its capacity to other manufacturers, i.e., acts as a subcontractor. This means that the company can share its production knowledge with these manufacturers and at the same time become inspired and "steal" smart solutions that are embedded in the customers´ products. This is something the respondent emphasizes as a concrete advantage when cooperating in SCs, "*a win win relationship*", and "*Steel with pride, steal with pride*" is an expression applied in the company. For some big customers, Company 4 is also known as a "preferred supplier" in their SCM and, hence, more involved in customers' processes, e.g., product development. Collaboration in SCs makes it possible for both parties to share advice and knowledge, in order to improve products and processes. Although the company is positive to collaboration, the respondent mentioned that

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employees could be a potential channel of knowledge leakage. This has already occurred in the company when employees contacted the company's customers and offered the same products at a lower price. However, since this incident was revealed early enough and those responsible were confronted, no devastating consequences resulted. Nonetheless, such an incident gives a frivolous impression and obviously risks creating a bad reputation for the company. Notably, the customer in the example was a new one, thus, there was really a great risk that the customer would decide not to buy products from the company.

- Company 5 collaborates to a relatively large extent, particularly for larger projects, with both suppliers and customers in the supply chain. The company works extensively with patent protection, in order to hinder competing companies from copying its products. Company 5 is active on the international marketplace where the culture of copying is different. "*They have no understanding of whether you have a patent*", as the respondent put it, instead they feel a sense of pride in copying products exactly. The company has been exposed to knowledge leakage and has also experienced negative consequences. According to the respondent, knowledge leakage occurred through both suppliers and customers. One concrete example the company has experienced was when employees, at an informal dinner, shared knowledge with one of the company´s customers. The customer in this example then utilized the newfound knowledge to their advantage and began producing the component themselves. Previously, the customer had purchased it from Company 5. Here, the knowledge leakage resulted in the loss of a customer and thus the loss of revenue for the company. The respondent emphasized that this incident "… *when the knowledge disseminated* (leaked, our comment) *via the customer had been taken with the greatest seriousness*", since it had resulted in the loss of customers for the company. It thus confirms Hamel (1991), Heiman and Nickerson (2004) and Ahmad et al., (2014) who argue that the loss of revenue is one of the negative effects knowledge leakages can cause. Technological knowledge, in particular the optimization of products, together with market-oriented knowledge, is essential for business success, since the company operates in a global market. Hence, the respondent ranks the domain technological knowledge as the most critical followed by market-oriented knowledge. In the company, market-oriented knowledge is treated with "*great secrecy*", and the respondent emphasized the importance of marketing and strategy plans for the coming years not being leaked to parties outside the organization. From the perspective of private and public knowledge, this concerns the company´s private knowledge.

Knowledge Leakage When SMES Participate in SCs: What is it About and How Can it Occur?

This work has resulted in two frameworks (Figure 3, Figure 4) visualizing what types of knowledge may leak away and how they are valued, when SMEs participate in SCs, as well as how the knowledge leakage can occur. The frameworks are based on the analysis tools (Figure 1, Figure 2) that have been revised in accordance with the results from the empirical study.

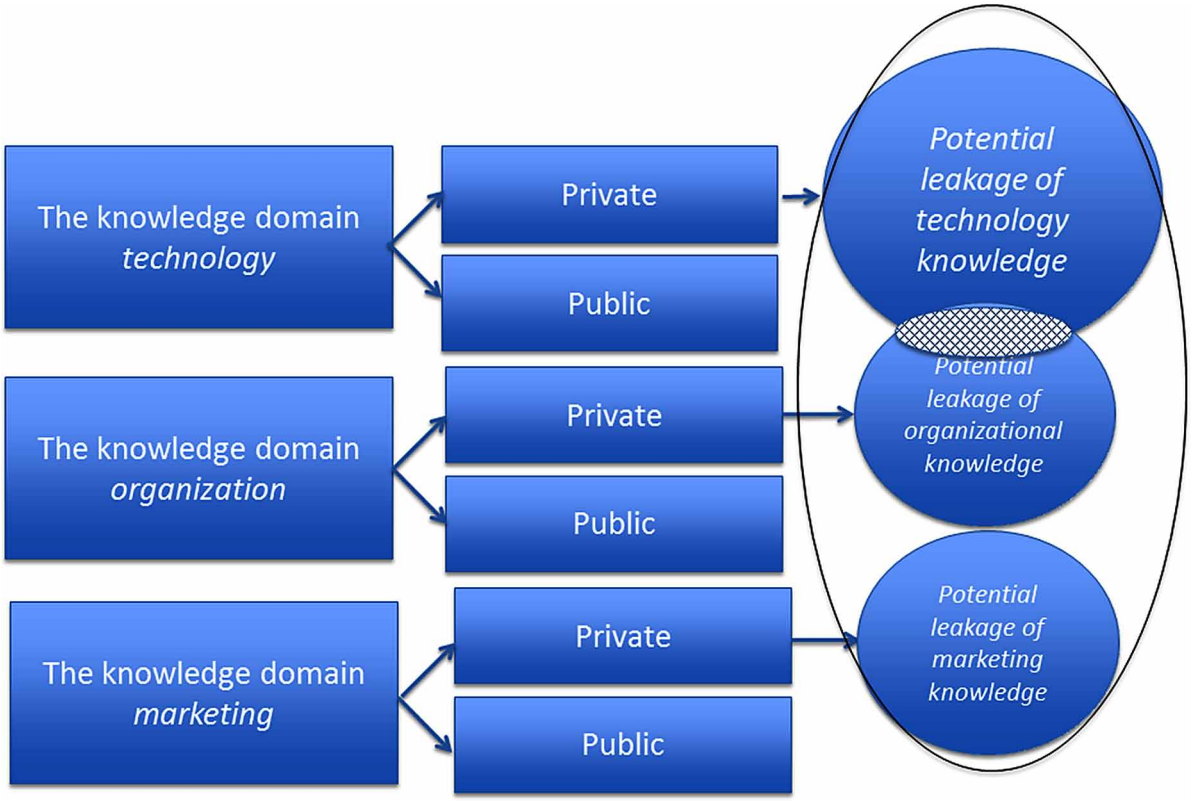
Types of Knowledge Leakage and How They are Valued

That the ability to manage knowledge is crucial for SMEs to achieve success (e.g. Coyte et al., 2012) is confirmed by the empirical study. The companies involved in the study regard knowledge leakage

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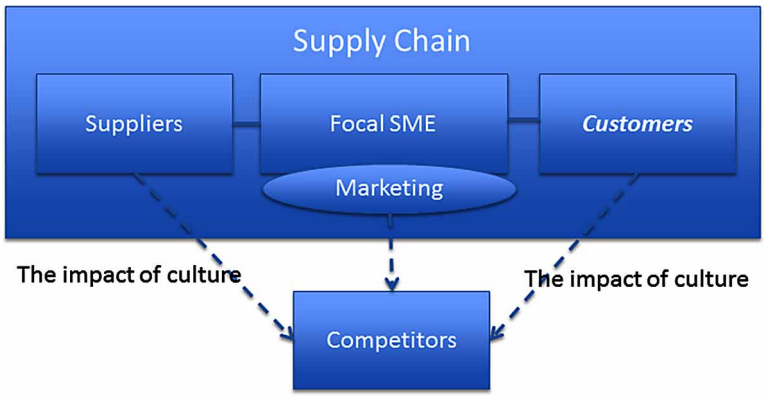
as a risk, and potential positive effects were not discussed. Comparing the three knowledge domains (organizational, technological, marketing), all the companies value technological knowledge as the type of knowledge that is critical to protect from knowledge leakage, since this type of "… knowledge or experience leaking away from its origin may lead to a loss of competitive advantage for an organization" (Mohammed et al, 2007, p. 456). Also, here the risk perspective is obvious. Two of the companies value technological knowledge as the most critical knowledge domain to protect. The knowledge domain technology concerns knowledge of products, research and development, core competencies, technological development, information and communications technology, product development and assembly (Beijerse, 2000). In the empirical study, all the respondents emphasized the importance of product and technological development; even if some of the respondents highlighted that they are not unique in their manufacturing process and use the same machines as others. Accordingly, from the perspective of the technological domain, it is not about the machines being used, it is about the employees´ skills and knowledge. "It would be devastating if they stop." This means that a critical type of knowledge leakage is in the intersection between the two domains technological and organizational. Notably, one respondent argued that it requires the right combination of employees, customers and production for the business to be unique and successful.

Figure 3. A framework showing what types of knowledge may leak away when SMEs participate in SCs and how they are valued



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Figure 4. A framework showing where knowledge leakage can occur when SMEs participate in SCs



From the perspective of the analysis tool for examining types of knowledge leakage when SMEs collaborate in SCs (Figure 1), we can conclude that all of the three domains are represented and that it concerns private knowledge. The analysis also reveals that the technological domain is valued as the most critical one. In order to capture and visualize this, the analysis tool has been revised accordingly, meaning this domain is placed on top and is bigger compared to the other two. Our study also shows that it is the technological knowledge owned by the employees, not the knowledge embedded, for example, in machines, which the respondents refer to. Hence, one type of potential knowledge leakage that can lead to a loss of competitive advantage for an organization belongs in the intersection between the technological and organizational domains, which accordingly has been visualized in the analysis tool. The revised analysis tool, a first version of a framework describing what types of knowledge may leak away when SMEs participate in SCs and how they are valued, is presented in Figure 3.

How the Knowledge Leakage can Occur

The empirical study confirms that suppliers and customers are potential channels of knowledge leakage when collaborating in SCs. However, one respondent argued that it was worse if the knowledge was leaked through customers compared to suppliers. The empirical study also confirms that employees may share too much knowledge when they, e.g., feel pride and joy in improvements (Ritala et al., 2015). In addition, the empirical study reveals the importance of different cultures and how existing cultural attitudes and opinions concerning plagiarism can increase or decrease the risk of knowledge leakage. Another perspective that is revealed in the study is how marketing and exhibitions in themselves include possibilities for knowledge leakage. The analysis tool has been updated accordingly to capture these aspects as well as visualize it. The result, the first version of a framework visualizing how knowledge leakage from a SME participating in a SC may occur, is presented in Figure 4.

CONCLUSION

The empirical study confirms existing theory and reveals some new perspectives and issues. The theoretically-based analysis tools have been revised accordingly and two initial versions of frameworks

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(Figure 3, Figure 4) have been developed visualizing what types of knowledge may leak away when SMEs participate in SCs, how they are valued, and how knowledge can leak away from a SME when participating in a SC. These frameworks, together with the descriptions of each of the five SMEs, are the result of this study. Hence, the study has achieved its aim. Additionally, the work has also shown the potential usefulness of the frameworks for examining the maturity of a specific SME concerning knowledge leakages when participating in a SC.

The advantages of sharing knowledge in SCs is well established in the literature (e.g. Brusoni et al., 2001; Ke and Wei, 2007; Wung, 2008; Hadaya and Cassivi, 2009), and also confirmed in our study. Concerning potential knowledge leakage in SCs, the study indicates that SMEs interpret this as a risk, where potential leakage of technological knowledge is deemed the most critical one, according to this study. Hence, taking a risk management perspective, when studying knowledge leakage in SCs, can potentially further reveal how to manage knowledge leakage in SCs.

The study has also spread some light concerning why knowledge leakage may occur when SMEs collaborate in SCs, e.g., informal meetings and employee pride in new products/ideas; however, to the best of our knowledge, this research is in its infancy. In this area, one potential research approach is to identify and describe Critical Success Factors (CSFs) for a SME when participating in SCs, in order to manage knowledge leakage. CSFs can be described as "the conditions that need to be met to assure success of the system" (Poon and Wagner, 2001, p. 395) and should consist of a limited number of factors (Rockart, 1979). There are numerous ex tensive literature studies that present overviews of CSFs (e.g. Aggestam and van Laere, 2012; Shaul and Tauber, 2013; MunirAhmad and PinedoCuenca, 2013; Leyh and Sander, 2015); however, to the best of our knowledge, not from a knowledge leakage perspective.

For practitioners, this study can serve as an "eye-opener" and contribute to increased awareness of the potential risk of knowledge leakage when participating in a SC. Furthermore, we believe that the developed frameworks can function as guidance and help practitioners to grasp what types of knowledge are most critical for us to protect when SMEs participate in SCs (Figure 3) and where, most likely, the leakage can occur (Figure 4).

We are aware that the present study is not without limitations. The empirical data consist of a limited number of Swedish SMEs represented by one respondent each. However, the result is based on existing research and the aspects added from the empirical study are some initial steps to spread further light on knowledge leakage when SMEs participate in SCs; they are not meant to be exhaustive. Finally, this research area is in its infancy and, when conducting future research, we believe that the results from this study and the proposed research directions can be helpful.

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Chapter 76
Strategic IT Alignment in Service Sector

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ABSTRACT

Effective management and governance is key to the business and information technology alignment. Just as business organisations have to be responsive to the changes in their operating environment to remain competitive, they also have to be proactive in leveraging technological resources to sense these changes and take appropriate strategic and operational decisions. Governance of information technologies is not the job of technology administrators; in fact, it is everybody's responsibility. With this recognition and understanding, technology stakeholders are able to assume responsibilities and accountabilities to execute and achieve desirable behaviour in the use of information technologies. This paper presents a case study of a bank in Thailand on how it has embedded governance practices in its social, operational, structural, and technical environment. It concludes that maximization of value from information technologies is dependent upon the technical, cultural, and organisational endorsement of business practices relating to their governance.

INTRODUCTION

In the contemporary business environment, information technologies (IT) act as strategic enablers as well as strategic advisors. These technologies enable business workflow, and at the same time allow for informed decision support that enhances internal and external responsiveness of the organisation. The impact of IT is particularly significant for service organisations, since they strengthen, support, improve and expedite operations along the service value chain. In these organisations, IT assume a variety of roles and serve as the main conduit to understanding and providing a sustained level of service and value to the organisational stakeholders. The value of IT, however, is dependent on the context within which they

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are implemented, as context shapes their use through the interaction and relationships between various social, human, and organisational, and technical systems. In order to maximise value from IT, service organisations have to understand these interactions, and the internal and external forces that influence the operating environment of the business.

Literature review suggests that technology managers take a deterministic approach to technology implementation (see for example, Haider 2013), whereby they focus on the promises associated with technology rather than the cause and effect relationship, and the contextual intricacies that realise those benefits. As a result, the information technology environment in the contemporary business landscape is replete with vulnerabilities, like lack of fit between technical infrastructure with strategic business considerations, incompatible technology, lack of information ownership, overdependence on outsourcing, inability of the organisation to assign responsibility and accountability, budget blowouts, and ineffective risk assessment and mitigation. As a result, employees in large sized service organisations maybe technically competent, yet they cannot fully appreciate the soft and hard role of information technologies in the organisation, and cannot fully apply their knowledge and skills for the optimum advantage of the organisation.

Managing value from information technology infrastructure is the core tenet of IT governance. It provides the decision rights and accountability framework that encouraging desirable behaviours in the use of information technologies within the organisation. These behaviours are shaped through the mutual interaction of cultural, social, technical, and organisational environments prevailing in the operating context of the organisation. IT governance, therefore, is not the job of a few individuals in the organisation or the information technology department; it is everybody's responsibility. At the same time, the Thai service industry is a complex environment, which consistently struggles to work within the established norms of Thai culture—particularly large sized service organisations, which are forced to have a reactive rather than proactive approach to information technology infrastructure development and use. It is, therefore, important to assess how these organisations institutionalise governance of their information technologies within their operating environment, such that it becomes an integral part of the business workflow embedded through organisational values.

This paper starts with conceptual explanation of IT governance and explains its significance for service organisations. It then discusses the institutional theory and highlights the social, organisational, and technical factors that help institutionalise a system or a phenomenon in an organisation. This is followed by a detailed case study of a Thai bank and its experience with IT governance, using the theoretical frame of references developed in the earlier sections of this paper.

CONCEPT OF IT GOVERNANCE

Different scholars have defined IT governance from different angles. The generally accepted definition of IT governance is about IT responsibilities. This definition, however, takes a very narrow approach of IT governance, whereby the authors only talk about the responsibilities of different managers or employees in the organisation to manage IT. Grembergen (2004) takes a strategic view of IT governance and suggests that IT governance is the organisational capacity exercised by the Board, executive management and IT management to control the formulation and implementation of IT strategy and in this way ensure the fusion of business and IT. The author suggests that in order for IT to function properly in the organisation, alignment between IT strategic business orientation is a must.

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The IT Governance Institute (2003) argues that, IT governance is the responsibility of the Board of Directors and executive management. It is an integral part of enterprise governance and consists of the leadership and organisational structures and processes that ensure that the organisation's IT sustains and extends the organisation's strategy and objectives. This is by far the most comprehensive definition because it not only talks about who is responsible for IT governance, but also explains why it is necessary and how it is related to other strategies and plans. Weill and Ross (2004) suggest that IT Governance is the decision rights and accountability framework for encouraging desirable behaviours in the use of IT. This paper adopts this definition because different organisations use IT differently. And even in one organisation, different employees use IT differently. Therefore, IT governance is not just about how resources are allocated and managed and how resource capability and capacity of the organisation is developed. IT governance is about how resources should be changed, who is responsible for this management and development and who is responsible if things do not go according to plan. This means that simply assigning roles and responsibilities is not enough. Employees in the organisation have to be encouraged, coerced, motivated, and trained to operate and manage IT in a way that helps an organisation achieve its objectives.

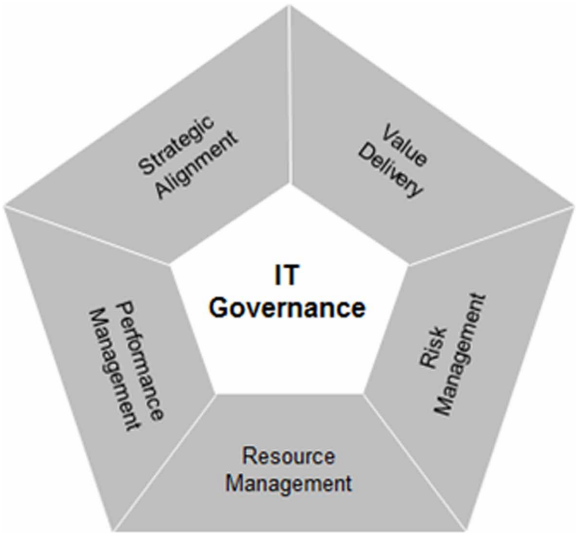
IT governance leads IT to move an organisation forward in different ways. However, it is important for the board of directors, with its decision-making powers, to be involved, and business and IT managers of different business areas to attend the meetings to discuss different issues on the IT agenda: business initiatives, IT-enabled business processes, project approvals, business performance, and the process of technology implementation, deliverables and benefits. These leaders are well-aware and conscious of the value of business performance that involves business transformation, risk management, accountability and responsibility, business continuity and performance measurement (Brown 2006; Aguilera and Jackson 2003). They are keen to acknowledge the type of requirements, resources and people to involve in different projects to make them succeed (Nolan & McFarlan 2005). Likewise, communication strengthens their relationships and collaboration to achieve effective implementation of IT governance (Johnson & Lederer 2005). Hence, communication and decision-making are the first priorities of IT governance to operate a business productively and responsively. This means meeting outcomes involving decision-making and consensus agreement, accountability and of IT managers to ensure the organisation does not encounter survival difficulties in the competitive business market.

IT governance requires considerable information from business and IT strategies to create an understanding of an organisation and form strong relationships between the business and IT arms of the organisation (Bowen, Cheung & Rohde 2007). IT governance aims to support senior managers to make decisions to allocate organisational resources carefully by ensuring they align properly with business and IT strategies (Brown 2006; Grembergen 2004). Subordinates then become aware of scarce resources, and use them wisely and responsibly. IT governance focuses on planning organisational strategies, controlling system reliability and mitigating risk (O'Donnell 2004). This means IT governance primarily focuses on business strategy with attention to the adoption and alignment of technology with business initiatives. Thus, it is important to understand that strong business knowledge and effective IT skills are required to implement IT governance effectively (Liu et. al. 2008).

Figure 1 illustrates the scope of IT governance. It focuses on five domains, i.e., strategic alignment, value delivery, risk management, resource management, and performance measurement. The most significant and fundamental domain of IT governance, i.e., strategic alignment calls for establishing

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Figure 1. IT governance scope
Source: Adapted from (IT Governance Institute 2007)



the relationship between business and IT planning, thereby ensuring that IT operations are aligned with business operations. This means that all IT implementations in the organisation must be fully mapped with the organisational information requirements, such that the collectively the IT infrastructure works as the enabler of organisation's strategic and operational information requirements. Therefore, the value delivery domain calls for practices that ensure that IT does deliver the perceived benefits against business strategy, while at the same time optimizing costs and enabling tacit as well as explicit value of technology. This, in return, requires the organisation to make sure that IT stakeholders comply with business requirements and that risks posed to information and information managing resources are properly identified and managed; hence the third domain, i.e., risk management. The fourth domain, performance management, contributes to other domains and calls for monitoring organisational IT performance on various accounts, such as, strategy implementation of IT and project management, monitoring compliance completion and usage of IT, and measuring process performance in terms of service delivery and achievement of business objectives. The firth domain certifies proper management of IT resources (both technology and human) and managing investments in infrastructure and people.

The effectiveness of IT governance is compromised if relevant change management strategies are not put in place. Organisations, therefore, need to blend execution of IT governance practices and learning together to bring about learning and innovation in an organisation. IT governance is, therefore, not a one off endorsement of some business activities, processes, and controls. It should be treated as a governance mechanism of continuous learning aimed at the evolving use of IT, shaped through alignment between the organization's strategy and diffusion and application of IT within the organisation, guided by the value profile that stakeholders attach to it. IT governance is, therefore, not just a managerial concept, and requires commitment and understanding of every employee in the organisation. Its effectiveness, however, depends on the way it practices, controls, and processes have been institutionalised in the organisation.

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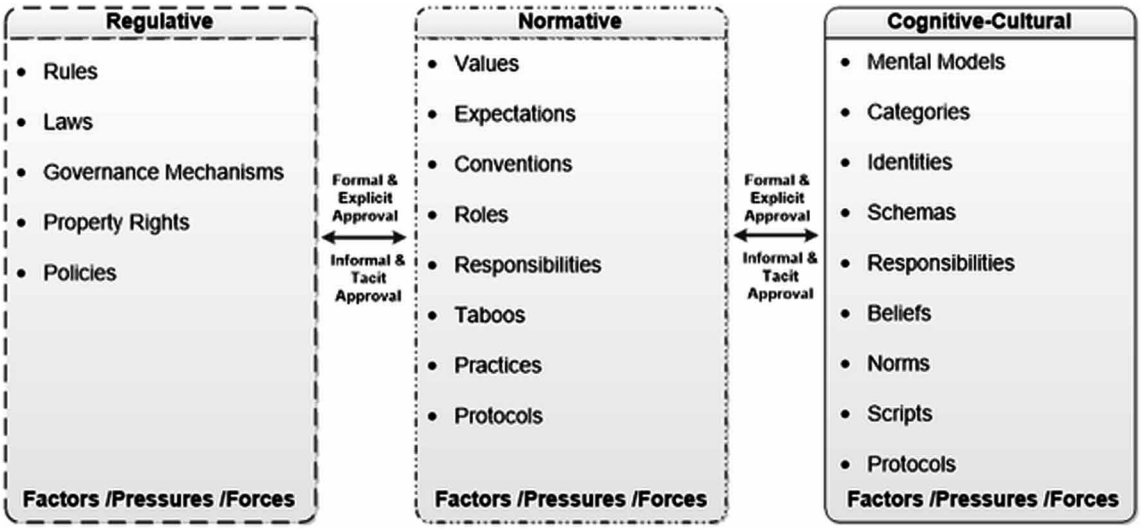
INSTITUTIONAL THEORY

In institutional theory, there are five key concepts, i.e., isomorphism, organisational fields, institutional logics, institutionalisation/legitimacy, and organisational and institutional change (Washington & Patterson 2011). These concepts are shapped by three types of social forces in an institution, i.e. regulations, assumptions and expectations, and cultural cognition (Macfarlane et al. 2013; Scott et al. 2000). An organisation, thus, integrates and aligns different and similar variables to create organisational value (Washington & Patterson 2011) by systemising all processes, practices and ideas. In other words, these interactions help an organisations evolve and institutionalise various concepts, such as technology use, across the organisation through the processes of facilitating and sharing, which leads people understand and make sense of their roles, jobs, and activities by enabling them to practice, communicate, and co-operate collaboratively.

Figure 2 summarises a view of institutional theory, integrated with its pressures, forces and factors. It shows that institutional theory focuses on paying high attention to holistic assessment of dynamic operational processes to gain better alignment with more internal process synergies. External variables concern competition, social regulations, technological change, and the economic and political environment, all of which impact organisational capabilities in meeting organisational objectives. Dynamic relationships in the organisation are built through the organisational structure, which allows people to understand their roles and responsibilities to deliver effective organisation performance (Greenwood & Suddaby 2006). In other words, everyone being aware of the structural change within an organisation (Dorado 2005) aids understanding of clear organisational strategies and policies (Battilana 2006).

People make sense of what they have to follow to manage organisational change and consequent organisational development (Lawrence & Suddaby 2006). Best practices are implemented to assess institutional change and gain institutional stability, while supervising people so they learn from past

Figure 2. Institutional theory
Source: Adapted from (Scott 2001)



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mistakes (Mutch, Delbridge & Ventrescu 2006) and leading them to understand all institutional domains vertically (Chizema & Buck 2006).

Institutionalisation is achieved when a phenomenon is embedded in organisational life in such a way that it becomes an integral part of organisational life. This integration means that business cannot be executed legitimately (in economic, social, and technical terms) without it. Institutional isomorphism means that the whole organisation conforms to the same set of principles, rules, and norms regarding a particular phenomenon. It occurs through three factors—coercive, normative and mimetic. Coercive isomorphism is the result of presses from internal and external forces that force the organisation to exhibit specific behaviour. These social, cultural, regulator, economic, technical and political forces are exerted on an organisation such that it conforms to the rules and desires of a dominating party. For example, rules and regulations regarding taxation and employee relations, set forth by the government, are examples of external coercive forces. Another example of external coercive pressure is making a trading partner conform to a specific technology standard because that will make it easy for the dominating business in the supply chain to transact business. These pressures emerge from legal mandates, or are influenced by political structures and power relations in organisations, involving authority and approval to meet requirements or expectations.

Normative isomorphism refers to the collective effort of employees to evolve a social, cultural, economic and technical environment that breeds a desired behaviour as well as controlling it. It arises from resources (training, knowledge, technologies and related areas), which are adopted to gain professional practice and achieve effective and productive outcomes (Macfarlane et al. 2013; Washington & Patterson 2011). Thereafter, effective organisational change management and organisational relationships certainly embrace the organisational environment, which gains effective cooperation internally and externally. This isomorphism is achieved through management policies, education and training of employees, job descriptions and experiences, and networking through professional associations. Norms and values thus evolved in the organisation increase the similarity of knowledge, skills, and attitudes of employees in a specific work environment. Mimetic isomorphism calls for deploying successful best practices, solutions or remedies of other organisations (Washington & Patterson 2011) to empower employees in uncertain situations (Macfarlane et al. 2013). When organisational technologies are poorly understood, when goals are ambiguous, or when the environment creates symbolic uncertainty, organisations may model themselves on successful organisations, within the same industry or outside of it (DiMaggio & Powell 1983). For example, a technology platform adopted by a competitor may be considered by an organisation to address uncertainties occurring due to changes in the business environment.

Applying institutional theory to IT governance means that unexpected situations are avoided and risks mitigated. People are encouraged to improve their individual skills learn to gain more knowledge to support and remedy IT governance and related domains in the organisation by sharpening their technical efficiency or organisational performance to meet organisational/stakeholders' expectations. It thus, aims for responsive behaviours under the institutional forces in an organisation.

RESEARCH METHODOLOGY

This research employs an interpretive epistemology with a qualitative perspective. The aim of this research is to explore how large sized Thai service organisations institutionalize IT governance practices. In order to address the research question for this study, 17 middle to senior managers representing various roles in

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the organisation were interviewed and a further 141 surveys were completed among the staff of Company A. were selected The interviews were conducted over a one to one and half hours period and included a cross section of job descriptions that participate in IT governance practices at various levels. This cross section includes staff involved with development, implementation, supervision, management, and use of technical as well as non-technical practices and processes relating to IT governance in company A. The interview questions were open-ended and interviewees had freedom to describe their experiences and problems beyond the scope of the questions. In addition, researchers were provided access to all documentation as well as access to sites of concerning IT governance. The interviews were transcribed and data from all sources were analyzed using NVivo software using its features of themes, descriptions and assertions. Survey data was categorized through various visual descriptions. The conclusions drawn in the following case, thus, represent interpretations of the evidence as understood by the author. To comply with confidentially agreements with the case study participants; theirs as well as their organization's identity has been suppressed.

CASE STUDY

Company A was established in 1945 with a registered capital of THB5 million (USD156, 885) and 21 employees. It has been one of the major local commercial banks in Thailand since 1976, and is listed with the Stock Exchange of Thailand. It is indexed with the bank of Thailand, which operates as the central bank—designating monetary policy, examining financial systems, supporting banking assistance to the government and financial institutions, releasing securities and new prints of banknotes, and controlling the foreign exchange rate in Thailand. Company A is one of the five largest commercial banks in Thailand as determined by its total assets, loans and deposits.

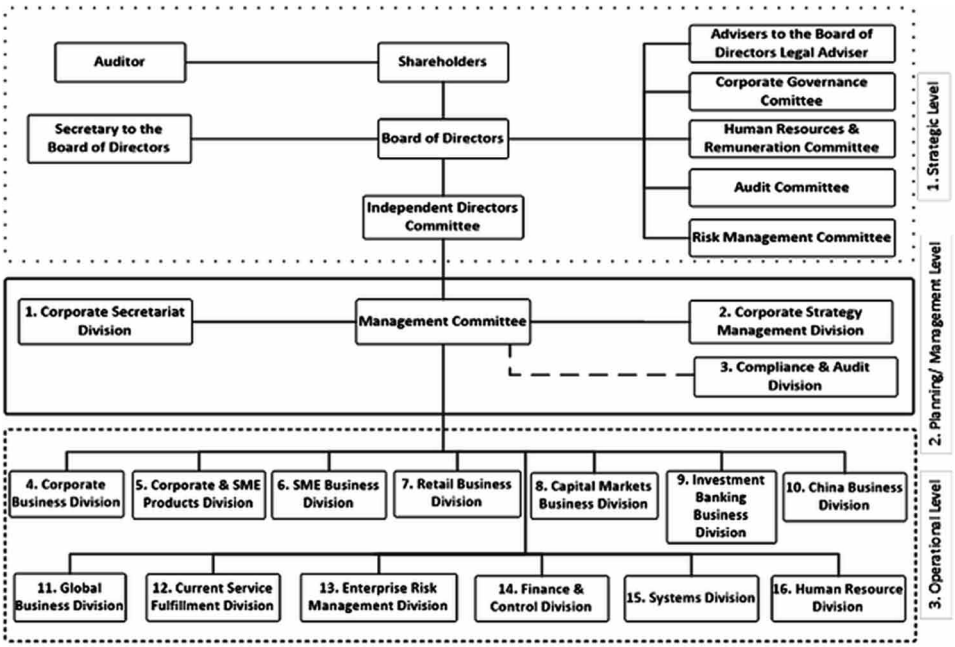
Company A's services include personal saving and investments, fund transfers and bill payments, foreign currency services, personal loans, international trade services, bank guarantees, credit and debit card services, cash management, domestic credit, international banking, investment banking and securities. Currently, it has a registered capital of THB30,486 million (US958 million) with total revenue in 2013 of approximately THB1.43 billion (US44,966 million). There are over 19,000 employees who

Table 1. Key Information about Company A

Business Dimension	Features
Nature of business	Banking and financial services
Year of establishment	1945
Head office	Bangkok, Thailand
Location	Across Thailand with designated countries
Total revenues 2013	Approximately THB1.43 billion (USD44,903 million)
Registered capital	Approximately THB30,486 million (USD958 million)
Total branches	Over 900
Total overseas offices	11
Total employees	Over 19,000

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Figure 3. Organizational chart of Company A



work in over 900 branches across Thailand, with 11 overseas offices in the US, Hong Kong, Cayman Islands, China, Japan and Myanmar, with trade partners worldwide. Table 1 summarises Company A's key information.

Organisational Structure

Company A is a large organisation with significant involvement in Thai monetary policy and operations.

As Figure 3 shows, there are 13 core business divisions with numerous smaller departments, sections and teams. The top management in the organisation represents four major components—shareholders, board of directors, independent directors' committee, and the management committee. In addition, the board of directors is advised by a range of directors and committees. The executive management team governs and controls the operational divisions and provides directions and guidelines for the business. Individual divisions collaborate closely across different product areas. The organization has decentralized formal management, thereby, individual divisions have extensive authority to run business activities.

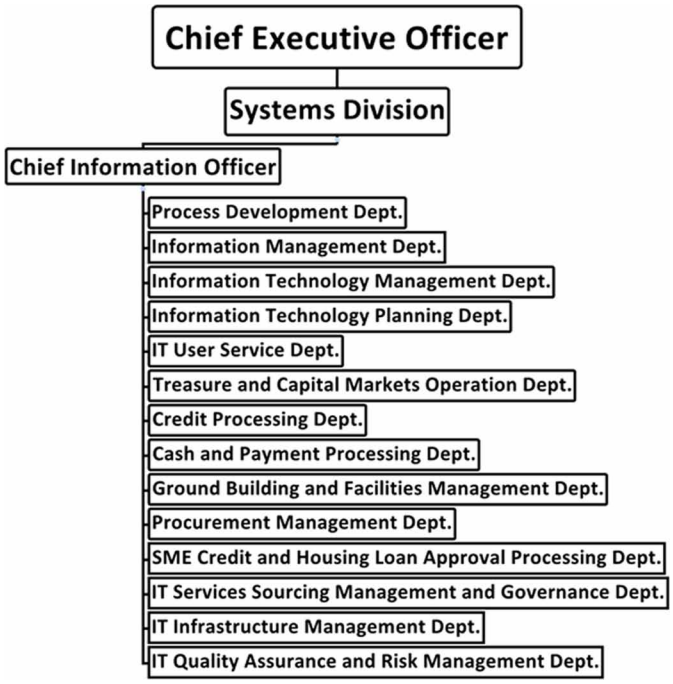
Information Technology Organization at Company A

In Company A, IT is in the systems division, with 14 key IT operating subordinate departments (see Figure 4). The CIO is the manager of the systems division, and is responsible for executing and controlling all IT functions related to all business activities in every business division and each subordinate department throughout Company A.

IT operational services are divided into two areas of responsibility—corporate and divisional IT. Corporate IT operates under the IT planning department in relation to the use of IT at the strategic level

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Figure 4. Organizational structure of IT at Company A



only. Divisional IT focuses on IT operations, and maintains all IT activities and services in the business division levels, including all subsidiary departments and branches. Therefore, the systems division handles all IT concerns and operates all IT activities in relation to all business transactions. The systems division is located at head office in Bangkok, leading all in-house and outsourced IT operations within head office and throughout the branches all over Thailand.

Major Technologies at Company A

Table 2 lists the various IT systems and applications that are implemented and operated to meet the business requirements of Company A. It classifies six business programs: (1) marketing, (2) personal online banking, (3) business online banking, (4) electronic funds transfer, (5) IT security and (6) banking operations.

The core banking system delivers all financial and banking data integration in real time: transaction banking, lending, mortgages, deposits, and online and mobile access. The credit management administration system controls credit transactions by integrating the selected vendors to facilitate data exchange with corporate and retail customers. Moreover, the credit management administration system enables the loan origination system to control and monitor all steps in loan application processing. With over 900 branches across Thailand, Company A facilitates customer service by implementing a queue system, a document imaging system and related banking systems.

Company A originally implemented data security and branch service systems. However, data protection issues arise from the different business processes, business applications and record management systems implemented on servers. Thus, a virtual server and storage was introduced to strengthen safety

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Table 2. IT and operational technologies infrastructure at Company A

IT Infrastructure	
Marketing:	Social networking service
	Customer relationship management
	Sales force automation system
	Campaign management system
Personal online banking	Verified by Visa and MasterCard SecurityCode
	One-time password
	Short message service and email notifications
	Online virus scanner
	Security software
	Mobile banking
Business online banking	Electronic data capture system
	Near field communication technology
	Mobile banking
Electronic funds transfer	Dynamic currency conversion system
	Payroll systems
	Real time exchange rate trading system
	Bulk payment system
IT security	Data security and branch service systems
	Virtual server and storage
	Key risk indictors
	Risk event database
	Record management systems: financial data, accounting and Payroll, operations, compliance, data security, policies, compliance, standards and regulations
Banking operations	Core banking system: transaction banking, lending, mortgages, deposits, and online and mobile access
	Credit management administration system
	Loan origination system
	Queue system
	Document imaging system

and protect data from attacks or risks from viruses and malicious intrusions. Risk-management tools, such as key risk indictors, risk event databases and related systems, monitor and control risks. Record management systems are the key applications that manage and interact with different business activities and systems, for instance, financial data, accounting and payroll, operations, compliance, data security, policies, compliance, standards and regulations. For business online banking, an electronic data capture system validates online credit card transactions over e-commerce websites for safe online payments. It detects fraudulent credit cards trying to make online transactions. This process focuses on strengthening the safety and accuracy of online financial data to support merchants that are business customers of Company A. NFC technology has been employed and developed for mobile banking. Customers can

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easily check their balance, transfer funds, top-up savings and make payments via their mobile phone. A dynamic currency conversion system allows electronic funds transfer so credit card holders can make payments converted into local currency from 35 different currencies. In addition, a real time exchange rate trading system is available over Company A's website. The bulk payment system allows transfer of large transaction payments.

In terms of personal online banking, Company A focuses on safer online financial transactions. Verified by Visa and MasterCard SecurityCodes are used to deliver fraud detection systems to strengthen customer shields. One-Time Password is a unique password notified by Short Message Service (SMS) over customers' mobile phones and email to immediately update and confirm transactions. Company A was the first bank in the Southeast Asian region to bring this technology to the banking industry. This service encourages and supports customers shopping over the internet and making payments through online transactions. Online security is vital for business online banking. Customers can easily access Company A's website to scan for viruses online and download security software products to help increase online protection.

Company A considers that IT infrastructure is vital to its business. It is implemented in different functional areas of the business divisions to ensure its products and services deliver value. A social networking service is also a key marketing channel that connects customers easily and interactively, possible as a result of strong growth in the use of social media. It markets new business products and services. A CRM system is implemented in both retail and corporate business divisions to ensure good relationships using technology to cooperatively manage and automate sales, marketing, customer service and technical support. A sales-force automation system is adopted to collaborate with CRM to drive and increase performance and profitability. Company A adopts a campaign management system to design and promote multichannel marketing initiatives and follow up their effects by analysing customer classification.

Information Technology Operations and Management

Company A mainly focuses on two areas of IT performance—management of outsourcing and vendors and business-IT strategic alignment. The SLAs focus on measuring performance and processes of different outsourcing activities and vendors. In addition, the BSC measures IT performance against alignment with business models, processes and strategies in response to profitability. Company A adopts a back-office centralisation solution to increase productivity and decrease expenses and staffing levels throughout all branches in metropolitan areas. All the non-core business functions are centralised in a shared environment.

Implementation of IT infrastructure routinely involves IT service management. The ITIL is adopted to support the IT planning department configure management, focus on organisational strategies and projects, and coordinate other teams and departments vertically and collaboratively. ITIL was adopted to create a master plan by allowing the IT planning department to manage all IT projects thoroughly, transform them properly and assign the responsible people correctly.

Strategic Alignment

Company A has a well-established procedure for technology implementation. Each new technology is introduced in the organisation in response to some strategic considerations. The organisation follows an

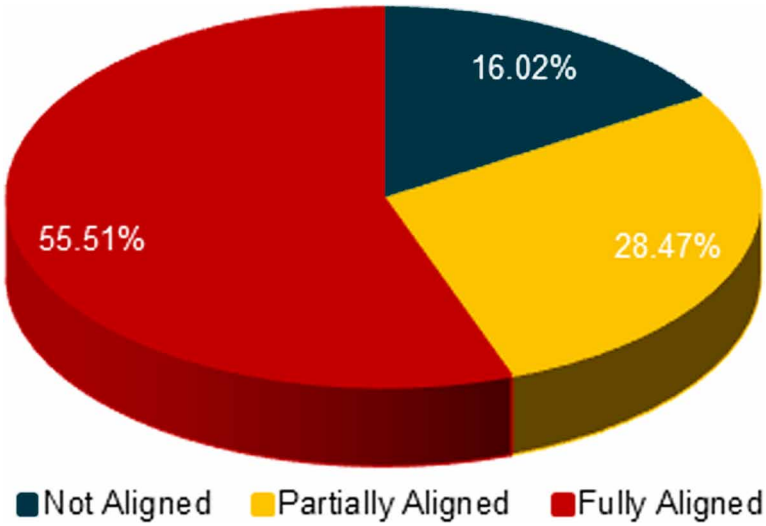
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extensive process of performance audit, whereby performance of processes as well as technologies is measured periodically. This evaluation provides management with feedback on the efficiency of processes as well as technologies. This assessment helps in identifying the technology and process gaps, which helps technology implementers identify the right kind of technologies that suit the business. Once they understand what technology is right for the business, proposals or quotations are sought from technology vendors. Doing so, not only organisational managers know what type of technologies is right for the business but at the same time they also know the limitations and capabilities of technology, which helps them with change management. The head of software quality assurance summarises the process:

We list all priorities from each business improvement initiative. We check the most useful technologies and methodologies that match the business requirements. The various committees that we have then meet on this IT agenda and take decisions on technology developments/procurements/improvement. These are thus able to indicate project stakeholders as well as resources required to undertake the projects.

Figure 5 shows that most respondents in Company A (55.51%) believe that IT is fully aligned with business model. On the other hand, 28.47% of the respondents believe that IT is partially aligned with business model, and relatively low number of the respondents (16.02%) believes that it is not aligned with the business model. This shows that Company A has a relatively low number of employees in the organisation who do not understand and interpret business requirements properly, and are not able to understand how technology is used to address these business requirements. Company A takes a closer look at IT-based enterprise architecture and business processes to investigate where the business needs are and adopts the right solutions to improve performance and mitigate risks related to IT infrastructure. Conformance to enterprise architecture not only helps with better performance, but also identifies root causes of the issues and loopholes that contribute to problems and issues with business processes.

Figure 5. IT alignment with business model



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Strategic Information Technology Implementation

Company A is a technology savvy organisation. Top management supports technology introduction, operation, and management at various levels in the organisation. There is fair bit of confluence between top management and the CIO. Once the top executive provides clear directions and visions on where the business is heading, the CIO is able to map business requirements with technology. The close association between the CIO and the CEO helps the organisation grow in synchronisation with technology. In this way, technology becomes an integral part of organisational growth. The head of IT strategy and policy further explains:

I think the most important is sponsorship from top management. It can improve IT systems, processes and the methodological thinking of people. It would be much simpler if the board of directors agree and support the intention to keep moving using technology. Their strong lead can support IT implementation to minimise difficulties in the business processes and achieve better results. Once this is done, the rest is easy because we provide education and training along with clear communication to involved people. They will clearly understand benefits of IT in the business.

External influences from both local and global environments impact the business of Company A, especially political factors. It is important for Company A to be aware of changes that directly and indirectly affect the ability of business and investment to meet organisational strategies and achieve business objectives. Company A focuses on government factors and legal concerns by anticipating and influencing public policy actions. In doing so, Company A complies with the bank of Thailand as mandated by the Thai Government. Senior managers take into account major political realities, such as, government-driven tax laws, trade quotas and restraints, regulatory frameworks, industry subsidies, investment incentives, local content manufacturing requirements, regulated pricing, trade agreements, economic treaties and bureaucratic processes. Since political developments and changes control business direction, Company A follows and updates practices according to directions from the bank of Thailand. This approach helps Company A to avoid problems and issues emanating from noncompliance and financial malpractices. A senior IT architect specialist provides insight in to this:

The regulatory team is responsible for working with the latest guidelines and policy from the bank of Thailand. These changes directly affect all banks in Thailand. The regulatory team is always aware of changes and understands what to change and improve. It also updates the latest information and reports to the participating people in the organisation, including our internal and external stakeholders.

To keep up with the changes, Company A relies heavily on IT. It is not only proactive in implementing new technologies, refurbishing and upgrading existing ones, but also keenly peruses BPR for continuous improvement. IT governance is the cornerstone of these strategies, whereby the company adopts and customises only reliable and trustworthy existing IT governance frameworks to meet its business considerations. The expected benefits of these existing frameworks meet the business objectives of Company A. The guidelines available through these frameworks help Company A to cope with its business effectively and proficiently. A senior IS auditor states:

We adopted and customised CobiT and ITIL in some areas. These methodologies support monitoring of different workflow processes relating to project management, quality assurance, capacity management,

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and customer relationship management. These help us mitigate risks and incidents from unexpected situations. They also reduce controlling processes and minimise costs for long-term management of processes.

Information Technology Investment

In Company A, the IT department works closely with other business functions. This collaboration helps IT people recommend solutions in terms of returns on investment and benefits expected in the future. For example, the senior IT strategy and policy specialist comments:

We acknowledge what kind of problems the business department has and encounters daily. We know what type of IT solutions to adopt and support them. This knowledge helps us understand the requirements and propose a variety of solutions for the end users to select from.

In Company A, a steering committee manages IT investment decisions. The committee pays attention to details in project scope, goals, plans, schedules, timelines, costs, quality expectations, tools and deliverables. They focus on reporting of project progress, and project changes and results of measurement. The senior software quality assurance specialist explains:

The committee highly focuses on making decisions on IT investments. They always inquire about the problems in the business departments that are related to the use of IT and the IT department always gets involved. They support the need to align business and IT and achieve better relationships.

Value Delivery

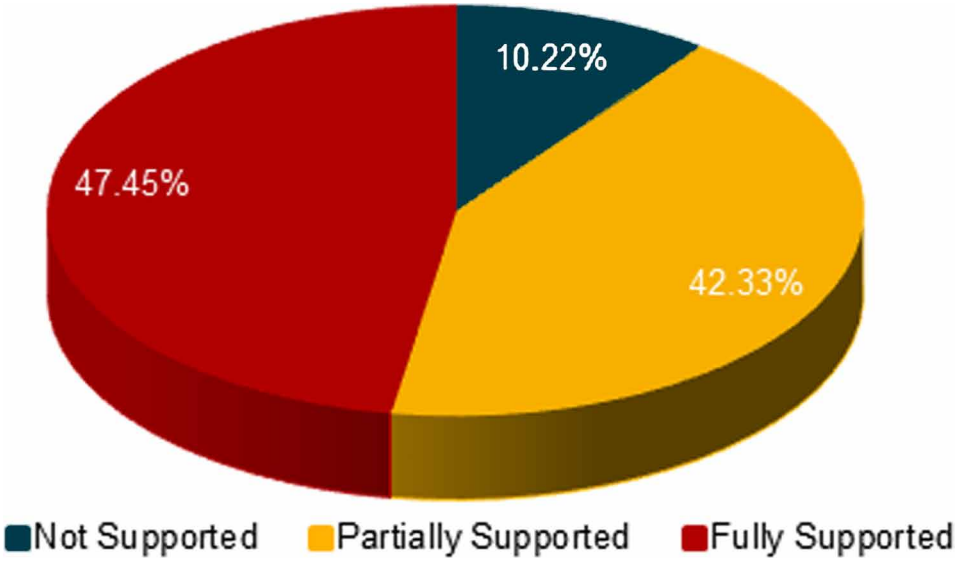
Figure 6 shows that 47.45% of the respondents in Company A believe that IT system fully support business services, with an almost equal number of employees suggesting that they partially provide support. This shows that Company A spends significant effort in taking care of the vulnerabilities and technology as well as the processes enabled by technology. Otherwise, the IT support systems can be a burden that can slow down the business. However, since the bank also involves third party technology services, it requires the IT department to continuously monitor and check the progress against value profile required of IT and related processes and procedures, and SLAs.

Company A operates in a highly volatile environment. However, its internal workflow and procedures are fairly stable. This helps the organisation to not only focus on an acceptable level of service to accelerate value for customers, but also helps it to continuously innovate and transform its business to meet and exceed internal and external customer expectations. This has led to very high level of employee turnover. As a result, retention of expertise is an issue with the bank. Company A has limited number of experience skilled employees who have in-depth knowledge of IT related to backend banking processes. IT also has a fairly large number of new or relatively newer employees who are not fully trained and do not possess the same level of expertise. The head of software quality assurance confirms this:

It is essential to have people who are ready and information well-prepared in advance to gain high productivity or high efficiency in a banking environment. Otherwise, I will say that we would waste time. I would like my department spend less time in preparing the department to provide the required level of surveys and more timing actually providing that surveys.

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Figure 6. IT and business service support



It is understandable why most respondents (25.07%) believe that ineffective change management is the main cause of failure to achieve expected value from IT (see Figure 7). Other major impediments to achieving value from IT as reported by the respondents include high costs of implementation and lack of planning. It is important to note that 15.42% of employees believe that there is a lack of expertise. This is because employees in Company A are fairly proactive in learning new technologies and employees feel a little less confident to claim expertise in the operations and use of technologies.

Figure 7. Causes of failure of IT to deliver expected value



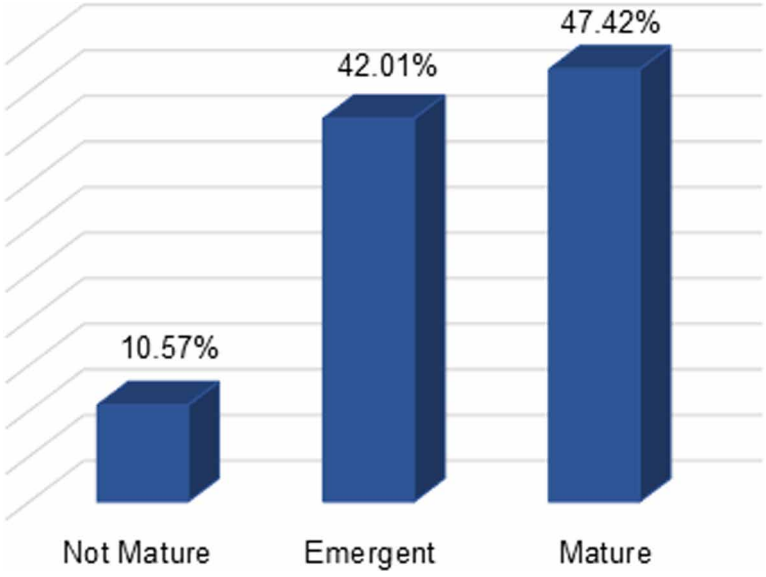
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Figure 8 shows that 47.42% of respondents believe that the organisation's IT infrastructure's value delivery is mature whereas 42.01% of the respondents believe that value of IT service delivery is emergent, which means that the existing IT infrastructure is effective in providing required results. It also shows that IT is aligned with the business model, and IT support services are fully supported for business processes. The existing technologies are up-to-date and are not a hindrance to specialists. The existing technologies are contemporary and add value to the work of employees in the organisation. In other words, IT infrastructure fulfils the demand of higher workload and capacity to meet the rapid work of business, such that mistakes are avoided and delays in business processes and delivery of transactions are minimised.

Since Company A is a financial institution, it has a propensity for measuring performance in financial terms. For this reason, most respondents (23.27%) agree that measure IT performance periodically is the key strategy to improve the perception of value delivery (see Figure 9).

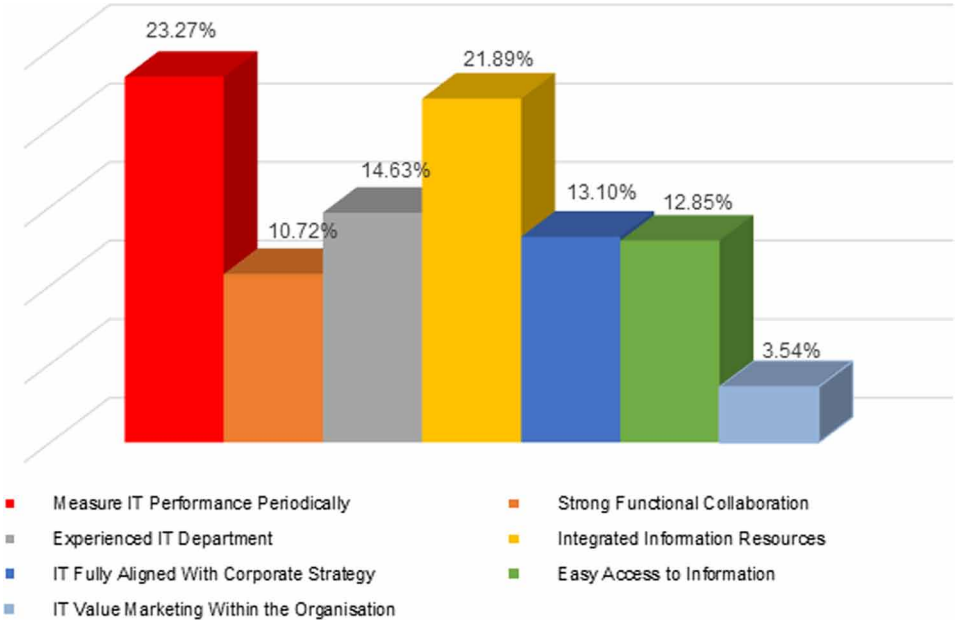
Integrated information resources is rated by 21.89%. This reaffirms that the organisation is fully programmed to view IT as means to developing a robust CRM infrastructure. The fairly even response rate in other categories indicates that the role of IT is well-established in the organisation. Considering Company A's business, the results are not surprising. It shows that employees understand the business well and know how to maximise value from IT. It also shows that Company A considers performance measurement in a variety of business areas and utilises resources to ensure that employees understand the value of IT. Company A regularly monitors contractors and vendors and accesses the SLAs to mitigate risks and unexpected situations. The capability and capacity of IT infrastructure is used to support business growth.

Figure 8. Value of IT service delivery



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Figure 9. Key strategies to improve value delivery perception



Resource Management

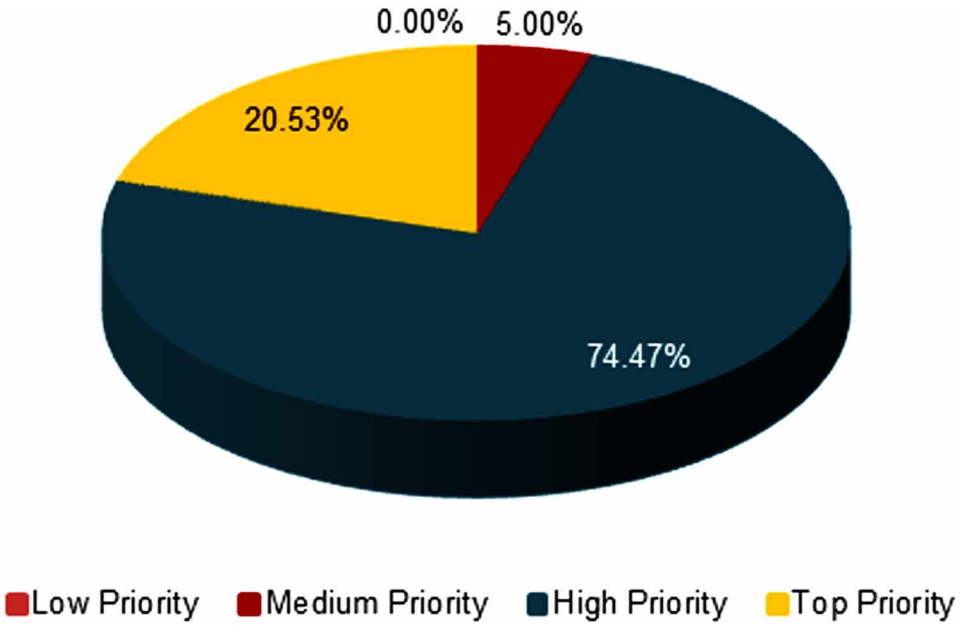
Being a financial institution operating in a highly competitive and technology intensive industry, Company A is quite keen on managing its critical IT resources. In terms of resources, it not only proactively manages the critical technology resources, such as hardware and software, but also the HR related to IT. A senior IT strategy specialist provides a statement about the organisation in terms of resource acquisition and management:

The planning team follows strategic directions from top management and update their plans with regards to ITIL change and configuration management. This team receives a master project plan that integrates other plans together and ascertains technologies required and assigns the responsibilities to people according to their experience and expertise. Senior management thus ensure that work is high quality, knowledge of employees is utilised properly and other employees learn from their expertise.

In Company A, there is a high turnover of technically qualified HR, therefore, it relies on well-thought out plans for employee retention, knowledge sharing, and peer based learning. Company A also lays equal importance on investing in existing hardware and software resources to upgrade and/or re-furbish them to gain continued and sustained value from them. This explains why 74.47% of employees in Company A believe that the organisation uses resources wisely and effectively (Figure 10). This shows that employees are trained to not waste resources and help organisation to reduce costs. Company A thus gains savings and is able to channel resources where required. Company A employs this technique to capitalise on opportunities in cautiously applying IT resources and strategically preparing itself for improved economic conditions. The response to the survey also indicates that employees in the organisation understand the criticality of IT resources and can relate to their efficient use for the overall competitiveness of the organisation.

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Figure 10. Efficient use of IT resources



At Company A, top management has made IT an integral part of organizational life—employees cannot think of doing their job without technology. Company A encourages multiskilling of employees, which enables employees to build and strengthen their skills across various functions and platforms. Apart from technical and operational skills, they also learn particular banking skills specific to Company A's business. The organization also provides ongoing support to employees, they become proficient in technology use within the organization. The business analyst explains the support available to employees, so that they are trained to handle different aspects of IT based business execution:

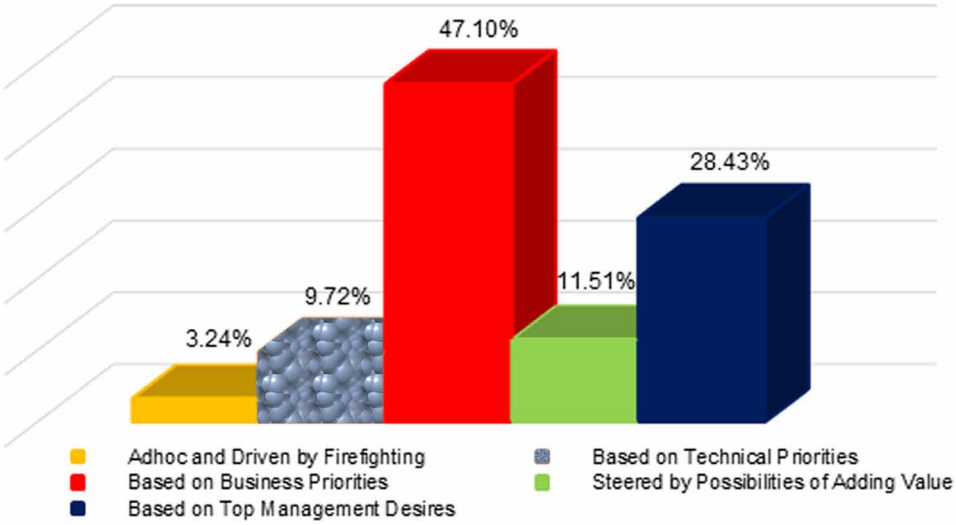
We have a team that provides training and service support to internal staff. They are technically sound and picked from various departments. This cross-functional collaboration helps them create all inclusive training programs, which I think would be pretty expensive if commercial trainers were hired. In our case, this team is able to give a thorough perspective of critical technologies to employees in a much friendlier and close to home environment.

In addition, Company A also utilises vendor-based training and support. External vendors provide support services to the organization on an as-required and where-needed basis. A senior software quality assurance employee explains the overall training paradigm:

We have external IT specialists from IBM to organise IT service support, in terms of applications and servers at headquarters and branches. We hardly get IT problems. Vendors are required to follow all IT infrastructure master plans that have been created and directed by IT architecture team. If there are new policies, new guidelines, new processes and new designs, organisation will pass them on to vendors, so they update their training programs.

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Figure 11. Allocation of resources



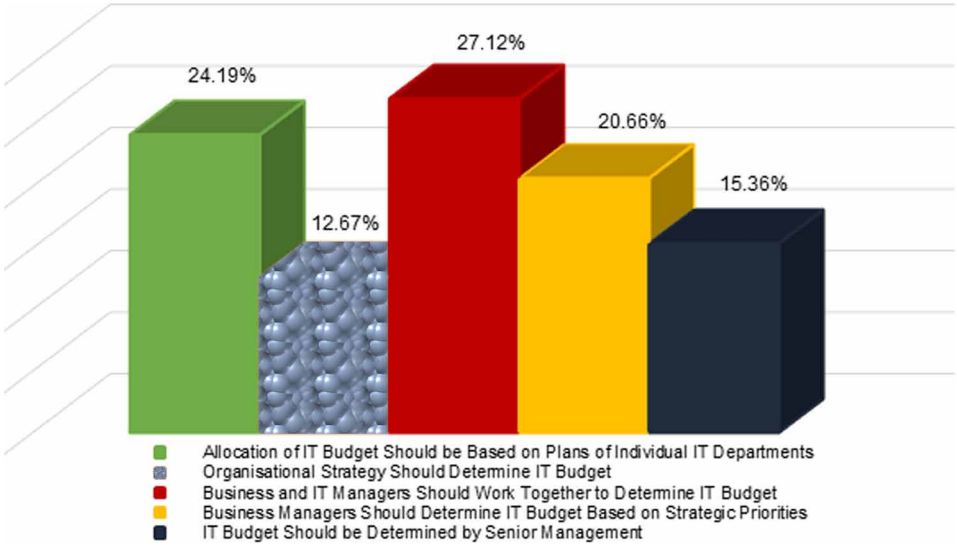
At Company A, top management is proactively involved in IT resource acquisition, allocation and management. At the same time, their technology implementation is derived from strategic business considerations, such that employees understand the rationale of technology, its utilisation, and how it contributes to individual efficiency as well as the overall business's profitability. It is, therefore, not surprising to note that 47.10% of respondents believe that resources allocation should be based on business priorities and 28.43% are of the view that it should be steered by possibilities of adding value (see Figure 11).

Budget Allocation

As explained earlier, Company A is a technology savvy organisation and allocates substantial budget for IT related infrastructure. The organisation has a fairly supportive CEO, who supports IT implementation at various levels in the organisation. It is, therefore, not surprising to note that majority of the survey respondents (27.12%) believe that business and IT managers should work together to determine IT budget (see Figure 12). This is because they have faith in, and trust top management that they will allocate funds when required. It is equally important to note that 20.66% of respondents believe that business managers should participate in IT planning and approval of budgets based on strategic priorities, whereas this organisation has IT infrastructure which is well aligned with its strategic business model. Similarly, there are only 12.67% of respondents who believe that organisational strategy should determine IT budget. It could be argued that these responses are somewhat biased because of continuing support and heavy involvement of the top management in Company A with IT related initiatives. In any organisation with similar characteristics and a non-supportive CEO, responses in these two categories maybe higher. Nevertheless, in Company A budgets are granted for approved projects only where business opportunities are evident. Budgets are monitored and controlled to make sure that they are spent wisely and effectively.

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Figure 12. IT budget allocation



Risk Management

Risk management is perhaps the most important concern of Company A. It has put in place various technologies to monitor and manage risks related to information as well as the systems that create/capture, exchange and store it. These initiatives are complemented with policy and procedural controls to monitor vulnerabilities and develop effective risk mitigation and management plans. The head of IT strategy and policy notes:

We focus on the efficiency of security systems by considering the type of security vulnerabilities, importance of system, and priority of information service. We classify results in different categories: type of incidents, level of severity and weakness. The results are used to develop an estimation plan that ascertains level and severity of risks, which is then used to allocate resources and develop assessment techniques, and risk mitigation and/or risk management plans, procedures and technologies.

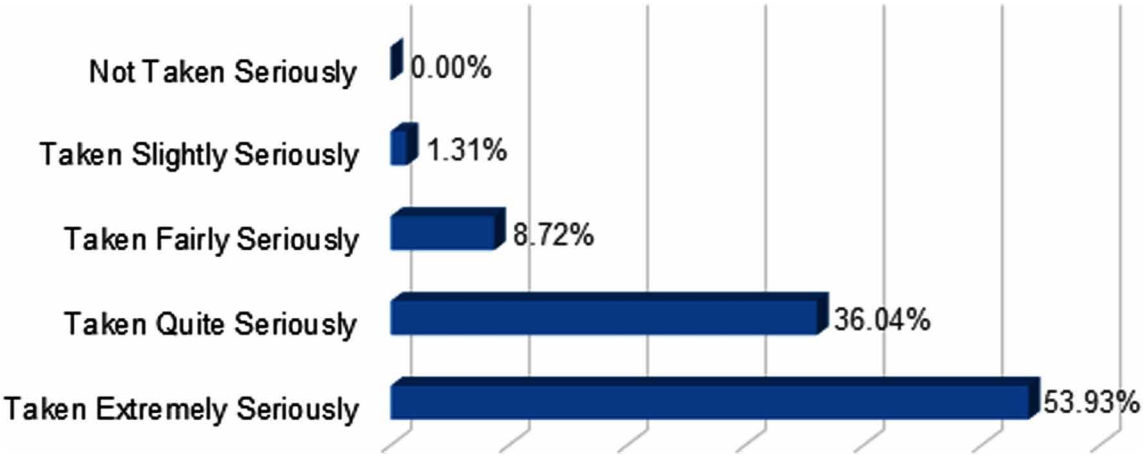
The risk estimation process at Company A ascertains the probability or the likelihood of the risk occurrence. This exercise helps the organisation establish the criticality, interconnectivity, and the likelihood of risk occurrence. The systems administrator explains:

Once we conduct risk assessment, we create the improvement plan by checking the level of risks. Then, we create action plans by concentrating on the issues in action plans to manage the risks. The action plan is about the necessary steps to be taken, to avoid the risk as well as to initiate resources and raise alarms. So that, other departments can take defensive measures.

Figure 13 illustrates that 53.93% of respondents indicate that IT risk management in Company A is taken extremely seriously. It is unsurprising and understandable that senior management considers risk as the most important element of IT infrastructure in a banking environment. It is for the same

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Figure 13. Technology risk management



reason that senior management pays close attention to IT risk management while considering business priorities and new and attractive business initiatives. It is also not surprising to note that none of the respondents believe that the organisation takes IT risk management slightly seriously or does not take IT risk management seriously at all.

At Company A, all departments have their own tools to investigate and monitor risks. Experts who work within their departments develop risk assessment reports. These risk reports are then shared among all functional areas of the business, thus employees in different functions understand vulnerabilities are coming from other functions. This not only helps senior management to develop all-encompassing IT risk management plans and processes but also helps in educating employees on different risks emerging from their own department as well as from other departments affecting their work. In the same way, the organisation also lays maximum emphasis on external risk sources. For example, the head of software quality assurance comments:

We always conduct risk analysis and assessment for outsourced work. Although we do not outsource any critical information, still risk assessment from external sources is a critical component of the overall risk management process in all departments.

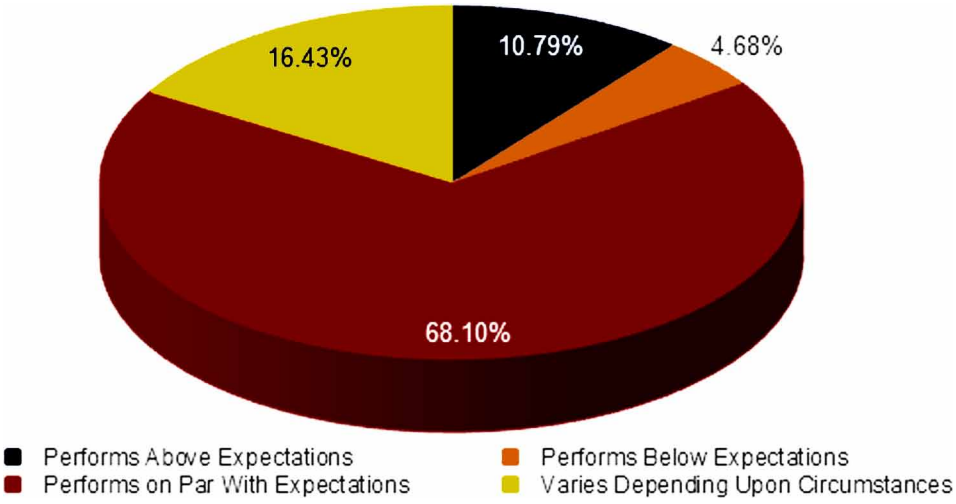
Performance Measurement

Company A has a fairly well-established performance measurement regime. It utilises frameworks such as Balanced Scorecard to measure the overall performance as well as functional performance in different areas of the business. For example, for IT performance measurement the head of software quality assurance asserts:

We adopt balanced scorecard to measure IT in a detailed way in different units. This gives us an in-depth analysis on the value assessment of IT to the stakeholders, customer service, and development of organisational capability. We couple this assessment with other assessments, such as; information quality, system reliability and availability, incident management, etc. to prepare detail analysis of IT infrastructure performance in the organisation.

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Figure 14. IT performance



Company A also continuously measures the performance of SLAs with the third parties. This complements the organisational effort in measuring performance of IT hardware. For example, the business analyst states:

We regularly measure performance of IT infrastructure, i.e., servers and networks. When we use this information along with the SLAs that we have with our major technology vendors, we can forecast future technology requirements and capacity planning. For example, IBM always reports us the capacity of hard drives and we make decision whether to invest more.

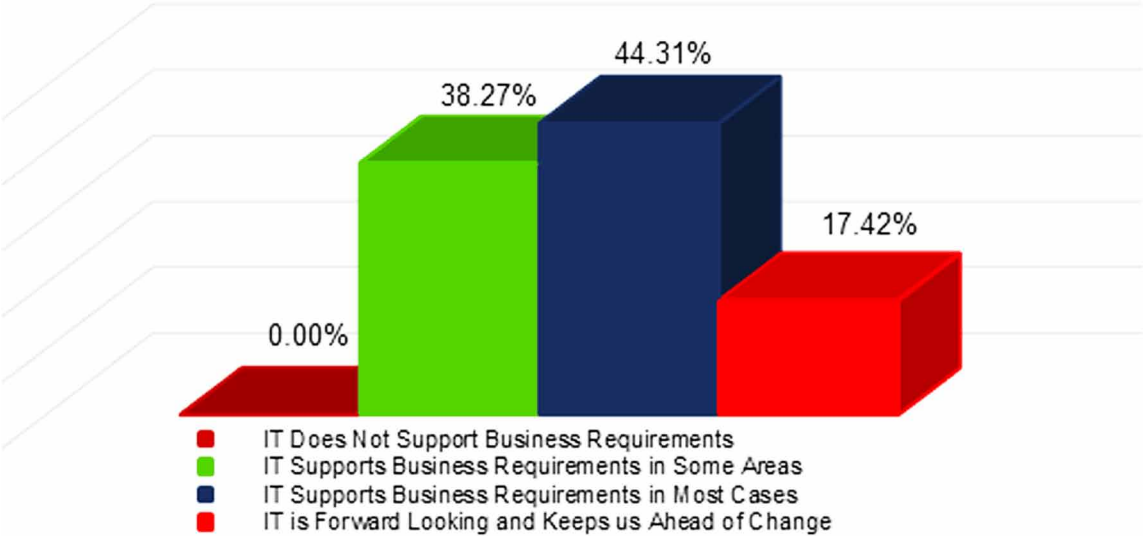
Performance measurement and management is not just an IT department function. It should be a critical component of every department's work agenda. This sentiment is reflected in the survey result illustrated in in Figure 14. Most respondents (68.10%) believe IT performance performs on par with expectations. They realise that the existing technologies can handle and support requirements of all business cases. This means most problems are responded and solved on spot with the right IT services and supports. This indicates that technology solutions and practices in Company A are well-suited to main business areas that are set in the business priorities. So, they deliver effective results.

Company A acknowledges that IT infrastructure is the primary organisational foundation to an agile business. It is vital to routinely investigate the capability and performance of IT infrastructure. Thus IT internal auditors or analysts collate monthly performance scorecards and provide cross-functional reporting for all operational areas. The performance is addressed in a report with recommendations for improvement to stakeholders and leadership team members. At Company A, performance measurement also focuses on measuring vendor performance in meeting SLAs. This signifies that the organisation understands that IT depends on internal as well as external support, and business departments can only access service attributes of technical infrastructure as available at any given time. Therefore, in order to get the full value of IT infrastructure performance, both these perspectives have to be accounted for.

Figure 15 specifies that most respondents (44.31%) believe that Company A has an effective IT infrastructure, which supports business requirements in most cases. However, it is interesting to note that

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Figure 15. IT capability



38.27% of respondents are of the view that IT supports business requirements only in some areas. This means that in some business areas existing technologies and practices are not well-designed, incompatible, and unqualified to support business requirements.

Information Technologies Governance at Company A

As Company A heavily uses IT in its business, it is unsurprising that most respondents (35.50%) believe IT governance allocates responsibilities and accountabilities relating to IT use (see Figure 16). This means that employees clearly understand their roles, rights and tasks about how to use IT properly and responsibly on all IT operations with the desired behaviour and actions. They realise that IT governance is embedded in their routine jobs, daily systems and working lives. Some (27.18%) believe that IT governance allows them to use IT assets to direct and control risk management and productivity in the organisation. This signifies that the boards focus on how to use resources wisely. They are the responsible people who decide to approve and allocate plans and budgets. Budgets are granted only for approved projects that provide opportunities, and are transparent. The boards monitor and control budgets to make sure that they are spent wisely, smartly and effectively.

It is not only employees who are required to utilise resources wisely, but contractors and vendors are also monitored and assessed. Training in different techniques occurs so consumables and resources are not wasted, and to capitalise on opportunities by cautiously applying IT resources and strategically preparing for improved economic conditions. Hence, Company A minimises unnecessary costs, has fewer expenses and limited possibilities to encounter unexpected large payments. This means Company A gains more savings and more earnings in the meantime. Particularly impressive, Company A employs this technique to capitalise on opportunities in cautiously applying IT resources and strategically preparing itself for improved economic conditions.

Figure 17 shows that most respondents (55.3%) believe that Company A has active involvement of people at all levels of IT governance. The boards and senior managers are careful and conscious of what

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Figure 16. Expectations from IT governance

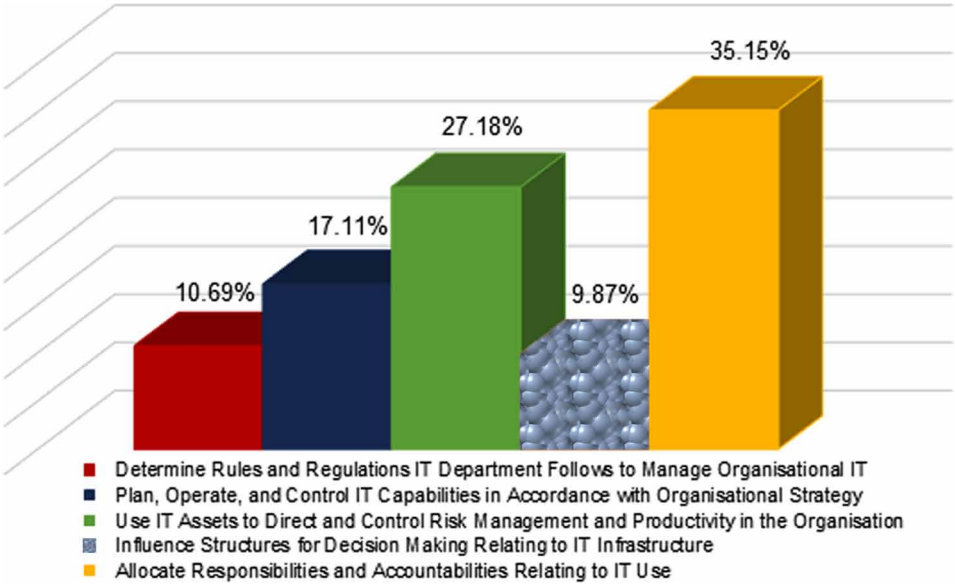
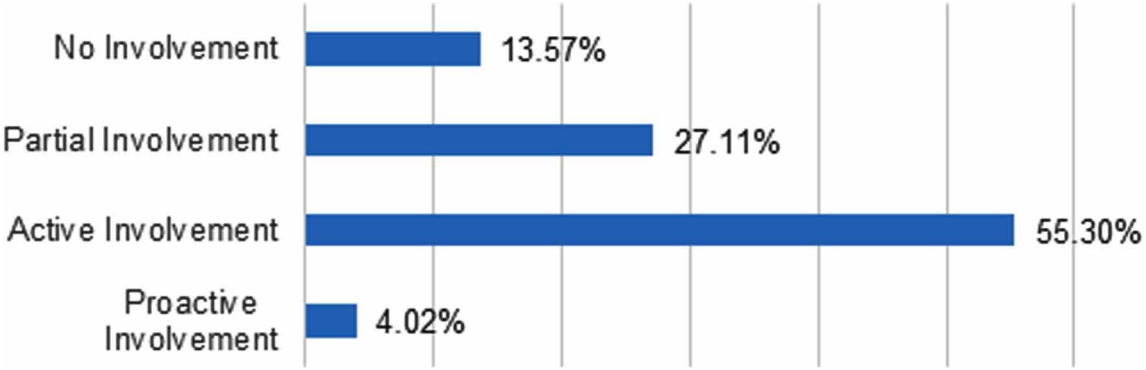


Figure 17. Involvement of all levels of the organization in IT governance



is working. The hidden issues, the unforeseen problems and the benefits are predicted and expected. It is unsurprising that their subordinates are well trained and work hard. Moreover, effective communication is the golden key in this shared environment where the boards, the CEO, the CIO and subordinates routinely collaborate. Everyone understands their responsibilities and scope of decision rights. Therefore, everyone in all levels of Company A is eager to be involved in decision-making to achieve desirable behaviour in the use of IT and expected performance.

DISCUSSION

Company A, being a financial institution, has security of information at the top of its strategic agenda. It is also evident in its philosophy towards the way it has institutionalised technology. Company A treats

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IT as a strategic asset, though the overall scope of technology is limiting and has a passive stance. Implementation and utilisation of technology is policy driven and follows directions set by top management. Utilisation of technology is more focused on risk monitoring and management for known or detected risks. At Company A, proactive and pre-emptive risk aversion, however, is not associated with the value profile of technology. In certain areas of the business, there is complete alignment with technology, such that employees understand its rationale and show a positive attitude towards its use as well as gaining expertise. At the same time, there are other areas, where employees do not understand the justification for technology use, and work with it purely because it is supposed to be used. In these circumstances, it is difficult to assign or assume information ownership, which leads to bigger issues like assigning responsibility and accountability for inept and inadequate understanding and use of technology. The end result is that there is no single 'definition' or 'explanation' of technology use in Company A. The definition or explanation as intended by the top management is not followed by the entire operational level. Although, the top management is technology savvy and has been very actively acquiring and managing technology resources, yet their focus or obsession with security and risk management has resulted in divided opinions. It is just like citizens are required to pay taxes in most economies around the world; however, there are a relatively low number of economies where the results of taxation are evident through public emancipation. In the rest, although people pay taxes they do not see that money being reinvested in their social uplift. That may be due to government corruption or inability of the government to comprehend or prioritise what is important for the public. Whatever the case may be, the general public loses faith in taxation, even though, in theory, it is understood that the government is charging these taxes in return for safeguarding individual and collective interests of the public. Hence, there are issues like tax evasion and frauds. In the same way, the intent of Company A's top management is evident through the active agenda of implementing contemporary technologies, allocation of resources for their use and management, and training employees on the same. However, due to focusing on specific functions, lack of proper education of employees about the utility of technology, and inability of planners and managers to take the 'value chain' perspective of the entire organisation, technology use is treated differently in different functions.

In terms of mimetic pressure, the organisation draws from contextual forces that shape banking or service industry. In doing so, it has implemented best practices for CRM and those relating to backend financial transactions. It is further supported by Company A's keenness to follow alignment of the business model with technology, which helps employees to increase their capacity to understand the causal relationships between technology and business execution. Company A's upskilling and reskilling agenda helps employees to learn from peers within the organisation as well as from within the industry. This helps Company A with a better understanding of why, how, and what organisational aspects are to be focused in various types of change processes.

In terms of coercive pressure, there are three factors acting on Company A. First and foremost, pressure comes from the Bank of Thailand, which sets the legal, operational, and social direction as mandated by the Thai Government. In response to these guidelines, Company A deigns its products and services, business processes and their enabling and support infrastructure like IT, regulatory frameworks, investment incentives, and controls. The second factor is the pressure coming from within the banking industry, which is evolving technologically on a continuous basis. Company A has to change technologically continuously to remain relevant within its industry as well as to utilise the technological innovation relevant to the banking industry. The third type of pressure comes from the customers of Company A, such as commercial organisations as well as the general public. With growing automation of human life and connectivity among the general public, there are increasing demands for availability,

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security, confidentiality, and completeness of information. This forces an organisation like Company A to continuously update its technical infrastructure to keep in sync with the technological changes in the operating environment well as the changing information needs and demands of the public.

Normatively, Company A has developed a culture that works as a well-oiled machine. Company A's CEO is committed to developing a robust technological infrastructure. The CIO of the organisation has significant input into strategic and policy direction of the company. Top management is, thus, quite liberal with financial and non-financial resource allocation. The company actively embraces new technologies, refurbishes existing technologies, and upskills its knowledge workers on contemporary technologies. Company A has a centralized structure, whereby technology implementation and management decisions are made by head office. However, top management also believes in delegation, and has delegated technology lifecycle management and majority of training to branch offices. This helps with the empowerment of middle management. Culturally, the organisation is security conscious and allocates a lot of resources and efforts in risk monitoring, mitigation and management. This has resulted in intensive internal competition between various functions on risk management. It helps employees in different functions understand technical and non-technical vulnerabilities originating from other functions of the business. This allows planners and managers to develop well-rounded IT risk management controls and plans, and in educating employees about the various types of risks posed to the organisation. However, the organisation seems overtly focused on security and risk, and often at the peril of improvement and innovation in other areas of the business. Company A also routinely conducts performance audits, where it assesses the value of the existing technical infrastructure, IT skilled HR, technology vendors, and SLAs, to the business. This evaluation is an ongoing activity in the organisation and the feedback is acted upon as and when deemed appropriate by the management.

CONCLUSION

This study presents a view of the institutionalisation of IT governance in large sized organisations. It contributes to theoretical research, as well as practice, in the field of IT diffusion and management and business management. There have been many research studies in IT governance; however, they have been focused on implementation diffusion and management aspects of IT governance. This study assesses how the case organisation has made IT governance an essential component of its organisational life. The findings from this study provide critical understandings about the organisation's view of technologies, as well as the psychology behind implementation of IT governance practices, as conceptualised and implemented in the organisation. This understanding helps understand how technology is viewed and absorbed within the social, cultural, organisational and technical environment of the organisation. At the same time, this understanding provides foundational knowledge for the development of more research to review further intricacies of IT governance practices and their interaction with the difference organisational, social, culture and technical systems within the organisation.

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Chapter 77
Technological Change Perspective for ERP Implementation in Small and Medium Enterprises

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ABSTRACT

Small and medium-sized enterprises (SMEs) trail large organizations in leveraging IT systems. SMEs are beginning to understand the significance of implementing IT systems like ERP for improving their preparedness in business processes. Hence the objective of this research article is to develop a framework to analyse SME's organizational preparedness for implementing the technology. This research applies a General Morphological Analysis (GMA) framework to explore suitable models and variables for IT change preparedness to realize the benefits of ERP implementation in SMEs. An SMEs drawback in implementing IT tools is specifically due to a lack of knowledge and an acute shortage of resources like investment and manpower. The review of literature in this article using general morphological analysis is novel for ERP implementation in the SME sector. Based on the review of articles, a morphology with a technology organization framework and environment (TOE) framework which evaluates technological, organizational and environment is most adequate to understand the IT readiness for ERP among SMEs.

INTRODUCTION

In recent times Information Technology (IT) has become a vital component for organizational preparedness in the business environment. The volatile pace technologies are growing at, it makes it essential to facilitate organizations in implementing strategic IT systems since they are determinants of organizational

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effectiveness and competitiveness (Singh, 1993). One such transformation that requires special mention is an Information Technology (IT) component, Enterprise Resource Planning (ERP) system. ERP, a software commodity, is an enabler of such a change from functional to process enterprises by way of seamless information flow to stakeholders across the organization. In the 1990s ERP systems became the "de-facto standard" (Parr & Shanks, 2000) for replacing legacy systems in large organizations (Ross, 1998; Robey, Ross & Boudreau, 2000). ERP systems are organized around the basic economic rationale of enterprise value chain. They are designed around a process view of the business. The major advantage of ERP over application software suites is that the enterprise wide applications promise seamless integration of information flowing through the company: accounting and financial information, human resource information, supply chain information and customer information. However, the most crucial factor in the whole system of ERP is the implementation aspect (Ahmad & Cuenca, 2013; Jha, Hoda & Saini, 2008). On the contrary, when the ERP implementation is a failure, there is no framework available to the organization to indicate what parameters cause failure and what the quantitative loss to the organization is. The consequence of organizational change due to ERP system implementation results in tangible and intangible benefits to the organizations. Because ERP promises such potential benefits, understanding the costs and how to avoid them should be a research priority (Gattiker & Goodhue, 2000). It becomes essential for organizations and decision makers to identify, measure, and increment these benefits of ERP implementation (Ross, 1998).

Large and small-scale organizations are implementing technologies to stay competitive while expanding globally. Small and Medium sized Enterprises (SMEs) trail large organizations in leveraging IT systems (Thong & Yap, 1995). Globally, SMEs are a major source of employment for a nation's economy and play a very important role in the socio-economic development of the country (Sharma, Gray & Daniel, 2007). SMEs are beginning to understand the significance of implementing IT systems like Enterprise Resource Planning (ERP) (Sharma, Gray & Daniel, 2007) for improving their business processes. ERP is defined as an application system software that centralizes an organization's database and brings about organizational change during its implementation to achieve organization goals (Nair, Reddy & Samuel, 2015). This necessitates the research question, the need for a research framework to analyse an SMEs organizational preparedness for implementing the technology and realizing its benefits from an organizational perspective. Love and Irani (2004) point that limited research attention has been given with regard to analysing the benefits of ERP implementation in SMEs (Saini, Nigam & Misra, 2010). Unlike large organizations, SMEs are often "cash poor", lacking in resources and expertise in implementing IT (Dyerson, Harindranath, & Barnes, 2009). ERP intervention results in an organizational change as its implementation is not only a technical system imperative but has to synergize with the social system of the organization (Nair, Reddy & Samuel, 2015). While large organizations have reached an assimilation stage of ERP implementation, SMEs are still in an emergent state. Hence it is essential for SMEs to build readiness at the firm level for ERP implementation. ERP intervention in an SME results in an organizational change (Sharma, Gray, & Daniel, 2007; Cui & Liu, 2010) necessitating organizational readiness from SME owners to deliberate on the antecedents for an IT implementation such as ERP. Singh (1993) argues that the inclination of SMEs to use IT systems requires preparation due to the socio-technical parameters influencing the organization internally as well as externally and hence preparedness for the consequent change "is thought to be a critical precursor to successful organizational change (Weiner, Amick & Lee, 2008, p.380)." This chapter applies a General Morphological Analysis (GMA) framework to explore suitable models and variables for IT change preparedness to realize the benefits of ERP

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implementation in SMEs. Literature is compiled based on the GMA framework to identify a suitable morphology for further research.

The following section describes the ERP deployment methods adopted by organizations and the implementation issues in SME sectors. The next section describes the technological preparedness demanded by SMEs as an outcome of ERP intervention. It also explains the actions necessitated for ERP implementation from an organization's side in the current climate of a business environment. In this section, the technological preparedness for small and medium enterprise (SME) sector is reviewed by applying a framework. The section discusses ERP as a technology and its significance towards technological change preparedness is emphasized. The section following, applies a GMA to decide on a suitable morphology for the SME sector and discusses the significance of the selected morphology. The final section of the chapter discusses implications for future research and draw conclusions.

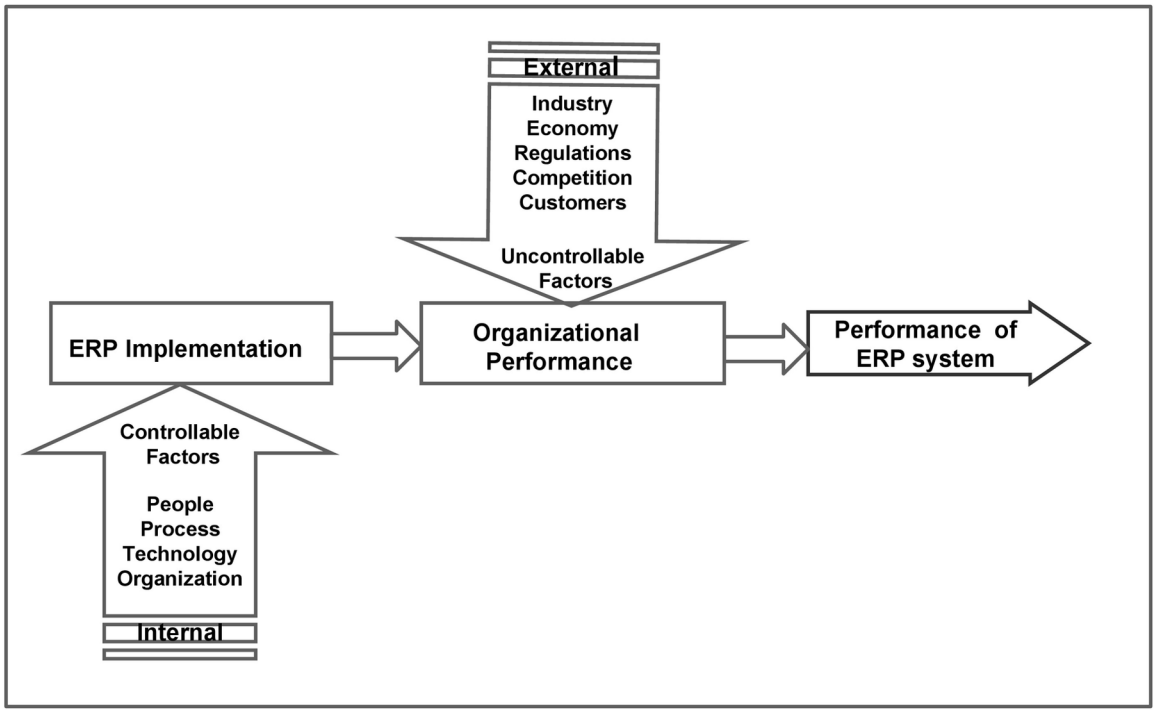
BACKGROUND: ERP IMPLEMENTATION IN SME SECTORS

Once an organization (large or small and medium business) selects ERP as a technology infrastructure to be implemented, the deployment method is planned by the organization. Parr and Shanks' (2000) comprehensive literature has detailed ERP implementation approaches as comprehensive, middle road and vanilla. Koch (2007) categorizes these approaches as; big bang, franchising and slam dunk respectively and define these concepts as follows: Big Bang method of installation involves swapping legacy systems with ERP system installed for the entire organization. This method of organizing projects requires tremendous resources from the organization in terms of investment, people and time. Adopting new standard processes and adaptation to the new software system by the entire organization has never been a success story for most organizations. In the Franchising strategy, ERP systems are independent and only common processes are linked across the organization. The merit of this category of ERP deployment is that core businesses of the organization are not affected during the course of the project since pilot installation happens at units where such a project would not disrupt routine processes. Finally, the slam dunk method is where a few key processes are bought under the purview of the ERP system. This strategy of ERP project is adopted by small organizations which prefer to see their systems up and running to avoid the radical reengineering of processes in the organization.

Organizations are scaling their technologies to stay connected with their stakeholders. Though large-scale organizations have adopted IT systems such as ERP, vendors consider this market as close to saturation and are focusing on ERP systems for SMEs (Haddara & Zach, 2011) who are trailing in adopting technology innovations (Thong, 1999a). In the present business context, ERP is a tool for competitive advantage and enables organizations to improve their efficiency and effectiveness. SMEs are to yet to reap the benefits of this IT tool. Issues related to SME context are different from those faced by large organizations (Thong, 2000b; Kale, Banwait & Laroiya, 2010; Haddara & Zach, 2011). Though Small and Medium enterprises (SMEs) all over the world have various definitions, a hindrance common to all of them is their inability to structure their resources from an IT perspective to increase their efficiency and competitiveness. Severe resource crunches among SMEs in Indian context have been stated by Kale, Banwait, and Laroiya (2010) in their empirical research conducted among 130 SMEs in the most industrially advanced cities of India. Lack of evaluation of costs and benefits of IT implementation among SMEs in Australia is analysed by Love and Irani (2004). Resources in terms of IT users, IT experts, finance, and time are some of the resource constraints identified by Thong (2001b) in their study of

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Figure 1. Influence of Endogenous and Exogenous factors on Performance of ERP System



SMEs in Singapore. Scaling up their business to the next stage requires implementation of technology like ERP (Saini, Nigam & Misra, 2010). Almost all SMEs are implementing cheaper, simplified, compact and customized ERP solutions at flexible prices provided by vendors (Kale, Banwait & Laroiya, 2010). Welsh and White (1981) in their highly refereed article distinguish large and small enterprises and point that they cannot be deliberated on same dimensions. Furthermore, they refer to the SMEs condition as "resource poverty" implying that a large share of revenues is reinvested into internal factors and due to the highly competitive exogenous environment factors in SMEs, their expenses are on the rise.

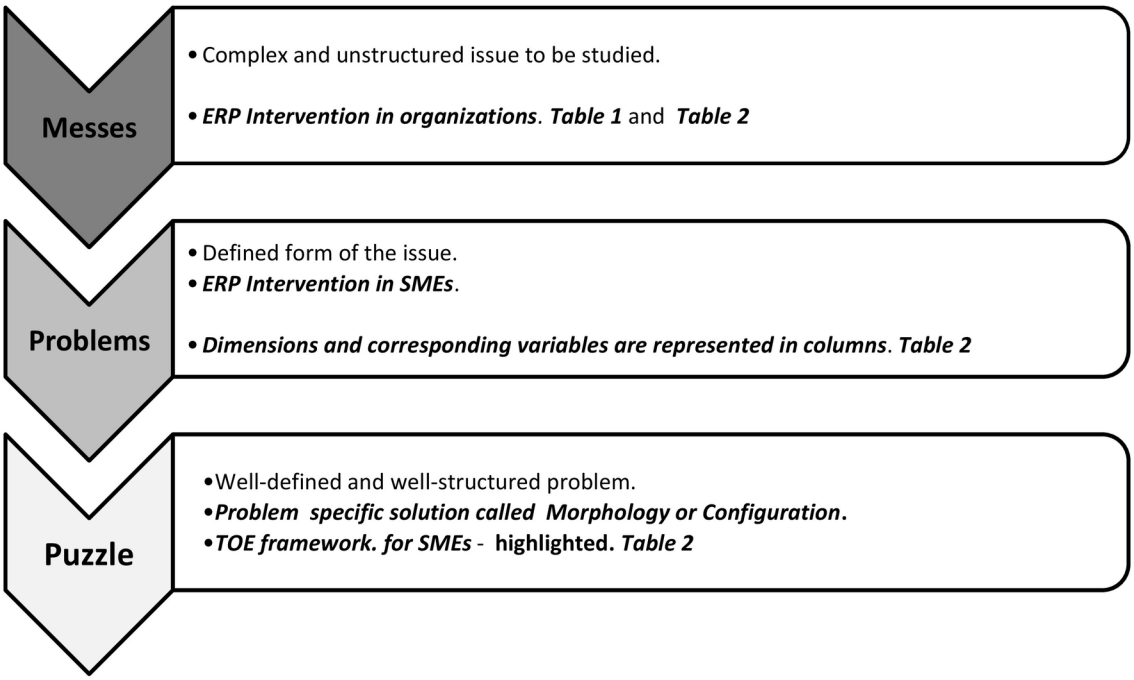
Variables within a SME can be consolidated with a framework that represents an enterprise from an organizational change perspective. Internal variables for ERP implementation are factors within the scope of the organization's control and external factors are those that are beyond the control of the organization (Figure 1). The stakeholders and practitioners who undertake such a change may be able to assimilate one change brought about by ERP intervention. Nonetheless, a framework with dimensions that represent an endogenous organization from an organizational change perspective is lacking. Hence in the following section, the authors discuss the significance of preparedness among SMEs to ready the organization for the challenges of a technological intervention such as ERP. Nair, Reddy, and Samuel (2015) analysed the consequences of ERP intervention in large sectors through a General Morphological Analysis (GMA) framework in an earlier version of their article in a chapter. Here the authors use GMA (Ritchy, 2006) to analyse a suitable morphology for ERP intervention on SMEs in Indian context.

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ERP INTERVENTION IN SMEs: A GENERAL MORPHOLOGICAL ANALYSIS FRAMEWORK

To identify the themes for ERP research, a General Morphological Analysis (GMA) is used. GMA is a generalized framework that can accommodate and facilitate the study of various aspects of ERP implementation in a multi-dimensional space. It structures and investigates the total set of relationships contained in multidimensional, usually non-quantifiable, complex problems (Ritchey, 2006). The dimensions identified form column headers and the variables of each dimension are clustered under the associated dimension in columns. This visual relationship is called as a morphological field (Ritchey, 2006) and a combination of variables from each dimension is called a configuration or a morphotype. Three broad steps of developing a morphological framework are: messes- complex and unstructured issue in hand to be studied, problems-here the issue has a defined form and therefore, its dimensions and its corresponding variables are identified and represented in columns and the last level is called a *puzzle*- a well-defined and well-structured problem with a specific solution that somebody can work out (as cited in Ritchey, 2002). There have been attempted studies in areas of modelling complex socio-technical systems (Ritchey, 2002), accountability in life cycle of products and packaging introduced in the market (Ritchey, 2006), virtual organization contexts (Shekar & Ganesh, 2007) and knowledge transfer research (Kumar & Ganesh, 2009). The visual tool allows a researcher to map specific variables under each dimension and work on a specific morphology. The steps of developing a morphological framework are illustrated in Figure 2.

Figure 2. Steps of Developing a Morphological Framework (Ritchey, 2006)



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Technological readiness is believed to enhance efficiency and is regarded as one of the parameters of competitiveness in the world economic forum's global competitiveness report (Schwab, 2014). The report argues the need for organizations to adopt technologies for daily activities and production processes. An SMEs drawback in implementing IT tools is specifically due to lack of knowledge and acute shortage resources like investment and manpower (Kadadevaramath, Chen, Sangli, Raj, & Vardhan, 2014) review of IT tools for SME. The review results are classified based on two central themes or messes of ERP implementation research; ERP deployment and ERP intervention as demonstrated in Tables 1 and 2 respectively. A representative list of variables drawn from literature are listed in columns and clustered under their respective dimensions (see Table 1 and 2). ERP deployment as detailed in the earlier section of the chapter calls for an organization to plan for ERP implementation based on the size of the organization, type of module, method of deployment and implementation strategy. GMA for ERP deployment will be of scope to practitioners to develop themes for future research for effective deployment of ERP. However, ERP intervention analysis for SMEs (see Table 2) is a highly researched area by academics and benefits the top-management in anticipating the risks associated with ERP implementation. Most SMEs purchase stand-alone modules of ERP systems for certain core functions of the organization and get them implemented by the vendor (Table 1). However, literature review points the need for a research framework that analyses the organizational characteristics of SME be evaluated. Zach, Munkvold and Olsen (2012) point the need to analyse the contextual influences of the organization to adopt ERP and according to Ram, Corkindale, and Wu (2015) requires an antecedent such as organizational readiness. However, research in the area of IT readiness with reference to ERP as a tool in the SME sector is lacking (Zach, Munkvold, & Olsen, 2012). Organizational readiness or preparedness focuses on the micro or organizational level (Lalic & Marjanovic, 2011) since small businesses are under increasing pressure to implement IT for survival (Thong, 2001b). The preparedness of an organization can be broadly categorized into an endogenous a component; within the organization context and an exogenous component; variables originating from outside the organization. Although the endogenous environment refers to a micro organizational perspective, the consequence of IT intervention has to be reflected and premeditated by the SME owners. Therefore, the following sections review the preparedness of SMEs form an IT perspective due to ERP intervention.

Table 1. General Morphological Analysis Framework for ERP Deployment

Industry	Modules or IT Tools	Method of Deployment	Deployment Strategies
Large Scale Enterprises	Customer Relationship Management	Big Bang	Customized Packages
	Sales Order Processing		
	Procurement		Stand-Alone Modules
	Financials	Phased (by function or location)	
Small & Medium Scale Enterprises	Automated Billing Systems		
	Content Management Systems		Cloud Model
	Human Resource Management System	Modular	
	Office Production tools	Hybrid	On-Demand/Software as a Service (SaaS)

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ORGANIZATIONAL CHANGE: A CONSEQUENT OF TECHNOLOGICAL INTERVENTION IN SMEs

Organizational intervention while implementing technology leads to change (Cui & Liu, 2010). Orlikowski and Gash (1994) state this process as "sense making". They explain that in order to understand the organizational impact of new technology, it is essential for actors in the organization to "develop particular assumptions, expectations and knowledge of the technology" (p. 175). This "sense making" will act as an enabler for SMEs while implementing IT systems such as ERP. Fostering an organizational environment such as this for IT implementation requires an organizational change process by way of "preparedness" or "readiness" among the actors.

Ongoing research case study by Cui and Liu (2010) to comprehend the technical processes of an ERP system at a physician's workstation in a hospital to examine its current level of preparedness, points towards the need to analyse organizational and actors' perspectives while measuring IT readiness. Though results of the study may not be conclusive to validate the results, the antecedents to preparedness for ERP system implementation can be identified. Singh's (1993) comprehensive review of several IT systems preparedness models points to the increasing need for organizations to plan tactically and strategically and adapt their IT systems to meet the needs of organizational and environmental contexts. Discussing the significance of ERP in SMEs, Singh, Singh and Pereira (2010) discuss the narrow scope of IT usage for correspondence and internal communication by top management and supervisory staff. Their case study discusses the antecedent role of actors, specifically a strong leadership of the management to bring about the technological change. Raymond (1985) studied the role of top management in implementation of information systems in small organizations and recommends the significance of the role of top management in understanding the implication of IT. Vasudevan and Chawan's (2014) case study identifies factors of preparedness in implementing knowledge management module in the SME sector in an Indian context. Some factors identified were individual user barriers and lack of training in using their knowledge in various roles in the SME.

ERP PREPAREDNESS: AN ESSENTIAL ANTECEDENT FOR SMEs

The morphology-based framework provides a holistic map and is a tool used by researchers to identify various instances of ERP intervention (Nair, Reddy, & Samuel, 2015). Several *puzzles* for the researcher or practitioner are illustrated in Table 2. A combination of 3*8*4*6 = 576 morphotypes as themes for research are available to researchers and practitioners to decide upon a suitable morphology for research. A sample morphotype is highlighted (see Table 2) under the columns representing the dimensions of ERP intervention in SMEs: stages, perspectives, frameworks and contexts. A study choosing such a morphotype will have the variables: project readiness, IT readiness, IT preparedness, Technology Organization Framework (TOE) framework and the context for study is organizational change and organizational environment. Therefore, ERP intervention in SMEs results in organizational change internal to the organizational environment context.

The review of literature in this chapter using General Morphological Analysis is novel for ERP implementation in the SME sector. Based on the review of articles, a morphology with a Technology Organization Environment (TOE) framework which evaluates technological, organizational and environment is most adequate to understand the IT readiness for ERP among SMEs. Uncertainty of the business

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Table 2. General Morphological Analysis Framework of ERP Intervention in SMEs

ERP Intervention in SMEs			
Stages	**Perspectives**	**Frameworks**	**Contexts**
Project Readiness	IT Adoption	***Technology Organization Environment (TOE)***	Benefits & Risks
	IT Readiness		
	IT Preparedness		
Project Implementation	Business-IT Alignment	Technique of Order of Preference by Similarity to Ideal Solution (TOPSIS)	Leadership
			Resources Planning
	Diffusion of Innovation	Balanced Scorecard	***Organizational Change***
	Acceptance and Use of Technology		***Organizational Environment***
Project Assimilation	Structuration	Technology Acceptance Model (TAM)	Stakeholders Role - Internal & External
	Socio-Technical System		

environment and ever-increasing competition requires SMEs to look at their internal context and measure the determinants in an organizational environment context. This will enable the top management and practitioners in the SME industry to look at readiness by analysing the organization's capability for the imperative technological change.

FUTURE RESEARCH DIRECTIONS

Organizations in developed and developing economies are increasingly adopting technology as an innovation to create profits and simultaneously increase job opportunities. Small and medium enterprises play a special role in developing the economy of the nation. Hence a study of technology innovation such as ERP intervention on SMEs is a challenge. Furthermore, refining the variables or adopting novel research models from other interdisciplinary areas of research can add more variables for further research. An organization environment variable can include the external environment and several stakeholders of the organization. Deployment models for cloud ERP implementation in SMEs can provide further scope for research.

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CONCLUSION

Information Technology intervention on organizations initiates technological change in organizations. An IT innovation such as ERP brings competitive advantage to organizations. While its implementation has not been successful in many organizations, the market for ERP in large organizations is weaning. Hence the scope for research in ERP implementation in the SME sector requires a structured micro level framework to prepare the organization to cope with competitive pressure. SMEs of today are large organizations of tomorrow; hence it is inevitable they get prepared for such an IT infrastructure. The aim of this chapter is to use a General Morphological Analysis framework to draw up the most suitable morphology through a comprehensive literature review. To a researcher and a practitioner, the GMA framework enables identifying a suitable morphotype for ERP intervention in SMEs.

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Section 7
Critical Issues and Challenges

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Chapter 78
Using Marketing to Implement a Strategic Plan:
Reflection of Practiced Literature

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Long Island University, USA

ABSTRACT

Close to 75% of marketing and promotional campaigns globally fail to meet their purpose. Marketing campaigns fail due to pitfalls, which sink promotional projects. Strategic planning is significant in overcoming these pitfalls hence increasing the chances of business being successful in their promotional campaigns. However, a lot of businesses are experiencing issues with integrating strategic planning into their daily operations and promotional campaigns. This article is intended at discussing the pitfalls, which may sink a promotional campaign and suggests how strategic planning can solve these issues. In addition, this article also discusses approaches which can be adopted by organizations to enable them to successfully integrate strategic planning into the marketing projects. In conclusion, it suggests some approaches that organizations may adopt to ensure that they are successful in their future projects.

1. INTRODUCTION

The current business environment is very competitive which makes it problematic for businesses to attract, retain, and grow a customer base. The business environment is characterized by high profitably, which attracts new entrants to share profits leading, to stiff competition. Businesses also increasingly invest resources in marketing for the purpose of communicating and promoting their product/service. For example, the global marketing spending on media alone rose to $2.1 trillion in 2015 (Scott, 2015). Scott (2015) adds that digital or internet advertising is the fastest growing marketing segment as businesses look to leverage on more than 1 billion daily users on social media. Experts believe that global spending on marketing won't decline soon as more businesses increasingly rely on marketing to attain a superior advantage.

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Marketing and promotional campaigns are intended to communicate products/services and sell them to the intended audience. Scott (2015) argues that despite the increase in spending on global marketing, not all businesses attain their desired outcomes. Close to 75% of marketing and promotional campaigns globally fail. These projects not only overrun their costs but also their time/schedule. Failed marketing projects cost the U.S economy between $100 and $150 billion annually. Project management experts project that more marketing campaigns will fail if businesses do not integrate the projects with strategic planning.

1.1. Background to Strategic Planning

Strategic planning involves setting a goal that a business wants to achieve (Johnson, 2015). In addition, plans of action or activities are designed to facilitate success. Top management also sets frameworks, such as regulations, to support the activities and influence the organization to attain the goal through leading by example. Johnson (2015) argues that strategic planning is concerned with all aspects of an organization. The main purpose of an organization is to maximize shareholder's wealth by realizing superior profits (Johnson, 2015). To attain this goal, a business may identify intensive marketing as the most effective approach. Therefore, the business will allocate adequate personnel and financial resources to enable successful marketing campaigns (Kaoud, 2017).

1.2. Study Hypothesis

Strategic planning is crucial to promotional campaigns success. This is because it provides a sense of direction and measurable goals. In addition, it guides in effective allocation of resources while conducting marketing programs that lead to success.

2. RESEARCH METHODOLOGY

This paper organizes existing literature pertaining to the relationship between strategic planning and marketing at the micro-level. The following approach was adopted: conducting a meta-analysis instead of a narrative literature review. A traditional literature review was not implemented because it is a qualitative approach that does not permit quantitative assessment of interest effects. Furthermore, this approach does not facilitate standardization of methods that are applied in differing studies. When researchers lack the ability to compare estimates, substantial bias may arise. That is why meta-analytics is implemented instead.

The study focuses on 1 effect: the impact of strategic planning on marketing. We conducted an overview of research literature concerning Europe, US, Canada, Middle East, and Australia. When discussing the results, we focus on the differences in the studied effects across various institutional settings.

2.1. Meta-Analysis as a Quantitative Literature Overview

There are several advantages to utilizing meta-analysis instead of a standard literature review (see e.g. Stanley, 2001). The primary reason is its quantitative nature. A standard narrative literature review does not quantitatively assess the effect of interest. It merely provides a higher-level commentary of the find-

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ings in the varying studies. Another advantage of meta-analysis is that it offers researchers a new way to standardize studied effects, method of analysis applied, control variables, and sample selected. As a result, researchers can better understand why there are gaps or variation. Furthermore, meta-analysis facilitates merit evaluation in different research methods, designs, data, and country specific contexts. A third advantage is that a meta-analysis can be conducted over all papers available based off priori defined criteria. This deters selection bias from occurring.

Despite such advantages, meta-analysis has its limitations. Unfortunately, it returns a narrower range than a traditional review. The traditional approach covers a broader range of studies without compensating for a priori defined criteria. For example, a traditional literature review can encompass studies that are only marginally related to the topic of interest. Another limitation is that it might prevent researchers from locating relevant studies. This is because publishers accept studies that report significant results, but the researchers might want studies that are more discrete in their findings. When a meta-analysis cannot unearth relevant studies, it is coined the "file-drawer" problem. This limitation can be avoided, since many new ways are developed to test and eliminate it (Rosenthal, 1979; Card & Krueger 1995; Begg & Mazumdar 1994). A final limitation is that researchers make more assumptions. When using a meta-analysis, researchers do not report the results required to conduct the analysis. Such results can include standard errors or t-statistics. Researchers are presented with a lack of information, therefore making more assumptions than they ought to.

2.2. Selection of Studies

Before pursuing a meta-analysis, one must construct his meta-data. To ensure that we collected a representative sample of high quality studies, we focused on reviewed articles and chapters in books and Monographs. Thus, we disregarded working papers and internal research reports. Our systematic search used a combination of selected keywords (including: Strategic Planning; Marketing; Project Management). A systematic literature search (traditional narrative review) was performed in the initial phase. This approach synthesizes primary literature and explores potential heterogeneity within it.

In this study, the traditional narrative review performed a literature review on current fields of study to identify potentially important literature. The following databases were used to obtain literature: EBSCO Host, Elsevier's Scirus, Scopus, ISI, Academy of Management, Google Scholar, Intute: Social Sciences, PROQUEST, ProQuest Digital Thesis, Blackwell Publishing, Networked Digital Library of Theses & Dissertations, FirstSearch, Emerald Full Text Database, Academy of Management Perspectives, Executive Development, Journal of Management, and The Sociological Review.

Keywords and phrases helped query the online databases (note: no filters were used and all combinations of these keywords and phrases were considered). As a result, 60 pieces of literatures ($N = 60$) were returned. To filter this abundance, a meta-analysis was used. It helped identify the critical pieces of literature and potential research gaps. Articles in English and non-English languages were considered. Omitting studies in foreign languages may cause an under-representation of some countries. This is a common issue in existing literature reviews.

The search was terminated once we reached the saturation point. In other words, by combining keywords and incorporating new ones, we gathered evidence that was already attained. Search filters refined the meta-analysis. A simple filter consists of single or combined words entered into database search parameters. Within many search parameters, Boolean algebra is implemented to form relationships

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between words. This helps further refine query requests. The most commonly used Boolean functions are "AND", "OR," and "NOT."

When developing a search filter, sensitivity and precision are considered and balanced Sensitivity is the ability of a filter to find all relevant material. Precision is its ability to reject irrelevant material. A filter with a high emphasis on sensitivity will include less and irrelevant material, whereas higher precision will reject potentially relevant information. In this study, a filter was initially developed with a high level of sensitivity. Additional adjustments were made to reach a desirable level of precision. In fact, crucial material search listings obtained from prior versions of the filter could be examined so that common terms could be incorporated to develop and refine the sensitivity. Several wildcard terms were introduced into the filter. By reviewing common categories of irrelevant material, the filter's precision could be further adjusted. The best adjustments were made by changing the structure, including usage and placement of AND and bracketing of the OR. Therefore, such a combination linked by the AND operator excluded irrelevant material.

The filter was then applied to the search parameters of each database from the initial search. The reference sections from literature identified in the initial queries were closely examined with the filter. As a final measure for robustness, this study incorporated direct correspondence with authors.

In one respect, filter results were less successful than anticipated when identifying material in the wider gray literature. Gray literature is material that is not commercially published. It may include working papers, business documents, government reports, educational reports, institutional reports, dissertations, technical reports, and conference proceedings. Gray literature is more commonly identified via manual searching. Employing the systematic search strategy helped us reduce the N of 60 studies to 30 (n=30). This is 50.00% of total literature identified, and served as the basis for performing the subsequent analysis into research objectives and hypotheses. Textual analysis was implemented to identify common themes and concepts.

Textual analysis is beneficial to comprehend all themes identified in the literature. As a result, researchers map and describe the content, functions, and structure of the literature. One common method of textual analysis is content analysis, which is when a researcher identifies, processes, enumerates, and analyses specific themes, messages, and characteristics in the text. This study implemented qualitative and quantitative content analysis. Qualitative content analysis suggests that meanings are associated with messages based on the frequency by which message factors occur. The quantitative content analysis is a systematic and step-by-step procedure that addresses key research questions. Then, results were categorized into themes and via affinity diagramming. The results of the affinity diagram served as the basis for the sections of this paper. As a result of filtering and diagramming, 23 articles were selected.

We limited the study selection to works that clearly explored the relationship between strategic planning and marketing. Thus, we restricted the search to longitudinal studies. Some identified authors presented an analysis of more than one independent sample, or studied more than one transition. These estimates were independent from another, and were included in our analysis. We accepted estimates from final models only. With thorough review of the 23, it was found that the results varied in focus and depth pertaining to strategic planning and marketing. From a descriptive and trait perspective, these papers indicated that the relation of ethics in strategic planning and marketing involve four themes, including: "Reasons why marketing campaigns fail," "Significance of strategic planning in marketing campaigns/projects," "Challenges to strategic planning," and "How to integrate strategic planning in promotional campaigns." The 23 studies are categorized based on theme, as depicted in Table 1 (note: some studies

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Table 1. Meta-analysis results by identified category

Category	Number of Articles (Frequency)	Article/Paper Authors
Reasons why marketing campaigns fail	6 (26.1% of total articles)	Bryson (2011) Khan & Khalique (2014) Suklev & Debarliev (2012) Taylor et al. (2003) Popay et al. (2004) Vaughan (2004)
Significance of strategic planning in marketing campaigns/ projects	6 (26.1% of total articles)	Rosenthal (1979) Card and Krueger (1995) Begg and Mazumdar (1994) Porter, Kim & Mauborgne (2011) Fairholm (2009) Errera (2014)
Challenges to strategic planning	4 (17.4% of total articles)	Scott (2015) Johnson (2015) Vemer et al. (1989) Waldorf and Byru (2005)
How to integrate strategic planning in promotional campaigns	7 (30.4% of total articles)	Pham & Richards (2015) Dawra, Katyal & Gupta (2015) Gillison & Reynolds (2016) Weichselbaumer & Winter- Ebmer (2005) Amato and Keith (1991) Stuck et al. (1999) Goldsmith & Amir (2010)

Table 2. Meta-analysis results by statistical analysis method

Statistical Method	Number of Articles (Frequency)	Article/Paper Authors
Regression	9 (39.1% of total articles)	Amato and Keith (1991) Stuck et al. (1999) Goldsmith & Amir (2010) Bryson (2011) Khan & Khalique (2014) Suklev & Debarliev (2012) Rosenthal (1979) Card and Krueger (1995) Begg and Mazumdar (1994)
ANOVA	3 (13.1% of total articles)	Taylor et al. (2003) Popay et al. (2004) Vaughan (2004)
Q-Test	4 (17.4% of total articles)	Pham & Richards (2015) Dawra, Katyal & Gupta (2015) Gillison & Reynolds (2016) Weichselbaumer & Winter- Ebmer (2005)
t-Test	5 (21.7% of total articles)	Porter, Kim & Mauborgne (2011) Fairholm (2009) Errera (2014) Scott (2015) Johnson (2015)
Chi-Square Test	2 (8.7% of total articles)	Vemer et al. (1989) Waldorf and Byrun (2005)

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Table 3. Meta-analysis results by number of variables studied

No. Factors Studied	Number of Articles (Frequency)	Article/Paper Authors
1	6 (26.1% of total articles)	Bryson (2011) Khan & Khalique (2014) Taylor et al. (2003) Popay et al. (2004) Pham & Richards (2015) Dawra, Katyal & Gupta (2015)
2	6 (26.1% of total articles)	Amato and Keith (1991) Stuck et al. (1999) Goldsmith & Amir (2010) Vaughan (2004) Gillison & Reynolds (2016) Weichselbaumer & Winter- Ebmer (2005)
3	4 (17.4% of total articles)	Suklev & Debarliev (2012) Rosenthal (1979) Card and Krueger (1995) Begg and Mazumdar (1994)
4	3 (13.1% of total articles)	Porter, Kim & Mauborgne (2011) Fairholm (2009) Errera (2014)
5	2 (15.4% of total articles)	Scott (2015) Johnson (2015)
6	2 (15.4% of total articles)	Vemer et al. (1989) Waldorf and Byrun (2005)

overlapped in more than one category based on the research it pursued, but each study was categorized into 1 theme best describing the study).

From a relational and causal perspective, review of the 23 demonstrates that these literature analysed strategic planning and marketing by employing different statistical methods. The use of statistical analysis and exploration of different variables/factors helps add value and depth to the conclusions drawn. Table 2 presents a summary of the statistical methods that the 23 studies used. Table 3 presents a summary of number variables/factors studied in each.

The next section presents the findings of the research methods in the scope of these four themes. The collected studies, apart from one, treat each keyword as exogenous. This is the most common way to investigate the relationship between the two variables. The studies that consider the variables' endogeneity are rare and often based on instrumental variable methodology. After collected the articles, we proceeded with the construction of one dataset for the association between strategic planning and marketing. Next, the dataset reliability was verified.

2.3. Meta-Analytic Techniques

2.3.1. Calculation of Effect Sizes

Our effect sizes are the log odds ratios, the log relative risks, and the estimates of the OLS regressions weighted by the inverse of their variances. They originate from the models, where the dependent variable is defined as the hazard of X (for each outcome of X), the hazard of Y (for each outcome of Y) or, in the

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case of the fixed-effects OLS regressions, deviation from the factor-specific mean. The variance of the effect size is defined as a sum of the squared standard error and the between-study variation. In order to study the influence of strategic planning and marketing, we selected the estimates for each potential outcome for each variable in the study. This was the most standard way of reporting the influence of strategic planning and marketing. Sometimes, however, the original reference category was different for each sample and each factor; in those cases, the coefficients then were recalculated according to the standard statistical procedures.

The last issue we encountered while calculating the effect sizes was the lack of standard errors or other statistics allowing a direct calculation of standard errors (e.g. t-statistics or at least p-values). Following the literature on meta-analysis, we made the following assumptions. When the result was marked to be significant and no other details were available, we set the p-value equal to 0.05. When the result was not significant and the upper limit for significance assumed by the author was 0.1, we set the p-value at 0.45, and when the upper limit was 0.05, we used a p-value equal to 0.475. When the significance was marked with stars only, we assumed the p-value to be equal to the mid-point of its interval.

2.3.2. Testing for Homogeneity

The estimated effect sizes were tested for homogeneity by using the homogeneity test proposed by Hedges & Olkin (1985). The test statistic Q measures the extent to which individual effect sizes vary around the mean effect size. Significant values of Q require an application of further procedures.

We expected large variation in the estimated effect sizes. The source of the variation lies in the differences in the institutional context, in which the outcomes for strategic planning and outcomes for marketing are taken, as well as in the peculiarities of the original studies in terms of the methods applied, the data looked at, sample restrictions, the types of the transition studied, the definitions of the reference category of the investigated coefficient, or any other variations in the effect measurements. Significant heterogeneity in the mean effect sizes was tackled with by estimating meta- regressions.

2.3.3. Meta-Regression

Our meta-regressions take the following form:

$$Yj = \Sigma\alpha\, wj + \Sigma\beta\, cj + \Sigma\vartheta\, vj + \Sigma\theta\, sj + \Sigma\delta\, mj + \Sigma\gamma\, xj + \xi\, j,\ j = 1, 2, \ldots, n \quad (1)$$

where Yj is the effect size of study j, wj are a set of dummies for the welfare regime, and cj for the cohorts covered, vj represent the control variables for the type of the transition and measurement of the studied effect (e.g. type of model/outcome used for strategic planning, type of model/outcome used for marketing, definition of the reference category), sj stand for dummies controlling for the sample selection (taking value 1 if the sample was restricted only to a specific outcome for strategic planning or marketing), mj denote variables standardizing for the method and type of the data, and xj are implemented to standardize for the covariates incorporated as controls in the original studies. The parameters α, β, ϑ, θ, δ, γ were estimated stepwise, using the standard maximum likelihood. First, we introduced control factors into the model including: type of environment, type of project, and cohort variables. They were followed by controls for the type of industry, the type of the reference category, the sample selected, the method applied, and the type of the data and the control variables employed in the original studies. The

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robustness of the meta-regression estimates was verified by conducting a sensitivity analysis. Namely, we estimated the same models on the samples reduced randomly by 10%. Minor differences in the estimates prove that the outcomes are reliable.

3. FINDINGS

3.1. Reasons Why Marketing Campaigns Fail

Each year, companies spend millions in market research to capture customers' attention and leave a lasting impression on them through various innovative methods (Bryson, 2011). However, some companies still fail in their marketing campaign, which leads to astronomical losses and, in some instances, irreversible damage. These losses are represented in funds spent on market research and running intense promotional campaigns (Bryson, 2011).

The Project Management Institute Inc. (PMI) offers more insight on the factors contributing to project failure. Khan & Khalique (2014) adds that each organization performs two types of work: operational work and projects. Operational work involves day-to-day activities that are repetitive and systemized (Khan & Khalique, 2014). Projects, such as promotional campaigns, have clear start and end dates, are unique in nature, and involve various personalities. These attributes make it challenging to systemize and develop efficient approaches to undertake them (Khan & Khalique, 2014).

Businesses funding campaigns experience projects that don't end on time, were changed in scope, or were over-budget (Bryson, 2011). These issues result from several pitfalls. Bryson (2011) notes the first pitfall is lack of visibility across a project team. The team comprises the sponsor, executive team/senior management, project manager, experts/consultants and support staff. All individuals require access to accurate and timely information. Visibility is significant in tracking progress of a marketing campaign, identifying early warning signs, identifying points of success, and sound decision-making to fix issues (Bryson, 2011). When there is lack of visibility in a marketing campaign, unidentified issues may escalate dramatically. The performance of support staff will be negatively impacted because they don't know how to handle delays in time, out-of-scope changes, and over-budgeting (Trump, 2016).

The second pitfall is unclear objectives (Johnson, 2015). Businesses are engaged in numerous projects in limited time. Even though all initiatives are crucial to optimal organizational performance, they should be undertaken systematically to not overwork project teams. Overwhelming employees is associated with exhaustion and unhappiness, which results in poor performance and high turnover especially (Johnson, 2015). Lack of visibility in resource workload is the third pitfall (Johnson, 2015). In the event that the project's management lack visibility in tasks required to successfully undertaking a promotional campaign, there will be losses in valuable resources and time. The project may also fail completely. Project tasks heavily influence the amount of resources required for a particular project, and project management must be able to gauge and address resource allocation.

In the event that the resources are scarce, performance of a project team may be hindered since it would be forced to operate with limited resources. On the other hand, a lot of resources also create room for mismanagement and wastage. This scenario also leads to losses.

Lastly, communication gaps across a project team may sink a marketing project (Suklev & Debarliev, 2012). Communication is crucial for success in any project. It informs team members about the goal/purpose of the campaign, their roles and contribution to success, and issues that may hinder success

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(Suklev & Debarliev, 2012). The fact that members are comprised of different personalities dispersed across geographical regions may negatively impact communication efforts. Finally, some teams are very large which increases the challenge in communicating effectively with everyone on the team.

3.2. Significance of Strategic Planning in Marketing Campaigns/Projects

Strategic planning is significant to overcome pitfalls (Porter, Kim & Mauborgne, 2011). It is aimed at improving visibility of all aspects in a promotional campaign. Strategic planning works because it publishes marketing projects to a visible location (Porter et al., 2011). Various tools and people-based alterations are useful to boost project visibility. For example, the Internet can be used as a central location/storage of project information and communication. For this approach to be successful, project leadership should require team members to effectively utilize this central location (Porter et al., 2011). The information should be updated continuously and reflected to every user, regardless of geographical location. Resistance to certain change, especially when members can't see the changes, may lead to lack of visibility and eventual project failure.

Secondly, strategic planning is essential in ranking project initiatives (Fairholm, 2009). Ranking eliminates the issue of unclear project objectives. In strategic planning, top management determines the main purpose of the campaign. Then, they identify the initiatives that will enable the organization to attain the goal(s). These initiatives are prioritized (ranked) in order of importance to achieving the overall goal (Fairholm, 2009). Prioritization is important in ensuring that resources are allocated adequately based on initiative importance.

Thirdly, strategic planning is crucial to the development of a resource management grid (Fairholm, 2009). Fairholm (2009) argues that a resource management grid enhances visibility into resource workload. The PMI emphasizes the importance of planning and managing resources effectively. A resource management grid should be used on a daily basis to indicate the total resources assigned, activities to be conducted, activity durations, status of each activity, and completion/success rate. The grid issues early warning signs about resource usage, thus creating an opportunity for corrective action (Fairholm, 2009). It also communicates success regarding resource usage. Finally, the grid can be used to forecast future resource allocation.

Lastly, strategic planning is beneficial for the creation of a centralized communication location (Fairholm, 2009). Normally, in marketing campaigns, different personnel and resources are employed. There are events in which new members are required and incorporated. Establishing and maintaining a central location for communication enables the new members to join the campaign mid-stream, review the historic data, and get up to speed enough to be instrumental and effective (Fairholm, 2009). The organization's network is the lowest denominator in the creation of a centralized location. Therefore, businesses ought to acquire the right infrastructure and train employees about efficient communication (Ayed, 2017).

3.3. Challenges to Strategic Planning

Even though strategic planning is essential, organizations utilizing principles of strategic planning may also fail. This is because challenges are associated with strategic planning, including the lack of leadership. Porter et al., (2011) explain that leadership is essential for success of a promotional campaign. The leaders are responsible for key decision-making regarding the nature of the campaign, the message,

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target audience, budget, and personnel. When leadership is present and actively engaged, the project is more likely to succeed (Porter et al., 2011). This is because leaders offer direction, help in identifying issues and solving them immediately, enforcing regulations, and approving new funds. When leadership is not engaged, the campaign lacks direction and unresolved issues will escalate, thus leading to wastage of time and resources.

For example, Coca-Cola introduced the New Coke campaign to inform consumers of its new formula. This campaign failed due to lack of leadership throughout the project life cycle. The leadership was not involved, especially during market research. As a result, New Coke did not meet the demands of consumers. This was evidenced by the fact that consumers did not like the product nor its taste (Porter et al., 2011).

The second reason promotional projects fail is lack of consensus. Reaching a consensus is crucial to ensure the team functions in harmony. If in harmony, team members will deliver their best performance to achieve a common goal. In the event that the team fails to reach an agreement, conflicts of interest may hinder project success (Suklev & Debarliev, 2012). Suklev & Debarliev (2012) adds the primary reason marketing teams fail to get consensus is because leadership doesn't involve all team members in decision-making. Involvement in decision-making process develops a sense of ownership, hence improving the chance that all members deliver high performance for optimal success (Suklev & Debarliev, 2012).

Fairholm (2009) argues that being overambitious can also hinder marketing campaign success. Ambition is important in planning for and enhancing the likeliness of future success. Ambitious ideas lead to the design of appealing campaigns, which leave lasting impressions on target consumers. However, being overambitious may lead to the development of complex ideas which consumers are not prepared for (Kainth & Verma, 2013).

Furthermore, ideas can be completely misinterpreted. For example, Malaysia Airlines initiated the *My Ultimate Bucket List* campaign in 2014 (Errera, 2014). This failed because a bucket list usually refers to activities an individual desires to complete before death. Even though the idea was creative, the timing was bad. At that time, two Malaysia Airlines planes were involved in fatal incidents. Errera (2014) adds that after the disappearance of Malaysia Airlines MH370 and the crash of flight MH17 after a missile hit, the bucket list was not a good idea. The message was misinterpreted by the target consumers, which led to a drastic loss in business (Errera, 2014).

Failure to integrate the marketing campaign into the culture and operations of the business also leads to failure (Fairholm, 2009). Organizational culture involves the behaviour of employees as individuals or in working groups. Their behaviour is significant for the organization because it affects the attitude and morale of all employees. Fairholm (2009) argues that good behaviour promotes positive attitude and high morale, thus encouraging employees to deliver their best. Furthermore, when a marketing campaign is integrated into the organizational behaviour and business operations, the chances of success are enhanced because it promotes good behaviour among all members and enable the organization to effectively utilize limited resources to attain success (Fairholm, 2009).

3.4. How to Integrate Strategic Planning in Promotional Campaigns

Pham & Richards (2015) argues that it is difficult to attain anything without a strategic plan. A strategic plan considers everything that an organization can do, then narrows down on those that it is best at accomplishing (Pham & Richards, 2015). This helps leaders determine where to allocate the organization's funds, human capital, and time. However, strategic planning is an overwhelming process to some.

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Breaking the process into small and easy-to-tackle activities is the best approach to integrate strategic planning into a promotional campaign (Pham & Richards, 2015).

The first step to strategic planning involves determining the current state and position of the organization. Pham & Richards (2015) argues that it may be problematic for an organization to determine its position because of existing bias. Many leaders want to see the organization as they want to, as opposed to how it appears to others. Determining the position of the organization is significant in identifying its strengths and weaknesses (Pham & Richards, 2015). As a result, the organization can design a plan that maximizes the strengths while minimizing the weaknesses.

Furthermore, the organization can determine the opportunities and risks associated with its operations. This enables it to leverage the opportunities while protecting against potential risks (Pham & Richards, 2015). The best approach to determine the organization's position is through a situation analysis, which considers the internal and external environments. During this process, the business should only consider real as opposed to perceived information. The business should also determine how its target market perceives its products/services. The business should go further to determine consumers' perceptions about rival companies. Then, the business can determine strengths and weaknesses associated with its product/service in comparison to that of its competitors (Felfel et al., 2017).

The next step involves identifying what is important to the business (Dawra, Katyal & Gupta, 2015). This involves focusing on the direction that the organization wants to pursue over time. This enables the organization to determine priority issues—those most significant to the overall wellbeing of the business. The organization's strategic plan should focus on these issues. For example, it is the desire and mission of businesses to maximize on profits, thereby increasing shareholders' wealth (Dawra et al., 2015). The organization may determine the priority issue is intensive marketing program. Therefore, the focus of the management team should be promotional campaigns while enforcing regulations and allocating resource to ensure success in intensive marketing (Agarwal & Ahuja, 2014). The proceeding step involves what the organization has to achieve. These are activities that must be undertaken within a specified timeframe. In the context of a marketing campaign, some required activities include raising brand awareness, customer sensitization and education, reaching out to customers in a specific geographical region, offering target consumers free samples, and rewarding consumers (Dawra et al., 2015). These activities determine an organization's performance. Successful completion of all or most activities indicates the organization is successful.

The fourth step involves identifying the individuals responsible for priority issues (Gillison & Reynolds, 2016). Human capital is the most important resource because they implement the strategic plan. After determining priority issues, individuals should be assigned and held accountable for their undertaking (Gillison & Reynolds, 2016). Assigning priority issues makes it easier for the organization to allocate resources and monitor progress. These individuals act as the focal personnel who will communicate with top management and team members. They influence the successful implementation of activities. Therefore, top management should carefully select these individuals.

In the context of a promotional campaign, the project manager is responsible for priority issues. The project manager should be a firm believer and a champion of the marketing campaign. He/she will manage communication between top management and team members. He/she will also assign and supervise team members during tasks.

Lastly, it is important to review the implementation of priority issues. Reviewing is crucial to ensure that activities are performed as designed, within the target and specified time (Gillison & Reynolds, 2016). Review should be continuous and timely to enable the business to identify issues and fix them

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immediately. The project manager should consistently review the progress and campaign impact to ensure that the overall goals are achieved (Abou-Warda, 2015).

4. CONCLUSION

Strategic planning is crucial to the success of promotional campaigns. Strategic planning provides a sense of direction and measurable goals for the undertaking. In addition, it is a guide in effective allocation of resources while conducting marketing programs that all lead to success. Each year, companies spend resources in marketing campaigns that fail (Khan & Khalique, 2014). Khan & Khalique (2014) adds that companies fail because of the unique nature of such projects. These projects have clear start and end dates, are unique in nature, and involve various personalities. These attributes make it challenging to systemize and develop efficient approaches (Khan & Khalique, 2014). Some reasons contributing to failure include lack of visibility across the entire team, unclear objectives, lack of visibility of resource workload, and communication gaps across teams. Strategic planning is helpful in overcoming pitfalls that can sink promotional campaigns (Porter et al., 2011). Strategic planning improves visibility, is essential in ranking project initiatives, is crucial to the development of a resource management grid, and is beneficial for the creation of a centralized location for communication (Gera et al., 2017).

Even though strategic planning is essential to the success of a marketing campaign, organizations utilizing principles of strategic planning may also fail because of challenges associated with strategic planning. These challenges include lack of leadership, lack of consensus, being overambitious, and failure to integrate the marketing campaign into the culture and operations of the business (Fairholm, 2009). In conclusion, by breaking strategic planning into small, easy-to-implement tasks and assigning them under a team with an effective project leader, the threat of failure in accomplishing promotional marketing campaign projects will be greatly diminished (Agarwak & Ahuja, 2014).

The study and results are somewhat limited due to a few research limitations that should be discussed. The main limitation was the fact that the study had a limited sample size and it only studied key factors from this limited sample size. The limitation of sample size introduces some potential bias and validity behind the findings and conclusions identified in the study, all of which could be alleviated by executing the study with a larger sample. Another limitation was that this study only examined the key factors and their relationship in terms of a project environment; therefore, the conclusions and analysis are specific to project environments and the findings cannot necessarily be extrapolated to other arenas such as supply chain management, operations management, or strategic management. This is a limitation since the conclusions and analysis are specific; this limitation makes it difficult to argue that the findings from this study could be deployed and used in other industries or managerial settings.

4.1. Originality/Contribution

Though extant literature has been devoted to studying this subject, attention has not been paid to the relationship between strategic planning and marketing. Review of the literature showed that there is limited amount of research that explored the variables. Therefore, this study sought to fill a void in existing research.

The results of this research contribute to the strategic planning and marketing bodies of knowledge. By performing this study, the results help enhance and evolve these bodies of knowledge. Because of

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this research, we can better see the advantages and disadvantages of incorporating strategic planning processes into a business marketing campaign. Thus, this research ought to help businesses understand that they do not need to fear failure so long as they attempt the inclusion of strategic planning into their promotional campaigning.

This study also contributes since it introduces new ideas and avenues for future research. Future research can be done concerning the actual application and implementation of strategic planning in a case study. Results can be documented and compared against a business undergoing a campaign without the inclusion of strategic planning. Other research can be conducted to see what industries and/or types of promotional campaigns would reap the most benefit from incorporation of strategic planning into business initiatives.

Finally, this research shed light on the relationship between strategic planning and business marketing, as well as the implications of pursuing strategic planning in any organizational structure. It notifies and prepares businesses that are interested or sceptical about incorporating strategic planning into their promotional campaign initiatives about the various pitfalls of strategic planning, but also how it can help avoid the pitfalls inherent in new marketing campaigns.

Future research should explore a few different arenas. For example, future research could investigate these factors and the relationship but in the context of other industries and managerial settings. In these settings or contexts, it would be interesting to study the strength of these variables and the relationship as well as the factors that impact these factors and their relationship. Another avenue of research could be to explore these factors and their relationship but from different perspectives, such as from an organizational, strategic, or cultural point of view. This would shed further light into the how this relationship is perceived across many different views and further understand the degree of impact that factors such as culture, strategy, human resources, operations have on the key variables and their relationship.

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Chapter 79
Startup Success Trends in Small Business Beyond Five-Years:
A Qualitative Research Study

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ABSTRACT

While entrepreneurs help to drive venture growth through business development in their respective cities, approximately 50% of new business ventures fail within the first 5 years of operation. Boss concluded that over 60% of entrepreneurs and small business owners fail within the first 6 years of doing business. This article examines some of the main factors that support early growth stage entrepreneurial sustainability for small business startups. In this article, entrepreneurship success factors, failure rates and sustainability are examined through qualitative research, expanding on factors identified in previous studies and applying them to different geographical areas. The results of this study can help reduce the number of small business failures by providing actionable knowledge to entrepreneurs in the start-up and early growth stages of business development.

INTRODUCTION

Entrepreneurs recognize opportunities and work to commercialize their ideas for new products and services. In doing so, they create hundreds of thousands of new business startups every year. According to the U.S. Small Business Administration (2008), while there were 597,000 small business startups in 2008, 641,000 small businesses closed that same year. Further, there is a recurring trend of small businesses

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opening and closing in the same year (U.S. Small Business Administration, 2008). This study examined entrepreneurship success factors, sustainability, failures, and new knowledge gained through qualitative research. What are some factors that create successful entrepreneurs? How does an entrepreneur sustain their success over a period of five years? Why do some entrepreneurs fail in the first year? In this paper, questions such as these and others are explored.

FOUNDATION OF THE STUDY

The driver of commerce in the United States is entrepreneurship (U.S. Department of Commerce, 2009). Entrepreneurs create small businesses and drive venture growth, which is vital for developing a strong and growing economy (U.S. Department of Commerce, 2009). One major challenge that entrepreneurs still face in the United States is a high failure rate.

Approximately 50% of new businesses fail within the first 5 years of operation (U.S. Department of Commerce, 2009). Boss (2010) concluded that over 60% of entrepreneurs fail within the first 6 years of doing business. This study used qualitative methods to examine factors that contribute to sustaining a business from startup through the growth stage. Few researchers have conducted studies on entrepreneurship failure, as most available studies have focused on success (see, for example, Byrd, 2010; Chupp, 2010; Johnson, 2010; Osbourne, 2009; Reaves, 2008; Schorr, 2008; Valdez, 2009; Weinberger, 2009; and Busenitz, Page West, Shepherd, Nelson., Chandler, & Andrew, 2003). As a follow-up to previous studies, this study addresses how some entrepreneurs are able to sustain their businesses beyond the first 5 years.

The target group for this study consisted of 20 hair salon owners in the state of New Jersey who had been in business for a minimum of 5 years. This research was necessary to expand sustainability knowledge derived from previous studies to different geographical areas. The results of this study may support entrepreneurs in the startup and growth stages of development in New Jersey.

BACKGROUND

The United States is currently recovering from the largest economic downturn since the Great Depression (Semoon, 2010). The government has had to step in and provide public funds to save big banks (Verschoor, 2010). The current and future economic environment may present a great opportunity for entrepreneurs to start businesses and sustain them, as there are always business problems to solve.

The issue addressed in this qualitative, phenomenological study is the high failure rate of small business entrepreneurs. All of the factors needed for success after 5 years in business was investigated. According to a report issued by the U.S. Department of Commerce (2009), 30% of startups fail in the first 2 years. Despite favorable research that may have supported small business success, the rate of failure is still rather high. Similarly, Boden and Headd (2002) noted that businesses fail 50% of the time after the fourth year of operations. The problem of small business failure has negatively affected the U.S. economy. This study may help to remedy the situation by providing new knowledge on sustainability that can reduce the number of small business failures.

The U.S. Department of Commerce (2009) found that the rate of small business failure at the 5-year mark was 49%. According to Song, Podoynitsyna, van der Bij, & Halman (2008), failure beyond the

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fifth year in business was at 68%. The U.S. Small Business Administration (2007) indicated that small business owners account for 99% of all employers, employ approximately 50% of the private workforce, and provide over 40% of private sales in the United States. The U.S. Small Business Administration (2008) also noted that small business creates 75% of new jobs. A knowledge gap in sustainability exists between small business startups and sustainable small businesses beyond the first 5 years.

NATURE OF THE STUDY

Qualitative method was used to gain understanding from the lived experiences of the participants. Creswell (2009) described a qualitative method research study as understanding the meaning individuals or groups ascribe to a social or human problem. Schorr (2008) noted that the qualitative approach requires in-depth involvement by the researcher with each participant, in order to hear his or her unique voice.

The direct perspectives of small business owners operating within the targeted industry provided a deeper understanding of the common characteristics and attributes of the hair salon business and its owners/entrepreneurs. Ethnography, grounded theory, and case study design were methods that were all considered, as they involve face-to-face interviews, onsite data collection, and long periods of observation. However, due to limitations of time and resources, those strategies did not align with this study. Instead, the data included the lived experiences of the participants, collected by use of surveys with open-ended questions.

ASSUMPTIONS, LIMITATIONS, AND DELIMITATIONS

Assumptions

Hamel and Prahalad (2005) noted that developing a competitive advantage might not be achievable with traditional business strategies. The first of several assumptions was that this study may contribute to social change by identifying proven competitive advantage opportunities for entrepreneurs. The second assumption was that a qualitative research method provided the best possible vehicle for researching the phenomenon of small business success and failure rates. The third assumption was that the participants chosen provided valuable insight into the requirements needed for this doctoral study to be actionable for a scholar-practitioner. The fourth assumption was that New Jersey was a large enough geographical area to provide useful data for the study. The last assumption was that the participants were open and honest with the information they provided.

Limitations

The results of any phenomenological study depend on the ability of the participants to recall and articulate events that may not be communicated as accurately as when they originally occurred. Open-ended surveys may not have provided as much quality information as a face-to-face interview. However, personal finances did not allow for the use of interviewing and transcription as an option.

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Delimitations

The delimitations of the study related to the participants, questions, and geographical area. The number of participants was 20, which provided a broad enough view of the phenomenon. The questions used in the survey are from a previous study and, as such, provided the scope of researchable information to support the goal of producing work for entrepreneurial scholar-practitioners. Finally, the geographical area of the state of New Jersey was a large enough area to provide insight into other similar areas across the United States.

Significance of the Study

As noted by the U.S. Small Business Administration (2007), small businesses owners account for 99% of all employers, hire 50% of the private workforce, and provide over 40% of private sales. Statistical data indicate that small business is important to the U.S. economy. The challenge that this study tackled was to affect the way small business owners perform in a positive manner. Previously, key factors contributing to entrepreneurial sustainability for New Jersey hair salon owners were not known. This study contributes to resolving the larger scale issue of a general high failure rate for entrepreneurs. The U.S. Department of Commerce (2009) noted that 49% of new businesses fail within the first 5 years of being in business. New knowledge from this study could have an impact on entrepreneurship and increase the number of successes beyond the first 5 years.

Participants

Ideal participants for this study were small business owners in the hair salon industry in New Jersey who had been in business for at least 5 years. To identify prospective participants, a database of active hair salons within the state of New Jersey was developed. The database is public information and no costs were associated with procuring the information. The database included business owner name, address, city, county, phone number, and year established. Five thousand hair salon owners who had established their businesses before 2006 were listed in the database. 20 prospects were randomly selected from this list. Random selection was conducted by sorting the list by county and reaching out to the first five names in each county until the required number of participants was reached. Candidates were contacted by phone to secure their e-mail addresses for the purpose of providing the business owners with information regarding the study. The prospective participants were provided with consent information in the following e-mail that allowed them to withdraw from the study at any time. Participants had access to the research survey through a link in the e-mail. The participants' identification was not obtained through the collection of data, as their participation in the study was anonymous. The process of contacting potential participants continued until the final participant completed the last survey during the summer of 2012.

Rudestam and Newton (2001) suggested that the number of participants for a phenomenological research study should be 10 because of the time involvement with each participant and each participant's data analysis. Twenty participants were chosen for this study, because using surveys was not as time consuming as face-to-face interviewing and transcription. This provided the researcher with an opportunity to gain access to a potentially plentiful amount of data.

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POPULATION AND SAMPLING

This study included open-ended interview questions in a survey targeting 20 entrepreneurs who were licensed hair salon owners. All participants received a salon business license before 2006. The study required sampling of this population pool to obtain data from entrepreneurs who have crossed the 5-year mark in business operation. This research was an attempt to determine the common attributes associated with entrepreneurial success displayed by the sampled population.

Schorr (2008) interviewed 10 entrepreneurs and suggested increasing the population size in future research. The current study expanded the participant population to 20 participants and included open-ended interview questions compiled in a survey used to collect the data. The sampling of 20 hair salon owners out of a potential pool of 5,000 throughout the state of New Jersey provided greater insights for this study.

Stratified sampling strategy was selected based on the research approach. Simon (2010) described stratified sampling as subdividing a population into at least two subpopulations or strata. Our sample of business owners licensed before 2006 was further subdivided by county in the state of New Jersey. Creswell (2009) described qualitative sample sizes as ranging from one to 300 participants. The sample size for this study was 20 participants. An open-ended electronic survey format, which is still a form of interviewing, was used in the study. However, results allowed for written participation, as opposed to spoken words (Creswell, 2009).

DATA COLLECTION

To understand the phenomenon of entrepreneurial success beyond the first 5 years, a survey containing open-ended questions to collect data was used. The survey was an electronic vehicle to obtain written feelings and experiences directly from participants (Simon, 2010) concerning entrepreneurial success beyond the first 5 years. The selected form of data collection allowed information to be collected quickly and provided stronger qualitative data from the pool of participants (Creswell, 2009). Providing the respondents with the right tools enhanced their willingness to respond to research questions more than if asked in a face-to-face interview or phone conversation (McCoyd & Kerson, 2006). McCoyd and Kerson (2006) also noted that an electronic open-ended survey allows for more convenience for participants, but is just as reliable and accurate as face-to-face interviews. The primary reason for using an electronic interview format was to capitalize on the speed and accuracy in the data collection. To ensure accurate identification and analysis, the collected data was loaded into NVivo, version 10, and looked for themes and threads of related information in participants' responses.

DATA COLLECTION TECHNIQUE

An open-ended survey served as the vehicle for collecting information from study participants. The participants received an e-mail containing informed consent information and a link to survey questions. The participants typed in their responses to the six questions and submitted the data to the Survey Monkey database. The completed survey data was downloaded and provided the information to the research as-

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sistant in a word document. There was no transcription required as the participants provided information via the web through written responses.

The social constructivist perspective assumes that individuals seek understanding of the world in which they live and work (Creswell, 2009). To parse out the study participants' understandings, qualitative study using a phenomenological approach was conducted. Creswell (2009) described the phenomenological approach as a strategy of inquiry by which researchers identify the essence of the human experience described by participants. The method of data collection that was selected for the study allowed us to collect data and identify themes, related data, and the worldview of the participants (Creswell, 2009). Permission was obtained to use the instrument from Schorr (2008).

Participants answered the following questions:

- Tell me about your (professional) path. How did you move into entrepreneurship?
- When did you feel like a successful entrepreneur for the first time? Please describe specific situations and experiences you tie to this moment.
- How would you describe your experience of getting where you are now?
- What did you expect from becoming a successful entrepreneur?
- What has becoming a successful entrepreneur brought into your life? What are the gains? What are the losses?
- What else would you like to share about your experiences of becoming a successful entrepreneur?

DATA ANALYSIS TECHNIQUE

The analysis involved three components: inductive analysis, software analysis, and coding for theme identification. In addition, hiring an NVivo consultant helped to ensure the data were properly loaded to generate quality results.

Following the process used by Schorr (2008), the survey data using the modified Van Kaam method were analyzed. This modification of the method developed by Moustakas (1994) involved grouping expressions, reducing and eliminating repetitive irrelevant data, and determining the invariant constituents.

FINDINGS

The general problem addressed in this study was the high rate of small business failure within the first 5 years. In this study, the lived experiences of participants were collected to shed light on how some business owners are able to sustain their business beyond the first 5 years. Tilley and Young (2009) described sustainability as being comprised of social forms of wealth, as well as traditional economic wealth. Open-ended survey questions were delivered via e-mail, which provided deeper insight into the phenomenon and some emergent themes.

The themes that developed from the study were as follows:

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1. Need for professionalism
2. Relationship development is important
3. Financial rewards are appreciated
4. Experience provided a sense of accomplishments
5. Regret with the loss of time with family
6. Sacrifices were worth it

Cassar (2009) wrote that nascent entrepreneurs have high expectations of success. The data collected showed that the hair salon owners surveyed have a drive and passion to be successful. Participants described three primary routes to entering the hair salon industry: (a) a traditional route of going to cosmetology school, (b) entering the trade in a family-owned hair salon, and (c) entering the industry after working at other jobs and/or earning a business degree. Participants reported that developing and maintaining a loyal client base was an indicator to participants that they were ready to start their own hair salons, as well as a measure of their success in the business. Cha and Bae (2010) noted that the entrepreneurship process starts with the recognition of opportunity and then the creation of a new business. Several participants described client growth before moving forward with their own businesses and others said that their repeat client base and referrals from their clients have made them feel successful in their new business.

Participants stated that relationships with colleagues and clients enriched their experiences. Participants described several positive aspects of their business relationships, including the excitement of having powerful clients and the everyday satisfaction of helping people and hearing about their lives.

Fillis and Rentschler (2010) described one aspect of entrepreneurship as bringing together resources for economic change. According to this study's participants, the ability to provide financially for family and maintain a comfortable lifestyle were the most often cited benefits of owning a business, as well as the most common motivators to starting one's own business. While some participants focused on the secure and even affluent lifestyles their businesses have afforded them, others cited being able to provide college education for their children and help other family members as the main benefit. However, two participants mentioned that the vulnerability of being self-employed is a drawback. Hair salons are subject to seasonal fluctuations in business and may suffer more when the economic climate sours.

Participants commonly cited a sense of pride, power, and accomplishment that business owners feel because of their success. Specifically, participants described a sense of self-confidence, a sense that no one can take away their accomplishments, and a feeling that they have come a long way. Hooks (2010) noted that novice entrepreneurs seemed to be happier and more satisfied. Several participants also mentioned that being an accomplished business owner puts them in a position to inspire, provide an example to, and teach other potential entrepreneurs. The most common drawback to being a business owner mentioned by participants was the loss of time they could have spent with their families. Some expressed regret, while others stated that it is a trade-off necessary for their businesses to be successful. One individual shared that they believe it would have been good to work smarter, because of wasted time and money.

Finally, despite the loss of time with family, the majority of the participants said that the rewards reaped from the hard work and sacrifice of owning a business have been worth it to them. While several mentioned the long hours involved and the challenging road to becoming a successful business owner, several expressed that they would not change anything about their journey. Cardon, Stevens, & Potter (2009) noted that passion is deeply rooted in entrepreneurship. The most common experience was one of satisfaction, accomplishment, and the knowledge that their hard work has paid off.

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APPLICATIONS TO PROFESSIONAL PRACTICE

Small business owners are key contributors to the United States economy, but face a high rate of failure within the first 5 years of operation. This research seeks to identify success factors that lead to greater business sustainability among small business entrepreneurs by surveying 20 hair salon owners from the state of New Jersey who had been in business a minimum of 5 years.

This study provided new researchable information for hair salon owners who desire to start sustainable businesses in New Jersey in the future. Participants identified some areas that contributed to the success of their businesses and made the following recommendations: (a) build clientele by working in another business before starting out on their own, (b) develop good relationships with other entrepreneurs/business owners, (c) learn lessons from the experience, (d) be determined, and (e) keep financial matters in order (e.g., pay taxes and maintain good credit). This information may have remained unavailable for new entrepreneurs, but now the knowledge gained from this study can be shared with those seeking entry or who have newly formed businesses within the hair salon industry.

Further, this study has added to the body of knowledge in the field of entrepreneurship theory by researching small business success within the hair salon industry. A search of the literature identified studies that focused on entrepreneurship success (Bates, 1990; Byrd, 2010; Chupp, 2010; Johnson, 2010; Osbourne, 2009; Reaves, 2008; Schorr, 2008; Valdez, 2009; Weinberger, 2009). This study has added to this specific area of knowledge by extending Schorr's (2008) and Bates (1990) studies to a different geographical area of the country, as well as to a different industry from what has been covered before.

None of the participants were able to identify any available research-based data that might provide some insight into success factors that may have led to sustainability. Now, this research has filled a gap in knowledge pertaining to success factors associated with sustaining a hair salon in New Jersey beyond its first 5 years.

CONCLUSION

The pursuit of this study was an effort to extend the initial research conducted by Schorr (2008). This study expands the knowledge associated with small business and entrepreneurship sustainability within the first 5 years of starting a business. Small business failure continues to be an issue, with the number of failures exceeding the number of startups (U.S. Small Business Administration, 2007). There is a need for small businesses to deliver a greater rate of success to assist in strengthening the economy by supporting job creation and private sales activity.

Further research on small business success will continue to expand the knowledge in this area. This study employed a qualitative phenomenological approach, which explored the phenomenon from the lived experiences of the participants (Creswell, 2009). A quantitative study may provide more information in support of small business success by increasing the amount of data collected. The total number of participants for this study was 20 and an increase in participants may provide better data for research. Collecting more data provide stronger evidence in support of understanding small business success beyond the first 5 years of operation.

While this study focused on the hair salon industry, conducting research on industries that are contributing the greatest amount to the economy in terms of jobs and private sales may yield more information on small business trends. By seeking a forward-looking view of small business activity,

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further research in a more targeted area of economic contribution by specific industries may provide more valuable research data.

Finally, the geographical area used for this study was the state of New Jersey. By expanding the study to include the northeastern portion of the United States or other areas larger than a single state, a new study may produce stronger data in support of small business success.

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APPENDIX

Section 3: Application to Professional Practice and Implications for Change
The purpose of this qualitative study was to understand entrepreneurship, providing insight into the needs contributing to sustainability during the first 5 years in business. The issue was the high failure rate of entrepreneurs. The issue was the high failure rate of entrepreneurs. One research question guided the study: *How are some entrepreneurs able to sustain their business beyond the first 5 years?*
The instrument used in the study consisted of six questions:

1. Tell me about your (professional) path. How did you move into entrepreneurship?
2. When did you feel like a successful entrepreneur for the first time? Please describe specific situations and experiences you tie to this moment.
3. How would you describe your experience of getting where you are now?
4. What did you expect from becoming a successful entrepreneur?
5. What has becoming a successful entrepreneur brought into your life? What are the gains? What are the losses?
6. What else would you like to share about your experiences of becoming a successful entrepreneur?

The target group for this study consisted of 20 hair salon owners from the state of New Jersey who had been in business for a minimum of 5 years. Surveys represented the data collection tool. NVivo software provided the tool to analyze the data according to the modified Van Kaam method.

Interview Question 1: Professional Path

Tell me about your (professional) path. How did you move into entrepreneurship?

There was a desire to gain insight into the path that each participant took to get into entrepreneurship. Each participant took a specific path into becoming a hair salon owner and the researcher was seeking to identify a specific theme. In addition, the researcher was looking to identify if there was a specific path that was more prevalent in terms of entry into the hair salon industry.

All participants surveyed were cosmetologists who are in business for themselves. The participants described two primary routes to entering the cosmetology industry: *starting their own business after building clientele* (20%) and *beginning a family business* (15%).

Interview Question 2: Feeling Like a Successful Entrepreneur

When did you feel like a successful entrepreneur for the first time? Please describe specific situations and experiences you tie to this moment.

Entrepreneurs set specific goals that provide the foundation for the feeling of success experienced in a venture. This section identified the goals set by each of the entrepreneurs in this study. There were three primary research results provided by the participants that led to the feeling of success, which was:

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when I moved and clients followed (25%), when my business became profitable (10%), and when I opened my own hair salon (10%).

Question 3: Describe Your Experience

How would you describe your experience of getting where you are now?

Participants have different aspects of the experience when describing the current level of accomplishments. There are two primary items described in the data by the participants, namely: challenging/experienced difficulties, learned lessons from experiences (20%), and hard work and determination (20%).

Interview Question 4: Expectation From Becoming Successful

What did you expect from becoming a successful entrepreneur?

There are expectations that an entrepreneur may have when attempting to go into business when starting a successful new venture. There were three main expected outcomes identified by participants, which were: the ability to have financial freedom, better income, and a chosen lifestyle (50%), autonomy, freedom, and control of my life (30%), and the enjoyment of work and the happiness that were felt from working in the salon business (15%).

Interview Question 5: Gains and Losses

What has becoming a successful entrepreneur brought into your life? What are the gains? What are the losses?

In business, there are gains and losses and entrepreneurs may have some since of those expectations. Participants commonly cited: financial freedom, lifestyle, and ability to provide for family (50%), the relationships and people met along the way (25%), self-confidence (15%), being their own boss (15%), and the experience, knowledge, and wisdom gained as key accomplishments.

The most common drawback to being a business owner mentioned by participants was: the loss of time they could have spent with their families (40%) and long hours (15%). Some participants expressed regret with lost family time, while others stated the trade-off contributed to their business success.

Interview Question 6: Share Experiences

What else would you like to share about your experiences of becoming a successful entrepreneur?

The qualitative method provided the foundation for this research study. Entrepreneurs provided insight into their lived experiences. The final question provided the participants with an opportunity to provide any specific information that may prove beneficial to readers of this study who want to go into the hair salon business. The main points identified by the participants were that: owning a business has been worth it to them (20%), it takes hard work and sacrifice (15%), keeping finances in order to include paying taxes and maintaining good credit (15%), and the autonomy of being your own boss is great (15%).

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Chapter 80
Exploring the Spheres of Crowdfunding

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ABSTRACT

This chapter reviews research and policy literatures on the spheres of crowdfunding. It identifies reward-based, donation-based, equity-based and credit-based crowdfunding with a view to collate relevant information to support crowdfunding knowledgebase and further research. As crowdfunding is a new concept in research literature, it is increasing in popularity in social media, business and research communities. Academic research in crowdfunding is limited and the subject is still evolving as a way of access to finance for seed capital, entrepreneurial projects and other early stage projects. Advanced countries in Europe and North America have recognised the relevance of crowdfunding in varying proportion from one country to another for project fundraising. However, the World Bank confirmed that developing countries are at different stages of recognition of crowdfunding in their policy framework. Although the UK financial regulator, Financial Conduct Authority, has produced a policy statement for crowdfunding and approved some service providers such as crowdfunding platforms, it is still interacting with stakeholders and providing guidance to potential entrepreneurs on the operational models. Crowdfunding is a way of raising small amounts of money from different contributors over the internet for different types of projects. There are huge management implications in the spheres of crowdfunding.

INTRODUCTION

Crowdfunding is a method of fundraising directly from members of the public with small individual contributions using the internet (European Crowdfunding Network, 2014). The spheres or types of crowdfunding are reward-based, equity-based, donation-based and credit-based. These spheres were discussed in FCA (2014a) and Bradford (2012) because the need for regulation in crowdfunding has become apparent. Apart from the UK, the USA has recognised crowdfunding as a way of funding entrepreneurial projects and this initiated the Jumpstart Our Business Start-ups Act (JOBS Act) (Stemler, 2013). Prior to the JOBS Act in the USA, researchers (Burkett, 2011; Hemingway, & Hoffman, 2012)

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disclosed the conflict between equity-based crowdfunding and the existing United States securities laws. Therefore, for crowdfunding to be operated lawfully in the USA, changes had to be made to existing securities laws. Accordingly, the President of USA, Barak Obama, stated in one of his speeches that the provisions of the JOBS Act are a potential game changer in the USA as businesses will have the opportunity for start-up and growth to the next level (Thompson, 2012). Apart from business reliance on personal savings, loans, private equity, venture capital and angel capital, crowdfunding is a new concept in access to business finance.

Venture capitalists left a funding gap in the early stage of new business development and crowdfunding is quite capable of filling that gap (Ley, & Weaven, 2011). Thus, crowdfunding is a new, alternative and additional method of access to finance for small and medium-sized enterprises (SMEs) and other early stage projects. As crowdfunding is increasing in popularity in social media, business and research community, it is beginning to make impact as a seed and start-up fund for new firms. Crowdfunding has been identified as one of the alternative finance mechanisms for individuals and businesses to explore for their capital needs (Collins, Swart, & Zhang, 2013). Therefore, members of the public can fund a project with little individual financial contribution in collaboration with others through the internet.

As crowd funders or investors are distributed all over the world, different regulatory provisions are being introduced from one country to another. Developed countries have introduced crowdfunding associations. One of these is the UK crowdfunding association (UKCFA, 2014) which was formed by fourteen crowdfunding businesses in 2012 and the membership has since grown to forty-three in December 2014; being 250% increase in membership over two years. Other crowdfunding related associations include National Crowdfunding Association in USA (NLCFA, 2014), National Crowdfunding Association of Canada (NCFA, 2014), Crowdfunding Professional Association in USA (CFPA, 2014) and Crowdfund Intermediary Regulatory Advocates in USA (CFIRA, 2014).

Web technology is the key driver of all the spheres of crowdfunding (European Crowdfunding Network, 2014; InfoDev, 2013). Entrepreneurial access to crowdfund platform is a globalisation phenomenon (Agrawal et al., 2011). As web technologies provide the enabling platform for many business successes, crowdfunding is being propelled using the internet (European Crowdfunding Network, 2014). Greater levels of crowdfunding campaign are initiated by creative individuals and within metropolitan areas (Antonenko, Lee, & Kleinheksel, 2014). This shows an evidence of spatial proximity in crowdfunding.

Advanced countries in Europe and North America have recognised the relevance of crowdfunding in varying proportion from one country to another for project fundraising. However, a World Bank research confirmed that developing economies are at different stages of recognising crowdfunding in their policy framework with South Africa leading with four crowdfunding platforms (InfoDev, 2013). Although the UK financial regulator, Financial Conduct Authority, has produced a policy statement for crowdfunding and approved some providers, it is still interacting with stakeholders and providing guidance to potential entrepreneurs on the operational models (FCA, 2014a).

According to Danmayr (2014), North America and Europe represent 98% of the worldwide crowdfunding industry and the crowdfunding industry has grown periodically from 64% in 2011 to 81% in 2012 and the growth has continued unabated. Thus, the growth of crowdfunding has become astronomical over a few years and the future potential of growth is unimaginable. There is a strong positive signal of better access to crowdfunding money and this could lead to improved access to other forms of finance such as venture capitalists and business angel (Lehner, & Nicholls, 2014). It is now confirmed that crowdfunding is helping to raise money for scientific research and success factors abound (Wheat, Wang, Byrnes, & Ranganathan, 2013).

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Successful crowdfunded projects show the value of small contributions in access to finance for entrepreneurial projects (Firth, 2012). Siva (2014) also report a success story of a science based crowdfunded project. In the UK, equity-based crowdfunding increased 618% and reward-based crowdfunding increased 387% from 2012 to 2013 (Collins et al., 2013).

There are huge management implications in the spheres of crowdfunding. These are summarised as follows:

- **A New Phenomenon:** As a new manifestation, crowdfunding is a growing business area for expansion.
- **Lack Maturity and Increasingly Popular:** Crowdfunding lack maturity but it is increasing in popularity and some projects exhibit competitive advantage.
- **Subject to Regulation:** Equity-based and credit-based crowdfunding will be subject to regulation to protect participants and system integrity, especially the protection of consumers, vulnerable members of the society and investors.
- **Trusting Relationship Yield Reward:** Project initiators such as business owners or entrepreneurs will reap reward from the crowd if their initial crowdfunding engagement is a trusting relationship.
- **Community Support Agenda:** Some crowd contributors and platforms are targeted for community support only.
- **Crowd Investor Portfolio Mix:** The spheres of crowdfunding and the relative small size of fund contribution provide opportunities for investor portfolio mix likened to a mini venture capitalist.
- **Stakeholder Management:** Crowdfunding participants must be managed within strategic stakeholder engagement.
- **Project Planning Is Necessary:** Crowdfunding projects and their associated activities must be planned to ensure success.
- **Feature Rich Platforms:** Different crowdfunding platforms have different features for the entrepreneur to explore before making request for fund to ensure project funding success.
- **Improve Crowd Profile and Support Others:** Entrepreneurs should back other entrepreneurs to increase their community profile and participation.
- **Crowdfund Training Required:** There is need for crowdfunding training for non-technology savvy entrepreneurs and investors.
- **Increasing Entrepreneurial Innovation:** There is a bandwagon effect of new innovative firms relying on crowdfunding activities.

BACKGROUND

The global financial crisis of 2007 caused a huge reduction in the availability of business finance for early stage and existing businesses (Smallbone, Deakins, Battisti, & Kitching, 2012; Saridakis, Mole, & Storey, 2008). Following the crisis and in the absence of adequate access to finance, start-up and existing businesses had financial constraints. Although different businesses explored personal savings, private equity/venture capital funding, invoice finance, loans and overdraft in their attempt at resolving access to finance issues, it was difficult to access the fund required for their survival and innovation. Crowdfunding came into the limelight in the business environment during the financial crisis of 2007 in the midst of financial constraints in small firms (InfoDev, 2013).

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It is possible to think that crowdfunding is in existence to resolve the inherent financial constraints of the time among early stage businesses. However, although the financial crisis caused financial constraints for all levels of businesses, there was greater financial constraint for small and start-up firms (Saridakis et al., 2008; Smallbone et al., 2012). However, some researchers (Belleflamme, Lambert, & Schwienbacher, 2014; Danmayr, 2014; Zheng, Li, Wu, & Xu, 2014; Gerber, & Hui, 2013) believe crowdfunding existed prior to the financial crisis of 2007 as a way of funding creative projects in the arts, music, film and other specialist terrain. Crowdfunding originated from crowdsourcing, which is a way of getting support from online collaborators towards gaining new ideas, resolving problems and proffering solutions (Hazen, 2012). Moreover, it can be argued that the financial crisis of 2007 and the financial constraints on small firms created the opportunity for the online community to seek to extend funding for creative projects to entrepreneurial projects among online friends and like-minded people (InfoDev, 2013).

The spheres or types of crowdfunding are different as contained in literature (Bradford, 2012; FCA, 2014a; U.S. Securities and Exchange Commission, 2013). Equity-based crowdfunding (Barnett, 2013) is a subset of investment-based crowdfunding and it involves sharing in the equity ownership of a business by contributing small amount of money in internet collaboration with other contributors. Donation-based and reward-based crowdfunding are not regulated in the UK because they are classed as not-for-profit (FCA, 2014a). According to Rossi (2014), the proportion of different spheres of crowdfunding in 2012 was: reward-based (43.5%), credit-based (14.5%), donation-based (28%) and equity investment-based (14%). As different countries begin to apply different regulations locally, it can restrict the size of private investors for crowdfunding projects (Schwienbacher, & Larralde, 2012). This is particularly relevant to the investment-based crowdfunding because sharing in the equity ownership of firms still apply old regulatory rules to check unwholesome practices. The United States regulatory authorities went through a period of checks and balances in promulgating the JOBS Act regulation and amending current securities laws aimed at supporting equity-based crowdfunding (Clifford, 2013). Therefore, while reward-based and donation-based crowdfunding will not be regulated through securities laws, credit-based and investment-based crowdfunding will be regulated. The World Bank reported in a recent research that reward-based crowdfunding has a compound annual growth rate of 524% from 2009 through 2012 followed by equity (114%), lending (78%) and donation-based (43%) (InfoDev, 2013).

THEORIES RELEVANT TO CROWDFUNDING

The key theories that impact access to finance in small and medium-sized enterprises (SMEs) are also systematically relevant to crowdfunding. These key theories include agency cost (Jensen, & Meckling, 1976; Ross, 1973), signalling (Ross, 1977; Spence, 1973; Weiss, 1995), credit rationing (Stiglitz, & Weiss, 1981), pecking order (Frank, & Goyal, 2003; Myers, 1984), discouraged borrower (Kon, & Storey, 2003), stakeholder (Ackermann, & Eden, 2011; Freeman, 1984), social capital (Zheng et al., 2014) and network exchange (Zvilichovsky, Inbar, & Barzilay, 2014) theories.

The agency cost theory identifies information asymmetry, moral hazard and adverse selection (Jensen, & Meckling, 1976). They define agency cost as the sum of monitoring costs, bonding costs and residual loss. Giudici et al. (2012) and Agrawal, Catalini, & Goldfarb (2013) believe that information asymmetry, moral hazard and adverse selection represent major issues in crowdfunding. In agency cost theory, members

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of the public are unable to determine adequate due diligence of the project before crowdfunding commitment. Making financial contribution without due diligence can be astounding (Agrawal et al., 2013). Therefore, in each crowd project, the entrepreneur or project initiator has the superior information which may not be known to the crowd funders or contributors. There will be cost implications for contributors if they engage third party agency as a way to gather more information about the entrepreneur and the viability of the project for funding. In this case, the actual sum contributed may be too small to warrant monitoring and screening of the project. However, the entrepreneur or project initiator could provide detailed and relevant information about the project to enable contributors to make informed decision.

Signalling theory provides an indicator to inform lenders of the credulity and potential viability of the entrepreneurial project. Whilst Weiss (1995) discussed the relevance of human capital as a signalling effect in labor economics, Ross (1977) revealed the role of incentive-signalling in the determination of corporate financial structure. The experience and education of the entrepreneur or project initiator can act as a positive signal on lenders, crowd contributors (Gruber, MacMillan, & Thompson, 2012). Signalling theory provides crowd contributors with an indicator of the project initiator to inform their funding decision. According to La Porta et al. (1998), a good legal system can act as a signal of an improved financial sector development. It follows that signalling theory is directly relevant to crowdfunding transactions as the strength of the legal system can determine the efficiency and effectiveness of crowdfunding. However, crowdfunding platforms currently rely on their legal jurisdiction to resolve disputes. Therefore, if the legal system is unable to sustain crowdfunding transactions, there could be unforeseen transaction limitations as investors gain awareness through online due diligence.

Stakeholder theory (Freeman, 1984) in relation to crowdfunding places a responsibility on the entrepreneur or project initiator to manage the affairs of the project diligently with a view to create value ethically for its crowd investors. According to the stakeholder theory, in managing the affairs of any business, there must be interface between multiple stakeholders and the business. A good entrepreneur and business owner should be able to manage the affairs of multiple stakeholders efficiently and effectively (Freeman, 1984). Ackermann, & Eden (2011) advocate the need for a strategic management of stakeholders to ensure business success. Therefore, the project initiator in crowdfunding has a responsibility to all stakeholders to ensure project success.

Pecking order theory (Frank, & Goyal, 2003) shows the hierarchy of methods of access to finance that an entrepreneur use in the process of seeking project fund. In pecking order principles, owner managers of small firms prefer internal sources of business financing over external sources, hence, they prefer debt finance over equity (Myers, 1984). Businesses in the small firm sector prefer the pecking order approach because it allows them to select their funding option while maintaining full control of their business (Holmes, & Kent, 1991). Thus, the application of pecking order theory depends on the sphere of crowdfunding because different rules apply to reward, donation, equity and credit.

Stiglitz, & Weiss (1981) introduced the concept of credit rationing as a way for lenders to reduce the risk associated with borrowers in an uncertain times and in the absence of collateral. Hence, credit rationing reduces the amount of credit finance available for entrepreneurial projects and reduces access to finance for SMEs. Crowd funders may withdraw or reduce their funding support if the entrepreneurial project is not adequately defined with due diligence to reduce information asymmetry and eliminate information distortion. Therefore, as a way to eliminate credit rationing, the entrepreneur or project initiator has a responsibility to provide adequate information about the project to inform the decision making of crowd contributors.

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The discouraged borrower theory points to self-rationing credit approach where the entrepreneur may be discouraged from seeking fund for fear of being rejected (Kon, & Storey, 2003). As an example of self-rationing, Mijid, & Bernasek (2013) find that women are self-rationing themselves in the capital market rather than being rejected by the bank for credit facilities. Kickstater (2014) shows that high number of rejections and successes are recorded for projects in its crowdfunding platform. It follows that crowd contributors may withdraw from funding entrepreneurial projects with inadequate prospect and reduced due diligence. Although crowd contributors are not skilled in screening the crowd projects, they have access to online information sources to inform their funding decision (Indiegogo, 2014). Therefore, entrepreneurs who fail to meet their funding target for their project may become discouraged.

Social capital theory is a valuable asset as it allows common problems to be resolved easily with combined effort. Following social capital theory, the online social media environment is an efficient place to develop and nurture social networks that can help to expand social capital. The social network perspective of an entrepreneur helps to define their strategic intent (Aldrich, & Kim, 2007). Zheng et al. (2014) find that the social network of the entrepreneur impacts the crowdfunding of its project. They discussed a multidimensional aspect of social capital in crowdfunding and they believe that social capital is embedded in social network. It follows that social capital is a trusted network connection of like-minded people. However, the herding behaviour of social network participants suggests that the success of crowd projects can depend on the social leaning of network members (Kuppuswamy, & Bayus, 2014).

Zvilichovsky et al. (2014) discuss the network exchange theory and find the principle of reciprocity to be applicable in the crowdfunding environment. They find that the entrepreneurs who double as backers have funding advantage and higher success rate. This is particularly relevant to a project entrepreneur or initiator who also acts as crowd contributor, a double-sided active participant in the crowdfunding market.

MAIN FOCUS OF THE CHAPTER

The contribution of this chapter is a systematic review of the different spheres of crowdfunding literature, identifying key relevant theories, support further research and a conclusion. This review is pertinent in understanding the spheres of crowdfunding around the world. Although there is an increasing popularity of traditional methods of access to finance, crowdfunding is innovative, new and a growing phenomenon (Tomczak, & Brem, 2013). Academic research about crowdfunding is limited and the phenomenon is still evolving as a way of access to finance for entrepreneurial projects (Lehner, & Nicholls, 2014; Lehner, 2013; Giudici, Nava, Lamastra, & Verecondo, 2012) and other fundraising projects (FCA, 2014a). As a result, there are limited academic research outputs on the subject as shown in Table 1.

To achieve our aim, electronic databases (ScienceDirect, Google Scholar, EBSCO and Emerald) were interrogated using keyword search method. It was also necessary to perform a keyword search of relevant reports published by government bodies and international organisations. In the keyword searches, ‘crowdfunding’, ‘crowdfund’, ‘credit crowdfund’, ‘lending crowdfund’, ‘donation crowdfund’, ‘equity crowdfund’, ‘investment crowdfund’ and ‘reward crowdfund’ were the keywords used.

The remainder of this chapter is presented thus. It examine investment or equity-based crowdfunding; credit-based crowdfunding; reward-based crowdfunding; and donation-based crowdfunding. Further discussion provides recommendations as well as conclusion and further research directions.

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Table 1. Date chronology of key crowdfunding research and policy literature

Authors	Year	Sphere	Policy/Research	Authors' Affiliate Country
Antonenko, Lee, & Kleinheksel	2014	Reward	Research	USA
Belleflame, Lambeth, & Schwienbacher	2014	Equity, reward	Research	Belgium, France, Germany
Boeuf, Darveau, & Legoux	2014	Reward	Research	Canada
Canadian Regulators	2014	Equity	Policy	Canada
Danmayr	2014	Donation, equity, lending, reward	Research	Austria
Dragojlovic, & Lynd	2014	Donation	Research	Canada
Financial Conducts Authority (FCA)	2014	Donation, investment, loan, reward	Policy	UK
Kuppuswamy, & Bayus	2014	Reward	Research	USA
Lehner, & Nicholls	2014	Donation	Research	UK
Meer	2014	Donation	Research	USA
Mollick	2014	Equity, reward	Research	USA
Pitschner, & Pitschner-Finn	2014	Donation, equity, lending, reward	Research	Spain, Germany
Rossi	2014	Donation, equity, lending, reward	Research	Canada
Siva	2014	Donation, reward	Research	UK
Yeoh	2014	Investment	Research	UK
Zheng, Li, Wu, & Xu	2014	Donation	Research	China, USA
Zvilichovsky, Inbar, & Barzilay	2014	Donation, reward	Research	Israel
Agrawal, Catalini, & Goldfarb	2013	Equity, non-equity	Research	USA
Belleflame, Lambeth, & Schwienbacher	2013	Equity, reward	Research	Belgium, France, Germany
Collins, Swart, & Zhang	2013	Donation, equity, lending, reward	Research	UK, USA
Cumming, & Johan	2013	Equity	Research	Canada
Gerber, & Hui	2013	Donation, reward	Research	USA
InfoDev	2013	Donation, investment, loan, reward	Research	USA
Lehner	2013	Donation	Research	UK
Stemler	2013	Investment	Research	USA
Tomczak, & Brem	2013	Investment	Research	Germany
U.S. Securities and Exchange Commission	2013	Investment	Policy	USA
Valanciene & Jegeleviciute	2013	Investment	Research	Lithuania
Wheat, Wang, Byrnes, & Ranganathan	2013	Reward	Research	USA
Ahlers, Cumming, Gunter, & Schweizer	2012	Equity	Research	Canada, Germany
Bradford	2012	Donation, equity, lending, reward	Research	USA
Carvajal, García-Avilés, & González	2012	Donation	Research	Spain
Cohn	2012	Equity	Research	USA
Collins, & Pierrakis	2012	Donation, equity, lending, reward	Research	UK

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Table 1. Continued

Authors	Year	Sphere	Policy/Research	Authors' Affiliate Country
De Buysere, Gajda, Kleverlaan, & Maron	2012	Donation, equity, lending, reward	Research	Germany
Giudici, Nava, Lamastra, & Verecondo	2012	Donation, equity, lending, reward	Research	Italy
Hazen	2012	Investment	Research	USA
Hemingway, & Hoffman	2012	Equity	Research	USA
Knight, Leo, & Ohmer	2012	Equity	Research	USA
Lee, & Lee	2012	Lending	Research	Republic of Korea
Mitra	2012	Donation, equity, lending, reward	Research	Canada
Parrino, & Romeo	2012	Investment	Research	USA
Schwienbacher, & Larralde	2012	Donation, reward	Research	UK
Agrawal, Catalini, & Goldfarb	2011	Investment	Research	USA
Ley, & Weaven	2011	Equity	Research	Australia
Ordanini, Miceli, Pizzetti, & Parasuraman	2011	Investment	Research	Italy, USA

Note: This list represents the key research and policy based literatures relevant to different spheres of crowdfunding since the inception of the phenomenon. This table indicates a chronological list of crowdfunding literatures from 2011 to 2014, compiled from crowdfunding research and policy based sources only.

1. Investment or Equity-Based Crowdfunding

[Investment-based crowdfunding]… *people invest directly or indirectly in new or established businesses by buying shares or debt securities, or units in an unregulated collective investment scheme* (FCA, 2014a, p. 11). Equity-based crowdfunding (Barnett, 2013) is a subset of investment-based crowdfunding and it involves sharing in the equity ownership of a business by contributing small amount of money. For example, according to Symbid (2014), there is a minimum investment of €20 for each crowdfunding investor and there are many entrepreneurial projects to be funded. The greatest obstacle to equity-based crowdfunding is regulation (Collins, & Pierrakis, 2012). The regulatory authorities in the UK (FCA, 2014a) and USA (Barnett, 2013; U.S. Securities and Exchange Commission, 2013; Cohn, 2012) believe in the regulation of investment or equity-based crowdfunding to protect investors or contributors. Yeoh (2014) discovered that the fine tuning of the regulatory framework in the UK and USA will lead to better crowdfunding provisions for all stakeholders. The regulatory provisions in Canada are targeting equity-based crowdfunding and many securities laws are earmarked for amendment to meet general crowdfunding needs (Canadian Regulators, 2014).

Apart from Symbid crowdfunding platform based in Rotterdam in the Netherlands, other examples of investment or equity-based crowdfunding are VentureCrowd (Melbourne, Australia), Crowdonomic (Singapore), CrowdCube (Exeter, UK) and Seedrs (London, UK). Although these example crowdfunding platforms currently pursue investment or equity fundraising approach, their operational strategies are different as a result of their regulatory origin and business choice.

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Researchers are sceptical about the amendment to the securities laws of the USA (Hemingway, & Hoffman, 2012). In discussing the JOBS Act amendment of the USA, Cohn (2012) state that the plan was focused on supporting capital raising in small firms but it appears to be fraught with 'limitations, restrictions, obligations, transaction costs and innumerable liability traps' (p. 1445). In Canada, there was a demand-driven regulation of the equity-based crowdfunding environment following the speed of crowd investor acceptance of the phenomenon (Cumming, & Johan, 2013). It is possible to appropriately adopt crowdfunding to compensate for the gap in venture capital funding at early stage of project finance (Ley, & Weaven, 2011).

There is a quiet revolution associated with equity-based crowdfunding relating to the securities laws in the USA (Knight, Leo, & Ohmer, 2012). They argue that crowdfunding platforms would have to support project initiators in satisfying the requirements of equity-based regulatory provisions. Hence, entrepreneurs must be aware of regulation or potential regulation for investment or equity-based crowdfunding. Although different countries have varied regulatory systems, the regulatory provision for crowdfunding is also varied.

FCA (2014a, 2014b) disclosed that the investment-based crowdfunding will be subject to UK regulation to protect participants and system integrity, especially the protection of consumers and vulnerable members of the society. According to the FCA (2014a), investment-based and credit-based crowdfunding platforms are subject to the UK regulation and current approved operators are registered. Barnett (2013) and U.S. Securities and Exchange Commission (2013) report on the regulatory provisions to support crowdfunding in the USA. As much as the regulation for crowdfunding is encouraged, securities laws must not become ineffective for general investor protection (Stemler, 2013; Hazen, 2012).

European Crowdfunding Network (2014) revealed that there is no single European Union in terms of regulatory provisions in crowdfunding. According to them, there are uncoordinated regulatory actions from one country to another in Europe. There are differences in the spheres of crowdfunding and different operational rules apply from country to country. There are differences between investment and donation; hence, the regulatory provisions for investment-based crowdfunding do not include donation-based crowdfunding. De Buysere, Gajda, Kleverlaan, & Maron (2012) provide useful guidelines to inform regulators, crowdfunding platforms, their investors and the general public. According to Thomas (2014), the initial barrier to market entry in crowdfunding requires disclosure of important documents to the regulatory authorities. Therefore, businesses that are unable to action all the required disclosure could be dissuaded from operating crowdfunding projects.

The principle of mandatory disclosure for crowdfunding has been supported in the aftermath of the approval of the JOBS Act legislation because although it is good to provide funding facilities to support small businesses, it is very important to ensure adequate protection for investors (Hazen, 2012). However, it is important to note that the success and continuous growth of crowdfunding will depend on the efficiency and effectiveness of the regulatory provisions applicable to the given crowdfunding platform (Gelfond, & Foti, 2012). They disclosed that a lean and simplistic set of rules will encourage start-up and other early stage entrepreneurs. Although the JOBS Act has eased the securities regulation to support start-up and small companies, there could be investment scam and fraud associated with the change (Parrino, & Romeo, 2012). They confirmed that the JOBS Act reduces the regulatory burden on start-up and small companies to enable them to expand unimpeded.

The JOBS Act and the securities regulation of the USA is not a panacea against fraud and it is not intended to prevent fraud but an attempt to promote capital formation for new business (Bradford, 2012). Thus, the fact that there could be investment scam or fraud associated with crowdfunding is not an adequate reason to kick against crowdfunding activities. Crowdfunding has the potential to outperform

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any type of business funding because the number of people involved in the crowd is enormous; being greater than any one country market.

Whilst investment-based and credit-based crowdfunding aim to make profit (e.g. shared equity and credit interest) for crowd contributors, donation-based and reward-based crowdfunding rely on personal non-monetary reward and community support (European Crowdfunding Network, 2014). The decline in major music industry labels following piracy and online music distribution has created an alternative avenue for artists to showcase their expertise and intellectual property through equity-based crowdfunding (Agrawal et al., 2011). The spheres of crowdfunding and the relative small size of fund contribution provide opportunities for investor portfolio mix. The crowdfunding investor portfolio mix could introduce a type of mini venture capitalists into an otherwise simplistic investment and capital raising terrain.

Crowdfunding has been described as an alternative to the traditional form of venture capital financing (Mollick, 2014). Whilst the traditional form of venture capital financing involves investment in high-valued entrepreneurial projects, crowdfunding investors contribute small amount in collaboration with many others to create a large crowd of small funders (Zheng et al., 2014). Therefore, there is a one-to-many relationship between one entrepreneurial project and a mix of crowd funders drawn from all over the internet world. In the UK, equity-based crowdfunding increased 618% from 2012 to 2013; a short period of just over one year (Collins et al., 2013). However, the making of financial contribution in the equity-based and non-equity-based crowdfunding platforms without due diligence can be shocking and susceptible to uncertainty (Agrawal et al., 2013).

Researchers produced an investment model with reward models to support crowd investors and investees in their funding decision process (Tomczak, & Brem, 2013). Case studies of three crowdfunding platforms including Sellaband, Trampoline and Kapipal were analysed to identify the variation in their risk factors and associated risk to guide investors and provide guidance on investment payoffs (Ordanini et al., 2011). They show that there are different levels of risk and returns associated with different spheres of crowdfunding. Ahlers et al. (2012) emphasised the significance of financial roadmaps, internal governance and risk factors in the success of fundraising through equity crowd funders.

In the same way that entrepreneurs learnt about other ways of accessing project funding, crowdfunding is not different. It is very easy to assume that all crowd participants such as entrepreneurs and investors are technology savvy. There is a clear need for training for entrepreneurs or project initiators to enable them present their ideas properly online for crowdfunding. Entrepreneurs and crowd investors need a deeper understanding of crowdfunding to enable them operate efficiently and effectively in the crowd environment (Valanciene, & Jegeleviciute, 2013). A trained entrepreneur will be able to articulate their ideas in the social media platform and failure to present the right information online could jeopardise the crowd funding application with a knock-on effect on the project. Siva (2014) suggests proposal review for entrepreneurial projects prior to submission for crowdfunding to weed out inappropriate and fraudulent ideas submitted for funding.

2. Credit-Based Crowdfunding

[Credit-based crowdfunding]… *people lend money to individuals or businesses in the hope of a financial return in the form of interest payments and a repayment of capital over time (this excludes some business-to-business loans)* (FCA, 2014a, p. 10). Entrepreneurs or business managers are able to establish a crowdfunding platform or setup an entrepreneurial project for crowdfunding (Greenwald, 2012; Rossi, 2014). Ordinary people are able to invest in credit-based crowdfunding with a view to make profit

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through credit interest (Symbid, 2011). According to Collins et al. (2013), debt-based securities in the UK grew 170% from 2012 to 2013.

Lenders in the crowdfunding peer-to-peer lending market are not professional investors and they face high risk as no collateral is offered for microloans (Lee, & Lee, 2012). However, the high risk of lending has not dissuaded the increasing platform participation among contributors in the UK, USA and Korea. It follows that capital contribution can be lost totally without any remedy in the event of entrepreneurial project failure.

Notable examples of credit-based crowdfunding are the Prosper (www.proper.com), Zopa (www.zopa.com) and Lending Club (www.lendingclub.com), which are reported to be growing unrelenting. Although all crowdfunding platforms are experiencing phenomenal growth, credit-based crowdfunding has the lowest share of growth (Mitra, 2012). While Symbid (2011) show that contributors in its credit-based crowdfunding platform are paid interest and capital, it is confirmed that Kiva (www.kiva.org) credit-based crowdfunding platform do not pay interest to contributors. Instead, Kiva pays the capital to the contributor at the end of a successful project and the contributor may contribute again in another project.

Researchers confirm that the accrued interest in some of the projects in Kiva crowdfunding platform are used to cover operating cost of providing microfinance to projects across the world (Bradford, 2012; Mitra, 2012). These show that while some credit-based crowdfunded projects pay interest and capital on successful completion, others pay capital only and use interest as operating cost. However, contributors in unsuccessful projects on the Kiva credit-based crowdfunding platform do not get any payment. If contributors are promised interest in a credit-based crowdfunding platform, the investment instrument could be regarded as securities for regulatory purpose (Bradford, 2012).

3. Reward-Based Crowdfunding

[Reward-based crowdfunding]... *people give money to receive a reward, service or product (such as tickets for an event, an innovative product, a download of an e-book or a new computer game)* (FCA, 2014a, p. 10). Reward-based crowdfunding is not subject to regulation in the UK (FCA, 2014a). In the UK, reward-based crowdfunding grew 387% from 2012 to 2013 (Collins et al., 2013). A major determining factor for crowdfunding could be the level of community support and reward associated with the project (Gerber, & Hui, 2013). According to them, crowdfunding supporters are motivated by personal rewards and the support for other people as part of a community of like-minded people. Reward-based and donation-based crowdfunding are the largest operational models of crowdfunding (Antonenko, Lee, & Kleinheksel, 2014; Mitra, 2012).

Kickstater and Indiegogo are two important and global crowdfunding platforms offering rewards for contributions received from the crowd. According to Kickstater (2014), the highest successfully funded projects were in the music, film and video industry. Indiegogo (2014) disclose that there is a minimum of $500 fundraising requirement on its crowdfunding platform and contributors are rewarded with non-monetary incentives called ‘perks’. Kickstater has a funding model of all-or-nothing and this suggest that if entrepreneurs are unable to get their full targeted fund, the amount raised will be withdrawn and returned to the investors (Kickstater, 2014).

According to Dragojlovic, & Lynd (2014), crowdfunding is a big benefit for early stage projects with early proof of concept. Research projects are known to face difficulty in raising finance for their investigation and development of new ideas (Dragojlovic, & Lynd, 2014). Crowdfunding are emerging as a way of funding community support projects around the world (Grossman, 2012). Kickstarter

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crowdfunding platform was started as a way to fund creative projects but this has grown extensively for funding technology start-up firms (Greenwald, 2012). A number of crowdfunding platforms use a tiered system of rewards for its contributors (Antonenko, Lee, & Kleinheksel, 2014). Contributors to crowdfunding campaigns expect reward and technology-based projects tend to give rewards such as software and performance tickets (Wheat et al., 2013). Although crowd contributors get rewards, their motivation may include social and intrinsic value (Collins, & Pierrakis, 2012).

Project initiators or entrepreneurs will reap reward from the crowd if their initial crowdfunding engagement is a trusting relationship. A lack of trust is one of the deterrents of crowdfunding among supporters (Gerber, & Hui, 2013). It is good practice to engage in an online prelaunch relationship prior to launching the crowdfunding campaign online (Helmer, 2014). The online prelaunch of the entrepreneurial project will introduce the idea to the social media environment and feedback can be systematically collected to guide the crowdfunding campaign towards supporting and building trusted crowd relationships. Zheng et al. (2014) confirmed that the social capital of the entrepreneur can improve access to crowdfunding investors.

Kickstater, a reward-based crowdfunding platform, is one example of a crowdfunding platform that could generate the social information required to better understand the behaviour of crowd funders (Kuppuswamy, & Bayus, 2014). They confirmed that social information can help to understand the behaviour of project backers. Hence, the success or failure of an entrepreneurial project can be dependent on the available social information. According to Zvilichovsky et al. (2014), backing the project of other entrepreneurs is a rewarding fundraising strategy because it introduces a sub-community of active backers. They find that backers who also operate as project initiators have positive funding outcomes.

4. Donation-Based Crowdfunding

[Donation-based crowdfunding]… *people give money to enterprises or organisations whose activities or purchases they want to support* (FCA, 2014a, p. 10). Similar to the reward-based crowdfunding system, donation-based crowdfunding is not subject to regulation in the UK (FCA, 2014a). According to Grossman (2012), there is a continuous increase in crowdfunding platforms around the world and local people in the UK are using community initiative to fund public projects through the crowd. Research show that non-profit project receive greater sum of money from each crowd funder and more likely to meet the project funding objective (Pitschner, & Pitschner-Finn, 2014). Also, non-profit initiatives in crowdfunding tend to be more successful at reaching fundraising goal (Belleflamme, Lambert, & Schwienbacher, 2013; Collins, & Pierrakis, 2012).

Donation-based crowdfunding is similar in some ways to reward-based crowdfunding. Notable examples of donation-based crowdfunding platform include CrowdRise (Delaware, USA), GoFundMe (San Diego, California, USA) and RocketHub (New York, USA). Although these example platforms are donation-based, it should be noted that different crowdfunding platforms have their operational strategy and subject to local laws.

In the UK, donation-based crowdfunding and peer-to-peer online fundraising constitute the largest fundraising market sector with £785million raised over a period of three years from 2011 to 2013 (Collins et al., 2013). Crowdfunding entrepreneurs should endeavour to contribute towards the fundraising of other entrepreneurs in the crowd community (Boeuf et al., 2014). They consider it advantageous for an entrepreneur to support the project of other entrepreneurs in the crowd environment.

Extending support to other entrepreneurs in the crowd increases the profile of the entrepreneur and shows full participation in the community and cohesion; hence, the entrepreneur will get increased sup-

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port from the crowd (Boeuf et al., 2014). Mollick (2014) confirmed that personal networks and signal of project quality contribute to successful crowdfunding. This shows that the personal networks of the entrepreneur made up of other entrepreneurs and like-minded people can lead to successful fundraising. The price of giving a donation has an effect on the behaviour of crowd contributors and the higher the competition, the lower the likelihood of donation (Meer, 2014).

The availability of crowdfunding in the form of online donation has challenged traditional journalism and removed the revenue and profit making paradigm into a non-business model concept (Carvajal, García-Avilés, & González, 2012). Crowdfunding as a form of social enterprise fundraising can provide the positive signal of potential funding through mainstream sources such as venture capitalists and business angels (Lehner, & Nicholls, 2014). They assert that crowdfunding can provide the legitimacy and leverage to enable fundraising in a venture capitalist and business angel environment. Crowdfunding is useful in the social entrepreneurship context and a model is provided to guide crowdfunding platforms and contributors (Lehner, 2013). The forms of returns associated with donation-based crowdfunding are intangible and contributors are motivated by social and intrinsic value (Collins, & Pierrakis, 2012). The contributions received through donation-based crowdfunding are not classified as securities for regulatory purpose in the USA (Bradford, 2012).

RECOMMENDATIONS

Entrepreneurs and SMEs are gaining access to finance through crowdfunding but they must consistently maintain good relationship with the crowdfunding platform. As much as project initiators or entrepreneurs need access to project funding, they should adhere to the guidelines provided by the crowdfunding platform and country level regulation. The guidelines are generated as protection for all crowdfunding stakeholders including service providers, contributors and entrepreneurs.

Entrepreneurs should not be restricted by the geographical location of crowdfunding platform because crowdfunding opportunities abound all over the world. Globalisation has positively impacted the demand and supply of crowdfunding; and entrepreneurial projects are at an advantage. Although conventional wisdom associated with traditional ways of project funding attribute success to geographical co-location, crowdfunding has used online mechanisms to mostly eliminate spatial proximity. Although crowdfunding platforms are concentrated in North America and Europe, most of the available platforms (e.g. Crowdcube, Indiegogo, Kickstarter, Seedrs, Invesdor and Abundance Generation) are expanding internationally as they are beginning to allow global access to their crowdfunding platforms. However, the originating country of the crowdfunding platform will determine the applicable legal jurisdiction for mediating disputes.

Entrepreneurs or project initiators who act as backers for other crowdfunding projects are able to increase their crowd profile positively. As project initiators increase their positive profile among the crowd community, they will continue to have fundraising success with many willing backers. Therefore, entrepreneurs are encouraged to back the projects of other entrepreneurs.

Entrepreneurs and SMEs are encouraged to use this research as their crowdfunding knowledgebase and exploit the potentials identified. The potential of crowdfunding is huge and entrepreneurs seeking early stage business and project funding have the opportunity to gain adequate funding from the crowd. The acquisition of knowledge is to increase conventional wisdom and this chapter gives a wide understanding of crowdfunding and its different spheres.

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CONCLUSION AND FUTURE RESEARCH DIRECTIONS

This investigation shows a systematic review of research and policy literature on the spheres of crowdfunding. Crowdfunding is a new, innovative, alternative and additional method of access to finance for seed, start-up and other early stage project fundraising from many small contributors via the internet. The existing economic and management theories (e.g. pecking order, signalling, stakeholder, social capital and agency cost) of SMEs are also applicable to crowdfunding. Globalisation and web technology has provided the driving force for a quicker expansion of crowdfunding all over the world. Regulation is also providing the necessary drive for the expansion of crowdfunding in developed countries and many developed countries in Europe and North America have recognised and approved the requisite regulatory support. However, regulatory authorities in developing countries are at different stages of the recognition of crowdfunding in their policy framework. The regulation of reward-based and donation-based crowdfunding can rely on existing rules on charitable giving and other existing social provisions in the UK and elsewhere. However, equity-based and credit-based crowdfunding require updated regulatory provisions with compliance monitoring.

As a new concept, crowdfunding is growing as a means of access to finance for entrepreneurs. There are opportunities for further research to advance crowdfunding, its knowledgebase and usefulness in meeting the needs of mostly seed and other early stage project funding. Crowdfunding is increasing in popularity in social media, business and research environments. It is very important that researchers explore crowdfunding widely with a view to broaden the knowledge of project initiators (such as entrepreneurs, business owners and managers). The necessity for further research is centred on the need for better information sharing and knowledge exchange to support new and existing entrepreneurs all over the world.

The period of the financial crisis which started in 2007 closed many businesses and many new businesses were born through crowdfunding with impact around the world. Crowdfunding has gained international recognition and approval from developed countries but less so in developing countries. Although regulatory authorities in the UK and USA have supported crowdfunding with the necessary regulation, many countries are still in their infancy in crowdfunding. Therefore, there is need for crowdfunding research in emerging and developing countries to expand the worldwide knowledgebase of crowdfunding.

Access to finance theories (e.g. pecking order, signalling, agency cost, credit rationing and discouraged borrower) have been explored widely in finance, economics and management research. Also, social capital, network exchange and stakeholder theories are relevant to crowdfunding but there are limited researches in these areas. There are limited researches that have explored crowdfunding as a method of access to finance for businesses with links to extant theories. As a result, there are limited research based literature associating crowdfunding and the theories. Hence, it is important that further research uncovers the impact of economics, management and finance theories on crowdfunding. This will allow adequate understanding of the various theories and how they relate to crowdfunding.

In agreement with other researchers, crowdfunding require more empirical study to share successes and failures across crowdfunding platforms and countries. Empirical study will provide research based knowledge to enhance existing provisions from all over the world. In the absence of clear empirical study, there will be continuous assumptions across the online news and opinion pages.

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KEY TERMS AND DEFINITIONS

Business Angel: A rich person who provides funding for a business in exchange for share of ownership.
Constraint: Restriction.
Entrepreneur: A person who establishes a business and assumes responsibility for risks and returns.
Innovative: Applying new ideas.
Private Equity: An asset class of medium to long-term finance invested in the equity share of potentially high growth and private unquoted companies.
Spheres: Types.
Venture Capital: A professionally managed fund focussed on equity investments in private and potentially high growth unquoted companies.
Venture Capitalist: A professional fund manager focussed on equity investments in private and potentially high growth unquoted companies.

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Chapter 81
A Framework for Research on Information Technology Governance in SMEs

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ABSTRACT

The need to effectively manage IT resources such that they enhance the business value of firms makes IT Governance (ITG) an important issue for both IS researchers and practitioners. The purpose of this paper is to build a conceptual framework for ITG in small and Medium-Sized Enterprises (SMEs). The authors first analyze the main theories applied in ITG research, and confront them with the specificities of SMEs. The authors then highlight the limits of those theories in SMEs context and discuss adaptations needed or alternative theories in such context. The resulting framework is then applied to generate a set of six research propositions on ITG in SMEs.

1. INTRODUCTION

Given that some organizations achieve higher performance with their IT investments while others fail to do so (Gattiker & Goodhue, 2004), the issue that matters now is to know under which conditions organizations create value from their IT (Kohli & Grover, 2008).

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It has been argued that IT governance (ITG), which "is about controlling the strategic impact of IT and its value delivery to the business" (Zarvić et al., 2012, p. 543) can make the difference (Nfuka, & Rusu, 2011; Devos, et al., 2012; Wilkin, 2012). The need to effectively manage IT resources so that they can enhance the business value of firms makes of ITG an important issue and yet an uneasy task (Weill & Ross, 2004; Van Grembergen & De Haes, 2010). Indeed, the most important IT challenges faced by organizations now and in the future are less related to technology than to governance (Nfuka, & Rusu, 2011).

The literature related to ITG in particular, and to corporate governance (CG) in general, has mobilized and proposed different theories and frameworks to explain the mechanisms of governance. However, most of those theories and frameworks are often criticized as being more appropriate for large enterprises (LEs) and less for small and medium-sized enterprises (SMEs), hence the call for revisiting existing theories and frameworks or for proposing alternative ones with in mind the specific realities of SMEs (Banham & He, 2010). This call is important, all the more so that studies on ITG in SMEs are rather rare (Vogt et al., 2011; Alves et al., 2013). This paucity of studies does not mean, however, that ITG does not exist in the context of SMEs. Previous studies have shown that SMEs use IT in their basic activities and are expanding IT usage in more advanced processes (Raymond & Croteau, 2006; Mardikyan, 2010; Ruivo, Oliveira & Neto, 2012; Sila & Dobni, 2012). As IT users, SMEs have to find ways to allocate IT-related responsibilities and to ensure IT-business alignment for increased business value, brief ways to practice ITG (Luftman et al., 2010). Given the important consequences IT can have on growth and survival of SMEs in a competitive market, we argue that ITG for SMEs is a necessity and must be researched.

The purpose of this theoretical study is to develop a framework for research on IT governance in SMEs. To do so, we proceed in three phases. First, we analyze theories generally applied in ITG literature with in mind the specificities of SMEs, and we bring out salient limits of these theories with regards to the realities of SMEs. Second, we identify adaptations necessary to these theories to account for the SME's realities, and alternative theories better suited to its context. Third, building on the results of the precedent analysis we propose a conceptual framework for ITG in SMEs and related propositions that can be used as hypotheses for future research.

2. THEORETICAL AND EMPIRICAL BACKGROUND

In the literature, corporate governance (CG) is generally conceptualized with reference to the rights and responsibilities of different stakeholders in the firm, to the relationships among stakeholders with regards to the decision-making process, resolution of possible conflicts, and control of organizational resources, and to the means for setting corporate objectives and monitoring performance (Turlea et al., 2010). The OECD has proposed the following definition of CG which seems to have gained widespread popularity (Mason & O'Mahony, 2008): "a set of relationships between a company's management, its board, its shareholders and other stakeholders [that] provides the structure through which the objectives of the company are set, and the means of attaining those objectives and monitoring performance are determined" (p. 32).

ITG has emerged since the 1990s as a conceptualization of steering the use of IT within a company (Zarvić et al., 2012). It is now acknowledged that ITG is the responsibility of top management and an integral part of corporate governance (De Haes et al., 2013). This view is integrated in frameworks such as CoBIT 5 that establish good practices for ITG.

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Definitions of ITG in the literature refer implicitly to the principal-agent problem which is central in the dominant agency theory in CG literature. In this perspective, a parallel is made between the alignment of executives' decisions to the owners' interests in CG and the alignment of IT management practices to the firm's needs in ITG. We define ITG as follows: ITG, a responsibility of top-management and an integral part of corporate governance, encompasses the decision rights and the accountability framework for encouraging desirable behavior in the use of IT, and ensuring that IT goals and objectives are realized in an efficient and effective manner (De Haes et al., 2013).

2.1 SMEs' Specificity Regarding Corporate Governance and IT Governance

Early previous studies have pointed out SMEs' specificities (Jennings & Beaver, 1997; Raymond, Bergeron, & Rivard, 1998; Torrès, & Julien, 2005). Blili and Raymond (1993) grouped these specificities in five categories: environmental, organizational, decisional, psycho-sociological, and informational. Generally speaking, SMEs operate in local markets and exert little control over their environment, they rather bank on their flexibility to adapt to changing conditions in environment; they count on limited resources, financial and human, and they are characterized by a simple organic structure, developed around interests/abilities of key employees, and by a centralized management; their decision-making and strategic formulation processes are intuitive, adaptive, and short-term oriented; they are in almost all aspects overwhelmingly dominated by the owner-managers who cumulate the roles of entrepreneurship, ownership, and management; their internal and external information systems are generally simple and informal.

The specificity assumption of SMEs should, however, be cautiously considered. At least two cautions should be heeded. First, the statement of the specificities of SMEs does not mean that the group of SMEs is homogenous. The heterogeneity inside this group is a deep-seated phenomenon in the small business research field (Torrès & Julien, 2005). With regard to ITG for example, one would assume that SMEs pertaining to different categories such as local, transition, and world-class SMEs which are characterized by different IT adoption patterns (Raymond and Croteau, 2006) would adopt different ITG mechanisms.

As second caution, the assumption of specificity should not be transformed into a universal principle (such as *all SMEs are specific*) ignoring that "[a] small business may sometimes not be, or no longer be, specific" (Torrès & Julien, 2005, p. 360). Indeed, in some contexts, referred to as "denaturing contexts", the very characteristics that found the specificity of SMEs tend to disappear, giving place to an "anti-small business", that is a firm that, without growing in size, takes on all or most of the opposite features of small businesses (Messeghem, 2003; Torrès & Julien, 2005). These authors, considering the denaturing potential of some contexts, plead for a contingent approach to SMEs specificity. This is exactly what have done Brouard and Di Vito (2008) by putting SMEs with multiple external shareholders on the same footing as (big) public companies with widespread shareholding, considering that agency conflicts in both situations would be similar.

Does the specificity of SMEs hold in the context of CG and ITG respectively? Can a SME embrace CG and ITG mechanisms and then keep the distinctive features of SMEs? At first sight, CG and ITG would appear counterintuitive for SMEs, in such they push for more structuring, planning, and formalization. Acknowledging this fact, we propose a framework for research on ITG that takes into account the specificities of SMEs, showing that there would be ITG mechanisms that are compatible with the SME's nature. In this research we use the OECD definition of a SME which is any firm that falls under the upper limit of 250 employees, in both manufacturing and service sectors (OECD, 2005).

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2.2 Theories Applied in Corporate Governance and IT Governance Research

Different theories applied into CG research have been applied in ITG research as well. The theories discussed in this study results from a literature review we conducted. We do not pretend in the completeness of the list of existing theories; nevertheless, we believe that the main and most referred to theories are covered. The main theories are agency theory, stakeholder theory, power perspective, stewardship theory, resource dependency theory, network governance theory, institutional theory, upper echelon theory, institutional trust theory (Al Mamun, Yasser, & Rahman, 2013).

In the following sub-sections we briefly present each theory and succinctly analyze its specific application in ITG empirical studies and its level of suitability to SMEs' realities. We begin with those that seem less applicable to ITG in the context of SMEs.

Agency Theory

This theory is the overwhelmingly dominant school of thought both in academic research and practice (Mason & O'Mahony, 2008). It focuses on problems arising from separation of ownership and control (Uhlaner et al., 2007). It embraces a narrow, shareholder-centric view of CG, which reflects the traditional finance paradigm of shareholder value maximization as the main (if not the sole) goal of corporate management (Turlea, et al., 2010). Following agency theory reasoning, studies in ITG have analyzed the relationships between ownership and control structures of the firm and the IT performance (Karake, 1995; Ferguson et al., 2013).

The problem of applying this reasoning in the context of SMEs, at least as it has been applied in ITG in LEs is threefold. First, this reasoning is based on the principal / agent problems that are less likely to happen in SMEs due to the overlapping of management and ownership in those firms (Banham & He, 2010; Brunninge et al., 2007). Second, structures that are referred to in proposed governance mechanisms inadequately mirror the ones found in LEs as if SMEs were just scaled down LEs (Uhlaner et al., 2007). Third, due to the small size of SMEs, the information asymmetry is very low (Brouard & Di Vito, 2008). Information asymmetry is at the basis of opportunistic behaviors that agency theory-related governance mechanisms seek to thwart. Therefore we consider that agency theory does not apply well to SMEs.

Stakeholder Theory

While agency theory focuses on the sole dual relationship between managers and shareholders, the stakeholder theory broadens constituencies, adding to managers and shareholders other groups of actors that may have a direct or indirect stake at the firm's operations (Talaulicar, 2010; Abraham, 2012). Stakeholder theory is inherently inscribed into ITG. Many ITG definitions "explicitly or implicitly refer to stakeholders either as ends of or as contributors to the ITG activities" (Messabia, & Elbekkali, 2010, p. 981).

The stakeholder theory has been criticized as a perspective that can lead SMEs to implement policies with sub-optimal outcomes (Abor, & Adjasi, 2007; Abor & Biekpe, 2007). The pursuit of divergent stakeholders' interests such as environmental versus financial is less of an issue in SMEs than in LEs. As a "definitive stakeholder", the SME owner-manager is the most salient among all stakeholders, that is, the one whose claims will be given priority in ITG (Mitchell et al., 1997). Therefore the stakeholder theory does not apply so well to the reality of SMEs with regards to ITG.

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Table 1. Theories with lower applicability to IT governance in SMEs

Theories	Key Issues with Regard to ITG Mechanisms in SMEs	Reasons Why Lower Applicability to SMEs
Agency theory	Relationship management with external IT partners	• Principal / Agent problems less likely (Brunninge, et al., 2007; Banham & He, 2010) • Reference to unlikely structures (van Gils, 2005) • Low information asymmetry (Brouard & Di Vito, 2008)
Stakeholder theory	Predominant role of owner-manager	Suboptimal outcomes (Abor, & Adjasi, 2007; Banham & He, 2010)
Power perspective	Predominant role of owner-manager	Lower levels of power playing (Fiegener et al., 2004)

Power Perspective

The power perspective is used in corporate governance to analyze potential conflicts of interests that may arise among different stakeholders, notably among executives, directors, and shareholders (Chen, 2007). With regard to ITG, this perspective is referred to analyze the relative influence of IT function comparatively to the influence of other business units in IT-related decision processes (Xue et al., 2008; Weill & Ross, 2005).

The potential conflicts opposing executives, directors, and shareholders that are at the core of the power perspective theory (Daily et al., 2003) are less likely to be observed in SMEs. Thus, this theory does not capture well the reality of SMEs with regards to ITG. The above theories that we assess as less applicable to ITG in SMEs are summarized in Table 1.

Among alternative theories that can be mobilized to study ITG in SMEs, we propose the following ones as more appropriate: stewardship theory, resources dependency theory, network governance theory, institutional theory, upper echelon theory, and institutional trust theory (Brunninge et al., 2007; Devos et al., 2012). Here are their key characteristics and why they seem more applicable to ITG for SMEs. They are summarized in Table 2.

Stewardship Theory

This theory is based on an assumption opposite to the agency theory's premise of opportunistic behavior as inherent to human nature. According to the stewardship theory, managers are naturally trustworthy, and seek to be good stewards of the corporate assets (Uhlaner et al., 2007; Nicholson & Kiel, 2007; Del Baldo, 2012). With regard to ITG specifically, the stewardship theory may be more consistent with the nature of ITG because the managers' interests are perfectly aligned with the shareholders' interests, thanks to the overlapping of ownership and control in most SMEs (McGinnis et al., 2004; Brunninge et al., 2007).

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Resource Dependency Theory

This theory is used in CG to explain the role of board of directors as a link to access to further resources available in the firm's environment (Nicholson & Kiel, 2007). Board members extend the reach of an organization in its environment, and provide it with access to resources that would otherwise be out of reach or expensive (Daily et al., 2003). Research in this area focuses on the size and the composition of the boards as they may reflect the extent of exposure to external environments networks and access to various resources (Jackling & Johl, 2009). The resource-dependency theory can be and has been specifically applied to ITG (Rasheed & Geiger, 2001; Xue et al., 2008). The resource-dependency theory fits well to the context of SMEs, particularly because most SMEs depend on external IT expertise (Devos et al., 2012).

Network Governance Theory

This theory involves a select, persistent and structured set of private firms and non-profit agencies engaged in creating, manufacturing or distributing products or services, based on implicit and open-ended contracts designed to adapt to their environmental specificities and to coordinate and safeguard exchanges (adapted from Jones et al., 1997). Based on the network governance theory, research on interorganizational ITG unveiled the two profiles of interorganizational ITG: contractual and consensual (Croteau et al., 2013). These profiles take into account the ITG structure, the process followed to make decisions, and the roles of participants involved in setting and promoting interorganizational mechanisms (Croteau & Bergeron, 2009). Given the more informal structure of SMEs, they have a lower number of hierarchical levels, a lower ratio of managers/employees and they are at an earlier level (state) of interorganizational ITG maturity (Barthon & Jepsen, 1997; Croteau & Bergeron, 2009). It is therefore expected that SMEs will have a more informal and flatter interorganizational ITG structure, will be more dependent upon partners as to the choice and obligation of IT control processes, and the interorganizational participants to ITG will be less in number yet more involved into their IT-related decisions and actions. It is thus expected that the more a SME is involved in external networks, the more it will implement ITG mechanisms. It will be under pressure to conform itself to its partners' practices and will rely on the network capacity to compensate for its lack of internal resources and capabilities (Xiaobao et al., 2013).

Institutional Theory

This theory considers that organizations are not just economic systems motivated by the pursuit of economic efficiency and performance, but are also social and cultural systems that seek to gain legitimacy in their environment by adjusting themselves to regulations, norms and values (Al Mamun et al., 2013; DiMaggio & Powell, 1983). Institutional theory acknowledges the influence of an organization's environment on its IT structures and practices. More precisely, the intensity of institutional pressures will affect the IT department power, and will influence an organization's ITG patterns (Xue et al., 2008). Moreover, due to their size and to their limited resources, SMEs may be more influenced by their environment than LEs. Hence the institutional theory seems be suitable for analyzing the adoption of ITG practices in the SME's context (MacGregor, 2004; Mohnnak, 2007; Islamoglu & Liebenau, 2007; Raymond et al., 2012).

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Upper Echelon Theory

According to upper echelon theory, the characteristics of top-level managers play a crucial role in determining the strategic organizational outcomes and processes (Hambrick & Mason, 1984). The small size and the structural flexibility of SMEs intensify the involvement of top managers in almost all of the firm's activities, and their influence is thus stronger than it can be in LEs (Brunninge et al., 2007). The upper echelon theory offers new theoretical lens through which ITG mechanisms in SMEs can be analyzed. The focus shifts from agency-related levels of analysis (ownership structure, board of directors, incentive compensation) towards the SME's top management team (or key employees). The upper echelon theory has been mainly used to analyze the strategic changes in SMEs (Brunninge et al., 2007; Napoli, 2012), but it is quite appropriate for ITG as well. The values, norms, backgrounds, and interests of top-level managers of SMEs may explain their readiness and their predisposition to adopt certain forms of ITG mechanisms and to reject others.

Institutional Trust Theory

This theory is an interesting alternative theoretical perspective to agency theory and it is suitable to the context of SMEs as well. Instead of relying on agency-based control mechanisms to deter opportunistic behavior in IT collaboration relationships, SMEs may develop a partnership based on trust, which "can be seen as a coordinating mechanism, based on shared moral values and norms" (Devos et al., 2012, p. 210). Trust reduces the need to resort to structured controls, such as steering committees, management guidelines, policies and procedures, or to comprehensive outcome-based contracts, for which SMEs may not be well-equipped to deal with given their financial constraints and their limited capabilities in terms of internal IT-related human resources (Huang et al., 2010).

3. CONCEPTUAL FRAMEWORK

The preceding analysis shows that when analyzing ITG in SMEs, we need to take into account theories that are more appropriate for SMEs. Building on such theories as discussed in the precedent section, we propose a framework for research on ITG in SMEs with the corresponding supportive theories by constructs, as illustrated in Figure 1.

In this framework, the SME's owner-manager and key (internal) employees are the main actors. The inclusion of the SME's owner-manager characteristics in the conceptual framework of ITG in SMEs is based on the stewardship theory and the upper echelon theory, which both acknowledge the SME's owner-manager's tight grip on any major organizational activities and decisions. Besides, the primary role played by owner-managers in the context of SMEs is unanimously acknowledged in the small business literature.

The inclusion of the SME's key employees is based on the stewardship theory and the upper echelon theory as well: key employees' influence is inversely proportional to the size of their organization, so the role of key employees in any major decisions would be greater in SMEs than in LEs. Shared values, beliefs and norms of both the owner-manager and the key employees are based on the institutional theory.

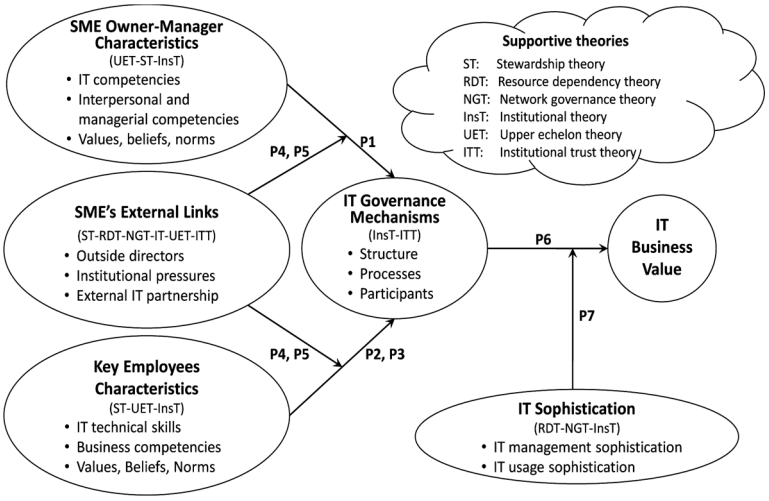
The proposed framework also assumes that in their decision with regard to ITG mechanisms, the SME's owner-manager and key employees will be to some extent influenced by its external links. This

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Table 2. Theories with higher applicability to IT governance in SMEs

Theories	Key Issues with Regard to ITG Mechanisms	Reasons Why Higher Applicability to SMEs
Stewardship theory	• No need for agency-based control mechanisms • Empowerment of owner-managers and key employees	Convergence of ownership and management (Brunninge, et al., 2007)
Resource dependency theory	• Role of IT external partners • Role of outside and independent directors	Limited internal resources (Devos et al., 2012)
Network governance theory	• Pressures from partners to conform • Support from the network	• Pressure to formalize the network structure • Pressure to implement controls • Pressure to improve IT knowledge and communication • Need for partners' support
Institutional theory	Institutional pressures towards ITG mechanisms adoption	• Pressures towards IT innovations adoption from the SME's networks (MacGregor, 2004; Raymond et al., 2012) • Little capacity of SMEs to resist to pressures
Upper echelon theory	• IT-related roles and responsibilities for owner-manager • IT champion among key employees	• Predominance of owner-managers (Brunninge et al., 2007; Napoli, 2012) • Important role of key employees (Brunninge et al., 2007; Napoli, 2012)
Institutional trust theory	Moderating effect of institutional trust between SME and external IT partner on the adoption of ITG mechanisms.	• Partnership based on trust (Devos et al., 2012) • Limited resources for agency-based controls implementation (Huang et al., 2010)

Figure 1. Framework for research on IT governance in SMEs



assumption is based concurrently on the resource-dependency theory, the network governance theory, the institutional theory, and the institutional trust theory. In accordance with the resource-dependency theory and network governance theory, the access to external resources through either independent and outside directors or IT external partners would influence the SME's owner-manager and key employees with respect to their ITG decisions.

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The network governance theory and the literature on interorganizational governance of IT suggest that governance mechanisms related to structure, processes and participants lead to higher competitive advantage or IT business value. The network governance theory also suggests that SMEs involved in networks are likely to be influenced by their business partners in adopting ITG mechanisms. According to institutional theory, mimetic, normative, and coercive pressures would be exerted on the SME's main actors towards the implementation of the same ITG mechanisms adopted by organizations evolving in the SME's environment. As for the theory of institutional trust, it allows to take into account the moderating effect of trust between a SME and its IT external partners on the level of ITG mechanisms implementation: high levels of trust reduce the need for owner-managers and key employees to implement agency theory-inspired ITG mechanisms.

So, the proposed conceptual framework is essentially composed of six groups of factors. At the framework's core, there is the group of IT governance mechanisms. The adoption of such mechanisms by a SME is deemed to be directly or indirectly determined by three groups of factors: the SME's owner-manager's characteristics, its key employees' characteristics and the SME's external links. The SME's IT business value, as the outcome of its adoption of ITG mechanisms, constitutes the next element in the framework (discussed later in the section on the consequences of ITG mechanisms). The firm's IT sophistication constitutes the last exogenous element, and is meant to assure the presence of the IT function and the "IT artifact" within the conceptual framework (Orlikowski & Iacono, 2001; Akhlaghpour et al., 2013) (discussed later in the section on the moderating role of this element in the relationship between ITG mechanisms and IT business value).

3.1 IT Governance Mechanisms in SMEs

Having its roots in the network governance theory (Jones, 1997; Barthon et al., 1997), ITG and interorganizational ITG generally classifies ITG mechanisms into three dimensions: structures, processes, and participants (Croteau & Bergeron, 2009; Croteau et al., 2013; Ko & Fink, 2010). Sometimes, participants is also referred to as relational mechanisms (De Haes & Van Grembergen, 2006; Wilkin, 2012; Mohamed & Singh, 2012). The structure dimension emphasizes control and coordination and refers to the organization of IT function, to its roles and responsibilities, brief, to the formal and rational units and mechanisms put in place to carry out IT-related decisions and activities in organizations; structure refers to the locus of authority with regards to IT decision-making, in other words it determines who act and with which resources (Croteau & Bergeron, 2009). The processes dimension emphasizes control and sustainable capability, and refers to tools, techniques, frameworks or standards combined to ensure IT-business strategic alignment and to track IT performance achievements. The participants dimension refers to the persons at various levels and functions who take part in leadership, training and sharing, who actively participate, collaborate, communicate, and get involved in order to disseminate IT-related policies, principles and outcomes. ITG would be even more important in a network or interorganizational environment due to the partners requirements in terms of a minimum threshold of quality, uniformity and reciprocity of IT mechanisms needed to create value for all network members. In this situation, the network strength is as high as the weakest of its link. Much adaptation will therefore have to be made to SMEs specificities.

Some highly-formalized ITG mechanisms are less suitable to rather organic and loosely structured SMEs (Jennings & Beaver, 1997). Basic ITG mechanisms are likely to be found in SMEs. These ITG mechanisms are not necessarily denaturing. Structure-related ITG mechanisms such as CIO on board

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and IT steering committee (De Haes & Van Grembergen, 2006) are less likely to be in place in SMEs, as their structural ITG capability is likely to be assumed by the owner-manager. Clear IT-related roles and responsibilities of the owner-manager are thus necessary as structural governance mechanism in this case (Wilkin, 2012). Instead of the formal CIO function, a SME is likely to rely on an IT champion, a much more informal role and yet a very important one for its IT-related activities (Pollard, 2003). SMEs may also rely on external expertise to compensate their lack of expertise internally. The IT champion will play a determinant role in the relationship between a SME and its IT external expert.

For process-related mechanisms such as externally developed standards, tools, techniques, or frameworks like COBIT, ITIL, ISO17799 which are highly formalized and certification oriented, SMEs are not either well equipped (Ko & Fink, 2010). Without necessary resorting to highly developed tools, SMEs have to find ways to align their IT projects to their strategic business and to track IT business value creation. Otherwise, overwhelmed by operational imperatives as they tend to be, SMEs may lose sight of long term and strategic imperatives in their IT decision-making. So, one would consider IT strategic alignment and IT performance tracking as key process-related ITG mechanisms in SMEs.

As for participants, relational mechanisms such as business/IT co-location and active participation and collaboration between key stakeholders do not need to be formally implemented in SMEs as they are naturally evident in such context (Wilkin, 2012). However, for an effective collaboration between participants (Peterson, 2004), people involved in ITG need to develop mutual understanding which can be reached through IT training, and proper communication for developing awareness and understanding of business/IT objectives.

3.2 Antecedents of IT Governance Mechanisms

In our framework, the adoption of ITG mechanisms is directly determined by both SME owner-manager's characteristics and key employees' characteristics, and indirectly affected by SME's external links. In other words, the relationship between, on one hand the owner-manager's characteristics and the key employees' characteristics, and on the other hand the adoption of ITG mechanisms is moderated by the SME's external links.

SME's Owner-Manager

Studies on SMEs have acknowledged the central role of the entrepreneur or owner-manager in shaping the firm. As the principal stakeholder concurrently assuming multiple roles, he/she is involved in almost if not all major decisions that affect the firm for better or worse. His/her characteristics will then be determinant. Banking on previous studies, we put these characteristics in three main categories: IT-related competencies (Caldeira & Ward, 2003; Wainwright et al., 2005; Scupola, 2008; Cragg et al., 2011), interpersonal and managerial competencies (Kraemmergaard & Rose, 2002; Bassellier & Benbasat, 2004) and personal values, beliefs, and norms (Ramdani, et al., 2009; Del Baldo, 2012).

IT-related competencies of an owner-manager are important in that they will shape not only his/her understanding of opportunities of IT usage in business activities, but also his or her expectations with regards to how IT activities should be managed. These understanding and expectations will lead to the IT adoption decision, and more important, to the creation of facilitating conditions for the actual IT implementation and use (Scupola, 2008). ITG mechanisms can be viewed as facilitating conditions meant to leverage IT for achieving business goals.

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Interpersonal and managerial competencies will help the owner-manager to effectively communicate his/her vision of ITG mechanisms, motivate and get employees to adhere to that vision, overcome change resistance, and meet the scope, time, and goal objectives throughout the implementation phases of ITG mechanisms. Adapting Kraemmergaard and Rose's (2002) and Bassellier and Benbasat's (2004) definitions to the context of ITG, we retain leadership, interpersonal communication, human resource, change management, and project management as part of interpersonal and managerial competencies.

Another determinant factor that would sway an owner-manager's decision in favor or not of ITG mechanisms adoption is the level of compatibility between these mechanisms and his/her values, beliefs, and norms. The notion of compatibility, which refers to the perception of consistence of an innovation (ITG mechanisms in this case) with regards to values, experiences, beliefs, and needs of would-be adopters, is important, especially in small firms (Ramdani et al., 2009). Owner-managers will obviously willingly push for adoption of ITG mechanisms that are compatible with their values, beliefs, and norms. Considering the precedent considerations, the following proposition can be stated:

P1: Greater competencies (IT-related, interpersonal and managerial) of the SME's owner-manager and higher levels of perceived compatibility of his/her values, beliefs, and norms with ITG mechanisms will positively influence the implementation of ITG mechanisms in a SME.

SME's Key Employees

Notwithstanding the key role of the entrepreneur or the owner-manager in all major decisions, key employees' influence in SMEs is likely to be paramount. This major influence stems from the fact that small firms tend to be structured around key employees' abilities and interests (Jennings & Beaver, 1997). It is also due to the small size and organizational flexibility of SMEs (Brunninge et al., 2007) that do not restrict key employees in narrowly-defined roles. The paramount influence of the SMEs' key employees is in line with the upper echelon theory (Hambrick & Mason, 1984). The characteristics of a SME's key employees have to be taken into consideration in order to understand the adoption of ITG mechanisms in the firm. Based on previous studies (Kraemmergaard & Rose, 2002; Bassellier et al., 2003), these characteristics are grouped into three main categories:

1. IT technical skills,
2. Business competencies, and
3. Values, beliefs, and norms.

At the level of key employees, IT technical skills required are more than a certain level of comfort with IT as is the case for owner-manager's IT knowledge. IT technical skills of key employees are a reflection of their IT-related explicit knowledge with regards to technology, applications, system development, IT management, access to IT knowledge. IT technical skills also include their IT-related tacit knowledge, that is experience in IT projects and experience in the management of IT (Bassellier et al., 2003). While owner-manager's IT knowledge play a role in the decision to adopt IT, IT technical skills at the key employees level are indispensable for the actual implementation and effective use of IT (Raymond et al., 2012). We would here assume the same pattern applies to ITG mechanisms adoption and implementation.

So, for this study we define business competencies of key employees as the knowledge and skills of key employees of a SME related to their understanding the business domain and the specific organi-

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zational context. The business domain-specific competencies refer to the knowledge of the production system of a firm's industry, the ability to recognize the firm's challenges and opportunities, including the potential of IT leverage for enhancing business processes. The organization-specific competencies are about the acute acquaintance of the firm's functioning (e.g. power distribution, structures), specificities (e.g. culture and history), and partnership. Key employees with stronger business competencies (business domain-specific and organizational-specific) are more likely to better understand the potential of IT usage in business activities and the necessity to adopt ITG mechanisms for achieving higher IT business value.

As in the case of owner-managers, values, beliefs, and norms of key employees of a SME will affect ITG mechanisms adoption. Shared cognitive characteristics (such as values, beliefs, and norms) will be conducive to consensus among team members which in turn will facilitate the introduction of strategic change in SMEs (Brunninge et al., 2007). This can be seen as a positive factor for ITG mechanisms adoption. But according to institutional trust theory, shared values and norms may reduce the need of formalized mechanisms (Devos et al., 2012). So, we would argue that shared values, beliefs, and norms among the SME's key employees will accelerate the process of ITG mechanisms adoption (pace) while reducing the diversity of ITG mechanisms adopted. We would also argue that the SME's key employees will favor the adoption of ITG mechanisms they deem compatible with their values, beliefs, and norms over others deemed less compatible. From the above developments, the two following propositions can be stated:

P2: Greater competencies (IT technical skills, business competencies) of the SME's key employees and higher levels of perceived compatibility of their values, beliefs, and norms with ITG mechanisms will positively influence the implementation of ITG mechanisms in a SME.

P3: The more the values, beliefs, and norms are shared among a SME's key employees, the more easily a SME will adopt and implement ITG mechanisms (quick pace), and the less diversified ITG mechanisms will be.

SME's External Links

In SMEs, decisions are mainly made by the owner-manager assisted by key employees. However, in their decision-making process, they may be swayed one way or another by external stakeholders. Following the literature review, we retained four sources of influence that can affect the decision to adopt ITG mechanisms: outside and independent directors, institutional pressures, IT external partnership and the network members.

We have already underscored that, in most SMEs, board of directors are either inexistent or purely formal, or sometimes used to serve the owner-manager's purposes (Fiegener et al., 2004; van Gils, 2005; Brouard & Di Vito, 2008). Yet, in accordance with the resource-dependency theory, having a board on which sit a number of external directors increases a firm's exposure to external environment networks and its convenient access to valuable resources (Jackling & Johl, 2009). The latter's independence vis-à-vis the owner-manager (and key employees) gives them much more latitude in their supervision role of the firm's management. So, SMEs are compelled to adopt boards with a great number of outside and independent directors (Abor & Adjasi, 2007). This would prevent them from developing "a myopic and narrow view" that stalls change (Brunninge et al., 2007, p. 299). Outside and independent directors would influence owner-managers and key employees towards ITG mechanisms adoption.

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Institutional theory posits that changes in organizations are determined more by external or environmental pressures than "rational" decisions by internal actors (owner-managers and key employees) (DiMaggio & Powell, 1983). In accordance with the institutional perspective, it has been found that the diffusion of corporate social responsibilities in SMEs is linked to the extent at which these SMEs are embedded in a network of local socio-economic institutions (Del Baldo, 2012). Similarly, a SME's network ties will play a role in deciding the owner-manager and key employees to embrace ITG mechanisms that are in place in other organizations within the network. Besides, inter-organizational exchanges entail task and function interdependence that requires a great deal of coordination (Croteau & Bergeron, 2009). Challenges related to the coordination of business partners which are more or less different with regard to various organizational aspects (strategy, processes, structure, IT infrastructure and architecture) incite each other to put in place governance mechanisms (Croteau & Bergeron, 2009). In the same vein, compared to the local SMEs, world-class SMEs would need more ITG mechanisms due to their being involved in more extended networks (Raymond & Croteau, 2006).

It is almost a truism to say that most SMEs lack internal IT expertise. To compensate this, they mainly rely on IT external expertise. Somehow, this dependence put a SME in a situation of inter-organizational ITG. Studying profiles of inter-organizational ITG, Croteau et al. (2013) proposed a continuum with at one end the contractual profile, and at the other, the consensual profile: in contractual profiles, "organizations are involved in a legal relationship with their outsourcers", while consensual profiles are characterized by "a collaborative and cooperative approach" (p. 36). Potential opportunistic behaviors are fought mainly through the formalization of commitments in contractual profiles, and through mutual trust in consensual profiles. Contractual profiles are consistent with agency theory according to which, as previously stated, a SME would adopt ITG mechanisms to deter opportunistic behavior from the external expert. We have seen however, in accordance with the theory of institutional trust, that some SMEs, ill-equipped for developing structured controls or outcome-based contracts, will instead seek a partnership based on trust (Devos et al., 2012). So, an external partnership based on trust will reduce the need to resort to formalized ITG mechanisms in SMEs. All of these considerations related to the SME's external links lead to the following propositions:

P4: A SME's external links through outside and independent directors, networks, and IT partners will positively influence the owner-manager's and key employees' decision to adopt ITG mechanisms.

P5: The higher the level of institutional trust between a SME and its IT external partner, the less its owner-manager and key employees will be swayed towards ITG mechanisms adoption.

3.3 Consequences of IT Governance Mechanisms

It has been suggested that there may be a positive correlation between ITG mechanisms and different organizational performance measures as captured into Kaplan and Norton's balanced scorecard framework (Mohamed & Singh, 2012). Bradley et al. (2012) have established that ITG has a positive impact on different measures of hospital performance. The underlying assumption is that effective ITG would enhance IT impacts on the organizational performance.

The idea that the ultimate effectiveness of ITG mechanisms adopted in organizations should be appreciated in terms of IT contribution to business value (IT business value) seems to be a largely shared understanding in ITG literature (Zarvić et al., 2012). IT business value is defined as "the organizational performance impacts of information technology at both the intermediate process level and the organiza-

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tion-wide level, and comprising both efficiency impacts and competitive impacts'' (Melville et al., 2004, p. 287). More precisely, Weill and Ross (2005) suggested assessing the ITG effectiveness against the achievement of four IT-enabled organizational objectives: "cost-effectiveness, asset utilization, business growth and business flexibility" (p. 26).

As the effectiveness of IT initiatives and investments is one of the priorities of ITG (Bradley et al., 2012), any failure with regards to IT initiatives hints to the failure of ITG. For example, failure of outsourced information systems may be seen as a failure of ITG (Devos et al., 2012). In the same way, the under-exploitation of IT business value in SMEs can be blamed on weaknesses of their ITG (Wilkin, 2012). Even a weak interorganizational ITG can lead to disastrous results in terms of competitiveness. So, the adoption of ITG mechanisms may have a positive impact on IT business value in SMEs, hence the following proposition:

P6: The adoption of ITG mechanisms in a SME will positively influence its IT business value.

3.4 Moderating Effect of IT Sophistication on IT Governance Mechanisms

The evolution of the strategic role of IT in SMEs, and thus the increasing need for IT governance, is closely linked to the *IT sophistication* of these firms, that is, to the way they manage and use IT in order to gain business value from their investment in the IT function and in IT artifacts (Philip & Booth, 2001; Bradley et al., 2012). IT sophistication was first defined, conceptualized and operationalized by Raymond, Paré and Bergeron (1995), this concept being later employed by other researchers (Chwelos et al., 2001; Paré & Sicotte, 2001; Pflughoest et al., 2003). IT sophistication "refers to the nature, complexity, and interdependence of the management and use of IT within an organization" (Raymond et al., 2011, p. 205). Now, the strategic role of IT sophistication in SMEs can best be understood by the extent to which the management and usage of IT by these firms are "aligned" with their strategic objectives (Dutot et al., 2014).

The form of IT governance adopted by an organization is one the key attributes used by researchers to characterize its IT function (Weill & Ross; 2005). Thus, forms of governance are differentiated by the extent to which the IT function is held accountable for the development of IT-enabled organizational capabilities (Reich & Nelson 2003), and for the ensuing contribution to organizational agility, innovation and IT business value (Guillemette and Paré, 2012). From a governance standpoint, the sophistication of the SMEs' IT function would thus affect the outcomes produced by ITG mechanisms such as the roles and responsibilities assigned to their owner-managers, external IT partners and key users with regard to IT-related issues and IT investments (Sambamurthy & Zmud, 1999). This presumed role of IT sophistication would be further supported by the resource dependence, network governance and institutional theories in particular, upon which "ideal" IT management and governance profiles can be founded (Ross, 2003; Willcocks et al., 2006). The delineation of such profiles would then imply that improvements in the SMEs' IT business value brought about by their increasing adoption of ITG mechanisms would be greater in firms whose level of IT sophistication is higher, that is, whose actual IT management and governance profile shows greater alignment or "fit" (Bergeron et al., 2004). The ITG research framework's final proposition follows:

P7: The greater the SME's IT sophistication, the greater the positive influence of its adoption of ITG mechanisms upon its IT business value.

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Note that this last research proposition is based on the view of the SME's IT function as a moderator of its IT governance, moderation being conceptualised as the interaction between IT sophistication and ITG mechanisms (Baron & Kenney 1986). Thus, in line with Bharadwaj et al.'s (1995) perspective of IT alignment and with Venkatraman's (1989) "fit as moderation" perspective, IT sophistication is deemed to positively moderate the relationship between ITG mechanisms and IT business value.

3.5 Control Variables: The Firm's Size, Age, and Sector of Activity

We previously underscored the necessity of carefully considering the heterogeneous nature of SMEs. All of these enterprises share some particularities, but they may also present some differences due to their size (very small-, small-, medium-sized), industry sector, or their age. All these factors are taken into account in the proposed research framework as control variables.

The size of firms (in terms of the number of employees or in terms of revenues) is generally positively associated with the adoption of innovations (Ko et al., 2008; Pekovic, 2010). More precisely, in the field of ITG, it has been advanced that there may be a positive correlation between the firm's size and ITG effectiveness (Mohamed & Singh, 2012). The same authors posit that organizations operating in information intensive sectors or in sectors characterized by high levels of uncertainty are more likely to effectively implement ITG mechanisms than organizations in less information intensive sectors, or in less uncertain environments. The firm's age can also explain differences between SMEs with regard to ITG mechanisms adoption. After reporting mixed results in literature on this topic, Mohamed & Singh (2012) formulate the hypothesis that a firm's age would be negatively correlated with ITG effectiveness.

4. CONCLUSION

Theories and frameworks generally referred to in the field of CG in general, and in ITG in particular, have mainly been developed in the context of large enterprises. In this study we analyzed the main theories applied in CG and ITG research, and confronted them with the specificities of SMEs. This exercise allowed us to highlight the limits of these theories in the SME's context, and to discuss adaptations needed or alternative theories in such context. Building on these developments, we then proposed a conceptual framework of ITG in SMEs.

We have shown that the mainstream agency theory does not fare well when applied in the context of SMEs. So, the proposed ITG research framework is based on a combination of alternative theories: upper echelon theory, stakeholder theory, resource-dependence theory, the network governance theory, institutional theory, and the theory of institutional trust. In accordance with the now abundant literature on SMEs, the conceptual framework acknowledges the central role played by the owner-manager in all major decisions of the firm. In accordance with the upper echelon theory, the role of the SME's key employees (or the top-management team) is also acknowledged in the conceptual framework proposed. Together, resource-dependency theory, the network governance theory, the institutional theory and the theory of institutional trust have been referred to for propositions related to the role of the SME's external links in its decision towards ITG mechanisms adoption.

In taking the SME's specificities into account, we followed the previous research recommendation that size is one of the contingencies that must be heeded when designing a mix of structures, processes, and relational mechanisms for an ITG research framework (Pollard, 2003). The seven propositions pre-

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sented in this study may thus serve as initial hypotheses for empirical verification. This theoretical study is a first step in our research. In the next step, case studies will be conducted to refine the conceptual framework, followed by a survey to test the framework.

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Chapter 82
Understanding Knowledge Management Spectrum for SMEs in Global Scenario

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ABSTRACT

Knowledge that exists within organization is a sustainable source of competitive advantage. Though enormous research on knowledge management (KM) has taken place, little focus has been on KM in Small and Medium Enterprises (SMEs). Globalization of supply chains, rapid technological advances, superior returns on intellectual capital, growing importance of knowledge-intensive industries would make KM a strategic tool in the growth and success of all, especially SMEs. KM-enabled SMEs are essential for competitive and sustainable growth. Hence a judicious approach for KM in SMEs is a must in current scenario. Done by an in-depth literature review and contextual analysis, the objective of this paper is twofold - to aid researchers in recognizing and understanding KM spectrum for SMEs in a globalized world and for SMEs to reckon that success and worth of businesses depend more on intellectual capital than physical assets merely.

INTRODUCTION

The velocity and dynamic nature of markets has created a competitive incentive among many companies to leverage their knowledge assets as a means of creating value and achieving a competitive edge. Thus the focus on knowledge management (KM) has become critical area for small and medium sized enterprises (SMEs). In particular, the management of knowledge assets may provide small firms new tools for survival, growth and maintaining a sustainable competitive advantage (Omerzel & Antoncic, 2008). There is a general consensus globally that SMEs fall behind large organizations in developing KM practices and exploiting fully the benefits thereof. This is also reflected in a literature gap as till date there is no dearth of literature describing large companies' successful KM practices. But the reasons why small firms show poor usage of KM tools are still unclear. In fact, little empirical studies have been

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conducted to identify the factors influencing KM adoption in SMEs (Finkl & Ploder, 2009). In addition, there is a growing need for qualitative analysis of the effects of knowledge management practices of networked SMEs (Valkokari & Helander, 2007). The potential which KM offers in improving efficiency and innovation has been cited as a key source of competitive advantage (MacKinnon et al., 2002). Despite this pressing need, it is widely accepted that small companies – even the most knowledge-intensive ones – are characterized by a lack of uptake of KM initiatives (Nunes et al., 2006). This may be perhaps due to the reason that KM systems are expensive to purchase, use and maintain. The aim of this paper therefore is to understand the spectrum of knowledge management for SMEs in globalized world. The paper also intends to propose alternative approach to developing KM systems for SMEs in developing economies. Instead of usual approaches, where KM needs heavy financial and other resources, study suggests solution centric approach (Patrick & Dotsika, 2007).

LITERATURE REVIEW

Small and medium enterprises (SMEs) make substantial contributions to national economies and are estimated to account for 80 percent of global economic growth (Pavic et al., 2007). Today in the competitive business environment knowledge is thought to be the primary resource (Baporikar, 2016). The conventional factors of production have become secondary. It is straightforward to obtain them, provided there is knowledge (Chen et al., 2006). Davidson & Griffin (2003) pointed out small businesses have contributed many innovative ideas and technological breakthroughs to our society. In order to maintain and develop further their innovative skills SMEs need to develop their understanding of knowledge management (KM), as a key business driver rather than as a resource-intensive additional initiative (Zanjani et al., 2008). "KM has become the latest strategy in increasing organizational competitiveness" (DeTienne & Jackson, 2001). The critical assumption of KM is that organizations that manage organizational and individual knowledge better will deal more successfully with the challenges of the new business environment. KM is seen as a vital factor in realizing and sustaining organizational success for improved efficiency and innovation. Today, knowledge is the primary source of competitive advantage and the key to success for organizations in the knowledge economy (MacKinnon et al., 2002; Patriotta, 2003). This study analyzed different aspects of KM for SMEs with respect to developing countries and proposed strategies for better implementation of KM programs in developing countries.

Further globalization and regionalization of the global economy intensify competitive pressures on enterprises. The ability to compete on the domestic and international markets can be ensured by factors, which provide the foundations for the building of the knowledge-based economy (Dorożyński, et al 2016). Small and medium-sized enterprises (SMEs) face more serious challenges to their survival than do larger firms (Baporikar, 2013b). To succeed, SMEs must establish and maintain credibility in the marketplace to attract the resources required for survival (Winter, et al 2010). The nature of strategic intelligence and the challenges of systematically scanning and processing strategic information have changed. However, much of the intelligence is collected through informal and manual based systems. Turning data into analyzed, meaningful intelligence for action is limited to a few industry leaders and mostly owners in most of SMEs (Baporikar, 2016). Over the past decade, the strategic use of information systems has played an invaluable role in the explosion of information technology. However, adopting a strategic information system is rarely successful without the necessary care and attention and implementation of information systems is a high risk, high reward decision (Baporikar, 2014c). The impact

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of a thorough understanding of all vital aspects, ranging from specific mechanics of a system to the theoretical impact and future development, cannot be underestimated when investing in an information system and more so for SMEs.

SMEs are an important part of all economies (Storey, 1994). First, SMEs employ the majority of workers (Levy & Powell, 2005). Second, SMEs also play an important role with respect to enhancing the competitiveness of economies through the processes of creation, elimination and restructuring of economic sectors (Bharati & Chaudbury, 2006). Third, in the majority of the world's emerging economies SMEs will be the predominant enterprise for the foreseeable future (Newberry, 2006). What is less clear is what exactly is considered as SMEs. Even the terminology used across the globe differs. The term small and medium enterprise (SMEs) is most commonly used in Europe whilst the term small and medium businesses (SMBs) are preferred in the USA. In Africa, micro-enterprises are added to the mix with micro, small and medium enterprise (MSMEs) and micro- and small enterprises (MSEs) used most often except in South Africa where terms SMEs and small, medium and micro-enterprises or SMMEs are used. Given the differing terms, it is not surprising that there is a lack of a consistent, universal definition for small and medium enterprises. There are two approaches to defining small and medium enterprises: The economic definition where enterprises must have a market share such that it does not significantly affect market prices or quantities sold nationally; or the number of employees (Dewhurst & Burns, 1993). Most definitions now classify enterprises as small or medium based on the number of employees in combination with the turnover and/or total assets. The employment thresholds, turnover and assets used in the definition of SMEs vary between countries. Even within countries there are different thresholds with manufacturing and labour-intensive sectors tending to higher thresholds than those for service and retail sectors. Furthermore, the thresholds, particularly with regard to turnover and total assets, differ significantly between developing and developed countries (Baporikar, 2013a).

Moreover, in developing countries, a vast majority of SMEs are suffering from market failures due to insufficient provision for integrated, reliable, relevant and solution-oriented business information. SMEs need support for effective linking with global markets both for their inputs and outputs. Businesses leveraging knowledge resources can make decisions faster and closer to point of action and help in mitigating risk, exploiting business opportunities and better understanding of market signals (Baporikar, 2013b). While various researchers and vendors have developed and implemented specialist Knowledge Management Strategy (KMS) for large organization, many small and medium enterprise (SME) organizations still face the challenge of selecting affordable frameworks including strategies, tools, and methods, which fit their objectives and needs as SMEs and then successfully implementing such frameworks. A successful KMS should not only impact a critical business process, but should also build the necessary momentum to create Innovation embedKMS (IeKMS)for SME enterprise - one where KMS contributes directly to innovations, organizational strategy, productivity, and bottom line. The study accessed the status of KM in SMEs and also examined the factors that influence the adoption of KM for SMEs with focus on developing countries. Many organizations have profited from KM because they recognize the importance of the KM in business growth and development. However, the study found SMEs in general and SMEs in developing countries in specific have not realized this importance and hence, still vulnerable. The study takes this factor into consideration and proposes a KM approach specific to SMEs. The study contributes on KM and SMEs literature and hopefully aids the researchers and practioners specially in developing economies in recognizing and understanding the knowledge management spectrum for small and medium enterprises in a globalized world.

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DISCUSSION AND IMPLICATIONS

Knowledge has been defined in multiple ways. Davenport & Prusak (1988) defined knowledge as follows: 'Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knower. In organizations, it often becomes embedded not only in documents or repositories but also in organizational routines, processes, practices, and norms.' Knowledge is the primary resource for individuals, organizations and the economy. Delahaye (2003) concluded that knowledge is a distinctive source as it has no law of diminishing returns, grows from sharing. Wiig (1997) argued that knowledge is not a new concept, from very early times people have transferred knowledge by succession to the next generation. In ancient cultures, this has taken the form of narratives and songs, which were intended to teach the new generation new skills and survival techniques.

Samuel (1775) wrote in his early dictionary "Knowledge is of two kinds: we know a subject ourselves, or we know where we can find information upon it". Knowledge can be divided into two categories: tacit and explicit. Explicit knowledge refers to the knowledge which can be articulated in formal language such as grammatical statements, mathematical expressions, specifications, manuals, and thus can be transmitted across individuals formally and easily. On the contrary, tacit knowledge refers to the knowledge which is hard to articulate with formal language, but is personal knowledge embedded in individual experience and involves intangible factors such as personal belief, perspective, and value systems (Nonaka & Takeuchi, 1995).

Knowledge Management

The field of knowledge management (KM) and its related discipline, intellectual capital (IC) have both contributed considerably to our understanding of the value of intangible assets of the firm. The general concept that intangibles are something worthwhile goes back at least to Schumpeter's (1934) work on innovation and has since included contributions from other high-profile writers such as Drucker, with his knowledge workers (1991). The idea that proper management of such intangibles might lead to competitive advantage was explored by scholars such as Nelson and Winter (1982) in their evolutionary theory of growth. Such competitive advantage fits well with the resource-based theory of the firm (Wernerfelt, 1984), specifically identifying knowledge as a potential key resource. As a result, we have the knowledge-based theory of the firm (Teece, 1998; Grant, 1996) and its suggestion that knowledge is not only a potentially important differentiator but perhaps the only differentiator for firms looking for sustainable competitive advantage. Patents, copyrights, and other intellectual property are valuable intangible assets, but intellectual capital extends recognition of value to additional, less well-defined intangibles such as know-how and expertise (knowledge). As a result, a clear distinction exists in the field between data, information, and knowledge. Formally, data are observations, information is data in context, and knowledge is information subjected to experience, reflection, or some similar analysis (Zack, 1999b). Within the field, knowledge is often referred to as know-how, effectively a sort of learning based on experience, learning, or insight. Such a perspective flows naturally out of the more general DIKW (data, information, knowledge, wisdom) hierarchy suggested by Ackoff (1989). KM involves knowledge identification, creation, acquisition, transfer, sharing and exploitation. KM is vital for efficiency and organizational competitiveness (Egbu, 2001). Boh (2007) described that KM is a systematic process for acquiring, organizing, sustaining, applying, sharing and renewing both the tacit and explicit knowledge

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of employees to enhance organizational performance and create value. Menkhoff et al., (2002) defined KM as the task of developing and exploiting both tangible and intangible knowledge resources of an organization. Pillania (2006c) defined KM as "a systematic, organized, explicit and deliberate ongoing process of creating, disseminating, applying, renewing and updating the knowledge for achieving organizational objectives''. KM is a process which involves the management of explicit and tacit knowledge (Nonaka & Takeuchi, 1995). Research on knowledge and knowledge management spans the disciplines of economics, information systems, organizational behaviour and theory, psychology, strategic management, and sociology. This diversity has contributed to the rapid advance of research in specialized areas of inquiry that investigate different aspects of organizational learning and knowledge management. Knowledge management, like knowledge itself, is difficult to define as concepts and practices evolved quickly through the 1990s. Two main issues are evident in this evolving path: knowledge is a critical resource, rather than land, machines, or capital (Drucker, 1993), and organizations generally manage it poorly. If more attention were paid to creating, providing, sharing, using, and protecting knowledge, the promise was that organizational performance would improve (Earl, 2001).

An understanding of the concept of knowledge and knowledge taxonomies is important because theoretical developments in the knowledge management area are influenced by the distinction among the different types of knowledge (Baporikar, 2014a). The literature offers a number of different knowledge taxonomies. Drawing on the work of Polanyi (1962, 1967), Nonaka (1994) explicated the most cited classification of knowledge distinguishing tacit and explicit knowledge dimensions. The author also views knowledge as existing in the individual or the collective. Other classifications (Alavi & Leidner, 2001) refer to knowledge as declarative (know-about or knowledge by acquaintance (Nolan Norton 1998), procedural (know-how), causal (know-why), conditional (know-when), and relational (know-with) (Zack 1998). Likewise, research in the domain of knowledge management seems fragmented. According to Sveiby (1997) the expression "managing knowledge" appears for the first time in a context of artificial intelligence at the end of 1980s. Early research in the field of KM was interested on the possibility of using information technology to support the process of individual learning. Again, in the artificial intelligence community, Wiig (1993) was one of the first scholars to recognize the limits of a primarily technological approach and he defined KM in term of creation, learning, sharing (transferring), and using or leveraging knowledge as a set of social and dynamic processes that needed to be managed (Iandoli & Zollo, 2007). Almost at the same time, Nonaka and his research group conducted a number of studies on the management of innovation processes in large Japanese companies. These studies together with the total quality management movement and the concept of continuous improvement, re-evaluate the overall role that human resources play at all levels in organizations: the centrality of the individual in the knowledge creation process and the consequent need to recognize the person's necessary level of competence and autonomy (Nonaka & Takeuchi, 1995). Most of the contributions in the vast literature on KM can be summarized to one of these two approaches or attempts to integrate the two perspectives (Iandoli & Zollo, 2007). Bhatt, (2001) defined KM by identifying the different phases in the process: knowledge creation, validation, presentation, distribution, and application. In fact, these five phases allow an organization to learn, reflect, unlearn and relearn and are considered essential for building, maintaining, and replenishing of core-competencies. In a broad sense, Quintas et al. (1997) define knowledge management as the process of continually managing knowledge of all kinds to meet existing and emerging needs, to identify and exploit existing and acquired knowledge assets and to develop new opportunities.

However, the KM definition suggested by Iandoli & Zollo (2007) has been considered as the working definition herein as it simultaneously refers to objectives, knowledge involved, tools and phases of

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KM. According to them, KM is the process of creating, capturing, and using knowledge to enhance organizational performance. As exemplified above, KM initiatives involve not only an implementation of ICT but also social and cultural facets. In this sense, according to Alavi & Leidner, (2001), knowledge management systems (KMS) refer to a class of information systems applied to managing organizational knowledge. That is, they are IT-based systems developed to support and enhance the organizational processes of knowledge creation, storage/retrieval, transfer, and application. In other words, the universal steps involved in KM are: knowledge capture, knowledge organization and knowledge preservation.

SMEs in Developing Countries

According to OECD (2000) SMEs make-up the largest proportion of businesses all over the world and play tremendous roles in employment generation, provision of goods and services, creating a better standard of living, as well as immensely contributing to the gross domestic products (GDPs) of many countries. The European Commission (2005) gave rise to the term SME in 1996.The term is defined as organizations employing fewer than 250 people (Burns, 2001). In developing countries, SMEs are defined differently for various countries. The term SME covers a heterogeneous group of businesses in a developing economy, ranging from a single artisan working in a small shop making handicrafts for a village market to sophisticated engineering firms selling in overseas markets (Fischer & Reuber, 2003). Generally, SMEs in developing countries have not more than 250 employees. SMEs are the backbone of the industrialization process of many developing countries and play a vital part in expanding a country's economy. In Nepal, SMEs constitute more than 98% of all establishments and contribute 63% of the value-added segment. In India, SMEs' contribution to GDP is 30% (Mahmood, 2008). SMEs' contain various advantages in income growth, entrepreneurial training, creation of technological capabilities, greater flexibility to changing market circumstances, job creation and lower wage inequality and dispersion of industry away from urban areas and regional development (Berry, 1998; Katrak & Strange, 2002). Thus, promoting SMEs would lead to: fostering an entrepreneurial culture, providing resilience in the economy, contribution to exports, employment generation, facilitate learning geographically, sectorial development, efficient resource allocation, reduction in inequalities, fair distribution of wealth and poverty reduction.

Significance of KM for SMEs

Both large and small firms, require continuous generation, sharing and implementation of knowledge in order to maximize their competitiveness and survival chances in the modern information society (Nunes et al., 2006; Pillania, 2008b). However, SMEs relatively need more focused approach towards KM as they face severe competition. Saloja et al., (2005) described that a more conscious and systematic approach to KM enhance SMEs performance and competitive advantage. KM also promotes innovation and business entrepreneurship, help manage change, and empower employees (Nonaka & Takeuchi, 1995). Zanjani et al., (2008) stated that SMEs need to make operational, tactical and strategic decisions and without accurate information they are unable to undertake this role. The knowledge of employees of an organization is an important asset and such knowledge should be garnered for the ultimate good of the company. Wong & Aspinwall (2004) described two complementary perspectives about KM importance in SMEs. "Pull" perspective, which identifies the potential benefits or improvements that are crucial for small businesses, include for example improved competency, efficiency, innovation, learning and

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knowledge sharing. And "push" perspective, which deals with the external or environmental thrusts that push them to the forefront of KM, include amongst others, competitive pressure, globalization, movement of large companies toward knowledge based organizations (Davenport & Prusak, 1988). Thus the underlying reasons for which SMEs need to manage their knowledge resources are:

1. SMEs compete on the basis of their competencies and knowledge is an important resource to be competent, hence need to use knowledge more than traditional resources;
2. The owner of SMEs, usually are also managers who need to transfer knowledge to employees;
3. SMEs usually find it difficult to get or retain good minds; hence they must settle for less qualified but motivated human resources;
4. Key stake holders like lending institutions, investors, suppliers, and customers, judged SMEs on the basis of their knowledge and strategies to put knowledge in right use (Zanjani et al., 2008);
5. Continuous 'rightsizing' trend. Starting in the 1980s, corporate downsizing measures led to the loss of valuable information and knowledge resources and subsequently to the emergence of KM as strategic countermeasure.

The driving forces like globalization have lead individuals and organizations to appreciate the important role of knowledge in an increasingly competitive world market (Davenport & Prusak, 1988). SMEs as a part of business sectors are no different from any other business sector. KM plays an important role for many SME companies in gaining competitive advantage and business survival. By and large, SMEs have a set of distinctive needs as described earlier that call for the deployment of a KM system for generating, sharing, and refining organizational knowledge. However, in practice, SMEs are still very reluctant to take KM principles into their strategic thinking and daily routines (McAdam & Reid, 2001; Nunes et al., 2006). SMEs usually lack resources such as land, labor, and capital. Therefore, SMEs must do more with less (Desouza & Awazu, 2006). SMEs need to be creative in working in order to manage knowledge with limited resources (Zanjani et al., 2008). Though SMEs in developing countries, in comparison with large enterprises are on back step for the availability of resources to manage knowledge, yet they as SMEs do have certain advantages in KM practice like: flat structure and short decision making process, flexible culture, organic behaviour and higher incidence of innovativeness. Knowledge, if properly harnessed, enables SMEs to stand out in the competition and outperform their rivals, thus maintaining a competitive edge (Wong, 2005).

KM Challenges

Organizations have a wealth of knowledge which, is embedded in people's head, work practices, and systems. The challenge for organization is to be able to capture that knowledge and to leverage it throughout the organization. Spender (2002) asserts that the intangible nature of knowledge makes it harder to identify and manage; consequently, it cannot be treated in the same way as other organizational assets. SMEs in developing countries have to face many challenges regarding KM adoption. Many SME owner-managers lack even fundamental concepts about KM and are unaware about underlying benefits of KM. Cultural barriers such as distrust, lack of recognition and communication, knowledge is power mindsets, retrenchment concerns and so forth act as de-motivators with regard to effective knowledge sharing and utilization of 'what we know'. Von Krogh (1998) stated "high organizational care culture" as a key element in KM development as its helps people to share ideas, information and knowledge.

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Developing KM competencies and visionary leadership is also challenging for SMEs. Other challenges SMEs face regarding KM are; i) SMEs rarely have a KM policy on strategic level; ii) Delegation of decision-making authority; iii) use of more sophisticated KM tools (Von Krogh, 1998). Handzic & Hasan (2003a) identify two major challenges for KM: achieving an objective picture of the field, based on formal and sound research, which integrates diverse perspectives of researchers and practitioners; and bridging the gap between theory and practice, thereby providing well-established KM strategies, tools and procedures for managers.

SME Paroxysms in Managing Knowledge

1. Deficit processes to convert tacit knowledge to explicit knowledge (Deshpande & Baporikar, 2014);
2. Defining knowledge for different audience;
3. Information sharing and information access (Motsenigos & Young, 2002);
4. Security issues (Motsenigos & Young, 2002);
5. The problem of capturing data (Nenov, 2005);
6. Creation of repositories without strategy to manage content (Baporikar, 2014b);
7. Failure to analyze and map knowledge management system to user's needs;
8. SME's inability to motivate employees by addressing their knowledge and learning needs;
9. Selection of right tools and technologies;
10. Failure to avoid re-invention of the wheel.

Knowledge Management in SMEs

Although introducing knowledge management systems into SME is a particular challenge because of the limited resources of these kinds of companies (Herrmann et al, 2007), the literature review on KM reveals that the mostly research in this field is focused on large companies. In fact, the understanding of the organizational theory and practice considerations of KM has mainly been derived from large company experiences. Consequently, the potential of KM seems not fully exploited by SMEs. In addition, research on KM in SMEs highlights some relevant different features (Pillania, 2006 & 2008). According to the review carried out by Thorpe et al (2005), research on KM in the SMEs context can be seen though three distinct fields: the knowledgeable SME manager/entrepreneur; knowledge systems and routines embedded and institutional and policy framework support. As asserted by Frey (2001), although major corporations have led the way in introducing and implementing KM, it is increasingly important for SMEs to manage their intellectual assets. In KM practices, issues that small businesses will face will not be simply a scaled-down replica of large-company experiences (Sparrow, 2001).

According to Desouza & Awazu (2006) key peculiarities that differentiate knowledge management practices in SMEs and larger companies are: lack of explicit knowledge repositories; deep and common knowledge possessed by members of the SMEs; deliberate mechanisms of avoiding pitfalls of knowledge loss; close social ties between SME members; aptitude for exploiting foreign sources of knowledge and the humanistic way of managing knowledge. Similarly, McAdam & Reid (2001) describe the key dimensions of KM (knowledge construction, knowledge embodiment, knowledge dissemination and knowledge use/benefit) and then, for each dimension, conduct a comparison between large firms and SMEs. Sparrow (2001) has also indicated four components that figure strongly in small firm knowledge projects: appreciation of personal and shared understanding; knowledge bases and knowledge systems;

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integrated and contextualized action needed and knowledge and organizational learning processes in SMEs. Egbu et al. (2005) highlight that knowledge generated in SMEs is tacit in nature due to various reasons. Thus, existing factors are mainly large companies oriented, thereby reflecting their situations and needs. Directly applying these factors into the SMEs environment may not be sufficient without an understanding of their very own and specific conditions (Wong, 2005). By integrating the common factors and introducing some new ones, Wong (2005) and Wong & Aspinwall (2005), propose a more comprehensive model for implementing KM in SMEs based on the following factors: strategy and purpose; management leadership and support; culture; organizational infrastructure; IT, processes and activities; resources; measurement; human resources management, training and education and motivational aids. The above set of critical success factors is important because it can act as a list of items for SMEs to address and deal and ensure that essential issues and factors are taken into consideration when planning and developing a KM strategy. It can also provide a basis for them to evaluate their KM practices (Wong, 2005).

KM Strategy for SMEs

KM strategy depicts the general approach an organization aim to take to align its knowledge resources and capabilities to the intellectual requirements of its strategy, thus reducing the knowledge gap existing between what a company must know to perform its strategy and what it does know. (Zanjani et al., 2008)

Considering the nature and requirements of SMEs in developing countries, researchers proposed personalization strategy for KM. Personalization is a strategy to manage the knowledge that is formed via human communication. Personalization strategy focuses on dialogue between individuals, not knowledge objects in a database. It is a person-to-person approach where knowledge is shared not only face-to-face, but also by electronic communications, thus building networks of people (Cendan et al., 2007). Personalization, on the other hand, provides a rich medium for communication, as it is concerned with the use of people as a mechanism for sharing knowledge (Boh, 2007). If the business strategy focuses on generating new or customer specific solutions or product innovations the personalization strategy should be chosen rather than the codification strategy (Greiner et al., 2007). Personalization strategy is more suitable for SMEs conducting tasks that are more innovative in nature (Zanjani et al., 2008).

CASE STUDY: KM IMPLEMENTATION AND SMES IN INDIA

Background

India is in a period of challenge with effects of globalization and it is a time to rethink what is the purpose of SMEs, to focus on the competencies of the future, and to move towards a networked cluster based policy and organizations. The private sector has shown that KM is a key enabler in this transition to a leaner, more efficient and more focused way of working. SME sector, with support from the government, can also use knowledge management to deliver focused, networked and learning approaches in delivery of its key services (Baporikar, 2015a). There has never been a more pressing need for improved ways of working in the SMES as today and KM is a key tool to enable this. With this brief introduction to the emergence of KM in the globalized world and the need for it in SMES, this chapter has focused on

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understanding and reviewing the concept application of KM to SME Sector in India. It delves into the meaning, need, process, steps and implementation approaches of KM.

Necessity of KM for SMEs

In India, this is reflected in poor financials of State Financial Corporations and steep decline in number of SSI accounts with public sector banks from 32 lakhs in mid-1990s to 17 lakhs in FY 2005. Main reasons assigned are lacuna in creating, managing and dissemination of knowledge among SMEs in specific and SME sector in general. These can be termed as 'Gap in KM'. The gaps in KM have resulted in both supply-side and demand-side constraints in growth of SSI.

Supply-side constraints include:

- Informational asymmetry relating to viability and return on investment in SME projects increases the risk of adverse selection for banks;
- Very often KM in banks is confined to compilation of data. Contextualising and converting these data into actionable-knowledge is required for evaluation of knowledge-intensive/ innovative/ new product oriented projects. Credit assessment in such ventures required to be knowledge-driven rather than tangible security-driven;
- Though banks have rating modules still their lending decisions are biased by availability of tangible security. Gaps in their KM system hamper objective assessment of an enterprise's worth and overall viability. Consequently, credit flows to knowledge-based SMEs remain tight.

Demand-side constraints which adversely affect investment by SMEs include:

- Informational infirmities and gaps aggravate the uncertainties about cost pattern and return on investment, choice of technology, scale of production and overall business viability which discourage capital investment by small entrepreneurs;
- Vast majority of SMEs do not have requisite resources and expertise to develop the infrastructure which is necessary to access and transform the vast amount of available information into intelligent insight;
- Some SMEs have the potential but lack of enabling environment hampers global connectivity for their products;
- Information available with different institutions being non-convergent, incomplete in many respects and generalised in nature restricts its utility to the sector.

LESSONS TO BE ADVOCATED

- Portugal's development of informational portal for SMEs envisages on-line access to SMEs for addressing their specific needs;
- Singapore's SME policy envisages realization of its vision of an "intelligent island" aimed at remaining relevant to the global knowledge-based economy;
- Working closely with MNCs generate positive impact for potential SME-suppliers in understanding supply chain requirements, identification of opportunities, improvement in operational efficiency and enhancing learning experience;

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- Inflow of Foreign Direct Investment (FDI) can have beneficial developmental effect with more and better linkages between MNCs and SMEs, e.g., automobile component manufacturing SMEs in India;
- Well-developed SMEs attract FDI inflow which helps in strengthening MNC-SME linkages;
- Another instance is of large FDI inflows to China and progressive integration of SMEs there with international manufacturing system has greatly helped in transforming the country into a global manufacturing powerhouse.

Implication

Many countries have instituted KM strategy for their SMEs. Hence to move ahead, an integrated knowledge network and information super-highway for SMEs that links all relevant national and international information sources become basic necessity. To enable SMEs to keep pace and alignment with the dynamism of knowledge-based economy, promotional, developmental and financing institutions, industry associations, chamber of commerce etc. have to commit resources and assistance to make the KM strategy tangible and economically viable. World over it is the SMEs which play a major role in innovation, revitalization of economy and creation of new jobs (Baporikar, 2015b). The gaps in knowledge management are affecting investment in the sector. Low capital accumulation affects employment generation, long-term competitiveness, production capability and SMEs' access and integration into globalized supply chains. These require substantial investment. But propelling SME-growth in India requires a futuristic, sound and inclusive Knowledge Management strategy for the sector.

FUTURE RESEARCH DIRECTIONS

Apart from generic studies about KIM implementation and strategies for SMEs – sector wise studies need to be undertaken as world over the SMES are based on classified products and services. ICT enablement for better leveraging knowledge across clusters would be another interesting area to probe. Technologically, effective KM requires the efficient organization of a suitable communication and information infrastructure (e.g. intranet) based on suitable and relevant taxonomies and knowledge repositories (where applicable). In addition, methods and techniques to leverage tacit knowledge, lessons learnt, viable approaches to documentation of experiences, whether successful or unsuccessful so as to create new knowledge would go a long way. SME organizational level studies about the development of a visionary leadership and a sound organizational culture to ensure maximum sharing of innovative and creative knowledge would also benefit the future entrepreneurs. Chan & Mauborgne (2003) also suggested constructive leadership behavior and development of a healthy organizational culture as important enabler of KM.

Recommendations

This paper has attempted to understand and explore KM practices in SMEs. The study revealed that there is a significant need for KM. In addition, it has been observed that SMEs adopt predominantly internal KMSs using simple ICT tools. There is greater need for wider (external) KMSs enabling inter-firm collaboration in developing collaborative projects. For developing effective KM practices, SMEs should

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adopt a three thronged approach which includes: management of market knowledge; management of technology knowledge and management of relational knowledge.

CONCLUSION

SMEs in developing countries have done very little for KM development in their organizations. It's not necessary that KM development will solve all the problems SMEs presently face. However SMEs will be in position to deal effectively with demands of present competitive era by managing individual and organizational knowledge. SMEs in developing countries need to make knowledge resources more productive with the help of proposed KM strategy. To conclude, the KM personalization approach is very relevant to SMEs in developing countries because this has the greatest potential for sharing of valuable tacit knowledge. The governments in developing countries also need to develop specific policy to help SMEs to build KM awareness. Collaborative approach is the way ahead and for that government agency, chambers of commerce and SMEs need to commit more resources and work collectively to make the KM more gainful. Finally, family owned businesses, owners, entrepreneurs and managers need mindset change too. Hence, embracing KM wholeheartedly by all the stakeholders of SMEs is a first step before embarking on the journey of KM.

NOTE

The case which forms the part of the chapter is based on secondary data and compiled from published sources.

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Chapter 83
Exploring the Research Domain of IT Governance in the SME Context

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ABSTRACT

This research aims to explore the research domain of IT governance in the SME context. To meet this objective, a small systematic literature review procedure is used. Results indicate that IT governance in the SME context has been researched previously, albeit not extensively. There seems to be consensus among authors that IT governance is important for SMEs as well as larger organizations. Additionally, many authors indicate that SME specificities will likely influence the nature and implementation of IT governance in the SME context. There also appears to be no great variety in research strategies used in this niche research domain. Regarding the contemporary state of IT governance in SMEs, authors seem to indicate that there is room for improvement. Finally, there is no published framework for IT governance that is tailored for SMEs, although the need for this is directly reported in the literature. This paper concludes by discussing some potential directions for future research, starting from the state-of-the-art of the research domain.

1. INTRODUCTION

IT (Information Technology) governance is concerned with the capability of an organization to turn IT investments into value for the business (Weill & Ross, 2004). While a shared definition is lacking within the field of IT governance, there is consensus on a few vital aspects of IT governance among scholars: (1) that it should be an integral part of the broader area of corporate governance; (2) that it is concerned with aligning the use of IT with strategic business objectives; and (3) that both business and IT people

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should execute their responsibilities in the framework of IT governance. These considerations lead to the following definition, which is the current state-of-the-art position in the field of IT governance: *"Enterprise governance of IT is an integral part of corporate governance and addresses the definition and implementation of processes, structures, and relational mechanisms in the organization that enable both business and IT people to execute their responsibilities in support of business/IT alignment and the creation of business value from IT-enabled business investments"* (De Haes & Van Grembergen, 2015). Empirical research by Weill and Ross (2004) indicates that IT governance directly influences a firm's performance, stating: *"effective IT governance is the single most important predictor of value an organization generates from IT"*. Despite this recognized importance, IT governance mechanisms are not as frequently used in SMEs (Small –and Medium Enterprises) as in larger organizations (Huang, Zmud, & Price, 2010), indicating that SMEs are still struggling with getting IT governance up and running. Furthermore, scholars are starting to argue that there is a lack of SME-centered theories that can lead to inferences about how SMEs should govern their IT assets (Devos, Van Landeghem, & Deschoolmeester, 2012). Indeed, almost all of the extant literature on IT governance deals with large organizations. It should be clear that the basic premise of IT governance (i.e. generating business value through IT) is important for SMEs as well as larger organizations. However, discussion arises that the contemporary state-of-the-art of IT governance research fails to offer SME-tailored insights.

A common reason for undertaking a literature review is to provide background for new research activity (Kitchenham & Charters, 2007). The main goal of this research is to review what has already been done in the IT governance research area with a specific focus on the SME context. Specifically, we are interested in gauging the state-of-the-art of this niche research domain and detect research opportunities. Hence the following general research question was put forward: *"What is the state-of-the-art of the research domain of IT governance in the SME context?"* To guide the research process, some more specific research objectives were identified:

- What research strategies are used in IT governance research in the SME context?
- What SME specificities are discussed that (potentially) lead to differences in IT governance in the SME context?
- What theoretical foundations of IT governance in SMEs are discussed?
- What is the contemporary state of IT governance in SMEs?
- What insights/guidelines are provided for the implementation of IT governance in the SME context?

After gauging the state-of-the-art of the research domain, some inferences can be made about future research opportunities. Accordingly, some major research opportunities will be discussed in more depth, starting from the contemporary state of the research domain.

2. RESEARCH METHOD

Following Kitchenham and Charter's (2007) guidelines, a small systematic literature review procedure was designed to gauge the extent of the existing IT governance research with a specific SME context. This systematic literature review approach is displayed in Figure 1.

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Figure 1. Systematic literature review procedure

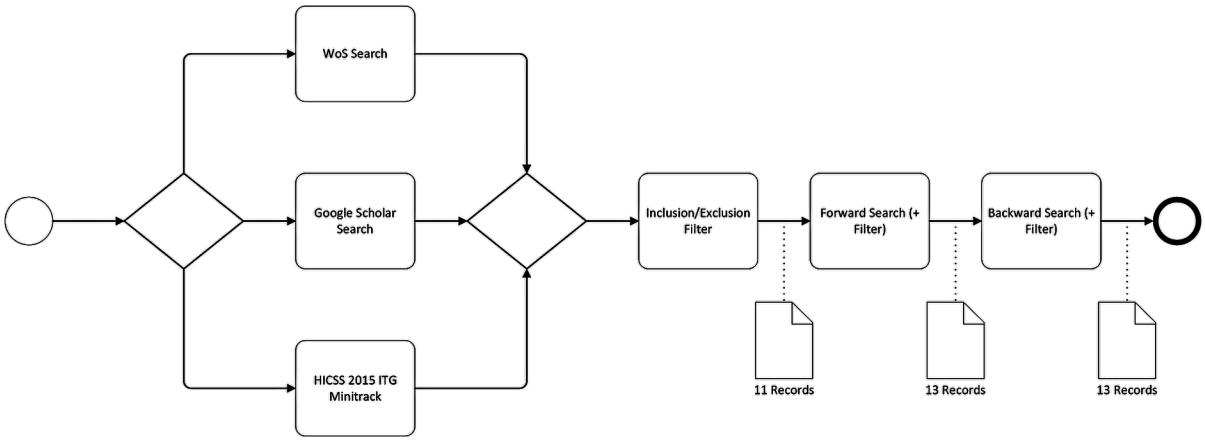


Table 1. Automatic search string for WoS

(TS=("IT governance" OR "information technology governance" OR "IS governance" OR "information systems governance" OR "enterprise governance of IT" OR "enterprise governance of information technology" OR "corporate governance of IT" OR "corporate governance of information technology" OR "ICT governance" OR "governance of IT" OR "governance of information technology") AND TS=(SME OR (small NEAR/5 organi?ation$) OR (medium NEAR/5 organi?ation$) OR (small NEAR/5 enterprise$) OR (medium NEAR/5 enterprise$)))* *AND **LANGUAGE:** (English)* *AND **DOCUMENT TYPES:** (Article OR Proceedings Paper)* ***Refined by: RESEARCH AREAS:** (COMPUTER SCIENCE OR BUSINESS ECONOMICS)* *Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH Timespan=1990-2015*

As part of this search procedure, an automatic search was conducted in the WoS (Web of Science) using the search string shown in Table 1.

The 'TS' field tag ensures that appearances of the indicated terms in the title, abstract, and author-provided keywords of the research are captured. The first part of this search string aims to capture the IT governance concept as a whole, using a variety of different terms that are used to refer to this concept. The second part of the search string aims to capture the SME concept. Three options were considered for this second part: (1) to catch all possible ways of writing of the concept using exact phrase search (like with the IT governance concept), (2) provide less stringent terms that enable a wider capture, or (3) to simply use 'SME*' in this part of the search string. The second option was deemed best here, since a lot of "exact phrases" can be indicated that could possibly be used by authors to denote the SME concept (e.g. small and medium enterprises; small and medium-sized enterprises; small -and medium enterprises; etc.). In addition, it should be noted that the IT governance research domain in itself is not very large (which can be approached by running only the first part of the search string), hence the expected amount of false positives obtained using the second approach is on the low side. Additionally, it can be argued that false negatives are worse than false positives in a literature review. The third option in turn would indeed potentially lead to a number of false negatives (i.e. this option would only be good if one was certain that all authors only used the abbreviation SME, or SMEs, to refer to the concept). To control the amount of false positives, the option 'NEAR/5' was added between the terms. This ensures that only records are returned containing the indicated terms within 5 words of each other.

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The above-mentioned search string was run on February 24th, 2015 and returned 16 results that day. To filter the results (i.e. to ensure that only results remain that are relevant for the purpose of the literature review), inclusion/exclusion criteria need to be defined (Kitchenham & Charters, 2007). For the purpose of this literature review, the following simple inclusion and exclusion criteria were defined:

- **Inclusion:** The IT governance research is (at least partially) focused on the SME context;
- **Exclusion:** The IT governance research is not (at least partially) focused on the SME context.

These criteria are mutually exclusive and hence useful for decision-making/filtering. The search results for this search procedure are presented together with the inclusion/exclusion decision in Table 2.

Of the 16 initial search results, 12 are deemed initially appropriate for analysis. To give more insight in the filtering procedure, a specific example is provided in detail. The first search result (being the most recent research) after running the automated search procedure is (Leon et al., 2012). The title, abstract, and author keywords for this record are provided in Table 3.

Table 2. Search results for the WoS automated search

Reference	Decision	
	Inclusion	Exclusion
(Leon, Kalbers, Coster, & Abraham, 2012)		X
(Wilkin, 2012)	X	
(Devos et al., 2012)	X	
(Lin, Chou, & Wang, 2011)	X	
(Huang et al., 2010)	X	
(Cochran, 2010)	X	
(Giraldo, Herrera, & Gómez, 2010)	X	
(Chapin, 2009)		X
(Smits, Fairchild, Ribbers, Milis, & Geel, 2009)		X
(Tan, Teo, & Lai, 2011)	X	
(Niu & Zhu, 2009)	X	
(Devos, Van Landeghem, & Deschoolmeester, 2009b)	X	
(Huang, Zmud, & Price, 2009)	X	
(Devos, Van Landeghem, & Deschoolmeester, 2009a)	X	
(Bernroider, 2008)	X	
(Simonsson, Johnson, & Ekstedt, 2008)		X

Table 3. Title, abstract, and keywords for (Leon et al., 2012)

Title	A spreadsheet life cycle analysis and the impact of Sarbanes-Oxley
Abstract	Past studies show that only a small percent of organizations implement and enforce formal rules or informal guidelines for the planning, design and development, usage, modification, and disposition stages of spreadsheet models. […]
Keywords	Spreadsheet; Spreadsheet life cycle; Controls; Sarbanes-Oxley; IT governance

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The 'hits' are underlined. As expected, due to the design of the second part of the search string, any combination of e.g. "small" and "organization" or "enterprise" anywhere in title, abstract, or keywords is expected to return a search result (if they occur within 5 words from each other). In this example, due to the first part of the search string, "IT governance" was found in the keywords. Due to the second part of the search string, a combination of "small" and "organizations" was found in the abstract. When investigating this record, it can be concluded that this indeed seems to be a false positive. The abstract states *"[…] a small percent of organizations […]"*, i.e. not indicating something about the size of the organization. Following our exclusion criterion, this record is therefore excluded for further analysis.

Hence, at the end of this process we are left with 12 records that are deemed appropriate for analysis. Full-text versions were obtained for all of these results for closer investigation and information extraction (if appropriate). Upon closer investigation, some research was additionally excluded from information extraction:

- Niu & Zhu (2009) seems to be presenting the same research as Huang et al. (2009), but as 'research in progress'. It was therefore decided to drop the least developed version of this research;
- Devos et al. (2009b) and Devos et al. (2009a) seem to be reworked and integrated in Devos et al. (2012). It was therefore decided to only include the integrated version of this research.

Considering this, the final set of research deemed appropriate for information extraction obtained using WoS consists of 9 records.

It is important to understand that a single automatic search will not necessarily catch all relevant research that is out there. Hence, it makes sense to consider other search strategies as well (Kitchenham & Charters, 2007). First, keyword search was performed using Google Scholar. For this procedure, keywords were derived from the search string that was used in the WoS. It is possible to obtain different results, since Google Scholar and WoS are not using exactly the same search venues. This resulted in an additional research, Ayat, Masrom, Sahibuddin, & Sharifi (2011), that was decided to be useful for information extraction. Additionally, the set of presented papers at the 2015 HICSS conference IT governance mini track is scanned. At the moment of writing, these researches are not yet indexed (i.e. forthcoming). Considering the reputation of HICSS and the potential relevance of the papers in the IT governance mini track, this specific venue was also included in the search procedure. This resulted in one additional research that needs to be added to the list of relevant records, i.e. Bergeron, Croteau, Uwizeyemungu, & Raymond (2015). At this point, the relevant set of research for information extraction consists of 11 records.

On this set, forward and backward search was applied. Forward search was done on February 26th, 2015 using the digital library through which the research was found. The results of the forward search on the relevant researches is presented in Table 4.

Of all the results identified by the forward search, two were deemed relevant (using the same filtering approach as described earlier). Backward search on the list of records (currently containing 13 researches) yielded no new relevant results. However, some mutual referencing was found between the identified researches. While there is a potential wealth of information in the reference lists of these 13 papers, there are no references to new researches that are specifically dealing with IT governance in the SME context and are hence particularly relevant in the context of this exploratory literature review.

The final list of relevant researches is displayed in Table 5. The type of research is also presented in this table. Out of the 13 researches, 8 are articles and 5 are conference proceedings. The researches

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Table 4. Results of forward search

Reference	Digital Library	Cited by (#)
(Wilkin, 2012)	WoS	1
(Devos et al., 2012)	WoS	2
(Lin et al., 2011)	WoS	0
(Huang et al., 2010)	WoS	23
(Cochran, 2010)	WoS	0
(Giraldo et al., 2010)	WoS	0
(Tan et al., 2011)	WoS	0
(Huang et al., 2009)	WoS	5
(Bernroider, 2008)	WoS	25
(Ayat et al., 2011)	Google Scholar	7
(Bergeron et al., 2015)	NA	NA

Table 5. Final list of relevant researches

Reference	Method Used to Obtain	Type
(Wilkin, 2012)	Automated search (WoS)	Article
(Devos et al., 2012)	Automated search (WoS)	Article
(Lin et al., 2011)	Automated search (WoS)	Article
(Huang et al., 2010)	Automated search (WoS)	Article
(Cochran, 2010)	Automated search (WoS)	Proceedings paper
(Giraldo et al., 2010)	Automated search (WoS)	Proceedings paper
(Tan et al., 2011)	Automated search (WoS)	Article
(Huang et al., 2009)	Automated search (WoS)	Article
(Bernroider, 2008)	Automated search (WoS)	Article
(Ayat et al., 2011)	Automated search (Google Scholar)	Proceedings paper
(Miyamoto & Kudo, 2013)	Forward search	Proceedings paper
(Garbarino-Alberti, 2013)	Forward search	Article
(Bergeron et al., 2015)	Manual search	Proceedings paper

were all published between 2008 and 2015, indicating that this subset of the IT governance research domain is still in its early stages and research activities are still emerging in the domain. Each of these researches was obtained as a full-text and will be discussed in the next section.

3. RESULTS

Wilkin (2012) uses the results of a survey among small enterprises in the Australian tourist accommodation industry to obtain new insights about IT governance practices for SMEs. Specifically, the author

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uses survey results to propose alterations to an existing IT governance practices framework (containing structures, processes, and relational mechanisms) as proposed in De Haes & Van Grembergen (2009). Wilkin advocates that a different IT governance approach is needed for SMEs, due to SME specificities that separate them from larger organizations. Devos et al. (2012) use multiple case studies of outsourced information system projects where failures occurred to critically rethink the concepts and the theoretical foundations of IT governance in SMEs. Their results reveal that trust is slightly more important than control in IT governance for SMEs. Lin et al. (2011) use survey research to evaluate the contemporary state of IT governance in Taiwanese SMEs by specifically examining if the key components of effective IT governance are in place. Starting from the COBIT 4 process domains (i.e. plan & organize, acquire & implement, deliver & support, and monitor & evaluate), the authors use exploratory factor analysis to detect the core factors of IT governance from the survey participant's views. This study discusses no SME specificities or theoretical foundations. It is also not explicitly pointed out why SMEs are used as the unit of analysis. Huang et al. (2010) provide evidence on the influence of IT steering committees and IT-related communication policies (i.e. two specific IT governances practices) using three SME case studies. Specifically, differences in the enterprise's IT steering committees and IT-related communication policies were found and used to explain differences in the enterprise's IT-usage outcomes. The authors clearly state that the sample of SMEs was selected for convenience reasons (i.e. a lesser complexity in SMEs' structures and processes). They also express the belief that their findings can be extended to larger organizations as well. Cochran (2010) proposes an "operations department model" as an organizational model to facilitate IT governance in organizations that don't have an IT C-level executive, which the author argues to typically be the case in smaller organizations. The author emphasizes that SMEs are different from larger organizations in terms of resources that can be used to implement a dedicated IT department and/or high level IT executives (e.g. a CIO). Giraldo et al. (2010) investigate the contemporary state of IT governance in five Colombian pharmaceutical companies. Each of the five cases is described using an IT governance matrix, an operating model, an engagement model, and portfolio management. The publication was deemed relevant because one of the five cases is a medium-sized enterprise. The authors do not find different results for the SME compared to the larger organizations in the sample. Tan et al. (2011) use survey research based on 50 Malaysian SMEs to gain insight in their understanding of IT governance. Their survey results show that the majority of the surveyed SMEs do not implement IT governance, although they are interested in the (potential) benefits of IT governance. Huang et al. (2009) examine the nature and influence of IT governance in SMEs using case study research on three cases. The authors observed centralized IT decision authority in all three SMEs. Differences in the organization's IT-use were explained by observed differences in senior management involvement in IT governance and communication practices about IT governance. This research explicitly acknowledges that the understanding of IT governance in the SME context is limited. Furthermore, the authors state that SME specificities (i.e. SME organizational structure, IT endowments, and IT management posture) could potentially lead to the need for a SME-specific IT governance approach. Bernroider (2008) investigated the role of IT governance in ERP success. Using survey research on a sample consisting of SMEs and large enterprises, the author showed that ERP investments were more effective in organizations that had IT governance implemented. The results also indicated that large enterprises under-performed compared to SMEs and that they needed specific performance drivers in order to become effective as well. The author divides the survey sample in two groups according to the enterprise's size (small versus large), and motivates this by stating that SMEs are inherently different from larger enterprises. Ayat et al. (2011) discuss the issues related to IT governance implementation in SMEs at a conceptual level. They state that SMEs

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have some specific characteristics that require specific IT governance frameworks and standards that are tailored to this context. Miyamoto & Kudo (2013) use survey research to examine the five IT governance domains as proposed by the IT governance institute (i.e. IT strategic alignment, IT value delivery, IT resource management, IT risk management, and IT performance management). The sample consists of SMEs located in the northern part of Japan. Using a structural equation model, they show that each of the five domains is significantly positively related to IT governance. Another interesting observation is that the vast majority (around 90%) of the SMEs does not have a dedicated IT manager or director responsible for IT (i.e. IT is not the sole responsibility). The authors provide no clear rationale as to why they specifically chose to investigate the SME context. Garbarino-Alberti (2013) provides an overview of the lessons learned and the issues that emerged in a single case study about the implementation of IT governance in a SME. The author focuses on human resource management issues. The research starts from the argument that IT governance frameworks for large organizations cannot simply be applied to SMEs, due to e.g. SMEs having less resources to implement such complex IT governance models. Finally, Bergeron et al. (2015) build a conceptual framework for IT governance in SMEs. The authors start by confronting the main theories that are used in IT governance research with the specificities of SMEs. The resulting conceptual framework is used to generate a set of six possible research propositions.

In the introduction, a few research objectives were presented to guide the research efforts. Specifically, this research investigates research strategies employed in IT governance research in the SME context, SME specificities as discussed in the IT governance SME literature, theoretical foundations of IT governance in SMEs, the contemporary state of IT governance in SMEs, and insights/guidance for IT governance implementation in an SME context. A summarizing table containing information regarding which researches contain information about each of these research objectives (except the research strategies that are employed) is presented in Table 6. Each of the research objectives is discussed in more detail over the following sections.

Table 6. Analysis of contents of the final set of researches

Reference	SME Specificities	Theoretical Foundations of ITG in SMEs	Insights in the Contemporary State of ITG in SMEs	Insights for ITG Implementation in an SME Context
(Wilkin, 2012)	X		X	X
(Devos et al., 2012)	X	X		X
(Lin et al., 2011)			X	X
(Huang et al., 2010)	X		X	X
(Cochran, 2010)	X			X
(Giraldo et al., 2010)			X	
(Tan et al., 2011)			X	X
(Huang et al., 2009)	X		X	X
(Bernroider, 2008)	X			X
(Ayat et al., 2011)	X			
(Miyamoto & Kudo, 2013)			X	
(Garbarino-Alberti, 2013)	X			X
(Bergeron et al., 2015)	X	X		X

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3.1. SME Specificities

Many researches discuss SME specificities to a certain extent (Ayat et al., 2011; Bergeron et al., 2015; Bernroider, 2008; Cochran, 2010; Devos et al., 2012; Garbarino-Alberti, 2013; Huang et al., 2009, 2010; Wilkin, 2012). There seems to be consensus in the set of indicated researches that these SME specificities will likely influence the way IT governance needs to be implemented in a SME context. When SME characteristics/specificities are discussed, they are almost always adopted from the more general business literature on SMEs. Specifically, the following SME specificities/characteristics are mentioned:

- SMEs tend to adopt a more operational than strategic view of business and hence tend to be more reactive in nature (Bernroider, 2008; Cochran, 2010; Huang et al., 2009; Wilkin, 2012);
- SMEs tend to have simpler organizational processes (Huang et al., 2009, 2010);
- SMEs commonly function without dedicated IT staff/specialists (Cochran, 2010; Devos et al., 2012; Huang et al., 2009, 2010; Wilkin, 2012);
- SMEs tend to exhibit flatter organizational structures (or lack of organizational structures) (Bergeron et al., 2015; Bernroider, 2008; Huang et al., 2009, 2010);
- Decision-making in a SME is centralized with the owner-manager, who has a lot of personal influence (Bergeron et al., 2015; Devos et al., 2012; Huang et al., 2009, 2010);
- SMEs tend to exhibit rich information networks, allowing coordination in the absence of formalized procedures (Ayat et al., 2011; Garbarino-Alberti, 2013; Huang et al., 2009, 2010);
- SMEs tend to have a high degree of internal transparency (Bergeron et al., 2015; Huang et al., 2009, 2010);
- SMEs tend to be more constrained in their (financial) resources (Bergeron et al., 2015; Cochran, 2010; Huang et al., 2009, 2010);
- Outsourced IT resources are more likely used in SMEs (Bergeron et al., 2015; Cochran, 2010; Devos et al., 2012; Huang et al., 2009);
- SMEs tend to be characterized by a more informal culture (Ayat et al., 2011; Garbarino-Alberti, 2013);
- SMEs tend to exhibit faster decision-making, i.e. high responsiveness (Ayat et al., 2011; Garbarino-Alberti, 2013);
- SMEs tend to be able to react to changes quickly, i.e. high flexibility (Ayat et al., 2011; Garbarino-Alberti, 2013);
- SMEs tend to rely more on a few important individuals, i.e. with a unique combination of skills and experience (Ayat et al., 2011; Garbarino-Alberti, 2013);
- SMEs tend to be characterized by fewer options for problem solving (Ayat et al., 2011; Garbarino-Alberti, 2013);
- SMEs' employees tend to be generalists rather than specialists (Ayat et al., 2011; Garbarino-Alberti, 2013; Huang et al., 2009);
- SMEs tend to be characterized by higher unit costs (Ayat et al., 2011; Garbarino-Alberti, 2013);
- SMEs are characterized by an overlapping of management and ownership (Bergeron et al., 2015);
- SMEs may be more influenced by their external environment than larger enterprises (Bergeron et al., 2015).

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Table 7. Classification of SME specificities

Organizational processes
Adopt a more operational than strategic view of business and hence tend to be more reactive in nature (Bernroider, 2008; Cochran, 2010; Huang et al., 2009; Wilkin, 2012).
Simpler organizational processes (Huang et al., 2009, 2010).
Organizational structures
Flatter (or lack of) organizational structures (Bergeron et al., 2015; Bernroider, 2008; Huang et al., 2009, 2010).
Decision-making centralized with the owner-manager (Bergeron et al., 2015; Devos et al., 2012; Huang et al., 2009, 2010).
Overlap of management and ownership (Bergeron et al., 2015).
Organizational resources
No dedicated IT staff or specialists (Cochran, 2010; Devos et al., 2012; Huang et al., 2009, 2010; Wilkin, 2012).
More constrained in their (financial) resources (Bergeron et al., 2015; Cochran, 2010; Huang et al., 2009, 2010).
Outsourced IT resources are more likely used (Bergeron et al., 2015; Cochran, 2010; Devos et al., 2012; Huang et al., 2009).
Rely more on a few important individuals, i.e. with a unique combination of skills and experience (Ayat et al., 2011; Garbarino-Alberti, 2013).
Fewer options for problem solving (Ayat et al., 2011; Garbarino-Alberti, 2013).
Employees are generalists rather than specialists (Ayat et al., 2011; Garbarino-Alberti, 2013; Huang et al., 2009).
Organizational culture
Rich information networks, allowing coordination in the absence of formalized procedures (Ayat et al., 2011; Garbarino-Alberti, 2013; Huang et al., 2009, 2010).
High degree of internal transparency (Bergeron et al., 2015; Huang et al., 2009, 2010).
A more informal culture (Ayat et al., 2011; Garbarino-Alberti, 2013).
Faster decision-making, i.e. high responsiveness (Ayat et al., 2011; Garbarino-Alberti, 2013).
Ability to react to changes quickly, i.e. high flexibility (Ayat et al., 2011; Garbarino-Alberti, 2013).
Organizational environment
Higher unit costs (Ayat et al., 2011; Garbarino-Alberti, 2013).
More influenced by their external environment (Bergeron et al., 2015).

It should be clear that many of these characteristics are linked with each other. For instance, the fact that SMEs tend to be more constrained in their financial resources leads to the fact that SMEs commonly don't have dedicated IT staff/specialists, and hence are more likely to use outsourced IT resources. To provide a better overview of these SME specificities, we propose a classification in a number of categories: organizational processes, organizational structures, organizational resources, organizational culture, and organizational environment. Our proposed classification of the SME specificities in these categories is displayed in Table 7.

3.2. Theoretical Foundations of IT Governance in SMEs

The nature and applicability of theories regarding IT governance in SMEs is discussed in Devos et al. (2012) and Bergeron et al. (2015). Both authors argue that the theoretical underpinnings of IT governance as used for large organizations are not necessarily valid in SMEs, due to SME specificities. Devos et al.

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(2012) distinguish between agency theory and the theory of institutional trust. Their empirical research indicates that trust issues are slightly more important than agency-related (i.e. control) issues when it comes to the governance of IT assets in SMEs. Bergeron et al. (2015) in a way extend this, by considering more theories that are often used in corporate governance research in general, and IT governance research in specific. Specifically, they use indicated SME specificities to evaluate these theories in the SME context. At a conceptual level, they distinguish between theories that have low applicability to IT governance in SMEs (i.e. agency theory, stakeholder theory, and power perspective), and theories that have higher applicability (i.e. stewardship theory, resource dependency theory, institutional theory, upper echelon theory, and institutional trust theory). Both researches clearly indicate that, due to SME specificities, there is a strong need for revisiting existing theories and frameworks for IT governance or proposing alternative ones that acknowledge the specific nature of SMEs.

Table 8. Theories versus SME specificities

Theories	Main Premise	SME Specificities Pointing at Applicability of Theory
Stewardship theory	Managers are naturally trustworthy, and seek to be good stewards of the corporate assets (i.e. an alternative view of agency theory, in which managers are assumed to act in their own self-interests at the expense of shareholders) (Barney & Hesterly, 2015).	- Overlap of management and ownership. - Decision-making centralized with the owner-manager. - High degree of internal transparency.
Resource dependency theory	The external resources of organizations affect the behavior of the organization regarding the optimal divisional structure of organizations, recruitment of board members and employees, production strategies, contract structure, external organizational links, and many other aspects of organizational strategy (Pfeffer & Salancik, 2003).	- More constrained in their (financial) resources. - Outsourced IT resources are more likely used. - Rely more on a few important individuals, i.e. with a unique combination of skills and experience. - No dedicated IT staff or specialists. - Higher unit costs. - Fewer options for problem solving.
Institutional theory	Organizations are not just economic systems motivated by the pursuit of economic efficiency and performance, but are also social and cultural systems that seek to gain legitimacy in their environment by adjusting themselves to regulations, norms and values (Al Mamun, Rafique Yasser, & Ashikur Rahman, 2013).	- More influenced by their external environment.
Upper echelon theory	The characteristics of top-level managers play a crucial role in determining strategic organizational outcomes and processes (Hambrick & Mason, 1984).	- - Decision-making centralized with the owner-manager. - Rely more on a few important individuals, i.e. with a unique combination of skills and experience. - Flatter (or lack of) organizational structures.
Institutional trust theory	Developing a partnership based on trust, instead of relying on agency-based control mechanisms to deter opportunistic behavior (Devos et al., 2012).	- Rich information networks, allowing coordination in the absence of formalized procedures. - High degree of internal transparency. - A more informal culture.

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Building on the work of Bergeron et al. (2015), we map the SME specificities that we identified in this research (see previous section) to the IT governance-related theories that they identified as having higher applicability in the SME-context, providing additional anchoring for these underlying theories. This is presented in Table 8.

3.3. Contemporary State of IT Governance in SMEs

A few of the indicated researches provide insights in the contemporary state of IT governance in SMEs (Giraldo et al., 2010; Huang et al., 2009, 2010; Lin et al., 2011; Miyamoto & Kudo, 2013; Tan et al., 2011; Wilkin, 2012). A few of the researches that provide such insights are based on a few cases only (Giraldo et al., 2010; Huang et al., 2009, 2010). The ones that involve survey research provide a more general view and are discussed here. Wilkin (2012) reports about the Australian tourist accommodation industry. Her major findings regarding the contemporary state of IT governance in this specific context are related to the fact that the organizations in the sample seem to miss opportunities for the maximization of business value from their IT investments. Lin et al. (2011) use survey research to examine whether the key components necessary for achieving effective IT governance (as defined by the COBIT 4 process domains) are in place. Results indicate that the COBIT 4 process domains are perceived to be important factors for effective IT governance by Taiwanese SMEs. Tan et al. (2011) report specifically on Malaysian SMEs in the state of Melaka. Their findings indicate that the vast majority of organizations is not using IT governance, while also showing that the organizations are interested in the (potential) benefits of IT governance. Miyamoto and Kudo (2013) provide insights regarding the contemporary state of IT governance in SMEs located in the northern part of Japan. Their results show a confirmation of the domains of which IT governance consists (i.e. IT strategic alignment, IT value delivery, IT resource management, IT risk management, and IT performance management). Their results also indicate that there is room for improvement of IT governance in the surveyed organizations, as indicated by the fact that around 90% of the organizations stated not having a dedicated IT manager or director responsible for IT. Overall, these sources seem to indicate that the maturity of IT governance is rather low in SMEs, i.e. there is definitely room for improvement of SMEs' IT governance.

3.4. Guidance for IT Governance Implementation in an SME Context

As expected, the majority of the collected set of researches provides some insights or guidance regarding the implementation of IT governance in the SME context (Bernroider, 2008; Cochran, 2010; Devos et al., 2012; Huang et al., 2009, 2010; Lin et al., 2011; Tan et al., 2011; Wilkin, 2012). However, the recommendations either remain at an abstract level (Devos et al., 2012; Lin et al., 2011), or are very case-specific (Huang et al., 2009, 2010). Wilkin (2012) provides the most detailed and comprehensive guidance for IT governance implementation in the SME context, starting from a well-established IT governance framework that was designed for large financial enterprises (De Haes & Van Grembergen, 2009). However, using the collected set of researches, we can conclude that there is no comprehensive framework for IT governance that is tailored for SMEs (i.e. that acknowledges SME specificities). The need for such a framework is directly reported in extant literature (Bergeron et al., 2015).

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3.5. Research Strategies Employed

Using the final set of researches, three main research strategies are identified:

- Case study research (Devos et al., 2012; Garbarino-Alberti, 2013; Giraldo et al., 2010; Huang et al., 2009, 2010);
- Survey research (Bernroider, 2008; Lin et al., 2011; Miyamoto & Kudo, 2013; Tan et al., 2011; Wilkin, 2012);
- Conceptual research (Ayat et al., 2011; Bergeron et al., 2015; Cochran, 2010).

It should be noted that all of the researches that are classified as 'conceptual research' are "work-in-progress"-papers. All of them explicitly mention that empirical research will be conducted in a further stage of the research project.

3.6. A Framework for IT Governance Tailored to the SME-Context

Our literature review indicated that authors seem to agree on the importance of IT governance for SMEs. Another point of agreement seems to be that SME specificities will likely influence the nature of IT governance in this context. Accordingly, SMEs' IT governance might need to consider different theoretical underpinnings compared to IT governance for larger enterprises. This leads to the conclusion that there is a need for concrete, context-based insights in how SMEs can govern their IT assets. As previously discussed, some descriptive empirical studies exist, albeit a small amount. Hence, the research domain would certainly benefit of more descriptive research into "how SMEs are implementing IT governance".

Our literature review found no evidence of a SME-specific IT governance framework, despite the existence of such frameworks for large enterprises (e.g. De Haes & Van Grembergen (2009)). This endeavor might hence be an interesting research opportunity. In practice, organizations are often drawing upon the practical relevance of industry frameworks such as "Control Objectives for Information and Related Technology" (COBIT), currently in its fifth edition, and released by the "Information Systems Audit & Control Association" (ISACA). In COBIT 5, claims are made that the framework is generic and hence will be applicable for all organizations, regardless of its size or industry. Despite offering a wealth of potentially useful information for organizations that are considering IT governance, the COBIT framework is often perceived as being very complex (Pereira & da Silva, 2012). It makes sense that this would even more so be the case for SMEs. Additionally, COBIT 5 is not the result of following a rigorous methodology. Rather, it is a descriptive account of "good practices". It is our belief that the design of such a "SME-tailored IT governance framework", anchored in relevant theories, would entail a nice contribution to the body of knowledge.

4. CONCLUSION

The research presented in this paper used a systematic literature review to gauge the state-of-the-art of the IT governance research in the SME context. The analysis revealed several interesting points. First, IT governance in the SME context has been researched previously, albeit not extensively. This can be seen by the fact that the systematic search only yielded 13 relevant researches. Related with this is the

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fact that the research in this specific area is still emerging. Indeed, all of the identified publications were published between 2008 and 2015. Second, IT governance is important for SMEs as well as larger organizations. This is especially true if the SME is critically dependent on IT. Despite this recognition, there are currently not many clear insights in how SMEs should govern their IT assets. Third, SME specificities will likely influence the nature and implementation of IT governance in the SME context. This is also indicated by the critique on the theoretical foundations of IT governance in general when approaching it using SME specificities. Using the fact that authors active in this niche research domain seem to agree on the importance of IT governance for SMEs, together with the fact that SME specificities will likely influence the nature of IT governance in SMEs, a need for concrete and comprehensive insights in how SMEs can govern their IT assets surfaces. Specifically, our literature review found no published framework for IT governance tailored to the SME context (i.e. acknowledging SME specificities). It is our belief that the research domain would greatly benefit from additional insights in IT governance in the SME context in general, and such a tailored framework in specific. Fourth, there is no great variety of research strategies used in the research domain of IT governance in the SME context. Our analysis indicates a mix of conceptual research and empirical research. In the case of empirical research, only survey research or case study research are employed as research strategies. The research domain would certainly benefit from a wider variety of employed research strategies, while gaining maturity. Finally, in general, there is room for improvement of SMEs' IT governance. This can be concluded using the researches that provide a view of the contemporary state of IT governance in SMEs. The research domain would certainly benefit from more insights in the contemporary state of IT governance in SMEs. While there is some empirical evidence available, there is not much, and a lot of contexts are still undiscovered.

5. LIMITATIONS

This research paper presented a systematic literature review in the research domain of IT governance in the SME context. Following guidelines for systematic literature reviews, the research approach was designed. An important part of the search strategy is the automated search procedure that was conducted using the WoS digital library. In general, it could be interesting to extend an automated search over multiple digital libraries. As a consequence, the search string will often need to be tailored to the specific digital library. For this research, we argued to limit the automated search procedure to a single digital library, i.e. the WoS, as it includes many high quality venues in the area of management information systems. To increase the reliability of the findings of the literature review, the automated search procedure was complemented by manual searches (i.e. forward and backward searches). Nevertheless, when conducting a systematic literature review, the researcher should consider the inclusion of multiple digital libraries if deemed appropriate.

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Chapter 84
Critical Review of SME Regulation Optimization in Serbia:
A Reflection on Harmonization with the EU Acquis

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ABSTRACT

The European Union (EU) and the Republic of Serbia have recognized the importance of SMEs and are developing accordingly the institutional framework of this sector. In the process of EU accession, Serbia has to fulfil political, economic and legal requirements by implementing systemic reforms of its legal system in order to align it with the EU acquis. Some of these requirements have a direct or indirect impact on SME regulations, to which our chapter has been dedicated within a series of our papers on developing the SME regulatory framework. This paper will try to present the importance of innovating legal development of these companies. Furthermore, modern concepts will be introduced together with very important tools of legal forms of SME organization. The intention is to clearly define specific legal goals of SMEs, expressed through targeted legal forms. The modern regulatory framework relating to SMEs should combine the existing solid theoretical base and innovative models from the practice.

INTRODUCTION

The purpose of this chapter is to comparably examine the institutional framework and process that optimizes company law through the adoption of more uniform regulatory models and laws compatible with a policy agreed at a multilateral level of the European Union (EU). The constituent premise is that development of small and medium enterprises (SMEs) can benefit from this process. Given that 99% of all forms of businesses in the EU are SMEs, which provide 67% of jobs and another 85% in newly

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created businesses, the EU therefore strongly encourages entrepreneurship and SME development (European Commission, 2016a).

Many studies highlight the value of examining legal, regulatory and administrative environment deemed favorable for SMEs. For example OECD (2004) study, featured, *inter alia*, the following:

- Property rights are clearly recognized;
- Contracts are easily enforced;
- A simple, transparent and low-compliance-cost tax system is operational and it is perceived as fair;
- Businesses are able to register with authorities through a simple and inexpensive system, preferably by remote access through the Internet;
- Business licensing requirements are minimized, and when they are enforced, the objective is to safeguard health and safety of consumers and labor rather than only being a source of revenue for local and/or central government;
- Labor regulations are balanced and flexible, protecting the rights of labor and the firm equally;
- SMEs, whether they are exporting or importing, interact with a streamlined customs administration that is efficient, simple and transparent;
- Financial sector regulations (banking, insurance, leasing) recognize SME constraints and provide legal and regulatory instruments that enable commonly available SME assets to be used as collateral;
- Public administrators at local levels appreciate entrepreneurs as contributors to economic growth, treat them fairly and are committed to limiting corruption to a minimum;
- Legislation and regulation is gender insensitive, rule of law and rules of the game apply equally to men and women;
- SMEs can easily set up and join membership organizations;
- Bankruptcy legislation does not impose unduly high penalties on the entrepreneur or the SME.

Clearly, in the field of the administrative burdens such as registration costs, efficiency of commercial courts and required permits it is recommendable to reduce the paperwork and cost involved in setting up SMEs.

Following a brief presentation of the EU approach to SME development and Serbia's progress (European Commission, 2016c), in this field the main context of this chapter is to examine the impact of some unique important principles of company law on SME growth and development. Part of the author's approach is also to critically analyze the most significant facilitating and restrictive factors as challenges or concerns for SMEs in both EU and Serbia. Consequently, the chapter will examine rewards and challenges associated with SME regulatory optimization and harmonization. To enhance this chapter, the author uses the comparative scientific method coupled with logical-axiological research and normative theory of law.

Following the above described content, the chapter discussion will present future research directions and is followed with a conclusion.

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BACKGROUND ON THE EU SME APPROACH AND REVIEW OF PROGRESS IN SERBIA

A typical internationally recognized SME country mapping consists of three sub-dimensions, analyzing these main aspects (OECD, 2012, pp.98-105) portrayed in Table 1.

As an example, let us consider the Republic of Serbia, which began its EU accession process in 2005. It is currently in the negotiation phase, involving 35 chapters. Serbia's task is to fulfill political, economic and legal requirements by implementing systemic reforms of its legal system in order to harmonize it with the EU *acquis* (European Integration Office, 2014). Some of these chapters have a direct / indirect impact on the development of entrepreneurship and SMEs, such as the Company Law, Taxation, Social Policy and Employment, Enterprise and Industrial Policy, Financial and Budgetary Provisions, etc. Although most of these chapters have not been officially "opened", the latest European Commission's Serbia 2015 Report unequivocally shows that Serbia has made a major step forward and is on the right track (European Commission, 2015a). In building SME development policy Serbia is harmonizing regulations by following Small Business Act (SBA) principles. According to (SBA) Fact Sheets, which present an assessment of progress in SBA implementation at national level, the European Commission stressed that administrative and regulatory requirements need to be reduced and simplified in Serbia. Further support is needed for the internationalization of SMEs, focusing on the sectors whose good performance stands out. Access to finance is still generally poor. Bank lending, crucial for SMEs, has become less available. Interest rates have lowered, but remain high. Therefore, alternative sources of financing should be developed. The methodology for the *'SME test'* exists, but needs to be applied systematically (European Commission, 2015b).

As jointly assessed by the Organization for Economic Cooperation and Development (OECD), European Commission and other relevant European institutions, Serbia's key priorities in 2016 are economic competitiveness and export-led grow (OECD, 2016, pp. 311-329). The key mid-term priorities are to establish a progress monitoring system, implement defined SME policy and measure its effectiveness in practice. Building on a well-developed institutional framework for strategic SME policy Serbia has improved its SME environment, especially regarding company registration and e-government, while focusing on the need to analyze results of numerous trainings held on SMEs. Significant progress is seen in promoting SME innovativeness so as to enable entrepreneurs to actively participate in international

Table 1. Development of SME policy and regulatory framework

Institutional Framework	Legislative Simplification and Regulatory Impact Analysis	Public-Private Consultations
• SME definition • Availability of statistic data • Inter-governmental co-ordination in policy elaboration • SME development strategy • SME implementation agency or equivalent • Measures to tackle informal economy	• Review and simplification of current legislation • Legislative guillotine • Use of regulatory impact analysis • The SME test	• Frequency and transparency of public-private consultation • Formal influence of public-private consultations • Representativeness of public-private consultations

Source: Adapted from OECD (2012)

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Table 2. Serbia SME problems with business environment, duties, taxes and contributions

General Business Environment	Taxes, Contributions, Fees
Lack of certainty and predictability	Value-added tax (VAT)
Distrust in state institutions – the judiciary	High labor taxes and contributions
Distrust in state institutions – public authorities	Advance payment of corporate tax
No exchange of information and coordination between authorities	Para-fiscal charges: number and amount
E-Government solutions are helpful	Administrative burdens

Source: Adapted from USAID Business Enabling Project (2015a)

cooperation programs, which is definitely a big step in the right direction. Access to funds is still a stumbling block for SME development and needs to be strengthened by expanding regulations in key areas such as permits and licenses. Another disadvantage is the fact that environmental policy in the SME area has not been implemented yet and is not considered to be an integral part of the environmental policy.

Obviously, many obstacles to SME development have been eliminated, but enormous work is yet to be done before full alignment of national legislation with the EU *acquis* in this area. In fact, results of focus group discussions and in-depth interviews conducted by the United States Agency for International Development (USAID) pointed out the following problems of Serbian SMEs regarding business environment, duties, taxes and contributions, as shown in the Table 2 (USAID Serbia, 2015).

In summary, fiscal levies need to be optimized and transparent support provided to the private sector by the government, with a focus on effective and horizontal objectives, such as SME support. It is also noted that SMEs mostly "suffer" from poor financial status and liquidity, as well as from regulatory unpredictability. SMEs have a limited access to different financing sources, especially at the beginning of their business operations when there is a lack of reliable data on financial and other features of the business and when company's credit solvency is weak (Beraha, 2016, p. 56).

In order to coordinate activities of various ministries and other organizations to promote entrepreneurship and develop SMEs, Serbian Government formed a Council for SMEs, Entrepreneurship and Competitiveness. This interim working body is composed of representatives of line ministries, businesses and research community. Furthermore, in March 2015 the government adopted the 2015-2020 Strategy to Support Development of SMEs, Entrepreneurship and Competitiveness and the Action Plan for its implementation, fully in line with the EU policy in this area i.e., the SBA for Europe from 2008 (Ćoćkalo, Đorđević, Sajfert & Bogetić, 2011. p. 450). The Strategy's firm baseline reflects information and recommendations from reports and analyses by international institutions and projects, the European Commission and national institutions. Its introduction emphasizes three reasons for its adoption: defining mid-term measures to promote entrepreneurship and competitiveness in Serbia in line with the state of affairs and real needs of the SME sector in Serbia; continuing and building upon the existing policy on developing entrepreneurship and competitiveness; and harmonization with the EU policy in this area. Six strategic goals – *Strategy pillars* – are clearly defined:

1. Boost business environment;
2. Improve access to financing sources;
3. Continuously develop human resources;
4. Build sustainability and competitiveness of SMEs;

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5. Enhance access to new markets, and
6. Develop, promote entrepreneurial spirit, stimulate women, youth entrepreneurship and social entrepreneurship.

Table 3 illustrates how the Serbian strategic goals are linked with the *Small Business Act for Europe.*

Comprehensive regulatory reform is an ongoing process that has to take place at all government levels, and its success depends on effective implementation of adopted regulations. Obviously, the very process of passing regulations has to be enhanced by increasing transparency and predictability of regulatory activities, and by enabling businesses and citizens to participate more in the adoption of new regulations. For example, the SME definition (see key terms and definitions) used by the authorities is only partially in line with the definition recommended by the European Commission as it does not cover affiliated and partner companies. The SME definition that came into effect on 1 January 2005 is based on three criteria: number of employees, total annual revenue and total assets (balance-sheet assets), and a company needs to meet the criterion relating to the number of employees plus one or both other remaining criteria. Micro businesses also include entrepreneurs operating independently (Stamatović & Vemić, 2009, p. 882). It would, however, be beneficial for SMEs in Serbia if the EU recommendations would be fully implemented in a single legal act, because that would enable them to receive treatment by the authorities and EU programs, for which this definition is binding.

Table 3. Links between strategy to support development of SMEs, entrepreneurship and competitiveness (2015-2020) and the small business act for Europe

Small Business Act for Europe	Support Development of SMEs, Entrepreneurship, and Competitiveness
Principle 1 - Create an environment in which entrepreneurs and family businesses can thrive and entrepreneurship is rewarded	Pllar 3 - Continuously develop human resources Pillar 6 - Develop and promote entrepreneurial spirit and stimulate women and youth entrepreneurship and social entrepreneurship
Principle 2 - Ensure that honest entrepreneurs who have faced bankruptcy quickly get a second chance	Pillar1 - Boost business environment
Principle 3 - Design rules according to the "Think Small First" principle	Pillar 1 - Boost business environment
Principle 4 - Make public administrations responsive to SMEs' needs	Pillar 1 - Boost business environment
Principle 5 - Adapt public policy tools to SME needs: facilitate SMEs' participation in public procurement and better use State Aid possibilities for SMEs	Pillar 1 - Boost business environment Pillar 2 - Improve access to financing sources Pillar 4 - Build sustainability and competitiveness of SMEs
Principle 6 - Facilitate SMEs' access to finance and develop a legal and business environment supportive to timely payments in commercial transactions	Pillar 2 - Improve access to financing sources
Principle 7 - Help SMEs to benefit more from the opportunities offered by the Single Market	Pillar 5 - Enhance access to new markets
Principle 8 - Promote the upgrading of skills in SMEs and all forms of innovation	Pillar 4 - Build sustainability and competitiveness of SMEs
Principle 9 - Enable SMEs to turn environmental challenges into opportunities	Pillar 4 - Build sustainability and competitiveness of SMEs
Principle 10 - Encourage and support SMEs to benefit from the growth of markets	Pillar 4 - Build sustainability and competitiveness of SMEs Pillar 5 - Enhance access to new markets

Source: Adapted from Serbia Strategy to Support Development of SMEs, Entrepreneurship and Competitiveness (2015)

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Table 4. Progress of reforms in Serbia 2011-2015

Significant Improvement	Some Improvement	No Improvement	Worse
• Wage taxes and contributions • Obtaining construction permits • Obtaining business licenses • Inspections surveillance • Enforcement of contracts • VAT payment procedures • Corruption in public administration • Inflation • Exchange rate volatility	• Court procedures & requirements • Para-fiscal charges • Administrative procedures • Court procedures & requirements • Labor law procedures & requirements • Customs and external trade procedures • Payment transactions • Public Procurement • Interest rate volatility • Difficulty in getting a loan • Bank collateral requirements • Interest rates and fees • Gray market employment • Awareness of regulatory changes	• VAT rates • Customs duties • Duration of loans • Duration of loan approval process • Banks' reporting requirement	• Use of external finance • Bank lending • Quality of bank services/ support • Excise taxes • Asset price volatility

Source: Adapted from USAID Business Enabling Project (2015b)

More recently, Serbia's progress in the process of alignment with the EU *acquis* has been demonstrated in several ways. The Executive Summary of Business Survey Serbia 2015 conducted by USAID shows results achieved in implementing the reforms but also a number of important issues remaining (see Table 4).

Serbia's progress is also reflected in conclusion of an agreement with the EU confirming Serbia's participation in the COSME Program for the Competitiveness of Enterprises and SMEs until 2020. This is an EU-funded program implemented in the period 2014-2020 with a budget of 2.3 billion Euros to support SMEs in improving access to financing sources, support in internationalization and accessing foreign markets, creating a stimulating business environment for development of competition, and encouraging the spirit of entrepreneurship. The Agreement with Serbia went into effect on 1 January 2016 (COSME, 2016).

In the next, central part, of the chapter the author will consider the impact of some key regulatory principles relevant for SME development in the EU, as well as in Serbia.

AN OVERVIEW OF SERBIAN COMPANY LAW IMPACT ON SME GROWTH AND DEVELOPMENT

This section focuses specifically on the use of key company law principles of relevance for SMEs. The author looks at the theory and practice of company law as well as the main benefits and threats associated with the treatment of SMEs.

The Principle of Completeness of All Forms of Companies

Serbia Company Law (Serbia Company Law, 2015) defines 4 legal forms of companies without leaving the possibility of incorporating a company in a form not regulated by the Law. The Law regulates companies' legal status, including in particular their incorporation, management, status changes, changes of legal form, dissolution and other issues relevant for their status, as well as the legal status of entre-

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Table 5. Ordinary classification of companies in Serbia

Characteristics	Partnership	Corporation
Established in view of the member' status	✓	-
Members are involved in the economic activity	✓	-
Members run business operations directly	✓	-
Minimum capital assets prescribed by law	-	✓
Members are liable for company's obligations with their personal property	✓	-

Source: Own presentation of author

preneurs. Provisions relating to entrepreneurs, who do not have a company status i.e. legal entity status, but are, instead, natural persons, make an impression that they accidently got left out from this Law.

Companies are usually classified into two categories: partnership (general partnership (GP) and limited partnership (LP) and corporation (limited liability company (LLC) and joint stock company (JSC). Their characteristics are presented in Table 5.

As the above legal forms of companies are defined by the company law in line with the principle of completeness, they should as such have a facilitating effect on legal development of SMEs. One paradox is noticeable, however, that despite the generally accepted term "small and medium-sized enterprises" this law does not explicitly recognize the word "enterprise", although entrepreneurs are mentioned, which the author does consider inhibiting for entrepreneurship.

The Principle of Essentiality of Intention to Demarcate SMEs as Companies from Institutions

Serbian company law clearly defines the company as a legal entity engaged in an economic activity for the purpose of profit generation, which is also the aim of SME establishment. On the other side, there are also other forms of association into institutions and companies for the purpose of organizing public services. They pursue economic activities that fulfill the needs of citizens and organizations and other legally determined interests in certain areas, and are also regulated by the Law on Public Services (Serbia Law on Public Services, 2015). This way a clear distinction was made between different forms of potential organization based on the purpose they are incorporated for, which shows that optimization is the purpose of the principle of essentiality of the intention to demarcate SMEs as companies from the so-called institutions.

The Principle of Equality of Companies

The principle of equality derives from the constitutional principle of equality and independence of companies. It concerns organizational forms of all companies and enables property and management components of the ownership function, regardless of the ownership basis. This principle is of particular importance from the aspect of economic activity individual companies can engage in and is reflected in easier market access. Introduction and popularization of European business and labor ethic, coupled with legal equality of all companies, increase the chances of SMEs to position themselves better on the

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market and distinguish them from other companies. This is facilitated by the well-known advantages of SMEs including, among others, better flexibility and dynamics in adjusting to demands of the market and new technologies, and their quick response to changes in demand (Ožegović & Pavlović, 2012, p. 75).

The Principle of Tripartite Interest of the Majority / Minority Owners, Creditors, and Employees

The tripartite principle embraces the modern thinking of comparative law and business practice, according to which in terms of interests a company belongs not only to its owners but to creditors and employees as well who all have certain specific rights set in the company's managing structure. In fact, in modern economy this concept grows from tripartition to multipartition. Therefore, along with the above interests included are also social interests such as the interest of clients and even the very society sociologically speaking, which all together strengthens SME organization.

The Principle of Compatibility of Legal Forms in Developed and Transition Countries

As mentioned earlier, Serbian legislation "knows" only 4 company forms regulated by the Company Law, which also embraces definition of the entrepreneur, as a physical person. This closed system of company forms, the so called *numerus clausus,* may in fact have a restrictive effect on SME development, because it fails to recognize some company forms present in the EU. Therefore, the principle of comparability of legal forms of companies in developed and some transition countries is not favorable enough for SMEs. At present this legislative approach does not have a major impact on SMEs in Serbia because most companies in the EU are also incorporated as limited liability companies. However for a fully-fledged EU member and market economy company legislation needs to be harmonized so as to introduce new forms of companies.

The Principle of Enhanced Liability of Management Board, Controlling Members, and Shareholders

Liability of corporation members is brought down to liability for company's obligations, but only in the amount of invested capital, for they are not liable for company's obligations with their personal assets. An exception is the case when owners use the company as a "shell" for their own unfounded enrichment. This is most often manifested by mixing personal and company's assets, in using company assets for personal purposes and personal benefit, fraudulent abuse of company and its assets and similar actions, followed by untruthful or incomplete presentation of the status of assets in business records. Candidates for the abuse of legal personality include, among others, one-member and no employee companies, companies with close links among members with family ties and highly undercapitalized companies. Abuse of legal personality is a relatively new legal institute and its most common form involves deceiving creditors and abuse institute was invented as a "defensive mechanism". Activation of this institute can be demanded if the charged person:

1. Used the company to achieve otherwise prohibited objectives;
2. Used or disposed with company's assets as their own personal property;

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3. Used the company or its assets to cause damage to company creditors;
4. Reduced the company's assets for personal gain or gain of third parties, although they knew or ought to have known the company would be unable to meet its obligations.

In judicial practice this institute has been applied very rarely and very restrictively. It should be regulated in more detail in order to encourage courts to apply it more effectively.

Director's liability is regulated by limitation of authority, prescribed level of due diligence according to which the director is bound to carry out his/her duties in good faith and in a reasonable belief that he/she acts in the best interest of the company. He has an obligation to report personal interest and avoid conflict of interests, keep business secrets confidential and respect disloyal competition.

Status, obligations and responsibilities of the controlling members are defined in detail. A party is the controlling member of the company always when such party owns, independently or with related parties, the majority share in the company's capital assets. The controlling members / shareholders bear unlimited joint and several liabilities for company's obligations even upon deletion of the company from the register. Various limitations have been prescribed for the purpose of protecting company's members and creditors such as, e.g., prohibition of subscription of shares – company's shares cannot be subscribed by its controlled company, nor by a third party acting in its own name and for the account of the controlled company. The controlling company is held liable for damages suffered by the controlled company due to actions upon binding instructions on how to run business, guided by the group's interests. The controlling shareholder having shares that account for minimum 90% of the company's capital assets is bound to buy shares of each of the remaining shareholders at a price set in the same fashion as in payment to disagreeing shareholders. All above protective measures enhance SME development by strengthening the legal institute of liability of the above mentioned groups of parties.

The Principle of Transparency for Company Operations

The transparency principle is highly positioned in the hierarchy of essential principles of the company law. In fact, ensuring transparency is one of the two goals for adoption of the Code of Business Ethics (Serbia Code of Business Conduct, 2006). In addition, transparency of financial information is a legal requirement for participants in the capital market (Todorović, Bunić & Todorović, 2013, p.11). Protecting investors' interests by disclosing relevant and reliable information is one of the segments of harmonization of regulations within the EU.

The transparency principle means that along with the traditional set of financial statements, other reports are also made available to the public in line with the accounting standards. The annual audit should be published by an independent and qualified auditor while external auditors should be responsible to shareholders providing information equally to all participants. This approach builds corporate social responsibility ensuring transparency towards all stakeholders and creating a long-term value through protection of interests of company members/shareholders. Therefore, this principle has a strong impact on building organizational development of SMEs.

The Principle of Modernity, Sophistication, and Liberal Enactment

The Serbian legal system belongs to the system of European continental law, but it also incorporates some institutes of Anglo-Saxon law. The new Company Law is a modern piece of legislation largely aligned

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with the EU company law. The principle of liberal enactments serves specific interests of all investors who can operationalize their business idea without the claws of imperative norms. Enactment norms are predominant in the law and offer freedom of choice of a solution for each particular situation regardless of the form of company, except partially for the public joint stock company. There is freedom of choice in relation to the solution foreseen by the norms, giving an opportunity to the interested entities to regulate their rights and obligations by themselves differently than as set forth by the law in accordance with the principle of autonomous will. Therefore the Serbian company law should contribute to creation of a legal system complementary to the internal EU market. It facilitates growth and development of SMEs because it optimizes the regulatory framework of SMEs and is in legal correlation with SME Development Strategy and some laws such as the accounting law (Serbia Accounting Law, 2013), and business registration law (Serbia Law on the Procedure of Registration with the Business Registers Agency, 2014). However, in the author's view, the present version of the procurement law (Serbia Public Procurement, 2015) still fails to offer liberal enabling provisions supporting SME development.

ANALYSIS OF FACILITATING AND INHIBITING REGULATORY FACTORS OF SIGNIFICANCE FOR SME DEVELOPMENT IN EU AND SERBIA

In a comparative analysis of company law, especially in the part relating to regulations of some essential issues of corporations, different factors with a substantial impact on growth and development of SMEs in the EU and Serbia can be distinguished. They represent unique opportunities and challenges for SMEs. Therefore, in this section of the chapter the author brings attention to the factors that can either enable or inhibit successful SME development applying the comparative method of scientific research.

Procedure for Establishment, Registration, Change of Legal Form, Mergers, and Acquisitions

This is a factor revealing unambiguous legislative progress in Serbia in legal gravitation towards the EU, with some inhibiting aspects. The Serbian Business Registry Agency (SBRA), which controls all registers at the central level, has increased the number of registers from 15 to 17. Although the procedure of filing the registration application is substantially simplified and the costs of establishing a company significantly reduced electronic company registration is still not in full operation. Optimal time for company establishment is now significantly shorter and it takes just a few steps, meaning that a business can be started up in 24 hours (European Commission, 2015c). The minimum amount of LLC's capital assets was lowered (most common SME form) from 500 EUR to 100 RSD (counter value ~ 1 $). This may makes it easier to start a business, but it does not provide sufficient protection of creditor' rights.

The possibility of changing a legal form and approaching mergers and acquisitions (M&A) represents a great opportunity for growth and development of SMEs through synergy, cost reduction and diversification. Legal aspects of M&A could contribute to enlargement, growth and development of SMEs and with proper assessment of tax risks and burdens can be optimized. Fusion is regulated in great detail by EU and Serbian Company Law, but the intended protection of interests of all categories of affected parties has not been achieved. The protection of rights of stakeholders is high, but there is insufficient protection of employees and stakeholders in ensuring preservation of their past status.

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Rights and Obligations of Company Members and Shareholders from the Standpoint of Creditors and the Principle of Fiduciary Duties

The issue of company creditors' protection is always one of the burning issues of economic stability in any country. These issues result in double threat to SMEs in Serbia, both as creditors and debtors. Competitors from the ranks of "big players" can abuse their dominant position to push the SMEs into bankruptcy by not paying invoices, without the true background of their ruin ever becoming known while the bankruptcy proceedings do not provide adequate opportunities for their reorganizations and a new beginning. The new solutions in the Bankruptcy Law (Serbia Bankruptcy Law, 2014) demonstrate readiness of Serbian institutions to create an environment in which creditors' interests would be protected. The Law has enabled legal entities to respond timely and in the most favorable fashion in case of business troubles in the interest of the legal entity and that of the creditors and the company as a whole. It introduces the *Prepared Reorganization Plan* institute for the first time. Amendments to the Company Law also set the imperative legal solidary liability of company's members with "their own assets" proportionately to their share in the company's capital assets. This legal solution is not grounded in the very nature of this company. According to Vasiljević (2012) "it is entirely arbitrary and reflects the understanding of absolute omnipotence of legislation, which does not respond to itself, logic or philosophy of law" (p.12). Some blanket provisions of this Law enable high discretion, for instance, in case of inadmissible payments to a company's member by the company, when the member is liable to return such payments to the company and the company cannot release him/her from that obligation, and with this such obligation can be claimed from a *bona fide* company member only if necessary to settle the claims of company's creditors. Protection of creditors in case of reduction of the company's capital assets is brought down to a written notification of creditors by the company on the decision to reduce the company's assets, who have the option to request protection of their claims, as in the case of status change (Jevremović-Petrović, 2011, p. 248).

The principle of fiduciary duties is a clause of loyalty of members of company bodies and controlling shareholders and members towards the company prescribed by the Code of Business Ethics. It stipulates an obligation to act in the company's best interest (International Finance Corporation, 2008). In author's opinion the above factors should facilitate SME development.

Minimum Founding Capital

The minimum founding capital1 for LLC has an inhibiting impact on SME development because the law stipulates the minimum amount of only 100 RSD (around 1US $), unless a higher amount of capital is foreseen by a special law for companies engaged in specific economic activities. The good side of this solution is that there is no need to assess the value of contributions forming the minimum part of capital assets, in view of the fact that the contributions are in the form of money. This further means that when subscribing a contribution to the company its value cannot be overestimated, which is the fundamental drawback when a non-pecuniary contribution is subscribed to the company. An argument against such solution is that conducting economic activity does not require just money, but also existence of certain assets and rights, so their exclusion from the value of minimum part of the capital assets is not founded, especially in case of a non-pecuniary contribution, which can be acquired only from the founders, but not from third persons. This provision may have a stimulating effect on establishment of new SMEs,

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but cannot suffice as security to company's creditors, because it is commonly known that the higher the company's capital assets, the higher creditors' security, bearing in mind that a LLC member is not liable for company's obligations with own personal assets. Hence, there is also negative impact on implementation of the bankruptcy law.

Improvement of Corporate Governance and Development of Employee Participation in Management

Improvement of corporate governance, development of employee participation in management has a facilitating SME impact. All companies in Serbia, regardless of their legal form, are subject to a comprehensive package of regulations. In the author's view further development of corporate governance for SME development is recommendable. Collective participation of employees in management consists of three segments:

1. Consultative participation enabling employees to give opinion on certain issues, with final decision made by the employer;
2. Actual participation where special working teams organise work, work independently and make nearly all decisions on their own in conditions of limited oversight;
3. Participation through representatives allows employee participation in the work of managing and supervisory boards and ensures other forms of participation.

Despite the comprehensive regulation of trade union organization and prescriptions from the Labor Law employee participation is not sufficiently developed in Serbia. It works only to some extent in the public sector, while the trade union organization in the private sector is very poorly developed. Given that the General Collective Agreement ceased to be valid back in 2011 (Serbia General Collective Agreement, 2009) and no agreement was reached in a tripartite dialoge on a new one, and that collective agreements are rare in the private sector, protection of workers in Serbia is reduced to the minimum prescribed by the Labor Law. Social dialogue is still an issue because trade unions representatives abandoned the negotiations on amending the Labor Law (Serbia Labor Law, 2014). The law is now aimed at enabling easier employment, flexibility and mobility of Labor force, enlargement of trade unions and increasing convergence with the EU legislation have in fact deteriorated the position of employees. Since all levels of employee participation in Serbia are below the satisfactory level, the author takes the view that institutional measures need to be taken for the development of participation such as in the French model or through co-decision of employees as in Germany and Sweden.

Valuation of Non-Monetary Contributions of the Founders

Valuation of the non-monetary contributions that may be exercised by the founders themselves has a facilitating impact on the development of SMEs in all forms of companies, with the exception of public joint stock companies where the law lists the competent entities to carry out this assessment (certified court expert, auditor or other professional authorized by the competent authority of the Republic of Serbia to perform valuation of certain assets or rights). On the one hand this factor increases cost of establish-

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ment, and on the other provides greater protection of shareholders. However, the legislator leaves an option to future company members to entrust valuation of assets and rights to an authorized assessor.

Clear Demarcation of Open and Closed Societies

Clear demarcation of open and closed societies seems to have a restrictive impact on SME development, and a regulatory step backwards was taken in this field. The previous company law clearly distinguished between open joint stock companies, established through public invitation for subscription and payment of shares and the closed where shares were issued only to the founders or to a limited number of other people. The current Serbian law recognizes only public and non-public companies, without a clear demarcation and uses poor legislative technique which makes it difficult to "navigate" in the law.

There are views (Jovanović, 2011, p. 319) that this Law was adopted for one time use during the transitional period of Serbia's EU accession, until a better one is adopted. The company law also has a legal gap with regards to the market price at which a company is bound to repurchase shares from disagreeing shareholders.

Regulation of Ownership and Control Functions, Protection of Minority Shareholders and Members of Corporations

The analysis of the Company Law, Capital Markets Law on and the Law on Takeover of Joint Stock Companies shows that these Serbian laws are now fully aligned with the EU Directives in the area of minority shareholders' rights (Đulić & Kuzman, 2012, p. 96). Therefore, at present, regulation of Ownership and Control functions, Protection of Minority Shareholders and Members of Corporations can have a limited facilitating effect on the development of SMEs, and is a direction to consider in future improvements to the company law. Hence, according to the World Economic Forum's Report Serbia holds the 94th place out of 144 countries covered by this competitiveness Report (World Economic Forum, 2016).

Obiovusly, a good legal framework is not sufficient for shareholders to enjoy effective protection if the regulation is not effectively implemented in practice. Since voluntary enforcement of law is clearly missing, the importance of forced enforcement is multiplied, and is manifested in the form of private enforcement by courts or public enforcement by regulatory and supervisory bodies such as the Securities Commission. A defect of this law is reflected in the fact that private persons are at will to decide whether to initiate enforcement procedure in case of violation of the rules, meaning that protection depends on citizens' private initiatives. This system is clearly not yielding intended results, taking into account that citizens' private initiative largely depends on their perception of the efficiency of courts and the legal system in general, costs, clarity of rules, burden of proof and incentives given to them. A detailed analysis of the practice of public and private enforcement needs to be conducted in the near future so as to identify issues and obstacles and define steps to eliminate them (Đulić & Kuzman, 2012, p. 95) in order to facilitate SME development.

Regulation of essential factors of interest for functioning of SMEs is certainly important, but development of new legal forms is equally important. For the reason, the next section of this chapter the author will focus on further development of new forms of companies in the EU and their possible introduction in Serbia.

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FUTURE RESEARCH DIRECTIONS AND INTRODUCTION OF POTENTIAL NEW LEGAL FORMS OF BUSINESS ORGANIZATION FOR SMEs

The author believes that it is very important to continue with research and development of SME regulatory framework in the EU and Serbia. Notably, the European Company, European Economic Interest Grouping (EEIG) and European Cooperative Society already exist in EU member states. The author provides a critical review of these forms of organization and linking of companies that could have a particular importance for medium-sized companies in both EU and Serbia.

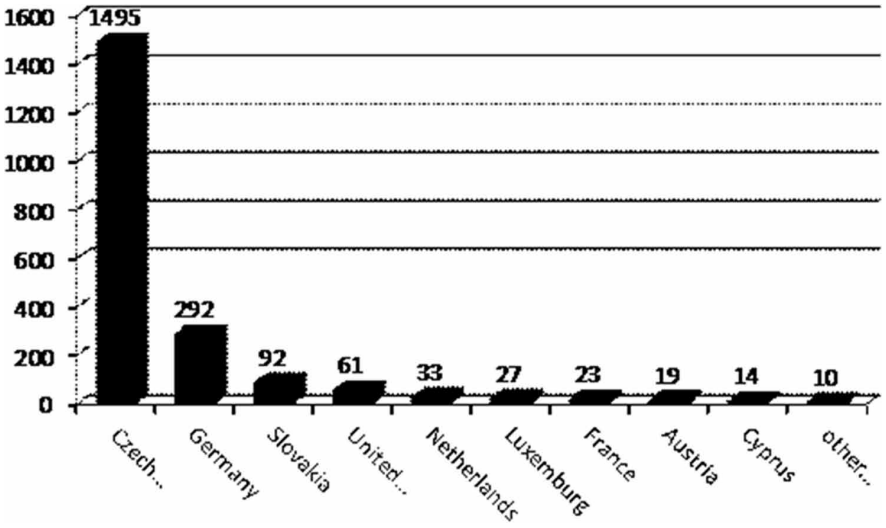
The European Company

The European Company (also known by its Latin name *Societas Europaea* or SE) is a type of public limited-liability company regulated under EU law (European Commission, 2016b).

The European Company as a legal institute was introduced in 2004, but has so far been used by a small number of companies for various objective reasons. According to available data of the European Company Database only 2,125 SEs were established until March 2014. The number of European companies is presented in Figure 1.

There are several features differentiating this joint stock company from other company types. First of all, it is a legal entity, a business company and a corporation, with its capital assets divided into shares, shareholders not liable for company's obligations and it has a statute as the articles of association. Founders of SE can only be the existing legal entities, and physical persons cannot appear in the founder's role. SE can be formed only in one of the foreseen ways: merger of two or more existing joint stock companies, formation of the SE as a holding company by a joint stock company, formation of the SE as a daughter company by any companies Conversion of an existing joint stock company established following regulations of a Member State can be converted under certain conditions into SE and formation of SE as a daughter company by the existing SE. Once formed, an SE can also found other SEs.

Figure 1. Geographical distribution of European Companies in EU (per country)
Source*: Own presentation of author*



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Its main advantage is the possibility of company's restructuring across borders into a form of cross-border merger, which was impossible until by some Member State laws, and there were insuperable difficulties. European companies thus adjust to the economic reality of a single market without meeting strict and complicating conditions of national laws, without costs particularly in relation to liquidation and new establishment in another country (Jeveremović-Petrović, 2007, p. 403). Many economic analysts deem that this institute suits larger companies and is discouraging for SMEs as it can be established by a minimum of two companies from two EU countries with a minimum capital of 120,000 Euros. As noted (Stefanović, 2011, p. 238-244), this automatically eliminates the vast majority of SMEs for which this founding capital is too high.

European Economic Interest Grouping

European Economic Interest Grouping (EEIG) is another form of interest linking of companies for a limited time on a status-legal basis with a view of facilitating and developing performance of the economic activity of members of SME associations and persons as professionals engaged in liberal professions and for establishing a cross-border cooperation. This could benefit the growth and development of SMEs from Serbia (Jevremović-Petrović, 2005, p. 8) and across EU when cooperating with neighboring countries. It is an excellent opportunity for international association not requiring high costs and is not complicated as other possible forms of association such as mergers, acquisitions and joint ventures.

Another advantage of this form of company is creation of links in different EU Member States without losing own legal personality or independence. This means that EEIG represents a legal entity acting on its own behalf and account in business transactions. Inexistence of regulations at its minimum capital assets does not lessen the legal certainty of its creditors, because unlimited joint and several liability of its founders for company's obligations is prescribed. It is important to mention that EEIG is not a simple association, not only for its formal legal personality but also because its founders retain independence in business. They do not transfer their activities and business to the EEIG, nor do they harmonize them with the EEIG's (Stefanović, 2011, p. 261).

EEIG is usually formed in the services sector such as legal practice, public notaries, telecommunications, financial services and real estate transactions. This supra-national legal creation can be founded by minimum two members (physical or legal persons, national or foreign) from at least two EU Member States and as such it facilitates cross border SME development within the EU. It is established in accordance with national legislation of the member state where it is seated upon its entry in the corresponding register based on the agreement on foundation.

The European Cooperative Society

Another supra-national legal creation can be established in the EU titled *The European Cooperative Society* (SCE, for Latin *societas cooperativa Europaea*). As its aim of establishment is to perform certain economic activities in the interest of its owners, not to penetrate the market for profit generation, it has no direct impact on SMEs but indirectly it does. *The European Cooperative Society* may operate throughout the European Economic Area if established by 5 or more persons residing in different member states or by legal entities (i.e. SMEs) established in different member states and its subscribed capital shall not be less than EUR 30,000.

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Practice shows that for development of their activities on the territory of other EU Member States SMEs use the generally known form of LLC, based on national law of the country in which they want to perform certain activities i.e. where they have their seat registered. It is a form of trading company most frequent in practice and particularly suitable for SMEs. Interestingly, the EU does not have a special regulation for LLCs because harmonization of legal norms relating to them was never proposed or initiated in the EU bodies. For that reason, this form of companies is subject to national law of the country of their establishment and harmonization is recommended.

Every systemic change of legislation, such as SME regulation optimization, usually has its threats and opportunities. For some of these changes it may be very difficult to define the category they fall in, e.g. with EU membership Serbian SMEs will join the single EU market, which will generate business opportunities for some SMEs while bringing "the end of business" to others for they may not be capable of meeting high technical and other standards regulated by the EU or handling the pressure of increased competition. Advantages of SME regulation optimization are numerous because they are implemented according to plan in line with a national SME Development Strategy. However, harmonization of national legislation with the EU *acquis* also bears certain costs, which could be categorized as follows according to the Standard Cost Model (European Commission, 2015a):

1. **Familiarization Costs:** Those incurred in the course of developing and understanding legislative requirements;
2. **Adoption Costs:** Representing the cost required changes to comply with legislation;
3. **Administrative Costs**: Representing the cost the administrative obligations required by the legislation.

Since there is no unique methodology to assess these costs, it is very difficult to determine them, especially since a difference should be made between costs existing without legislative harmonization (i.e. „business as usual costs") and those incurred due to harmonization (i.e. „administrative burden").

If change is made in Serbia through harmonization with EU law, optimization consequences will be numerous because they affect development of the entire Serbian economy whose prime mover is SMEs. Regardless of negative effects that may appear, the author finds them negligible as compared with the expected benefits.

CONCLUSION

The basic SME characteristics enable them to adjust faster and flexibly to dynamic conditions, changes in consumer needs and demands on the global market. These are also the sources of problems and obstacles restricting their development and not rarely endanger their survival. Experiences of developed countries show that a significant impact of SMEs on growth and employment can be expected only in an organized and stimulating business and legal environment suitable for their foundation, improvement and stability of business. This requires adoption of sound regulations and their efficient enforcement, which will enable fast, professional and objective resolution of problems they SMEs encounter in doing business. Growth and development in the EU and Serbia require development of SMEs whose competitiveness on the global market will be based on knowledge, use of new technologies and innovations. In order to

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attain this goal in practice, readiness of the SME sector to conquer a market respecting adherence to necessary standards is of extreme importance.

On its way to the fully-fledged EU membership, Serbia has taken serious steps to meet the necessary requirements, some of which directly or indirectly relate to SME development. A comprehensive reform of legislation is currently ongoing for the purpose of its alignment with EU regulations, which goes in favor of SME development in Serbia, since the EU emphasizes this sector by strongly supporting its growth and development.

Analysis of SME regulatory development has shown that relying only on the existing legal forms is not enough to fulfill the needs of this sector and its expansion at growth rates necessary to maintain their share in the market. Finding and developing optimal regulatory forms is the key of further SME success.

The EU and the Serbian Government in particular, need to consider and propose a series of legislative and regulatory measures, instruments and institutions so as to improve the SME regulatory framework. Those regulations that are not operating in accordance with the legal intentions need to be innovated. Therefore, governments, agencies and institutions with the public support should improve the SME sector through regulatory development, tax reliefs, exemption from general economic-legal regulations and granting a relatively favorable status to SMEs. Hence, it can be justifiably assumed that the process of modernization of the SME regulatory framework will continue.

The assumption of continued process of developing legal regulations stems from an estimate that the low level of growth and development of SMEs in countries like Serbia persists. Increased quality of the institutional structure, along with the reform of legislation on financial markets, is a vital precondition for changes in the quality of SME development. Indeed, company law, stock exchange law, securities law, competition law and bankruptcy law analyzed by the author should be better harmonized to serve both SME development and Serbia's EU accession, instead of being obstacles. The fact that 2016 is declared the "Year of the Entrepreneur" shows that Serbia is on the right path. This project has various state programs to build entrepreneurial strengths, assist entrepreneurs starting or developing a started business, and provides financial and non-financial support for long-term development of the entrepreneurial spirit.

SMEs in the EU and Serbia are an important sector of the national economy, which is why the economic policy with other segments of the "policy mix" should support its development. There isn't a unique and universal recipe on how to proceed with legal harmonization for SMEs. One of important recommendations refers to optimizing SME regulatory framework and cooperation with line ministries and development agencies. The Governments' role is to increase institutional and regulatory support to SMEs, offer new instruments and better inform the sector, especially on how SMEs can develop new legal forms of organization.

This chapter examined an area that is extremely important – SME regulatory optimization in the EU and its accession countries such as Serbia. Further, this chapter highlighted the theoretical basis for cross border SME cooperation. Each of these terms were presented from a theoretical basis and examined in the context of new legal SME forms. Ultimately, SMEs must innovate and respond to legal advances as all other business organizations, regardless of their legal status and size, in order to compete.

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KEY TERMS AND DEFINITIONS

Small and Medium-Sized Enterprises (SMEs): Small enterprises are defined as enterprises which employ less than 50 persons and whose annual turnover or annual balance sheet total does not exceed 10 million euros; medium enterprises employ fewer than 250 persons, have turnover below 50 million euros and annual balance below 43 million Euros.

European Union (EU): Unique economic and political union between 28 European countries that operates as a cohesive economic and political block.

EU Acquis: The accumulated of legal regime and body of common rights and obligations binding on all the EU member states.

Legal Harmonization: A process that approximates legal rules within an institutional framework through the adoption of regulatory models and laws more uniform and coherent with a policy agreed at a multilateral level such as the EU in which member states achieve uniformity in laws.

Legal Reform: Process of examining existing laws, and advocating and implementing changes in a legal system, usually with the aim of enhancing justice or efficiency.

Legal Certainty: A principle which holds that the law must provide those subject to it with the ability to regulate their conduct and is internationally recognized as a central requirement for the rule of law.

Micro Businesses: Enterprises and entrepreneurs operating independently which employ less than 10 persons and whose annual turnover or annual balance sheet total does not exceed 2 million Euros.

Legal Optimization: A systematic approach that shifts the focus to legal innovation or what should be different in a process with legal outcomes involving comprehensive structural change necessary for innovation, business outcome, or both.

ENDNOTE

[1] Editors' note: The possible connections between company size and founding capital in SME life cycle are also discussed in chapter 10.

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Chapter 85
Are the Payments System and e-Banking in India Safer than in other SAARC Members?

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ABSTRACT

This paper deals with the issues in the way the banks are managing risks in payments and settlement systems using netbanking within the legal frame of information technology in India compared to other SAARC members. It compared India with the SAARC members with respect to management of credit risk, liquidity risk and operational risk in the payment system. The findings are: (i) India, Pakistan and Nepal are stronger in managing all of aforesaid risks in their payments systems relative to the rest and (ii) India is the most permissive by nature as to the crime of computer hacking.

INTRODUCTION

Electronic banking (e-banking) is synonymous with internet banking (i-banking) from the user viewpoint when it comes to online (i) distribution of banking products by banks and (ii) payments and receipts of funds by banks as well as users. In India electronic banking expanded as a result of the internet communication technology revolution. Because a major driving force behind the rapid spread of i-banking all over the world is its acceptance as an extremely cost effective delivery channel of banking services as compared to other existing channels, after studying the experiences faced by USA, UK and Scandinavian Countries and taking assistance from the leading Indian multinational IT (information technology) company Infosys Limited the Reserve Bank of India (RBI) designed regulatory and technological frameworks for India, which the banks need to follow. The statistics on payments, clearing and settlement systems in the countries who follow the guidelines of CPSS (Committee on Payment and Settlement Systems) are available in Bank for International Settlements (2011).

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The rest of the paper critically discusses the anatomy of the electronic payment system in India compared India to other SAARC members in matter of managing credit risk, liquidity risk and operational risk from regulatory view point and examines the ease of hacking one's e-banking account from a hacker's perspective through axiomatic approach.

BACKGROUND

The onset of electronic banking (e-banking) in India dates back to 2001 after five years of commencement of electronic clearing service in 1995. Different innovations in this field include RTGS (Real Time Gross Settlement System), NEFTS (National Electronic Fund Transfer System), CTS (Cheque Truncation System), NECS (National Electronic Clearing Service), mobile banking and satellite banking. In the current decade by and large all commercial banks in India are offering internet banking, mobile banking and ATM facilities. In any Indian commercial bank (henceforth 'bank') governance of IT is a *part and parcel* of its corporate governance. Every such bank has an independent IT Committee with professionally qualified members. This Committee participates in the Board of Directors and manages all the risks related to IT at the enterprise level.

The needs for mitigation of credit risk in securities settlements and reduction in interest cost of slow speed in physical payments gave birth to the electronic payment and settlement systems. The second benefit of these systems is that they facilitate better management of operational and liquidity risks. The third benefit is that they help faster operations in cross border financial markets. But in the context of exposure to these markets one important lesson learnt from the history of financial crises is that the payment and settlement systems work as a channel through which business risk transmits and in the process, on many occasions, there is conversion of one category of risk to another, e.g. operational risk may change into market risk. A corollary of the above lesson is that through payment and settlement systems a single category of risk at the point of origin is distributed as multiple categories among the receivers. Other related lessons are that (i) categorization of business risk depends on the types of system design and settlement method, and (ii) it varies from case to case whether the settlement system alone has to bear the risk, share it with clients or bounce back to clients.

In India the banking regulator the RBI is at present in the process of addressing the following risks of payment systems - concentration risk, counter-party risk, credit risk, legal risk, liquidity risk, operational risk, regulatory risk, settlement risk and systemic risk. But during the last one year the Deputy Governors of the RBI expressed more concern about operational risk than other risks in their lectures on online banking and electronic payments. Because of the factors typical to emerging economies, like financial exclusion of a sizeable chunk of households, existence of informal sector, a massive parallel economy and availability of education on IT to a tiny privileged section of the population, other risks could not yet attract attention in the Indian context while online frauds like hacking, leaking database and phishing mostly having been engineered offshore, but involving onshore agents, have been receiving attention.

Therefore, being empowered by the Payment and Settlement Systems Act, 2007, the RBI requires every bank to (i) pursue eight basic principles of information security – confidentiality, integrity, authenticity, non-repudiation, identification, authorization, accountability and auditability, and (ii) identify its security requirements in line with the prescription of the CPSS constituted by the Bank for International Settlements (BIS). In the process a bank needs to detect the threats to information database, explore its vulnerability to security threats and the likelihood of occurrence of such threats, assess the potential

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impact of such threats on its business and comply with the legal, statutory, regulatory and contractual requirements involving itself as a party and its trading partners, contractors and service providers as counterparties. For ensuring smooth operations and proper conduct of the payment systems the RBI plans to integrate their six aspects – safety, security, soundness, efficiency, accessibility and authorization. This study plans to draw a comparative picture of how the banks are managing risks in payment and settlements systems as per regulatory guidelines in India vis-à-vis other countries.

THE PAYMENT SYSTEM SCENARIO IN INDIA

A ready reference of payment systems in the context of e-banking and clearing houses is provided in Bank of England (1996).

In line with Bank for International Settlements (2011) Subbarao (2012) described the following different electronic payment methods and systems in practice now.

CTS - it is an image based cheque clearing system obviating the need for physical movement of cheques; a further technological improvement of the regular CTS environment is the grid based CTS; the grid based CTS encompasses multiple clearing locations spread across several states facilitating the processing and clearing of cheques of all the banks under that particular grid; the National Payments Corporation of India, the umbrella retail payment organization set up by banks, has since operationalized a grid based CTS in Chennai in 2011;

Electronic Clearance Service (ECS) - the localized ECS metamorphosed into an ECS suite of products: (i) a localized ECS catering to the bank branches of a local clearing house; (ii) a regional ECS covering all the bank branches of a state or several states as in the Northeast; and (iii) a national electronic clearing system (NECS) covering the entire country; alongside, the electronic fund transfer (EFT) has evolved into the pan-India national EFT (NEFT); together, these two products have revolutionized the electronic retail payment market landscape in the country;

RTGS: The RBI introduced the RTGS system in March 2004 for settling gross inter-bank and customer transactions of values over INR 200,000; initially the RTGS in 2004, the gross daily turnover was just about INR 5 billion which grew in 2012 to an average gross daily turnover of nearly INR 2.5 trillion, an expansion by a factor of 500; similarly, the volume of transactions that stood at just a few thousand on average per day when RTGS started has today increased to well over 200,000 per day; the RBI is now focusing on graduating to the next-generation RTGS system with enhanced liquidity saving features and faster and higher processing capabilities.

In terms of Kar (2009) in the case of large-value inter-bank funds transfers, the most common approach is the adoption of credit transfer mechanism like RTGS; in a credit transfer system the funds move from the payer / paying bank to the receiver/ receiving bank; RTGS system is a gross settlement system in which payment instructions received from the sender are processed and settled with finality on a real-time or continuous basis (without being deferred to a later time) i.e. each payment instruction that enters the system is processed for payment immediately; individually and independent of other transactions between the same parties to the transaction; since the RTGS system is of systemic importance, the central bank usually steps in, with the provision of intra-day liquidity, typically interest-free, in the form of fully collateralized intra-day repo or intra-day overdrafts, up to limits based usually on a bank's creditworthiness and its capital. As per Reserve Bank of India (2012d) the RBI took initiative

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for facilitating real time funds transfer through RTGS because under the RTGS system, transmission, processing and settlements of the instructions will be done on a continuous basis.

In terms of Padmanabhan (2012) the introduction of new payment products and methods during last one and half decades could be termed as supply driven such as MICR (Magnetic Ink Character Recognition) technology, CEPS (Centralized Electronic Payment Systems) viz. ECS, EFT, NEFT, NFS (National Financial Switch), CTS, various type of plastic cards etc; these supply driven innovations for both paper-based and electronic payments have gained wide acceptance over a period of time; all these innovations and new payment methods have been driven by RBI, which rolled out the products and encouraged the banks to make use of these products to render better, faster, safer and secure services to their customers. Again in terms of Subbarao (2012) as technology improved and as banks moved on to core banking platforms, RBI shifted to aggregation and consolidation of the decentralized systems to exploit economies of scale; the shift to grid based CTS, and in the case of retail electronic payments, the NECS and the NEFT systems are illustrative of this.

Kar (2009) described large value systems such as RTGS and Securities Settlement Systems (SSS) for settlement of securities market transactions, and foreign exchange settlement system for settlement of transactions in the foreign exchange market; these systems deal with transactions of very high value which are time-bound, and when transactions in these systems are settled on gross basis, they put a high pressure on demand for liquidity by the system's participants.

BANKS' ACCESS TO CEPS

Initially only commercial banks were using CEPS. RBI is eager to make all licensed banks including cooperative banks, which are technologically capable but not using CEPS, use it, but a cooperative bank need to be a sub member of a member bank. As per Reserve Bank of India (2012a) though the sponsor bank is not required to take prior approval of RBI for sponsoring the sub-member/s into the centralized payment systems but as and when they sponsor a sub-member, they should immediately inform RBI the details of the sub-member, IFSC (Indian Financial System Code) or MICR codes allotted to the branch of the sub-member, date of commencement of sub-membership etc; the sponsor bank needs to put in place a risk management framework and a system of continuous monitoring of the risk management practices of sub-member/s that they desire to sponsor where the risk management framework needs approval from the Board of the sponsor bank.

RISKS IN THE PAYMENT SYSTEM

The concept of risks in payment systems has been suitably explained by the Bank of Thailand (2012) as the possibility of payments being incomplete; the impact can be measured in terms of damaging value or level of confidence in payment systems, e.g. in case of incorrect or delayed payments, there are costs arising from transferring funds back, interest charges, replacement costs and other types of charges; in case of not receiving or receiving partial payments, there will be a principal loss, while in some cases, which involve high value payments or payment participants at large, this may cause systemic risks among financial institutions and eventually affect the stability of the financial system; such risks generally exist in the payment systems that are not settled on a real-time basis i.e. net settlement

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systems, whereby the longer the time difference between payment and settlement time, the higher the risk exposure it is. Moreover, the risks will also depend on the volume and value of transactions in the payment system; different causes of payment system risks lead to different types of risks, major causes are counter party risk i.e. liquidity risk and credit risk. Bank of England (2009) refers to six payment incidents – (i) settlement risk: settlement member's insolvency/illiquidity, (ii) settlement risk: settlement member's operational problems, (iii) operational risk – disaster/terrorist attack, (iv) operational risk – system/network failure, (v) operational risk – utilities failure, and (vi) operational risk – external threat to networks. In terms of Gilbert (1989) many banks overdrew their reserve accounts at the central bank during part of each business day as they process payments within the payment system; the central bank is concerned about the extent of this intraday credit because it does not charge interest on it though it provides overdraft facility to the banks who may overuse it; further it may be creditor to a failed bank if the latter fails when already overdrew the reserve account, or a sound bank may assume risk through participation in electronic transfer. Kar (2009) maintained that in any payment transaction there is a time lag between instruction and settlement; unlike cash transactions between two counterparties, the incident of the damage is not limited to only two parties, rather it affects all participants in the system including those not contributing to the damage in the forms of

1. **Credit Risk:** The risk that a counterparty will not settle an obligation for full value, either when due or at any time thereafter;
2. **Pre-Settlement or Replacement Cost Risk:** The risk that a counterparty to an outstanding transaction for completion at a future date will fail to perform on the settlement date leaving the solvent party with an unhedged or open market position or deny the solvent party unrealized gains on the position; the resulting exposure is the cost of replacing the original transaction at current market prices;
3. **Principal Risk:** The credit risk that a party will lose the full value involved in a transaction e.g. in the case of securities transactions the risk is that the seller does not receive payment after delivery of the security or the buyer does not receive the security after payment – here full value of the security or fund transferred is at risk; when principal risk arises in foreign exchange transactions it is called cross-currency settlement risk or Herstatt risk; it is also a major risk in the securities settlement system; it occurs during the settlement process wherein the transaction is completed by final transfer of securities from the seller to the buyer (known as delivery) and final transfer of funds from the buyer to seller (known as payment); during this stage, counterparties are exposed to credit risk / principal risk where the seller could deliver the securities but not receive payment and vice versa;
4. **Liquidity Risk:** The risk that a counterparty does not settle an obligation in full value when it is due, she may not be insolvent but may settle the obligation afterwards; it is certainly higher when transactions are settled on a gross basis between counterparties to the transactions; its magnitude risk may be larger in Module 1 of the delivery vs. payment system (DvP) with gross settlement of both legs;
5. **Settlement Risk:** The risk that the settlement in transfer does not take place as expected, it may assume the forms of credit risk or liquidity risk; again while providing protection against settlement risk and pre-settlement risk the central counter party (CCP) itself becomes exposed to credit risk and replacement cost risk; and concentration of such default risk in a single institution like

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the CCP has the potential to disrupt the system's functions itself thereby placing all participants at another level of risk;

6. **Operational Risk:** The risk that deficiencies in information systems or internal controls could result in unexpected losses;
7. **Systemic Risk:** The risk that failure of a participant in a transfer system or financial market, to meet its obligations will cause other participants or financial institutions to be unable to meet their obligations when due; such a failure may cause significant liquidity or credit problems and as a result might threaten the stability of the financial system;
8. **Legal Risk**: The risk of loss because of unexpected application of a law or regulation or because a contract cannot be enforced; it also arises if the applications of laws and regulations are not clear; and
9. **Settlement Agent Risk:** The risk that the settlement agent which holds the cash accounts used for settlement purposes by participants in the system, may default preventing the depositor from accessing the funds derived from transactions; the risk is increased when all participants in the system opened accounts with the same settlement agent unless it is a clearing bank.

ADDRESSING RISKS AND LEGAL ISSUE

Risk Management in Payment System

As the apex bank of the country Reserve Bank of India (2912c) expressed interest in the payment systems on account of critical roles played by the payment systems with respect to financial stability, economic efficiency, monetary policy transmission and fiscal policy implementation. The same observed that an efficient payment system can promote financial stability and economic efficiency, at the same time it may induce and transmit risks in the financial systems; increased fraudulent activities which include attacks on IT infrastructure and delivery channels (cyber attacks), also pose significant risks to payment system providers; necessary measures to strengthen security have to be taken as such attacks are growing in scale and sophistication; this may also result in reputational risks to the payment system providers. Hence Reserve Bank of India (2012c) directed the banks to promote an enterprise risk management competence throughout the bank, including facilitating development of IT-related enterprise risk management expertise and establish a common risk management language that includes measures around likelihood and impact and risk categories and to integrate their risk management processes for its e-banking activities into their overall risk management approach. The same also prescribed that an information system auditor (IS Auditor) in a bank must define, adopt and follow a suitable risk assessment methodology in consonance with the focus on risks, to be addressed as a part of the overall Internal Audit Strategy and thus a successful risk-based IS Audit Programme can be based on an effective scoring system arrived at by considering all relevant risk factors.

Mitigation of Principal Risk component of Credit Risk

An important way described in Kar (2009) in which the principal risk is eliminated in securities transactions is through a mechanism known as Delivery versus Payment system (DvP) whereby a strong

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linkage is created between the two legs of the settlement process and the system's procedures ensure that delivery occurs if and only if payments occur and the non-defaulting counterparty does not lose its principal either because of delivery of securities or payment of value; SSS adhere to one of the three approaches to DvP known as follows: Module 1 - here the securities as well as funds obligations in the transactions are settled continuously on a gross basis; Module 2 – it ensures that securities are settled on gross basis while funds are settled on the basis of net obligations between the system participants; Module 3 – it settles both securities and funds on a net basis; thus a strong linkage is created between delivery of securities and payment of funds.

Mitigation of Settlement Risk

In line with Bank for International Settlements (2011) Kar (2009) narrated the use and the existence of CCP who guarantee completion of settlement process; a CCP is an entity that interposes itself between counterparties to financial contracts, thereby becoming the buyer to every seller and the seller to every buyer; in this process, commonly known as novation, the original bilateral contracts between market participants are removed and replaced by a new contract with the CCP itself; by doing this in SSS, the CCP is in a position to guarantee funds to the seller of the security, that in the event the buyer defaults, it will pay the seller who fulfills the obligation of delivering securities to the CCP; similarly, the buyer is protected against default by the seller with the CCP providing the securities as long as the buyer fulfills the obligation of making payment to the CCP; in India in order to address settlement risk the mechanism of using CCP was introduced with the operationalisation of Clearing Corporation of India Limited (CCIL); in order to facilitate a smooth transition to the new mechanism, the settlement of government securities transactions was centralized at the Public Debt Office in Mumbai; with CCIL acting as CCP by novation, settlement guarantee was provided, thus reducing the occurrence of replacement cost risk or pre-settlement cost risk and also settlement risk; with this arrangement in place, the DvP Module 2 was adopted since February 2002 for settlement of transactions in government securities where securities are settled on a gross basis while funds are settled on the basis of multilateral net obligations; once this mechanism had stabilised, the DvP Module 3 arrangement was put in place from April 2004 with settlement taking place on the basis of multilateral net obligations for both securities leg (security-wise netting is done) and funds leg; due to the netting effect, the pressure on liquidity is also reduced in the system; under the CCP arrangement, members with obligations to deliver securities, will pay-in the securities to CCIL while the members with payment obligations will pay-in the funds to CCIL; thereafter, CCIL will pay-out the securities and funds to members who have a net receivable position in securities and funds, respectively; CCIL also ensures that its settlement guarantee commitment is honored by putting in place an arrangement for lines of credit with certain institutions for provision of both securities and funds, which will be accessed in case of default by any member to the CCIL; again after the establishment of the CCIL a major chunk of foreign exchange transactions are put through the CCIL arrangement and settlement takes place on the basis of multilateral netting obligations; this facilitates reduction in liquidity risk (as compared to the earlier gross settlement arrangements), replacement cost risk as well as settlement risk because CCIL has put in place lines of credit to facilitate settlement of both the INR leg as well as US$ leg.

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Mitigation of Liquidity Risk

As per Reserve Bank of India (2012e) gross settlement in a real time mode eliminates credit and liquidity risks. In the words of Kar (2003) in the case of traditional settlement methods, incidence of liquidity risk was usually minimized through bilateral netting arrangements; multilateral arrangements for netting continued to be faced with the constraints mentioned earlier, till the Continuous Link Settlement (CLS) Bank arrangement was launched; under the PvP-based arrangement of CLS Bank, while settlement of trades takes place in the books of CLS Bank on a gross basis, the members need to fund their accounts on the basis of multilateral net short positions they are expected to have; further, in order to mitigate liquidity risk, the CLS Bank itself has committed lines of liquidity / funds with major banks for each currency; thus, in the event of a pay-in failure by any member, CLS Bank will use these liquidity facilities to complete its own pay-out obligations to the non-failing members in the required currencies thereby preventing systemic failures; in an RTGS system potential liquidity risk has to be addressed by both individual participants as well as the system; in order to facilitate better liquidity management (within the system) by the participants and also enhance the efficiency of transactions being settled; RTGS systems provide facilities such as Queuing Mechanism (under which pending payment instructions are temporarily kept within the system itself rather than being rejected for lack of funds in the paying bank's account), assignment and re-ordering of transaction priorities, interface with other systems from which the participant may be able to source additional liquidity, and so on.

Mitigation of Pre-Settlement Risk

Kar (2009) recommended use of a CCP locally in each country (as in the case of SSS) for settlement of transactions in specified currencies; by providing settlement guarantee, the CCP provides protection against pre-settlement risk or replacement cost risk.

Mitigation of CCP Risk

Regarding transactions in government securities, as per Bank for International Settlements (2011), all participants need to open subsidiary general ledger (SGL) account and use the securities in their SGL account to provide collateral and contributions to the settlement guarantee fund maintained by CCP to facilitate the guaranteed settlement of government securities transactions; this fund is used for CCP-related risk management; if a member defaults, its contribution to the fund is utilized. As per Kar (2009) the default risks facing a CCP may be mitigated by adoption of extensive risk management policies and practices by CCPs including membership criteria, extensive use of collateral and their valuation, margining requirements, committed lines of credit, etc; CCIL minimizes concentration of risks on itself by adoption of various risk management practices including membership criteria, maintenance of collateral pool, margining, mark-to-market of collateral, etc.

Mitigation of Credit Card Fraud Risk

Similar to the way, as happened in Australia reported by Bank of International Settlement (2011), this risk is taken care of nowadays by one-time password and immediate message to the registered mobile number after transactions.

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Table 1. Risk Management of payment system

Country	Liquidity Risk Management	Credit Risk Management	Operational Risk Management
Afghanistan	No	No	No
Bangladesh	No	No	No
Bhutan	No	No	No
India	Yes	Yes	Yes
Maldives	No	No	No
Nepal	Yes	Yes	Yes
Pakistan	Yes	Yes	Yes
Sri Lanka	Yes	Yes	No

Sources: The references mentioned in the previous paragraph

Based on Bank for International Settlement (2004), Kar (2009), Reserve Bank of India (2012e), Maldives Monetary Authority (2011), Nepal police (2016), Mcquerry (2015), Bangladesh Bank (2014), International Business & Technical Consultants. (2016) and State Bank of Pakistan (2012), Table 1 shows the risk management in the payment system in the SAARC members.

(CRIMINAL) ECONOMICS OF HACKING: SAARC COUNTRIES

In criminology there are standard theories like strain theory, social learning theory, social control theory, labeling theory and theory of biology, genetics, and evolution. The rational choice theory applies to both criminology and economics (Akers, 1991). As per this literature, if hacking benefits, the cost of hacking over the benefit deters (Ulen, 1991). The compatibility between rational choice to hack and the legal state of India relative other SAARC members is examined below.

Axiom IA

First let us consider safe access to internet (SATI) as a digital good, which is measured in terms consumption of megabytes (MB). All other goods the consumer who is a *Homo Economicus* here used to working with computer and SATI in daily life, consumes are bundled into a composite good G, the good that need to be given up in order to consume a positive quantity of internet. Let us distinguish between hacker and non-hacker. A homo economicus, who hacks is not a consumer. A homo economicus, who does not hack is a non-hacker or consumer. The price per MB facing a consumer is positive. For a consumer law of demand works for all goods.

Axiom 1B

Homo Economicus has right to privacy to access of internet to the extent of the specified megabytes she paid for.

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Axiom 1C

One *Homo Economicus* can violate a right of another *Homo Economicus*. Law of demand does work on SATI for a hacker because it is rational for a hacker not to pay a positive price for SATI.

Corollary IA

In light of the Rational Choice Theory *Homo Economicus* can make utility analysis where demand may be derived from utility and there exists a marginal utility function as per Jeevons as described in Stigler (1950) and there also exists consumer equilibrium in terms of equality of the ratios of marginal utility to price of all goods in terms of Gossen also described in Stigler (1950).

Corollary 1B

Violation of one's right by another *Homo Economicus* is an infringement-offence.

Corollary 1C

A *Homo Economicus* commits an offence when the benefits therefrom exceeds the legal costs (Becker, 1974).

Axiom II

Use of SATI happens with low intensity or high intensity. Low intensity SATI consists of entertainment, personal non-enterprise email browsing, occasional networking and some utility services like online shopping, online bill payment etc.

High intensity SATI happens at enterprise level, research and development and continuous networking.

Corollary II

Axiom II implies the indifference curve of *Homo Economicus* would be convex with diminishing MRS at low intensity use of SATI and may be concave with increasing MRS at high level of use.

Axiom II

In the low intensity level SATI is a normal good. Demand for SATI varies inversely with price but positively with income.

In the high intensity level of use of SATI behaves like an inelastic good when price increases but like an inelastic good when price decreases. The marginal utility of SATI here is increasing at an increasing rate.

Axiom III

There is a market for SATI in the sense that there are demand for SATI and supply of SATI. Increase in real price of SATI means fall in demand *vice versa* attributable to low intensity users.

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Corollary III

An increase in real price of SATI *ceteris paribus*, causes shrinkage in the equilibrium consumption bundle of *Homo Economicus* and *vice versa*.

Axiom IV

A common meaning of hacking in laws of different countries is unauthorized access to computer or data. An act of hacking for the purpose of fame or greed deprives *Homo Economicus* of the use of SATI for which *Homo Economicus* already paid the price. Different ways of hacking and hackers' markets are described in Leeson and Coyne (2015). This study distinguished between three types of hacking - (i) good hacking, (ii) fame-driven hacking and (iii) profit-driven hacking (PDH).

Corollary IV

PDH increases the real price of SATI facing *Homo Economicus* because more is o be paid on internet security.

Axiom V

PDH benefits the hacker by providing extra purchasing power, e.g. transfer of money from hacked internet banking account or getting information from hacked email account for the purpose of espionage.

Corollary V

PDH reduces the purchasing power of the victim.

Axiom V

PDH generates negative externality to *Homo Economicus* in the form of infringement upon his private right to access to internet. The concept is taken from Eatwell, Milgate and Newman (1987).

Corollary VI

PDH causes hike in real price of SATI facing *Homo Economicus*. if similar PDH continues to happen with more than one consumers of internet access, PDH will create distortion in a market that may be otherwise competitive primarily through affecting the consumer demand schedule via shortening the intercept, i.e. autonomous demand, which is not sensitive to price and demand.

Theorem

It may be deduced from Corollary 1C and Corollary VI, the administration (consisting of law and enforcement) need to make legal costs higher than benefits of PDH facing the hacker such that the consumer need not revise her pricing. The proof is in the Appendix.

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Table 2. Penalty for computer hacking

Country	Law	Maximum Penalty	Provision for Bail at least in some cases
Afghanistan	None	None	
Bangladesh	Information and Communication Technology Act 2006	Either or both of three-years imprisonment and fine three lac taka	Yes
Bhutan	None	Crimila Lw of the Peoples' Republic of China 1997	No
China		Death (The Guardian, 1998)	No (Permanent Mission of the People's Republic of China, 1979)
India	Information Technology Act 2008	Either or both of three years and fine two lac rupees	Yes
Japan	The Code of Criminal Procedure (Act No. 131 of 1948)	Life Sentence (Mctague, 2014)	No
Maldives	None		
Nepal		Fine Rs 3 lacs or five-year imprisonment	
Pakistan	Prevention of Electronic Crimes Ordinance 2007	Either both of five-years imprisonment or five lac rupees	Yes
Sri Lanka	Computer Crime Act No 24 of 2007	one lac rupees, five-years imprisonment or both	No

Evidence: The maximum punishment for hacking in India is three years, fine two lac rupees or both as per the Information Technology Act 2008. Hacking is a bailable offence in India. In Pakistan the Prevention of Electronic Crimes Ordinance, 2007 is bailable except for the offences liable to imprisonment of seven years or more. In Bangladesh it is a bailable offence as per the Information and Communication Technology Act 2006. The maximum penalty is imprisonment of three years or three lack taka or both. As per the Computer Crime Act 2007 of Sri Lanka, the maximum penalty for the non-bailable offence may be one lac rupees, five-years imprisonment or both. In Nepal, as per the Electronic Transactions Act 2063, 2006, the maximum penalty for the non-bailable offence may be two lac rupees, three-years imprisonment or both. There seems to be no specific penalty for hacking in Bhutan (Oh and Lee, 2014). Maldives and Afghanistan are yet to have one. In China it is death sentence (The Guardian 1997). Outside SAARC, the strictest punishments are observed in China and Japan.

In terms of Table 2 India is the softest among those SAARC member countries having specific legal provisions against hacking.

Mitigation of Foreign Exchange Settlement Risk

Kar (2009) mentioned efforts of various international agencies, including central banks, paid-off in the form of Payment versus Payment (PvP) settlement effected through CLS Bank; in order to enable PvP-based settlement then in seventeen currencies arrangements were done to ensure that settlement take place through the RTGS systems in the countries of those currencies, with the pay-in first made

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by all the settlement members into the account of the CLS Bank and then CLS Bank makes the pay-out subsequently to the accounts of the members who have to receive those currencies.

Addressing the Legal Issue

Reserve Bank of India (2012d) observed a major initiative towards integration of trade and finance over the globe through e-commerce is the United Nations Commission on International Trade Law (UNICITRAL)'s Model law, which was adopted by the General Assembly of United Nations and has been recommended to the member nations for consideration while revising / adopting their laws of electronic trade; Government of India has enacted the Information Technology Act, 2000 in order 'to provide legal recognition for transactions carried out by means of electronic data interchange and other means of electronic communication, commonly referred to as 'electronic commerce'…the Act, which has also drawn upon the Model Law, came into force with effect from October 17, 2000; the Act has also amended certain provisions of the Indian Penal Code, the Indian Evidence Act, 1872, the Bankers Book of Evidence Act, 1891 and Reserve Bank of India Act, 1934 in order to facilitate e-commerce in India; however, this Act will not apply to (i) a negotiable instrument as defined in section 13 of the Negotiable Instruments Act, 1881, (ii) a power-of-attorney as defined in section 1A of the Power-of-Attorney Act, 1882, (iii) a trust as defined in section 3 of the Indian Trusts Act, 1882, (iv) a will as defined in clause (*h*) of section 2 of the Indian Succession Act, 1925, (v) any contract for the sale or conveyance of immovable property or any interest in such property and (vi) any such class of documents; again the 4th Schedule to the Information Technology Act, 2000 has amended the Reserve Bank of India Act, 1934 empowering RBI to regulate electronic funds transfer between banks, and between banks and other financial institutions.

FURTHER RESEARCH DIRECTION

Padmanabhan (2012) pointed out that generally the credit card issuers are not liable for fraudulent transactions unless the customer reports the unauthorized transactions immediately; so the shift in liability from customers to banks comes into effect only after the customer informs the bank; banks argues that they take adequate steps to ensure safety of card transactions, and the least they expect from the customer is to report the card loss immediately; here this issue is the protection of a customer adhering to all the risk measures prescribed by the bank, but yet unauthorised transactions took place in her account. In this context Reserve Bank of India (2012d) held on a similar view that even though, the Information Technology Act, 2000 has provided for penalty for denial of access to a computer system (Section-43) and hacking (Section – 66), the liability of banks in such situations is not clear. The same pointed out that the Information Technology Act, 2000 in its Section 72 has provided for penalty for breach of privacy and confidentiality and Section 79 of the Act has also provided for exclusion of liability of a network service provider for data traveling through their network subject to certain conditions; thus, the liability of banks for breach of privacy when data is traveling through network is not clear; this aspect needs detailed legal examination and at the same time the issue of ownership of transactional data stored in banks' computer systems also needs further examination.

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CONCLUSION

This study analyzed the risks embedded in the payment system and e-banking systems in India It covered various risks in the payment systems, their management and how to mitigate the same based on the reports and guidelines distributed by the Reserve Bank of India and Bank for International Settlements. It made a comparison among the SAARC members with respect to management of credit risk, liquidity risk and operational risk in the payment system. In the axiomatic frame it examined the motive of rational hackers depending upon the legal state of affairs in the SAARC member countries. The author is of then opinion that India, Pakistan and Nepal are stronger in managing all of aforesaid risks in their payment systems relative to the rest and (ii) India is the most permissive by nature as to the crime of computer hacking.

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APPENDIX

Let us consider a two person single good economy, where one is a consumer and the other is a hacker. The good is SATI with a positive price. When price per MB reduces by one unit, the demand of a consumer for SATI increases by, say, b_1 following Axiom 1A and the demand of a hacker for SATI increases by b_2 following Axiom 1C, where $1 > |b_2| > |b_1| > 0$, i.e. a hacker tends to buy more when price reduces and vice versa because through she may obtain free quantities of the good. Again as per Axiom IA the law of demand holds for a consumer but does not for a hacker. Hence $b_1 < 0$ and $b_2 > 0$.

If autonomous demand of the consumer and the hacker are respectively a_1 and a_2, where a_1, $a_2 > 0$ and the supply is assumed, for the purpose of simplicity, fixed at S, the autonomous net supply is $NS = S - a_1 - a_2$. In equilibrium the aggregate net demand:

$$\left(b_1 + b_2\right)p = NS \Rightarrow p = \frac{NS}{b_1 + b_2}$$

where the denominator is positive.

Expanding the above expression yields:

$$a_1 + a_2 + b_1(p) + b_2(p) = S$$

rearranging and rewriting of which results in:

$$\left\{a_1 + b_1(p)\right\} + \left\{a_2 + b_2(p)\right\} = S, \text{ i.e. } D_1 + D_2 = S$$

where D_1 and D_2 are demand functions of the consumer and the hacker respectively:

$$D_1 \Rightarrow q = a_1 + b_1(p), \text{where} \frac{dq}{dp} = b_1 < 0$$

and:

$$D_2 \Rightarrow q = a_2 + b_2(p), \frac{dq}{dp} = b_2 > 0$$

as per Axiom 1A.
Hence is the proof.

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Chapter 86
The Role of Culture in IT Governance Five Focus Areas: A Literature Review

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ABSTRACT

Information technology governance (ITG) is one of the top challenges of managers today and culture in different level can have an important role while implementing IT governance. This is a new and significant issue, which has not been investigated deeply. This paper sets out to provide a systematic review of the literature, focusing on the role of culture in IT governance. The literature review findings are categorized through the lens of IT governance's five focus areas which are IT strategic alignment, IT value delivery, Risk management, IT resource management and Performance measurement. This study contributes to the field of IT governance by reviewing and discussing the existing literature on the role of culture on IT governance. This literature review resulted that there are few research studies in this topic and many of the IT governance focus areas are not covered regarding the role of culture in these IT governance areas.

INTRODUCTION

In the current competitive business environment, the enterprises are greatly depending on the use of IT to create value for their business (Debreceny & Gray, 2013; De Haes et al., 2016). Information technology is potentially the key driver of economic capital in the 21st century and it is even changing the industries (Benbasat & Zmud, 2003; ITGI, 2003; Crowston & Myers, 2004; Sueyoshi & Goto, 2013; Workman,

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2014; Venkatesh et al., 2016). Hence, IT governance, which deals with decision rights and responsibilities of people working with IT for gaining value from IT (Weill & Ross, 2004), is one of managers' top concerns (ITGI, 2003; ISACA, 2011). IT governance is strongly linked with the corporate governance. Corporate governance defines the division of power and wealth in the corporation. Corporate governance is influenced by culture (Licht et al., 2005) and consequently culture is a very important influencing issue in IT governance as well. There are many different uses of the term "culture," such as shared forms, ideas, symbols, values, ideologies, rules and collective norms and patterns, and, of course culture is not unique in this way and many definitions and aspects of it exist (Alvesson, 2012).

In fact, culture is blamed in many cases when IT governance fails to deliver value to the business (Kingsford et al., 2003). Culture should be considered with its both possible inhibiting and supporting effects on IT governance implementation (Ke & Wei, 2007). Still, there is a lack of research concerning the link between culture and IT governance. Therefore, this study aims at performing a systematic literature review on the relationship between culture and IT governance and to providing a future research agenda.

The role of IT within organizations is changing from an operational role to a more strategic one and this consequently stresses the need to make sure that IT is properly governed (Lunardi et al., 2013; Bergeron et al., 2015). IT governance is involved in the relationship between the ownership and control structures of the firm and IT performance (Ferguson et al., 2013). Successful implementation of ITG is a challenge for managers and yet we know very little about that (Debreceny, 2013, Jairak et al., 2015). It has also been suggested that culture plays an important role in the implementation and use of IT in organizations (Walsham, 2002). Culture has been often recognized as one of the impact factors when failures happen in IT implementation in organizations. With its potential constructive or catastrophic effect on organizations' management and operations culture should be reflected by managers while implementing IT governance (Dittes &Smolnik, 2016).

The literature on management shows that national and organizational cultures can affect companies' performance and there is a need for greater number of studies on the interdisciplinary fields that bridge IT and organizational studies and identify how they interact with each other. In the current dynamic work environment, both technological and institutional contexts should be considered to understand how organizations are operating (Orlikowski & Barley, 2001; Kingsford et al, 2003; Leidner & Kayworth, 2006; Kappos & Rivard, 2008, Orlikowski et al., 2016). Leidner and Kayworth (2006) believe that culture is a crucial dynamic, which explains the interaction among the social groups and IT in an organization. Claver et al. (2001) also states that the improvements in the organizational culture are required when organization are seeking to boost their information systems efficiency. Organizations need to match their technology with their organizational environment to achieve the optimized value from their IT (Hester 2013).

Additionally, when implementing IT governance, it is very challenging to respond to different technical, environmental and business changes. The speed and direction of change reaction in organizations influence the way a firm creates competitive advantage and deals with the new business environment challenges such as control and efficiency (Ventris, 2004; Harison and Boonstra, 2009; Chen et al., 2014). Laudon and Laudon (2007) argue that technology, task, structure and people are linked with each other and therefore changes in one of them influence the other three. The new technology used successfully by one company, may face failure in another due to organizational resistance to it and to differences in organizational cultures. However, the relationship between IS and culture remains a challenging topic for researchers and practitioners (Kappos & Rivard, 2008). It is considered that the gap spotting is a first

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step towards a legitimate and fruitful approach to motivate the undertaking of a future theory development effort (Rivard, 2014) and this is the motivation for this literature review.

The aim of this study is to conduct a systematic literature review (Webster & Watson, 2002) of the relationship between culture and IT governance. Using the lens of IT governance five-focus areas framework, this study seeks to find traces of culture in each of these areas of IT governance in previous research.

The rest of the paper is structured as follows. Section two presents the theoretical background of the relevant literature on IT governance and culture. Section three discusses the research methodology followed by section four that presents the outcomes from the literature review. The last two sections present Discussions, Conclusions and Future research.

THEORETICAL BACKGROUND

An Overview of Culture

National Culture

According to Hofstede (1984), the culture of a society called the "national culture" is defined as the shared values, understandings, assumptions and goals that exist in the current society and have been learnt from earlier generations. This culture gives directions to the way of living, communication, life and work standards and expectations of the person (Dressler, 1976).

Rauch et al. (2013) indicates that different national cultural contexts are related to various issues, even to the degree of innovation and growth in firms. According to Deresky (2011), it is a critical skill for managers of organizations to have an understanding of the national culture of the environment in which they are running their business, especially when organizations operate globally. Different researchers have developed various frameworks for studying and understanding national culture and it has been assessed by both values and practices (i.e. Hofstede, 2001; Javidan & House, 2001; Gupta et al., 2002).

Organizational Culture

Organizational culture is the object of many studies in relation to its definition, its effects on organizations' success or failure, and its formation and influential factors (Schein, 2009; Alvesson, 2012). Organizational culture is expressed from two aspects: 1) practices and values and 2) behavior and beliefs. Organizational culture can be defined as the specific ways that an organization behaves over a period of time (Kostava, 1999). The organization's work practices define the organization's knowledge and competence, while organizational values and norms weave a belief system (organizational culture) by which organizational members make sense of their actions (Vieru & Rivard, 2014).

Cameron and Quinn (2011) have developed a strategy for measuring organizational culture by adapting both quantitative and qualitative approaches. They propose the Organizational Culture Assessment Instrument (OCAI), a six-dimensional model of organizational culture based on the Competing Values Framework previously introduced by Quinn and Rohrbaugh (1983). Another worth noting model is the "X Model of Organization Culture" developed by Smit et al. (2008). This model categorizes the organizational culture elements into five clusters named: leadership, strategy, adaptability, coordination and relationship. Choo (2013) proposes a typology called "information culture" and counts it as analogous

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with organizational culture. Information culture is similar to organizational culture but with a distinctive focus on the cultural norms, values and behaviors regarding the way information is perceived, used and managed in an organization. Additionally, according to Kappos and Rivard (2008) there may even be subcultures within an organization related to the norms and values shared among its subunits. Guzman and Stanton (2009) also note the important role of cultural fit to subunits in the organizations. They suggest that the cultural fit of the employees working with IT occupations influences the IT performance.

An Overview of IT Governance

IT Governance Definition

According to Wilkin and Chenhall (2010) and Zarvić et al. (2012), the term "IT governance" appeared for the first time in research during the 1990s. Loh and Venkatraman's (1992) work is one of the first studies to use the concept of IT governance, pointing out that IT governance is starting to be acknowledged as a significant part of IT strategy.

IT governance is strongly linked with the corporate governance (Licht et al., 2005). Van Grembergen and De Haes (2009) also state that "enterprise governance of IT governance is an integral part of corporate governance" (p. 4). Corporate governance is defined as the division of power and wealth in the corporation and the system through which the organization is controlled and directed (Van Grembergen & De Haes, 2009). The link between the corporate governance and IT governance was found to be that important that the International Organization for Standardization (ISO) has created a specific standard (ISO/IEC 38500:2008) for corporate governance of IT. It defines the guidelines for preferred behavior in corporations to guide the IT decision making.

Van Grembergen (2007) defines IT governance as "the organizational capacity exercised by the board, executive management and IT management to control the formulation and implementation of IT strategy and in this way, ensure the fusion of business and IT" (p.1).

This study adopts Weill and Ross' (2004) definition of IT governance which represents the ensemble of decision rights and responsibilities of organization members implementing and using IT for gaining value from IT.

IT Governance Focus Areas

There are five focus areas for IT governance identified by the IT Governance Institute (ITGI, 2003): Strategic Alignment (SA), Resource Management (RM), Performance Measurement (PM), Value Delivery (VD) and Risk Management (RK). The five focus areas of IT governance are based on the stakeholders' values. The first three (strategic alignment, resource management and performance measurement) are considered as drivers and the other two (value delivery and risk management) are outcomes. Most of the IT governance models, frameworks, standards and structures consider these five focus areas during IT implementation (ITGI, 2003) and this is the reason for this research to choose this practical approach of IT governance in reviewing and categorizing the literature.

The ITGI (2003) defines each criterion as follows:

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1. **IT Strategic Alignment:** Ensures a linkage between business and IT plans, defines, maintains and validates IT value propositions and aligns IT and enterprise operations. The main concern relates to the linkage of enterprise business and IT plans with operations.
2. **IT Value Delivery:** Deals with the execution of the value propositions through the delivery cycle, makes certain that IT delivers the promised benefits vs. the strategy. The main concern is optimizing costs and proving the intrinsic value of IT throughout the delivery cycle.
3. **Risk Management:** Ensures risk awareness by senior officers in the organization, a clear transparency and understanding of the organization's desire for significant risk and compliance requirements and embedding of risk management responsibilities in the organization. The main concern is to do with embedding accountability to mitigate significant risks.
4. **IT Resource Management:** Ensures optimal investment and proper management of critical IT resources: applications, information, infrastructure and people. The main concern regarding optimizing knowledge and infrastructure. The IT resource management area overlays all the other four areas.
5. **Performance Measurement:** Tracks and monitors implementation of strategies and projects. This also applies to the use of resources, performance of processes and delivery of services. An example is the use of a Balanced Score Card (BSC), which translates strategies into action for achieving goals that are measurable beyond conventional accounting. Key issues relate to setting and monitoring strategies and services (Figure 1).

IT governance is a continuous life cycle that can be entered at any point. Usually the organizations start with the strategic alignment and after that they start the implementation and then delivering value from IT. The risks should be identified and addressed, the performance needs to be measured, and the strategy should be monitored regularly. ITGI (2003) states that IT governance does not occur in an isolated place and it is influenced by the environment that it is taking place in and this environment is at the same time influenced by some factors such as: "stakeholder values; the mission, vision and values of the enterprise; the community and company ethics and culture; applicable laws, regulations and policies and industry practices" (p. 21). This highlights the significant role of environmental factors such as culture in the focus areas of IT governance.

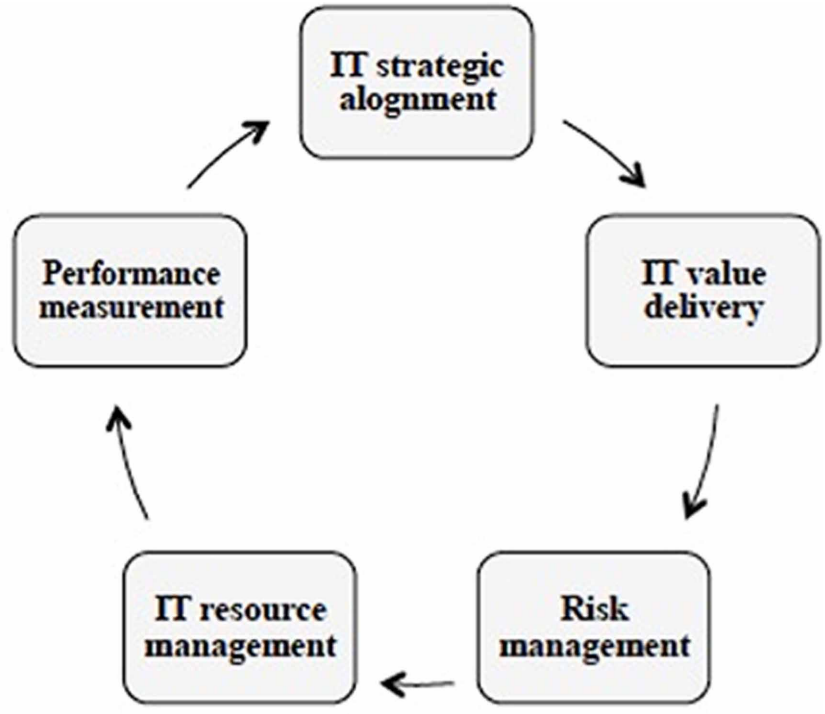
RESEARCH METHODOLOGY

To conduct this literature review we followed the following steps: (1) identified keywords; (2) found the literature examining the topic; (3) selected and filtered the relevant studies; (4) organized the findings; and (5) summarized the findings from literature and categorized them (Creswell, 2011). The six-stage technique suggested by Punch (2014) was used to search for pertinent articles:

1. Using Boolean logic for key terms
2. Using phrase searching
3. Using proximity operators
4. Using truncates and wildcards
5. Determining database fields
6. Limiting searches

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Figure 1. Five Focus Areas of IT Governance (Adapted from ITGI, 2003)



In order to prevent having an unmanageable number of articles with limited value, we decided to bind the sample articles to those significantly investigating both culture and IT governance (any aspect of five focus areas of IT governance). The concept of IT governance has received more attention from researchers and practitioners after 2000 and particularly the research literature in this topic in relation with culture is very recent. Therefore, we have considered the research literature published between years 2000 and 2016 for this research. We have focused to find the studies that have the culture and IT governance relationship, role or influence as their significant research question and results. Using the above strategy, the literature search was first conducted by accessing the databases of Business Source Premier, Science Direct, IEEE Explore, AIS and ACM digital library. Then a similar search was done in the leading journal volumes such as MISQ, MISQE, IJITBAG and IJIS and related conference proceedings, such as ICIS, HICSS and AMCIS. Duplications were found and removed.

Based on a search for combinations of keywords such as “culture”, “IT governance”, “IT strategic alignment”, “IT value delivery”, “IT risk management”, “IT resource management” and “IT performance”, we initially found 167 articles in culture and ITG (15 in culture and SA, 70 in culture and RM, 4 in culture and PM, 20 in culture and VD and 58 in RK). To be included in the review, an article had to meet two criteria. First, culture had to be the significant focus of the study and part of hypotheses, theoretical lens, findings and conclusions. Second, IT governance (in one or more of its five focus areas) had to be another topic examined by the article and it had to be in a relationship with one of the concepts related to culture. The articles in which culture was only briefly mentioned, or that were not focusing on IT governance were excluded.

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Figure 2. Theoretical Approach on the Role of Culture in IT Governance Five Focus Areas



Considering the above criteria, the initial number of articles found were refined by reading their abstract first and if needed, their results, methodologies and eventually the full text. This process resulted in a sample of 15 articles that were reviewed to determine their methodological approach, type of culture and levels (national, organizational or subunit), area of IT governance, and key findings. We used Webster and Watson's (2002) concept-centric approach for writing the literature review. Figure 2 illustrates the analytical tool that this study used to seek evidence of cultural impacts on IT governance in the extant literature.

LITERATURE REVIEW OUTCOMES

A Taxonomy of the Cultural Concepts and Terms Used by the Reviewed Papers

The literature review was conducted using the lens of five focus areas of IT governance for categorizing the cultural impacts on each of them. A taxonomy of the cultural concepts and terms was defined and used to present the cultural issues in the selected literature (Table 1). This taxonomy contains the classification of cultural values defined by various authors and specifies the reference for those concepts and their cultural level (organizational/national). After reviewing the literature, a concept matrix was provided to represent the findings of each article related to each of the five focus areas (Table 2). The concept matrix as the result of this literature review summarizes the information on each article, including its author(s), studied culture level and methods and findings, which are clustered through the five focus areas of IT governance.

Table 2 provides the categorization of the reviewed papers based on the studied focus area of IT governance and the level of culture used.

As represented in Table 2, there are only 15 research studies concerning culture and IT governance. Four out of five focus areas received more attention from the research literature and there was only one paper found to investigate briefly the role of culture on the risk management area of IT governance.

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Table 1. A Taxonomy of Cultural Concepts and Terms Used in the Reviewed Papers

Taxonomy of cultural concepts and terms used in the reviewed papers				
Cultural value-dimension	**Reference**	**Level of analysis**	**Description of values**	**Reviewed Papers**
Bases of truth and rationality	Detert et al., 2000	Organizational	Determines the degree to which the employees believe something is true or not and how they find it in an organization.	Rowlands et al., 2015
Nature of time	Detert et al., 2000	Organizational	The concept of time is dealing with the organization long-term planning, strategic planning and goal settings.	Rowlands et al., 2015
Motivation	Detert et al., 2000	Organizational	Motivation defines what motivates the employees in an organization.	Rowlands et al., 2015
Orientation to change	Detert et al., 2000	Organizational	The degree to which the individuals in an organization are open to change or take risks which is linked with innovation.	Rowlands et al., 2015
Orientation to work	Detert et al., 2000	Organizational	The certainty of work in human life and the balance between work as a production activity and as a social activity.	Rowlands et al., 2015
Isolation versus collaboration	Detert et al. 2000	Organizational	Deals with how employees work, alone or collaboratively.	Rowlands et al., 2015
Control, coordination, responsibility	Detert et al., 2000	Organizational	The degree to which control is concentrated or shared in an organization.	Rowlands et al., 2015
Orientation and focus	Detert et al., 2000	Organizational	The nature of the relationship between organization and its environment. The organization may have internal or external orientation in relation with its environment.	Rowlands et al., 2015
Institutional collectivism	House et al., 2004	Organizational	Institutional collectivism has been defined as the extent to which organizations are perceived to encourage and reward collective distribution of resources and collective action	Gu et al., 2014
Positive work environment	Howell and Shea, 2001	Organizational	Project champions in product development projects can add to the creation of a positive work environment	Gu et al., 2014
Leadership risk tolerance	Thamhain, 2004	Organizational	Leadership risk tolerance can be defined as the way management communicates the organization's tolerance to accept risk taking in projects	Gu et al., 2014
Results orientation	Greaver, 1998	Organizational	Focusing efforts on the results instead of the activities. In this way, the customer and the supplier should have a common purpose	Gu et al., 2014
Innovation and risk taking	Robbins et al., 2009	Organizational	The degree to which employees are encouraged to be innovative and take risks	Erasmus et al., 2012
Attention to detail	Robbins et al., 2009	Organizational	The degree to which employees are expected to exhibit precision, analysis and attention to detail.	Erasmus et al., 2012
Outcome orientation	Robbins et al., 2009	Organizational	The degree to which management focuses on results or outcomes rather than the techniques and processes used to achieve these outcomes.	Erasmus et al., 2012
People orientation	Robbins et al., 2009	Organizational	The degree to which management decisions take into consideration the effect of outcomes on people within the organization	Erasmus et al., 2012
Team orientation	Robbins et al., 2009	Organizational	The degree to which work activities are organized around teams rather than individuals	Erasmus et al., 2012
Aggressiveness	Robbins et al., 2009	Organizational	The degree to which employees are aggressive and competitive rather than easy-going	Erasmus et al., 2012

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Table 1. Continued

Taxonomy of cultural concepts and terms used in the reviewed papers				
Cultural value-dimension	**Reference**	**Level of analysis**	**Description of values**	**Reviewed Papers**
Stability	Robbins et al., 2009	Organizational	The degree to which organizational activities emphasize maintaining the status quo rather than growth	Erasmus et al., 2012
Leadership	Smit et al., 2008	Organizational	The degree to which leaders are able to influence the culture of the organization in order to ensure optimal service delivery/results delivery	Silvious et al., 2010; El-Mekawy et al., 2012
Strategy	Smit et al., 2008	Organizational	The degree to which the organization is clear about its strategic direction so as to ensure optimal service delivery	Silvious et al., 2010; El-Mekawy et al., 2012
Adaptability	Smit et al., 2008	Organizational	The degree to which the organization is in contact with and responds to change so as to improve service delivery	Silvious et al., 2010; El-Mekawy et al., 2012
Coordination	Smit et al., 2008	Organizational	The degree to which the internal system is horizontally and vertically aligned for optimal service delivery.	Silvious et al., 2010; El-Mekawy et al., 2012
Relationships	Smit et al., 2008	Organizational	The degree to which people in the organization work together to form strong working relationships that will ensure optimal service delivery	Silvious et al., 2010; El-Mekawy et al., 2012;
Power distance	House et al., 2001	Organizational	The degree to which members of a collective expect power to be distributed equally	El-Mekawy and Rusu, 2011
Uncertainty avoidance	House et al., 2001	Organizational	The extent to which a society, organization, or group relies on social norms, rules and procedures to alleviate unpredictability of future events	El-Mekawy and Rusu, 2011
Human orientation	House et al., 2001	Organizational	The degree to which a collective encourages and rewards individuals for their cooperation	El-Mekawy and Rusu, 2011
Institutional collectivism	House et al., 2001	Organizational	The degree to which individuals are integrated into groups within the society	El-Mekawy and Rusu, 2011
In-group collectivism	House et al., 2001	Organizational	The degree to which individuals have strong ties to their small immediate groups	El-Mekawy and Rusu, 2011
Assertiveness	House et al., 2001	Organizational	The degree to which individuals are assertive, dominant and demanding in their relationships	El-Mekawy and Rusu, 2011
Gender egalitarianism	House et al., 2001	Organizational	The degree to which a collective minimizes gender inequality	El-Mekawy and Rusu, 2011
Future orientation	House et al., 2001	Organizational	The extent to which a collective encourages and rewards future-oriented behaviors (delaying ratification, planning & investing in future, etc.)	El-Mekawy and Rusu, 2011
Performance orientations	House et al. 2001	Organizational	The degree to which a collective encourages and rewards group members for performance improvement and excellence	El-Mekawy and Rusu, 2011
Power Distance	Hofstede, 1980, 1983	National	The power distance index is an indication of the extent to which less powerful members of a society accept unequal distribution of power.	Janssen et al., 2013; Prinz, 2015; Satidularn et al., 2011; Silvious et al., 2009;; Zhong et al., 2012

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Table 1. Continued

Taxonomy of cultural concepts and terms used in the reviewed papers				
Cultural value-dimension	**Reference**	**Level of analysis**	**Description of values**	**Reviewed Papers**
Individualism vs. collectivism	Hofstede, 1984	National	In cultures that are considered highly individualistic, individuals are loosely tied to each other and are expected to look out for themselves and their family. In collectivist cultures, people are integrated into strongly cohesive in-groups, and group loyalty lasts a lifetime.	Janssen et al., 2013; Prinz, 2015; Satidularn et al., 2011; Silvious et al., 2009; Zhong et al., 2012
Masculinity vs. femininity	Hofstede, 1984	National	In the dichotomy masculine versus feminine, a masculine culture values assertiveness, performance and material success. In a feminine society values like quality of life, tenderness and modesty prevail	Janssen et al., 2013; Prinz, 2015; Satidularn et al., 2011; Silvious et al., 2009; Zhong et al., 2012
Uncertainty avoidance	Hofstede, 1984	National	The uncertainty avoidance index is defined as "the extent to which the members of a culture feel threatened by uncertain or unknown situations	Janssen et al., 2013; Prinz, 2015; Satidularn et al., 2011; Silvious et al., 2009; Zhong et al., 2012;
Culture gap	Ward and Peppard, 1999	Organizational	The concept of gap used here, based on literature, refers to what is called 'culture gap' which is a variable that explains the challenges that can exist between the IT function and business activities	Almajali and Dahlin, 2010
Underlying assumptions	Schein, 2004	Organizational	Unconscious and taken-for-granted beliefs, perceptions, thoughts and feelings that members of the organization share	Xiao and Dasgupta, 2005
Espoused beliefs and values	Schein, 2004	Organizational	Espoused justifications including strategies, goals, and philosophies	Xiao and Dasgupta, 2005
Artifacts	Schein, 2004	Organizational	The visible organizational structures and processes	Xiao and Dasgupta, 2005
Stories	Johnson and Scholes, 1993;	Organizational	The stories told by members of an organization to each other, to outsiders, to new recruits and so on, embed the present in its organizational history and also flag up important events and personalities.	Cormack et al., 2001
Rituals and routines	Johnson and Scholes, 1993	Organizational	The rituals of organizational life are particular activities or special events through which the organization emphasizes what is particularly important and reinforces 'the way we do things around here'	Cormack et al., 2001
Symbols	Johnson and Scholes, 1993	Organizational	Symbols57 such as logos, offices, cars and titles, or the type of language and terminology commonly used, become a shorthand representation of the nature of the organization	Cormack et al., 2001
Power structure	Johnson and Scholes, 1993	Organizational	Power structures are also likely to influence the key assumptions. The most powerful groupings within the organization are likely to be closely associated with the core assumptions and beliefs.	Cormack et al., 2001
Organizational structure	Johnson and Scholes, 1993	Organizational	Organizational structure is likely to reflect power and show important roles and relationships.	Cormack et al., 2001

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Table 1. Continued

Taxonomy of cultural concepts and terms used in the reviewed papers				
Cultural value-dimension	**Reference**	**Level of analysis**	**Description of values**	**Reviewed Papers**
Control systems	Johnson and Scholes, 1993	Organizational	The control systems, measurements and reward systems emphasize what is important to monitor in the organization	Cormack et al. 2001
Clan	Cameron and Quinn, 2011	Organizational	The clan culture, as assessed in the OCAI, is typified by a friendly place to work where people share a lot of themselves. It is like an extended family	Nugroho and Surendro, 2011
Hierarchy	Cameron and Quinn, 2011	Organizational	Formalized and structured place to work. Procedures govern what people do	Nugroho and Surendro, 2011
Adhocracy	Cameron and Quinn, 2011	Organizational	Is characterized by a dynamic, entrepreneurial, and creative workplace. People stick their necks out and take risks. Effective leadership is visionary, innovative, and risk-oriented.	Nugroho and Surendro, 2011
Market	Cameron and Quinn, 2011	Organizational	Is a results-oriented workplace. Leaders are hard-driving producers and competitors. They are tough and demanding	Nugroho and Surendro, 2011

Table 2. Categorization of the Literature Based on Their Cultural Focus on IT Governance

Research literature overview of culture influence on the five focus areas of IT governance						
Reviewed paper (Author)	**Cultural focus**	**IT Governance focused area**				
		Value Delivery	**Resource Management**	**Risk Management**	**Strategic Alignment**	**Performance Measurement**
Prinz, 2015	National	X	X			
Rowlands et al., 2015	Organizational		X		X	
Gu et al., 2014	Organizational			X		X
Janssen et al., 2013	Organizational		X			
Zhong et al., 2012	National	X	X			X
El- Mekawy et al., 2012	Organizational				X	
Erasmus et al., 2012	Organizational				X	
El- Mekawy and Rusu, 2011	National				X	
Nugroho and Surendro, 2011	Organizational	X				X
Satidularn et al., 2011	Organizational	X				X
Almajali and Dahlin, 2010	Organizational				X	
Silvious et al., 2010	Organizational				X	
Silvious et al., 2009	National				X	
Xiao and Dasgupta, 2005	Organizational					X
Cormack et al., 2001	Organizational				X	

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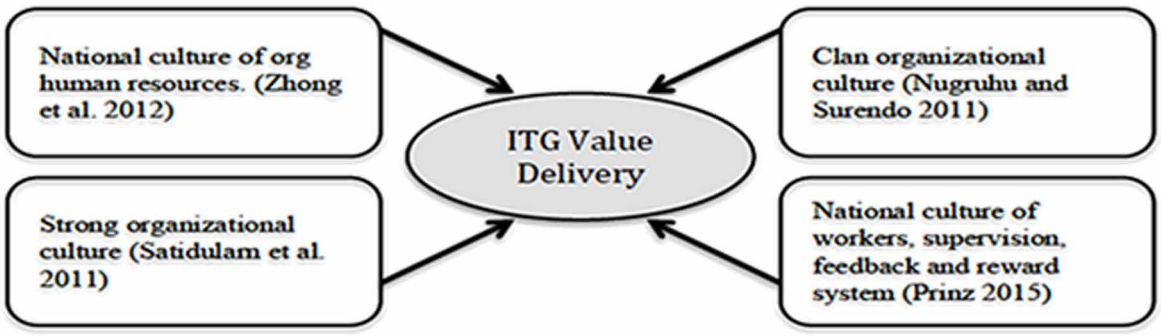
Risk management is one of the important aspects of ITG that can improve the ITG implementation. The reason that previous researchers have not done any investigation specifically on the role of culture on ITG risk management can be that at the current stage there is more emphasis from the practitioners' side on the role of culture in other ITG focus areas. Additionally, the researchers with a corporate governance perspective have studied risk management previously, which can be linked to risk management in IT governance. This can explain why there is not much research on culture and IT governance focus areas.

Role of Culture in IT Value Delivery

The value delivery focus area of IT governance deals with the benefits from IT through the business strategy and considers issues such as the costs of IT in the IT project cycles and how IT can provide solutions to reduce the costs and create more income for the business. Four studies were found that mentioned the role of culture in this focus area of IT governance: two with a national culture and two with an organizational culture point of view. Figure 3 summarizes the organizational or national culture factors influencing ITG value delivery mentioned by the reviewed literature.

Zhong et al. (2012) use the terms IT governance performance and IT value delivery interchangeably and discuss both the value delivery and performance measurement of IT in their paper. The authors indicate that ITG represents a combination of IT resources and complementary organizational resources, such as human resources and their cultures, which makes the firm capable of IT value creation and propose that national culture provides the complex structural, functional and social coordination through which the degree of IT value delivery is moderated. In their case study, Nugroho and Surendro (2011) suggest that clan organizational culture is key to the successful implementation of IT governance polices, especially in data management. The clan organizational culture brings more commitment of leadership and makes the organization focuses more on the loyalty of the employees, a friendly workplace and teamwork. The authors found that organizational culture is influential in designing IT governance and creating value from IT. In another study, Satidularn et al. (2011), emphasize the role of organizational culture in relation to how IT governance practices and structures are designed. The authors found that a strong organizational culture with a high degree of integrity, responsibility, accountability and ethical behavior may lead the studied firm to monitor and pay attention to IT governance. Finally, Prinz (2015) suggests that the national culture related concepts of worker participation, supervision, feedback, and rewards system have an influence on IT governance value delivery.

Figure 3. Organizational Culture or National Culture Factors Influencing ITG Value Delivery



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Figure 4. Organizational or National Culture Factors Influencing ITG Resource Management

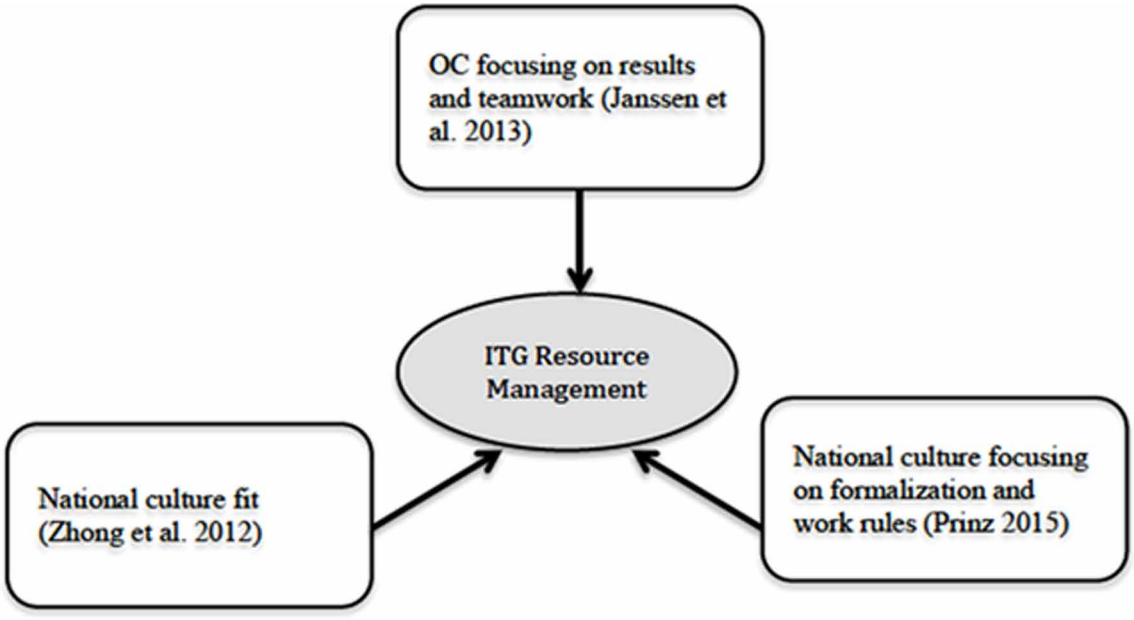
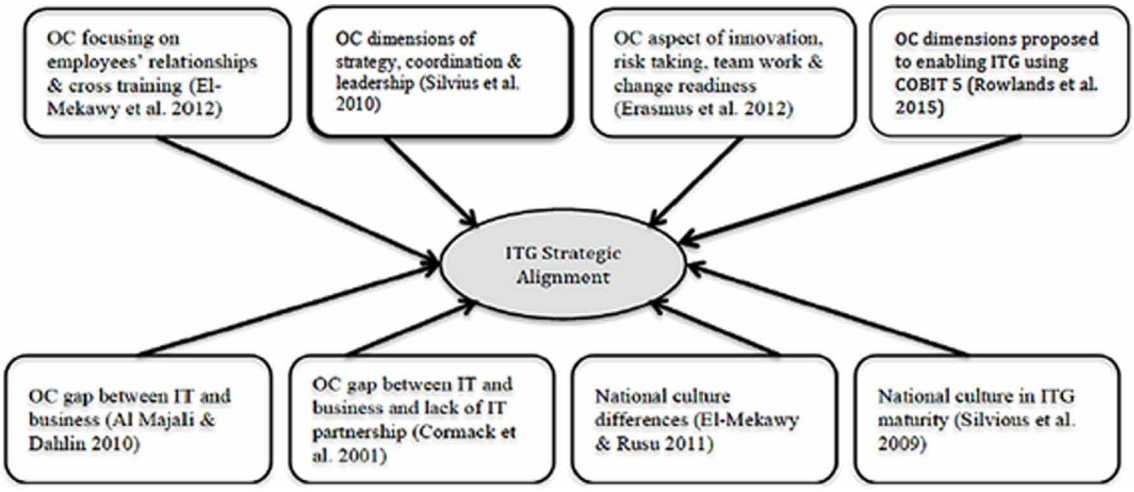


Figure 5. Organizational or National Culture Factors Influencing ITG Strategic Alignment

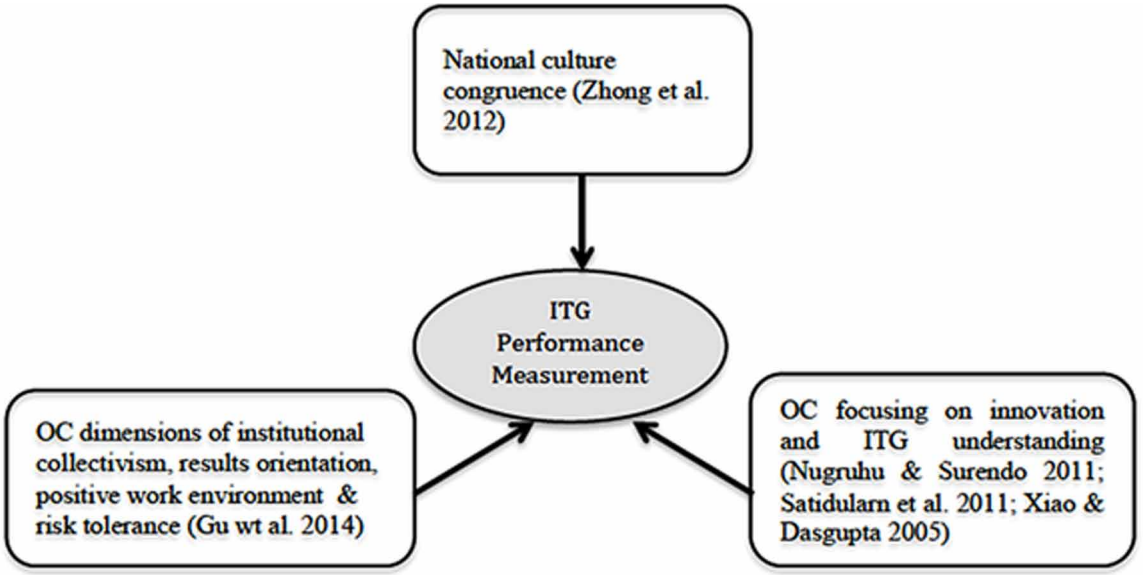


Role of Culture in IT Resource Management

Information technology resource management deals with the management of and investment in the IT resources, including people, applications, hardware and data. Among the reviewed literature in this area, three studies focus on the role of culture in IT governance. One of them uses an organizational culture perspective and the other two adopt a national culture perspective. Figure 4 summarizes the organizational or national culture factors influencing ITG resource management mentioned by the reviewed literature.

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Figure 6. Organizational Culture or National Culture Factors Influencing ITG Performance Measurement



According to Janssen et al. (2013), an organization with a cultural focus on results and team work tends to implement simple structures of IT governance and simple decision-making processes, uses more efficiently their IT resources and integrates better its organizational knowledge. The authors suggest that in the organizations that value individual work, there is less teamwork, the structures are more complex and the decision-making will be more difficult, slow and bureaucratic. This type of culture causes less participation of business executives in the IT governance model, less interaction between areas and different resources and therefore less optimized IT resource management. Prinz (2015) focuses on how national culture influences IT governance. The author found that worker participation, supervision, feedback, rewards, formalization and work rules have an impact on IT governance resource planning. Zhong et al. (2012) conceptualize IT governance as a set of firms' resources and discuss IT governance integration under the national culture influences. According to them, a combination of structural, functional, social capabilities and moderation of culture fit leads to improvements in firms' specific IT resources.

Role of Culture in Strategic Alignment

The strategic alignment focus area of IT governance aims to ensure that IT and business plans are linked with each other, both sides understand each other, and business and IT operations are aligned. The review of the literature produced seven papers that had an emphasis on the role of culture on the strategic alignment area of IT governance. Among these studies, two had a national culture perspective and the rest had an organizational culture perspective. Rowlands et al. (2015) suggest that the concept of organizational culture ITG is mostly focusing on the dimensions of COBIT 5. Figure 5 summarizes the organizational or national culture factors influencing ITG strategic alignment mentioned in the reviewed literature.

El-Mekawy et al. (2012) found links between organizational culture and the understanding of IT by business, understanding of business by IT, employee relationships, and cross training. Silvius et al. (2010) suggest that three dimensions of organizational culture called strategy, coordination and leadership, have

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Table 3. Methodological Approach Used in the Reviewed Papers

Methodological approach on the research literature of the role of culture on ITG					
Reviewed paper	**Cultural focus**	**Research Method**	**Data collection technique**	**Place of research**	**Publisher**
Prinz, 2015	National	Qualitative	Interviews/ 11 Interviews	Germany and Japan	Proceedings of AMCIS 2015
Rowlands et al., 2015	Organizational	Theoretical	-	-	Intl. Journal of IT/Business Alignment and Governance
Gu et al., 2014	Organizational	Quantitative	Survey/Panel of experts	U.S. and China	Intl. Journal of Project Management
Janssen et al., 2013	Organizational	Qualitative	Interviews	Brazil	Proceedings of HICSS 46
Zhong et al., 2012	National	Analytical framework	Literature	China	Proceedings of PACIS 2012
El-Mekawy et al., 2012	Organizational	Qualitative	Interviews (semi-structured)	Sweden	Proceedings of HICSS 45
Erasmus et al., 2012	Organizational	Qualitative	Interviews (semi-structured)/ 10 executive managers	Victoria Australia	Proceedings of PICMET 2012
El- Mekawy & Rusu, 2011	Organizational	Qualitative	Interviews	Sweden and Egypt	Proceedings of HICSS 44
Nugroho and Surendro, 2011	Organizational	Mixed methods of Qualitative and Quantitative	Survey, interviews and observations	An organization unit in Indonesian Institute of Sciences (public organization)	Proceedings of ICEEI 2011
Satidularn et al., 2011	Organizational	Qualitative	Semi-structured interviews/ 4 interviews	Large state-owned organization in Thailand	Proceedings of PACIS 2011
Al majali & Dahlin, 2010	Organizational	Qualitative	Interviews/ 4 interviews	Different Jordanian organizations	Intl. Journal of Electronic Business Management 2010
Silvious et al., 2010	Organizational	Quantitative	Questionnaires/ 23 respondents	Middle sized logistic company/ Netherlands	Proceedings of AMCIS 2010
Silvious et al., 2009	National	Quantitative	Questionnaire	Belgium and Netherlands	Proceedings of HICSS 42
Xiao & Dasgupta, 2005	Organizational	Quantitative	Survey	-	Proceedings of AMCIS 2005
Cormack et al., 2001	Organizational	Qualitative	Semi-structured interviews/ 13 respondents	One public and one private Australian companies	Proceedings of ACIS 2001

a strong relationship with governance in the business IT alignment maturity. In another study Erasmus et al. (2012) found that aspects of organizational culture like innovation, risk taking, team orientation, and change readiness have a significant impact on the strategic alignment components. These aspects of organizational culture can be used to encourage more collaborative IT decision-making and improve alignment maturity. Al Majali and Dahlin (2010) assess the culture gap between IT and business strategy

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by analyzing the issue of strategic alignment in ITG. The authors indicate that leadership, processes, service quality, structure, values and beliefs represent the culture gap between IT and business strategy and affect the strategic alignment. Finally, Cormack et al.'s (2001) study highlights that the cultural characteristics of an IT group are associated with the tensions in the relationship between the business and the IT side. Among these cultural characteristics, the authors pinpoint to the indirect way of reporting to the CEO by the IT managers, poor communication, decentralized structure of the IT department, and system delivery processes. The authors conclude that the lack of efficient IT partnership is due to the organizational culture of the IT group. The role of national culture in strategic alignment has received attention in two studies conducted by El-Mekawy and Rusu (2011) and Silvius et al. (2009). Both studies identify the influence of culture on business IT alignment components. More specifically, Silvius et al. (2009) suggests that the difference in national cultures affect governance maturity and skills in business IT alignment.

Role of Culture in IT Risk Management

Risk management focus area of IT governance deals with risk awareness by senior officers in the organization, a clear transparency and understanding of the organization's desire for significant risk and compliance requirements. We found only one study concerning the relationship between culture and risk management. The study is done by Gu et al. (2014) and it suggests that leadership risk tolerance as a cultural aspect positively influences managers with respect to IT project performance. Leadership risk tolerance is defined as the willingness of managers to take and allow risks during projects (Thamhain, 2004).

Role of Culture in Performance Measurement

The performance measurement focus area of IT governance is related to tracking and monitoring the strategies, processes, and services to assess their performance and goal achieving. Among the papers reviewed we identified five that analyze the link between culture and the performance measurement of IT governance. Four of these studies use an organizational culture perspective and one uses a national culture approach. Figure 6, summarizes the organizational or national culture factors that influence ITG performance measurement as found in reviewed literature.

Gu et al. (2014) find that organizational culture has an impact on IT performance. The authors use the four dimensions of organizational culture – institutional collectivism, results orientation, positive work environment, and leadership risk tolerance, – to provide evidence that organizational culture affects the IT project performance in many aspects, such as meeting expectations, team members' satisfaction, benefits to the organization, and improving the competitive position.

In the same vein, Nugroho and Surendro (2011), Satidularn et al. (2011), and Xiao and Dasgupta (2005) identify a link between organizational culture and IT governance performance measurement. According to these authors, it is crucial that IT managers enable an organizational culture that facilitates innovation and helps understanding the practices of IT governance. Concerning national culture, Zhong et al. (2012) suggest that the existence of congruence between national culture and IT governance mechanisms may improve the likelihood of an effective IT governance performance.

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DISCUSSION

More Emphasis on Organizational Culture Than National Culture in IT Governance

The findings of our literature review revealed that previous researchers considered either one or in some cases two levels of culture: national and organizational culture. Eleven research papers used the organizational culture and four the national culture perspective. This confirms the growing importance of the role of organizational culture in IT governance in recent years in comparison to that of the national culture. However, none of the studies that focused on organizational culture has provided exact details on how different aspects of organizational culture can be used in each focus area of IT governance. This is a significant gap found in the previous literature that can be studied in detail, resulting in precise linkages between organizational culture dimensions and IT governance components.

Methods in Studying Culture Influence on IT Governance

The literature review provided insights into the variety of research methods selected by the authors to analyze the link between culture and IT governance. Table 3 summarizes the methodological approaches used in the reviewed papers.

The qualitative research appeared to be the preferred approach for analyzing the link between culture and IT governance. However, depending on the framework used, some researchers chose to study the relationship between either organizational culture or national culture and IT governance, while others chose to use quantitative analysis or even a combination of quantitative and qualitative analysis (for ex. Nugroho & Surendro, 2011). In terms of geographical spread, the researchers had a focus on different areas of the world, such as the U.S., China, Australia, Netherlands and Thailand. Finding studies on the role of culture in IT governance in different parts of the world confirms the importance and the actuality of this topic.

CONCLUSION

This study aimed at assessing the extant literature on the relationship between culture and IT governance through the lens of the five focus areas of IT governance: value delivery, resource management, risk management, strategic alignment and performance measurement. The findings provide evidence that research on this specific topic is scarce. There were only 15 studies that met the inclusion criteria in this literature review; these papers focus on either organizational or national culture and analyze different IT governance areas in various contexts.

The most important gap found in the extant research represents the lack of precision in terms of culture – IT governance relationship granularity. There is no clear understanding of which dimensions of culture impact IT governance and which of the five areas of IT governance are affected. Authors used a monolithic view of culture and did not analyze which parts of the organizational structure are affected by it. Finally, none of the papers covered the role of culture in all five focus areas of IT governance. Based on the increasing interest in better understanding the role of culture in IT governance and the gaps found by this literature review, we propose that one interesting future avenue of future research would

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be the analysis of the organizational culture impact on each of the five focus areas of the IT governance. Another topic of interest would be to assess the influence of specific dimensions of culture on each of components in ITG current frameworks and standards.

In conclusion, this literature review sheds light on the importance of cultural issues at different levels of analysis for implementing IT governance and emphasizes the need for in-depth future research in this area.

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