Business Reinvention for Ecosystem Value, Flexibility, and Empowerment

Emerging Research and Opportunities

Soe-Tsyr Daphne Yuan

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Table of Contents

Preface

In the global trend of high-quality economic growth, business reinvention is a process through which a focal business is changed to drive its growth by featuring human-centered, innovation-driven, and business-sustainable practices through a service ecosystem. The service ecosystem is comprised of the focal business and stakeholders (e.g., Apple reinvented itself to have a more human-centered lifestyle brand through its iTunes and AppStore ecosystems). There are some key components required to prepare such reinvention. The first is empathetically redesigning the value proposition toward a high human value, serving as the ecosystem value. The second key component is strategically rethinking the ecosystem flexibility to develop and deliver high value. The third component is innovatively architecting the ecosystem into a digital business to empower the focal business and stakeholders toward ecosystem flexibility and business sustainability.

High human value (i.e., ecosystem value) refers to the high proportion of customer experience and benefits compared to the overall cost and effort expended. Alternatively, an ecosystem with high human value can also be called a value ecosystem. Ecosystem flexibility indicates a flexible configuration of talent, resources, organizations, and technologies that work toward providing a productive and sustainable way of developing and delivering high value. Ecosystem empowerment refers to a focal business with its stakeholders empowered with the capability to execute designated courses of actions with designated levels of performance (i.e., self-efficacy) within a cost-effective, supporting ecosystem context facilitated by innovative digital architectures and technologies.

Each of the above would absorb a significant amount of a business executive's time and effort. In particular, what is often missing among the myriad advocates of digital business transformation is a holistic view of how a business sets the proper mindset in light of a plethora of digital technologies.

Further, what is also missing is how to systematically choreograph the right components for the reinvention, and then how to strategically undertake the change journey.

Accordingly, this book is structured to provide a hybrid approach of both the inside-out and the outside-in aspects. We lay the inside-out grounding mindset in Part 1's Context and Vision (Chapter 1) and describe the outside-in methodology by putting together those reinvention key components in Part 2's Methodology (Chapters 2–7). This is followed by a discussion of the strategic decision-making issues about the reinvention and emerging research opportunities as discussed in Part 3's Strategy (Chapter 8).

The target readers of this book are business managers and academic or corporate researchers who encounter emerging, challenging issues and await the following non-ad-hoc research, resolutions, and opportunities:

- Concerning the future of a business or business growth strategies but lack the best methods or practices to follow
- Wondering where and how to invest while wanting to make a change or determining business innovation research
- Doubting the readiness and mindset for the change or pursuing a corporate culture of innovation
- Puzzling or seeking sustainable competitive advantages and strategies for technological alignment
- Synergizing multiple sources of talent, resources, organizations, and technologies to work toward a shared empathetic human value
- Building digital business transformation in a holistic manner

Acknowledgment

Firstly, I thank the anonymous referees for their precious time, efforts and valuable suggestions on this book.

This book was developed out of a series of former lectures and research papers given to the executive MBA (EMBA) students at College of Commerce, National Chengchi University (NCCU), Taipei, Taiwan (R.O.C). Some of the research papers originated from a decade of academic/industrial research projects conducted at the Service Science Research Center (SSRC) of NCCU, of which I was the principle director supervising numerous talented graduate students, PhD students, Postdoc students, *etc*. (who were once the lab members during the period). The underlying topics under investigation then include service design, service innovation, digital business transformation and advanced digital technologies, etc.

I am grateful for a number of colleagues and the SSRC lab members in encouraging me to share the work, preserve with it, and finally publish it. I would also like to express my gratitude to those lab members for their passion and endeavors on the research projects under my supervision. Those lab members involved in conducting research of relevance to this book include (but not limited to) Pei-Hung Hsieh, Cindy Yunhsin Chou, Yen-Hao Hsieh, Wei-Feng Tung, Shih-Ming Hsu, Wei-Tien Hung, Szu-Yu Chou, Chun-Ya Yang, Shiou-Tian Hsu, Yu-Chen Yeh, Ching-Fang Hsieh, Pei-Kang Hsieh, Wei-Cheng Yang, Cheng-An Wu, Chih-Teng Huang, etc.

Finally, I want to thank the SSRC lab members, the students and the colleagues in NCCU who made this demanding time joyful and fruitful.

Part 1
Context and Vision

Chapter 1
Collective Well-Being for Economic Quality Growth

ABSTRACT

Chapter 1 provides an overview of the current economic context for the global trend for economic quality and growth called the quality of life (QoL). Industries or businesses are progressively impacted by this trend in terms of the provision of a variety of improved QoL or wellbeing through service ecosystems. In addition, this chapter provides a rationalization of the vision for collective wellbeing toward economic quality and growth. The rationale is unfolded in terms of the provision of a conceptual model of collective wellbeing grounded in the logic of value co-creation, empowerment, and self-determined behaviors. This chapter provides the grounding mindset for the imperative elements and rationales for service providers to better design the customers (or stakeholders) empowerment processes for the co-creation of QoL wellbeing values, realizing collective wellbeing for economic quality and growth.

INTRODUCTION

The current economic context for the global trend is in pursuit of the economic quality and growth for the Quality of Life (QoL). Industries or businesses are progressively impacted by this trend because they witness their creation or distribution in the advent of the service/experience economy. In this economy, modern digital technologies have been utilized to facilitate the provision

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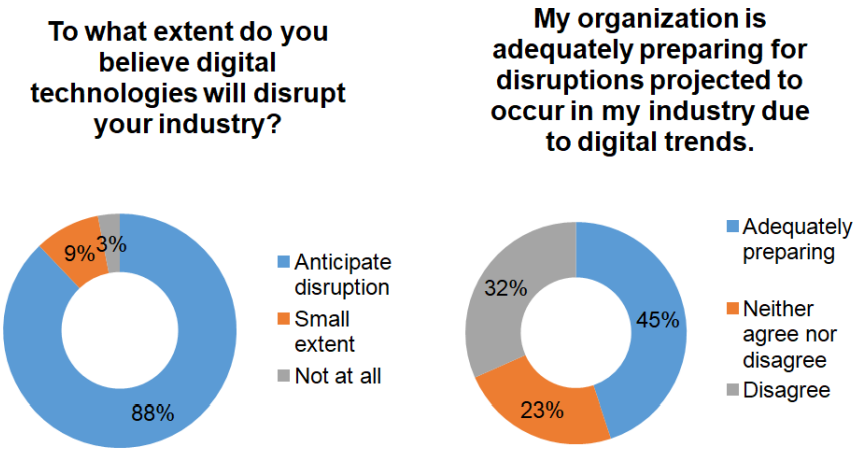
of a variety of improved QoL or well-beings through service ecosystems. Consequently, business reinvention is imperative, and it refers to a process through which a business is changed so as to drive its growth; it features a human-centered, innovation-driven, and business-sustainable approach toward the improved QoL or well-beings through service ecosystems. Accordingly, this chapter provides the grounding mindset of the imperative elements and rationales for service providers to better design the customers (or stakeholders) empowerment processes for the co-creation of the QoL and well-being values to realize the collective well-being toward the economic quality and growth.

ECONOMIC QUALITY AND GROWTH

Quality of Life (QoL) has recently become a global trend according to the global sustainable development goals of the United Nations (UN, 2016). QoL refers to the general well-being of individuals and societies, and it concerns the quality of life at the level of individuals as well as at the level of societies. Further, QoL relates to the appraisal of human beings and their assessment of the external contextual environment (Barcaccia et al., 2013). Industries or businesses are increasingly affected by this trend because they observe the QoL being either created or disrupted in the current era of the service/experience economy. The contextual environment has an abundance of digital technologies that are used to facilitate the provision of a variety of improved well-beings. However, this might not be clearly manifested through the commonly used economic growth measure of GDP.

The Easterlin Paradox shows that growth in the form of economic prosperity is not connected with the growth of citizens' life satisfaction (Pathak, 2018). Rather, GDP promotes the production and consumption of products and services and does not consider the negative phenomena (e.g., increased fuel consumption can lead to more traffic jams—and even more fuel consumption). The fact that GDP is not sufficient to measure the well-being of individuals and societies is evidenced clearly by the fact that it does not translate into people's greater access to quality health care, education, transportation, environment, income distribution, general well-being, etc. In line with the global trend of economic quality and growth, it is imperative for industries and businesses to endorse the well-being conception to sustain themselves and avoid being disrupted over time.

Figure 1. Business perception of digital disruption threats



On the other hand, some research statistics (Figure 1) emphasize that digital technologies are highly believed to break down industry barriers and create new opportunities while destroying long-term, successful business models (Kane, 2018). We argue that these new opportunities are those well-being values being created in forms that could be effectively delivered to the targeted customers by using digital technologies to facilitate the value-delivery collaboration among the stakeholders. Meanwhile, customers become increasingly digital as a result of digital technologies. Businesses either compete to advance this customer behavior change concerning digital customer experience (DCE) or they constantly cope with it (Solis, 2015). That is, digital technologies can become part of the solution but also turn into part of the problem when helping businesses become more human in accord with the attempted well-being value to deliver.

There are a plethora of examples manifesting their efforts to achieve higher QoL while in pursuing economic growth, such as Uber or Airbnb (sharing economy of collaborative consumption to increase the access to capitals and decrease the environmental effects), Recruit (unified backbone of career-life value-added services for college graduates through cross-vertical ecosystems in areas such as job search, travel, real estate, cars, dining, beauty, weddings, etc.), Siemens (increased flexibility and smarter energy solutions with the growth of decentralized energy and the push for cleaner energy sources), Kaiser (integrated and effective in/outpatient care horizontally within departments and vertically across health plans, hospitals and medical groups, etc.), and so on.

COLLECTIVE WELL-BEING

The QoL well-being values, in general, depend on the overall goods/services provided by businesses, industries, or governments. Recently, significant emphasis has been placed on the service/experience economy as a major force in the betterment of well-being. This is in light of the widely recognized conception that all industries are service industries that emphasize the processes of benefits exchange rather than units of output exchanged and value of co-creation among service providers, stakeholders, and customers (Lusch & Vargo, 2016). However, research has yet to investigate the most fundamental issues as to how service providers can better design their initiating role to empower customers (or stakeholders) in value co-creation, which in turn enhances customers' lives and well-being through the consumption of activities or experiences (Rosenbaum et al., 2011). Accordingly, this chapter provides the imperative elements and rationales for service providers to better design the customers (or stakeholders) empowerment processes for the co-creation of QoL well-being values, while realizing the collective well-being toward economic quality and growth.

These imperative elements are mainly for the enhancement of customers' (or stakeholders') beliefs in self- and collective efficacy based on empowerment logic and their self-determined behaviors; these are based on Self-Determination Theory (Deci & Ryan, 2000) and drive the generation of collective well-being. Chou and Yuan (2015) provide a conceptual model explaining the relationships among the aforementioned elements and concepts. Without the loss of generalization, the conceptual model discusses self- and collective efficacy on the co-creation of QoL well-being values among the provider and the customer.

Empowerment Logic

Empowerment is considered an effective way to improve governance because it strengthens growth prospects (Diener & Biswas-Diener, 2005). Customer empowerment is a process that acts not only for individual customers but also effects the institutional and community levels. Through the provisions of resources or capabilities from services, customers are engaged and attain a mastery of their internal values and objectives (Wathieu et al., 2002).

The empowerment process entails diminishing disparities by putting resources into customers' capabilities to learn, decision-making skills,

resource management, capacity to work with others, sharing of an institution's leadership, and development of community's tolerance for diversity (Diener & Biswas-Diener, 2005). Accordingly, service performance is enhanced when related customers are empowered to express their thoughts, engage in activities, and request transparent accountability. Customer empowerment is thus an initial, yet indispensable, step for services to engage customers in value co-creation.

Two kinds of empowerment (internal empowerment and external empowerment) enhance individuals' assessments of their capabilities to execute designated courses of action with designated levels of performance, which is referred to as self-efficacy (Bandura, 1995). Internal empowerment refers to the customers' knowledge, skills, and execution achievements that cause them to trust that they can complete the required actions. External empowerment concerns environmental conditions that can elicit faith in self-efficacy (Diener & Biswas-Diener, 2005). Customers do not feel truly empowered in the absence of any type of empowerment (Diener & Biswas-Diener, 2005).

Internal empowerment requires customers to possess knowledge and skills to drive confidence in their self-efficacy; however, the presence of performance accomplishments further upgrades this confidence and derives from actual actions. External empowerment indicates the process by which customers attain resources and master powerful external entities (Narayan, 2005). The interactive relations among customers, external entities, and their environments require opportunities for customers to control resources and decisions. These opportunities emerge within the institutional, social, and political contexts of formal or informal policies and resources that ought to be prepared and feasible for customers to exercise their control (Narayan, 2005).

In spite of the fact that it has been recommended that external empowerment combined with internal empowerment actuates the faith in self-efficacy without a specific domain or goal, the faith in efficacy does not always lead to an actual influence on an action (Diener & Biswas-Diener, 2005). In light of this premise, external empowerment needs to be meaningful and should be oriented toward specified goals and actions. Such realization reflects how essential it is for services to better and continually align their goals with their target customers before and amid customer empowerment and value co-creation processes. Therefore, external empowerment must be meaningfully associated with specified goals, which should be aligned with the values and goals of customers or their relevant social community.

With the goal alignment between a service provider and its target customers, a customer's faith in their self-efficacy can strengthen their aptitude to work with the community to bring about desired outcomes, which is referred to as collective efficacy (Bandura, 2000). Hence, collective efficacy expects social cohesion among community members and their willingness to acquire resources for collective goals (Shinn & Toohey, 2003).

To raise collective efficacy and thus further collective commitment and action toward a shared goal of co-creation, Bond and Key (1993) affirmed that the implementation of co-empowerment plays a crucial role in adequately engaging active collaboration among different entities. Co-empowerment means there is mutual and simultaneous empowerment of each constituent group (Bond & Keys, 1993). While individual customers have their own bearing of value creation, under co-empowerment, each of them ought to have legitimate chances to influence the decision-making process based on their own long term values (Bond & Keys, 1993). Such a co-empowerment process necessitates that individuals share knowledge and skills to work toward a specific goal, and as a result, these individuals become accountable for related goals in the co-creation process.

In addition, the process of co-empowerment reinforces the significance of perceiving individuals' expertise and strategically organizing their active collaborations so as to augment individuals' contributions. No one entity can dampen the voice of another entity (Bond & Keys, 1993). Such a process is crucial to heighten effective collaboration between customers and the service. Through continuous practice in co-empowerment, and as customers see that their values and concerns are respected, their commitment to shared goals will be further solidified.

In light of this clear cycle of active co-creation, not only do customers benefit but the related service entities' well-being is also collectively improved. This confirms the idea that collective well-being alludes to customers, together with their related others, who experience a consistent type of well-being in their lives by establishing a balanced and interdependent status with each other.

That is, customer empowerment strongly impacts business sustainability as well as individual and collective customer well-being through the agent of co-creation. Further, service providers may achieve success by making a decent attempt to engage customers. Given the fact that customers do not really physically own services, the reasons they are motivated to co-create values for a given focal service remain unknown (Fisher & Smith, 2011). Also, the nature of the co-creation process requires both a focal service and

resource investments on the part of customers. This makes it progressively harder for a service to constantly engage its customers in co-creation over time.

Thus, business executives ought to constantly design and create empowerment strategies to engage customers in value co-creation. Nonetheless, the basic reasons with respect to why customers participate in co-creation, what drives their active engagement in co-creation, and to what extent their active engagement influences subsequent individual and collective well-being over time are yet to be comprehended.

Self-Determined Behaviors

When individuals devote themselves to a particular conduct, such as reducing electrical energy usage as a result of personal willingness, the continuation of engaging behaviors has no part of compulsion and is fully self-determined (Deci & Ryan, 2000). Self-Determination Theory (SDT) postulates that individuals integrate these intra-psychological and interpersonal experiences into a unified form of self (Deci and Ryan, 2000). Instead of being independent, such a self is developed through an integrative process that is flexible, yet comprised of self-regulated values and structures. Such commitment of the self enables customers to deliberately engage in activities including social encouragement, emotional excitement, and pursuit of personal interest (Deci & Ryan, 2000). In accordance with this rationale, a social community may enhance a customer's inclination to incorporate ambient social values, which thusly fulfills their psychological commitment to self. That is, SDT can likewise fortify the importance of collective well-being to individuals.

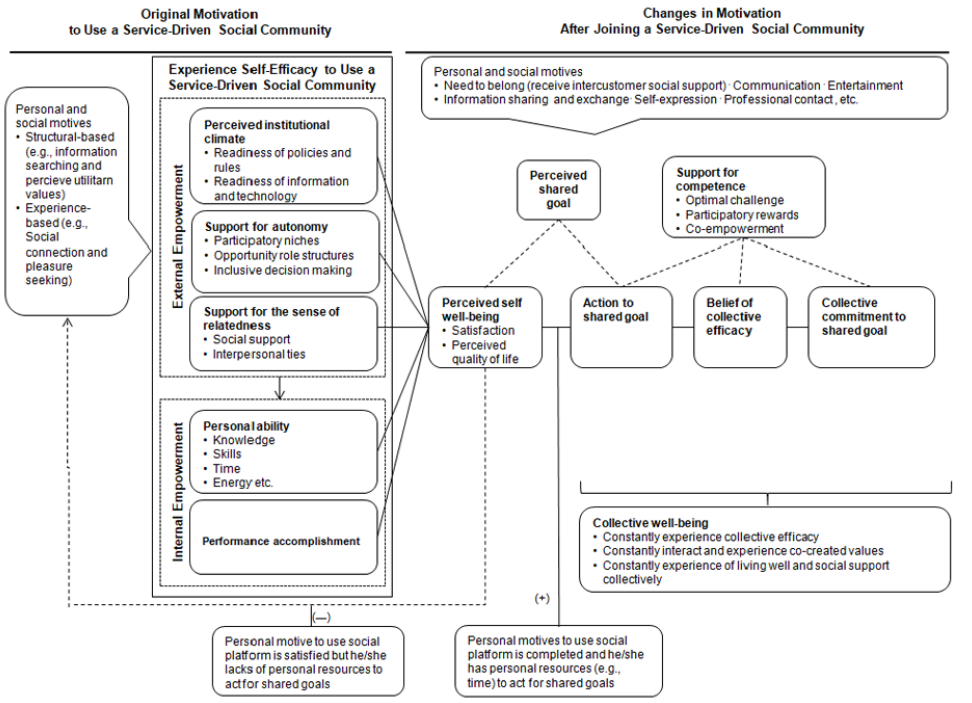
SDT affirms that the content of an individual's life and the process involved in living well defines the individual's experiences of living well and good life (Ryan et al., 2008). Instead of embracing power, wealth, and fame, the meaning of living well originates from individuals' experiences of vitality, courage, intimacy, health, and their relations to others (Ryan et al., 2008). Accordingly, self-determined behaviors demonstrate a quest for personal benefits as well as social cohesion, harmony, and a sense of belonging (Ryan et al., 2008). Next section will provide a conceptual model to address what drives customers' active engagement in value co-creation and the fulfillment of collective well-being.

CONCEPTUAL MODEL OF COLLECTIVE WELL-BEING FOR ECONOMIC QUALITY AND GROWTH

For the enhancement of customer beliefs in self-efficacy and collective efficacy, customers are driven by self-determined behaviors regarding co-creation of the QoL well-being values (i.e., collective well-being). Figure 2 provides a conceptual model showing the imperative elements of three psychological needs (competence, autonomy, and relatedness) that service providers should support (Chou & Yuan, 2015). When customers become more assured and self-determined with these psychological needs satisfied, this, in turn, contributes to an ongoing sense of well-being.

As indicated by the model, the continuous support for competence, autonomy and, relatedness by a service empower the customers' self-efficacy and results in well-being, regardless of whether it is related to individuals or collectives. Nevertheless, self-determined engagement may not be performed when customers have no control over their social communities. Meanwhile, given that co-creation is an interactive and dynamic process (Vargo & Lusch,

Figure 2. Collective well-being model



2008), the belief in collective efficacy emerges from an entity's interactions within a group, which are the nascent properties of that group, as opposed to only the sum of individual parts (Bandura, 2000). This interactive property drives customers to actively and continuously take part in co-creation and results in collective well-being.

That is, the on-going fulfillment of the three psychological needs would encourage long-term behaviors in connection to the self, which could have beneficial effects on one's well-being (Ryan et al., 1999). For instance, if customers see that routinely giving feedback on a service about hygiene contributes to their own health and psychological well-being, they will give such suggestion all the more consciously as they internalize this sort of behavior (i.e., giving feedback) as their own (Deci & Ryan, 2000). Then, the fulfillment of the sense of relatedness has additionally been shown to add to more prominent psychological well-being than the achievement of personal wealth, power, and fame (Ryan et al., 1999).

As for more details of the three psychological needs, the need for competence means that customer desires to efficiently interact with their environment to feel equipped in accomplishing shared goals (Deci & Ryan, 2000). Service providers are thus are required to convey support to engage customers in challenges and mastery experiences in light of the fact that support enhances customers' feelings of efficacy in achieving specific shared goals in co-creation processes. In Sweden, for instance, McDonalds' "pick n play" gamification incorporates entertaining elements that allow customers to experience challenges simply through a smartphone application, which may thus have a positive influence on their well-being.

The need for autonomy means that there is a strong self-determination that drives any behavior, regardless of whether the behavior is individualist or collectivist (Deci & Ryan, 2000). Instead of being independent, detached, or feeling compelled to act, autonomy within SDT is reflected in self-directed actions that are performed through the experiences of integrity and willingness (Deci & Ryan, 2000). Also, the need for autonomy is related to a longing to self-organize experiences and behaviors to make it coherent with one's self (Deci & Ryan, 2000). Thus, the facilitating role of services is to help customers perceive that they can exercise choice with respect to their behaviors. Autonomy makes customers more aware of their responsibility and ownership toward a specific goal.

The need for relatedness about a customer's desire means the feeling is affiliated with significant others (Deci & Ryan, 2000). Customers are more engaged in behaviors that are valuable or related to their significant others.

Relatedness is formed through the experiences of sharing and shaping symbolic meanings that are understood by community members (Ind et al., 2013). Services like service-driven social communities give a secure social base that makes customer engagement in value co-creation processes increasingly powerful (Rosenbaum et al., 2007).

The aforementioned conceptual model first focuses on customer motivations for service engagement and then on how external and internal empowerments actuate their belief in self-efficacy in service value co-creation. Customer satisfaction and perceived quality of life in connection to both service support for external empowerment and internal empowerment may then drive consequent actions within a value co-creation community if these customers perceive shared goals and consent to invest their resources. The success of co-creation actions would then impact the belief in collective efficacy. Subsequently, the support for competence and co-empowerment is given to raise collective commitments and actions toward shared goals. Eventually, continuous collective commitments and interactions contribute to ongoing collective well-being. Further, digital technologies could be utilized to enable engagement and empowerment in a timely, cost-effective manner.

Going beyond the provider and customer, the aforementioned concepts could also be extended to value co-creation among the stakeholders of a value ecosystem. For example a service provider could play the initiating role of engaging and empowering stakeholders in value co-creation within the value ecosystem (i.e., the processes of benefit exchanges among stakeholders for effective value delivery to the end customers). In the value ecosystem, the enhancement of stakeholders' beliefs in self- and collective efficacy are likewise to be regarded. That is, when well-being values are created, the value deliveries should consider the general well-being at the level of the individual customer as well as at the level of the stakeholders in order to achieve collective well-being of economic quality and growth.

However, for industries or businesses, the development of collective well-being for economic quality and growth requires a systematic business reinvention methodology that addresses the aforementioned concepts and elements. To this end, Part 2 provides such a methodology to drive the economic quality and growth that is human-centered, innovation-driven, and business-sustainable.

BOOK OBJECTIVE

In light of the aforementioned grounding mindset about the imperative elements of the co-creation of the QoL well-being values to realize collective well-being toward economic quality and growth, this section briefly discusses objective of the book in terms of the knowledge gap or challenging problem that it is meant to fill, the objective it aims to achieve, the methodology it uses to achieve the objective.

Besides United Nations (2016), modern economist Raworth (2017) highly emphasized the importance of a human need economy that is a healthy economy that differs from a traditional economy in terms of the advocated conception of "make us thrive, whether or not they grow" and a "healthy economy should be designed to thrive". Further, more detailed discussions will be provided in Chapter 8.

Traditional economics of real business situations often center around organizational structures, labor, capital, product markets, management, etc. Therefore, the gap and challenge addressed in this book is how multi-disciplinary scholars should tackle the design of a thriving human need economy. Accordingly, the book's objective is to provide such a multi-disciplinary way of filling and tackling the mentioned gap and problem in a systematic manner.

The mentioned multi-disciplinary way is to provide a business reinvention methodology, which is a well-integrated set of models, methods, and principles across various disciplines of service design, engineering, management, and science. The details of the business reinvention methodology will then be provisioned in chapters two through seven and will utilize two practical running scenarios to facilitate the understanding of the methodology.

However, successful applications of the business reinvention methodology might need particular business reinvention strategies that will be discussed in Chapter 8. Besides helping business managers and academic or corporate researchers cope with those emerging, challenging issues as addressed in the preface, our business reinvention methodology is also to open new avenues for emergent research opportunities about the design of a thriving, healthy economy as exemplified in Chapter 8.

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Part 2
Methodology

Chapter 2
Framework for the Business Reinvention Methodology

ABSTRACT

To begin the section on Business Reinvention Methodology, Chapter 2 provides the methodological framework containing three dimensions that underly the development of the methodology's key components. The three dimensions are the meaningful customer value, the business priority on the value ecosystem, and the digital business strategy to achieve value ecosystem flexibility and business sustainability. Each dimension features a set of stages with increasing levels of wellbeing. In addition, this chapter describes two running scenarios (regional-tourism and city-district prosperity development) that will be used to demonstrate the methodological components in the remaining chapters of Part 2.

INTRODUCTION

For the betterment of QoL well-being, a service provider playing the initiating role (hereafter called "focal B") can embark on business reinvention that refers to a process through which the focal B is changed to drive its growth featuring a human-centered, innovation-driven, and business-sustainable approach toward the improved QoL or well-beings through a service ecosystem. The focal B has to empathetically create the well-being value at the level of individual customers as well as at the level of stakeholders, and the focal B is regarded

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as the focal B's ecosystem. This well-being value is then regarded as the ecosystem value, and the ecosystem with the well-being value is referred to as a value ecosystem.

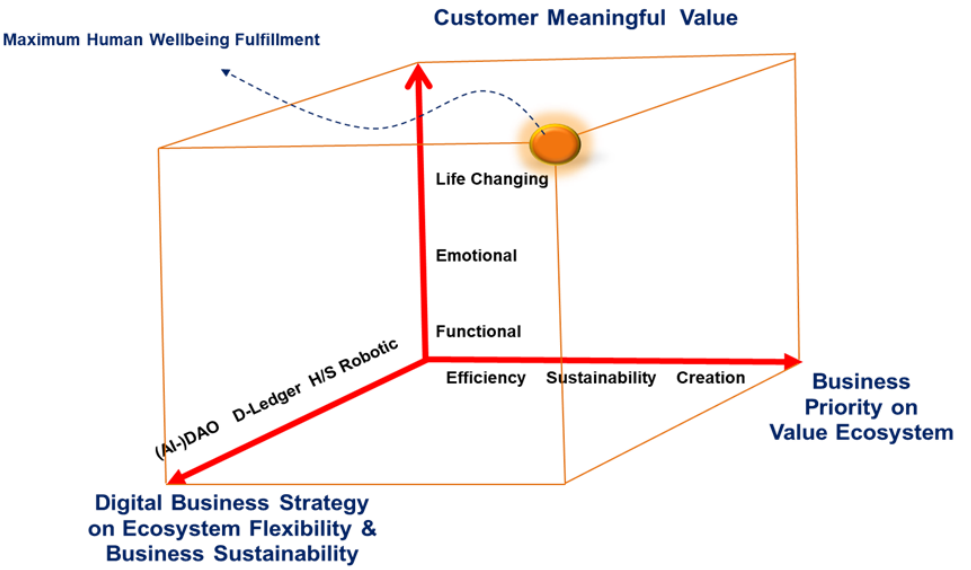
In addition, such value ecosystem could be innovatively architected into a digital business capable of enabling the focal business and stakeholders toward ecosystem flexibility and business sustainability (i.e., the flexible configuration of stakeholders for a productive and sustainable way of delivering the ecosystem value). To further business productivity and sustainability, the focal B could also dynamically engage and empower customers and stakeholders by innovatively utilizing digital technologies in value co-creation to achieve ecosystem empowerment (i.e., customers and stakeholders are empowered with the capabilities to execute designated courses of action with designated levels of performance).

To this end, a systematic business reinvention methodology will be provided in this book and this chapter will first outline the methodological framework. The following chapters in Part 2 will detail the methodology.

The business reinvention methodology framework has three dimensions (Figure 1), including meaningful customer value (i.e., empathetic well-being value to be designed and created), business priority on the value ecosystem (i.e., strategic decisions for priority business objectives on the assessments of stakeholders and their benefit exchanges to emphasize), and the digital business strategy to achieve flexibility in the value ecosystem and business sustainability (i.e., the strategy about innovative digital operants and architectures that can dynamically engage and empower customers and stakeholders in value co-creation toward a flexible strategic ecosystem and business sustainability). The details associated with each dimension will be provided in chapters three through six. That is, each of the chapters will provide the respective design method, preceded by its foundational theories and basic concepts, and will be intertwined with exemplars of method demonstrations.

Each dimension features a set of stages for increasing levels of well-being in the direction from the origin outward, as shown in Figure 1. The stages in the dimension of meaningful customer value include the functional, the emotional, and the life-style changing that address different kinds of impacts as a result of value co-creation on the part of the customers. The stages in the dimension of the business objective priority on the value ecosystem include efficiency, sustainability, and creation; these address the objective of integrating stakeholders and resources to realize value co-creation. The stages in the dimension of digital business strategy on ecosystem flexibility

Figure 1. Framework of business reinvention methodology



and business sustainability include hard/soft (H/S) robotics, distributed ledger, and (AI-)DAO that address the types of digital architectures and operants developed to facilitate value co-creation. Focal B's selected stages along the three dimensions also interact with each other (e.g., a functional customer value often goes with an efficiency-oriented ecosystem utilizing H/S robotics). The following sections will briefly overview the respective dimension descriptions.

DIMENSION OF CUSTOMER MEANINGFUL VALUE

Discussion of the term value spans multiple disciplines, including economics, sociology, anthropology, psychology, marketing, and design. Boztepe (2007) identified three approaches to the definition of value (as shown in Table 1). They include value as an exchange (i.e., value defined as an objective monetary sacrifice that customers are willing to make for a product or service), value as an experience (i.e., a result of the interactions between what a product or service provides and what customers bring in terms of their subjective goals, needs, expectations, physical context, and emotions, etc.), and value as a sign (i.e., socially assigned meaning that is independent of the use, acted

Table 1. Three approaches to the definition of value

	Exchange Approach	Experience Approach	Sign Approach
Value Arise from	price and desire for a product/service	interaction between user and product/service within a particular socio-cultural setting	social and cultural context
Value is	objectively determinable in terms of price	both objective and subjective	subjective
Product/Service is	a sacrifice made by user measured in terms of money	what enables experience	socially assigned meaning

on by a product or service, and the range of social psychological ends that the product or service provide to the customers objectively and subjectively, including ends such as prestige, style, image, etc.).

For simplicity, we use the functional, the emotional, and the life-style changing to address the above-mentioned value approaches in terms of the analogies; as such, we use the functional for value as exchange, the functional and the emotional for value as experience, and the functional, emotional, and lifestyle changing for value as a sign. In other words, the increasing levels of well-being pursuit extend the part of the customer's meaningful value dimension and would go from the functional to the emotional (added on the functional) to the life-style changing (added on the functional and the emotional).

DIMENSION OF BUSINESS OBJECTIVE PRIORITY ON VALUE ECOSYSTEM

The business reinvention methodology presumes a focal B has a pre-existent business that needs to be reinvented. (Of course, the methodology can also be applied to the creation of new businesses by simply positioning themselves to the market along this dimension.) Accordingly, the stages in the dimension of business priority on the value ecosystem could move from efficiency to the sustainability and then to the creation with increasing levels of well-being pursuit (i.e., moving from improved operational efficiency on top of current business value proposition to improved business productivity and viability and to improved value proposition) when being benchmarked against the current market standards.

Upon integrating stakeholders and resources to realize value co-creation, improved operational efficiency focuses on the objective costs and efficiency. For example, this could mean improved business productivity and improved viability for creating better products and services that can be sold for higher prices to the current target market. This could also indicate an improved value proposition for seeking new, insightful value that is meaningful for new or old segments of prospective customers.

DIMENSION OF DIGITAL BUSINESS STRATEGY ON ECOSYSTEM FLEXIBILITY AND BUSINESS SUSTAINABILITY

After integrating stakeholders and resources of a value ecosystem to realize value co-creation, the issue of a productive and sustainable way to deliver the high value in response to uncertainty is required since uncertainty creates risks and opportunities that make flexibility valuable (Husdal, 2004).

Digital business strategy for value ecosystem flexibility refers to focal B's choice of digital solution architecture and operants that can dynamically engage and empower actors for high-value co-creation to work toward strategic ecosystem flexibility and business sustainability. This flexibility needs proper digital intelligence (i.e., the ability to perceive or infer information about adaptive behaviors for resource integration of a value ecosystem) and a proper digital architecture (i.e., the ability to support the dynamic resource integration of value ecosystem in a timely and cost-effective manner).

The stages of hard/soft (H/S) robotics, distributed ledger, and (AI-)DAO that address the types of digital intelligence and architectures that can be developed to facilitate the value co-creation, in the direction of increasing levels of well-being pursuit are further discussed in Chapter 5.4.

RUNNING SCENARIOS FOR PART 2'S METHOD CHAPTERS: REGIONAL-TOURISM/CITY-DISTRICT PROSPERITY DEVELOPMENT

This book uses two running scenarios to better demonstrate the methods to be described in Part 2. The two running scenarios are about regional tourism development and city district prosperity development, both of which share similar characteristics.

Given accelerating economic growth, advances in transport, higher rates of education, and increased disposable income, individuals have turned out to be progressively centered around tourism, which has stimulated the active promotion of the tourism industry and chimney-free industries by countries around the globe. According to the Organization for Economic Cooperation and Development (OECD) (2008) survey, the tourism industry is a worldwide industry and keeps on enduring issues in regional development such as low productivity, lack of innovation, and slow growth.

Deeper observations of tourist behaviors reveal that unique attractions boost tourists' wills to travel. Building up the attractiveness of destinations can help foster the development of the tourism industry. Nevertheless, the majority of business in the tourism industry are small and medium-sized businesses (SMBs) (Novelli et al., 2006; Wanhill, 2000) and have limited financing, time, human resources, or experience. Therefore, partnerships help SMBs remain competitive (OECD, 2008). However, tourism, leisure, and travel management approaches that consolidate the history, culture, and local characteristics have progressively developed. In the face of global competition, this operation model is relied on to continue the future advancement of SMBs.

Local industries operated by tourism SMBs in a region are the result of local life, cultural development, and historical heritage. Such industries are not only regional and local economic pillars; they also speak to the embodiment of regional development and local infrastructure (Jackson & Murphy, 2006). Local industries are characterized as products or services that showcase the local natural landscapes, history, and cultural heritage. Likewise, the utilization of local materials, natural resources, traditional skills, and labor in a township, community or tribal village, subsequently establishes local clusters (OECD, 2008, 2018). The mix of local industries and local characteristics can extend and build up a local cultural and creative industry, which is the key to local industry growth (Hesmondhalgh, 2008).

The local cultural and creative industry has been changing from production-oriented to service-oriented, and hence the development of the local cultural and creative industry. Thus, the evolution of SMBs are viewed as inseparable (Higgs & Cunningham, 2008). This change additionally strikes the regional development of the tourism industry and the evolution of tourism SMBs. Additionally, the traditional industry cluster theory (Porter, 1998a) indicated that when a single geographic area contains an adequate number of ventures, the businesses would accelerate the industrial development for regional competitive advantages.

The moving of business models to service-oriented may substantially impact the interactions and relationships among SMBs in tourism regions. As such, sources of competitive advantages are not only from the resource but are also from the transaction cost that is diminished from the advantages of industry cluster (Porter, 1998b). Additional factors to consider include resource integration and value co-creation from service innovation (Vargo & Lusch, 2004). Hence, the role of SMBs becomes not only the producers but also the co-creator for the service innovation in the tourist region being developed. Hsu, Hsieh, and Yuan (2013) introduced a conceptual model portraying the causal relationship between the regional development of the tourism industry and the changing roles of local SMBs to comprehend the impacts of their service-oriented business models and the value co-creation behavior among SMBs.

When contemplating tourism as a service ecosystem for a tourism destination region, tourism SMBs in the region should have their service value propositions and value delivery mechanisms in place, and they should provide value-in-use for customers based on their strengths. Their challenge includes market attractiveness and visibility (or having limited innovation capability and marketing competitiveness) and ineffective service delivery (or having a lack of human and financial resources that constrain development choices). Consequently, services offered by tourism SMBs cannot be found easily by tourists, which brings about an absence of positive service experiences and produces a less sustainable tourism ecosystem. Powerless SMBs in tourism destination regions have less employment and income potential. A tourism ecosystem subsequently deteriorates in terms of both growth and productivity. Hence, expanding the effectiveness of regional tourism SMBs creates value, grows markets, and improves service delivery channels; all of these are essential to upgrade SMB tourism destination sustainability and to achieve the objectives of tourism innovation, growth, and productivity (Hsu et al., 2013).

However, service value created from regional tourism SMBs depends on the tourists' service experiences that use the feedback and reflections of images from tourists to the SMB in the region. In addition, destination images in tourism destinations are perceived as brands for identification (Prebensen, 2007). The value of destination images for a regional tourism SMBs also relies on the tourists' encounters and assessments according to the image formation process. Regional tourism in pursuit of innovation for growth needs to establish their own brands. Furthermore, to improve the value creation for tourism SMBs, the relationships among tourism SMBs are continual and emerging from chain to network to cluster. Collaboration in

this manner turns into an important strategy for tourism SMB development. Well-designed service value networks thus advance the collaboration synergy.

Meanwhile, the improvement of regional tourism needs to include sustainable development that continues the advancement while addressing the issues of the present without jeopardizing future generations' ability to satisfy their own needs (Costanza et. al, 1997; Kates et. al, 2005). In compliance with sustainable development, tourism development needs to concern the economic, social, and environmental factors to avert the common tragedy of sluggish growth happening in the tourism sectors.

From the economic aspect of regional tourism development, tourists are the fundamental operant for regional tourism SMBs due to their impact on the growth and survivability of regional tourism SMBs. This indirectly connects to job opportunities in a region, which is about the social aspect of regional tourism development (World Travel & Tourism Council, 2002). When there are more tourism SMBs in a region, there are more environmental resources (such as scene, culture or landmarks) that can then be utilized for the tourism service provisions. If these environmental resources are not well-preserved, both the economic and social aspects of regional tourism development would be consequently affected. In other words, the interactions of the economic, social, and environmental factors in a regional ecosystem would impact the sustainability of regional tourism development.

Likewise, the above-mentioned concepts and issues also apply to city district development because the unique creative features of different city districts. For example, districts can be developed to include ideas from city citizens and visitors about how to fostering creative district community images toward collective well-being and prosperity. This is because a creative economy has been emerged as a national strategic choice for rejuvenating economic growth, employment, and society; further, social relationships and cultural identity are widely exercised in urban economies and called a creative city (Levickaite, 2011; Navickas & Malakauskaitė, 2009).

Recently, organizations like OECD, World Bank, and UNESCO have increasingly addressed the topics of the creative industries and are perceived as increasingly important in the economic sector. In countries like UK and Korea, creative industries have emerged as their national strategic choices for rejuvenating economic growth, employment, social societal relationships, and cultural identity.

The creative economy has been widely used in urban economies and has led to the concept of a creative city. A creative city refers to a city where varied cultural creative activities are an integral part of the city's economic and social

functioning and are built on their strong social and cultural infrastructure. Creative cities usually have a relatively high level of employment in the creative sectors and thus are relatively easier to attract business investments due to their good social and cultural infrastructures. For instance, London is an example of creative city where its creative economy was the second-largest economy from 1995-2001, increasing its employment from 20% to 25%.

Many cities in the world realize that the creative economy plays an increasingly important role in their economic and social development. The cities have yet to know how they could effectively utilize their cultural creative potential for their creative city's economic development. UNESCO Creative Cities Network was established to facilitate the exchange of knowledge, experience, and examples of successful activities among cultural groups around the world. In other words, it is important to have systematic knowledge and methods about how to build more business capacity. This is particularly true for managerial businesses and capital market disciplines to grow the economics of creative cities, as advocated in the works of Chou & Yuan (2015) and Yuan et al. (2017).

In response to the above-mentioned challenges occurring to the development of regional tourism (abbreviated as RTD) or city districts (abbreviated as CDD), this book will take them as the running scenarios to exemplify the applications of our business reinvention methodology provided in Part 2.

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Chapter 3
High Human Value Design

ABSTRACT

Meaningful customer value is the first dimension indicated in the business reinvention methodology framework. Chapter 3 provides a sequence of key components and their underlying concepts that altogether furnish a systematic and empathetic way to create meaningful customer value (i.e., new wellbeing value). These components and concepts are intertwined with service thinking, design thinking, abductive thinking, and business thinking; their respective practices could be iteratively conducted toward creating a higher human value design.

INTRODUCTION

The empathetic way to create meaningful customer value (i.e., new well-being value) involves both the method to create the value and the necessary mindset concerning the essence of the meanings for customers. Accordingly, this chapter begins with the theories and concepts that pave the way for the required mindset, followed by the provision of the value creation method.

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FOUNDATIONAL THEORIES AND BASIC CONCEPTS

Service-Dominant Logic

Service-dominant logic is the first necessary mindset required for creating meaningful customer value in the era of service and experience economy. Vargo and Lusch (2004, 2008) believe that the structure of the consumer market has evolved from product-based to service-based. Changes in consumer behavior have increased the importance of service value and competitive strategy. Thus, the consumer market is more service-oriented since the tangible, physical products have been surpassed. The focus of consumer market development lies in transforming the traditional goods-dominant logic (GDL) into the service-dominant logic (SDL), where the SDL is considered an evolutionary process of the consumer market.

SDL stresses that services are a process rather than an output unit; the focus thus lies in operant resources (i.e., intangible assets of specialized skills and knowledge that use operand resources to produce effects) rather than operand resources (i.e., tangible assets that are the factors of production, such as raw materials, natural resources, or machinery) emphasized in GDL. The value of service from the SDL perspective lies in the collaboration between the provider and customer rather than on the creation and the delivery process from the provider to the customer as is the case in GDLs (Vargo & Lusch, 2004, 2008).

There are ten foundational premises (FPs) for SDL insights. (Vargo and Lusch, 2004, 2008). First, services are the basis for all transactions (FP1), and thus involve the application of operant resources, such as knowledge and skills (FP2). Next, tangible physical products are considered a sale medium provided by the services (FP3). From the perspective of the GDL, goods produced by a business can create value, and customers are the users of the value of those goods. However, SDL takes a different perspective. SDL stresses resource integration (FP9) and the creation of value (FP6) where the customer is considered an operant rather than an operand resource. SDL also implies a process-oriented logic. The emphasis is on generating value-in-use rather than the traditional value-in-exchange viewpoints. Therefore, SDL stresses that each value is unique and determined by the beneficiary (FP10). When the business is able to integrate operant and operand resources, the environment can, in turn, produce value. This signifies the existence of a

variety of transactional relationships (FP8). The business is unable to control value, but it can provide the orientation of the value (FP7).

Customer Dominant Logic

Going beyond the discussion about the differences between SDL and GDL, customer-dominant logic is then the next necessary mindset required for creating meaningful customer value. Several studies (Heinonen & Strandvik, 2015; Rihova et al., 2018; Strandvik et al., 2012) have considered the advancement of customer dominant logic (CDL), which recognizes the primacy of customers. CDL is an ultimate concept that includes how individual customers live their lives thinking about what goods and services to purchase and utilize, as well as how to allocate their assets and engage activities given existent market offerings (Heinonen et al., 2010). A provider's service offering could be regarded as a fraction of the activities and experiences of a larger value-in-use equation about how the provider can be involved in a customer's life goals and tasks as depicted in Figure 1 (Heinonen et al., 2010).

CDL differs from SDL under the ecosystem perspective. CDL enforces a customer ecosystem, which is characterized as a system of actors who are pertinent to the customer and a specific service (Voima et al., 2011). A customer ecosystem incorporates some service providers, actors, customers, or supportive physical or virtual infrastructures relevant to the service. On the other hand, SDL regards a service ecosystem as resource-integrating actors connected by mutual value creation through service exchanges that are initiated by a focal B. As indicated in Table 1, the customer is the prime focus in a customer ecosystem, while in service ecosystem, the mutual value creation through service exchanges is main point (Heinonen et al., 2010).

Figure 1. Customer-dominant logic contrasted with service-dominant logic

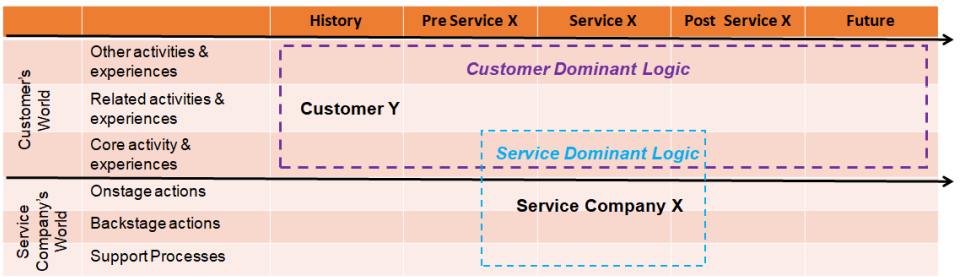
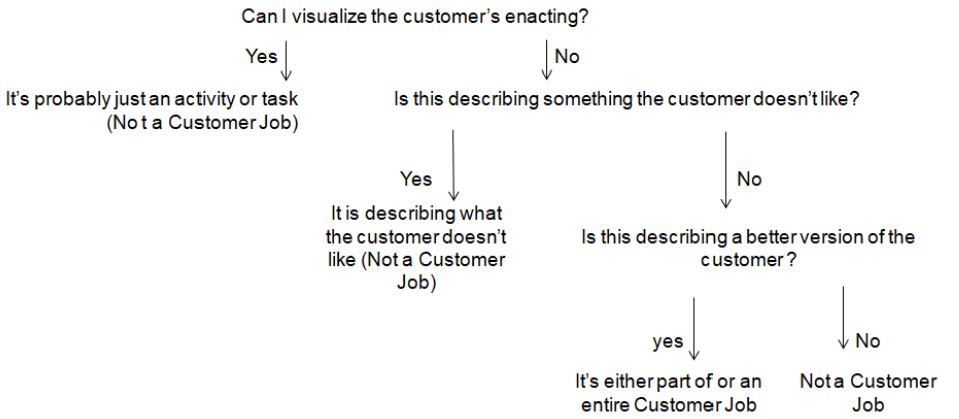


Table 1. Contrasting SDL with CDL

		Provider –Dominant Logic	Customer-Dominant Logic
Co-creation	•Involvement •Control	•Customer involved in co-creation •Provider controls co-creation	•Provider involved in customer activities •Customer controls value creation
Value-in-use	•Visibility	•Focus on visible interactions	•Consider visible, invisible and mental actions
Customer experience	•Scope	•Formed within the service	•Emerge in customers' life

Furthermore, CDL is also pertinent to the Jobs-to-be-Done Theory (Christensen et al., 2016). The theory has five principles: (1) people purchase products and services to get a "job" done; (2) jobs are functional, yet in addition to emotional and social parts; (3) a Job-to-be-Done is usually steady over time; (4) success originates from making the "job" as the unit of evaluation, instead of the product, service, or the customer; (5) a deep comprehension of the customer's "job" would make providers and their advancements increasingly viable and foreseeable. Each principle could bring some new inspiration to a provider's business practices as depicted in Figure 2 (Klement, 2016).

Figure 2. Jobs-to-be done concepts

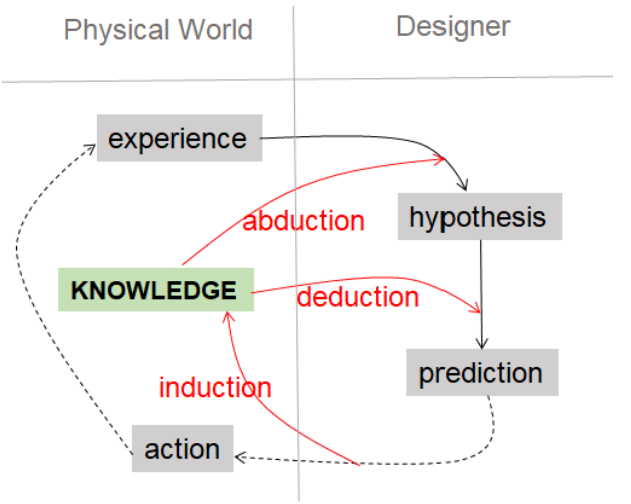


Design Logic

With the aforementioned SDL/CDL mindset, what follows is the fundamental reasoning or philosophy behind the method used to empathetically design or create meaningful customer value. Design is an abduction (or abductive) reasoning process that is a form of logical inference that begins with a set of observations and data. Subsequently, it looks for the most likely explanation that could be regarded as new knowledge. This explanation would then become the best guess (i.e., the hypothesis) that makes the most sense given the observed data, existent knowledge, and prior experiences. That is, design is a sensemaking process that helps create new knowledge and is exemplified below where C is presented as the best guess for why B is occurring, yet C is not a piece of the grounding premises (Kolko, 2010).

When I do A, B occurs.
I've done something like A before, but the circumstances weren't exactly the same.
I've seen something like B before, but the circumstances weren't exactly the same.
I'm able to abduct that C is the reason B is occurring.

Figure 3. The cycle of abductive, deductive and inductive reasoning



In relation to the other two logical inferences (deductive reasoning and inductive reasoning), Figure 3 shows a cycling relationship of these logical inferences in which a human is able to make hypotheses and interpretations of incoming data and information; making predictions, exploring, and learning are all based on the encounters one persistently experiences (Pauwels & Bod, 2012).

In short, abductive reasoning is the fundamental philosophy used to design logic that actively seeks new data, challenges existing explanations and hypothesizes new possible worlds of new problems and solutions. This is very different from the general business logic that is essentially grounded in analytical reasoning and uses predestinate objectives to accomplish goals, as depicted in Figure 4 (Moore, 2017). However, Brown (2011) added two more requirements that make the abductive reasoning for design logic more fruitful. First, design should be technologically feasible, and second, the creation or innovation must also make business sense.

Basic Concepts

Customer value is the keystone element as it is mentioned in both SDL and CDL even though it is covered from different perspectives. SDL emphasizes that the customer is regarded as an operant rather than an operand resource within the resource-integrating value co-creation initiated by a focal B, while CDL emphasizes a customer's life goals or tasks and determines the

Figure 4. Traditional business logic versus design logic

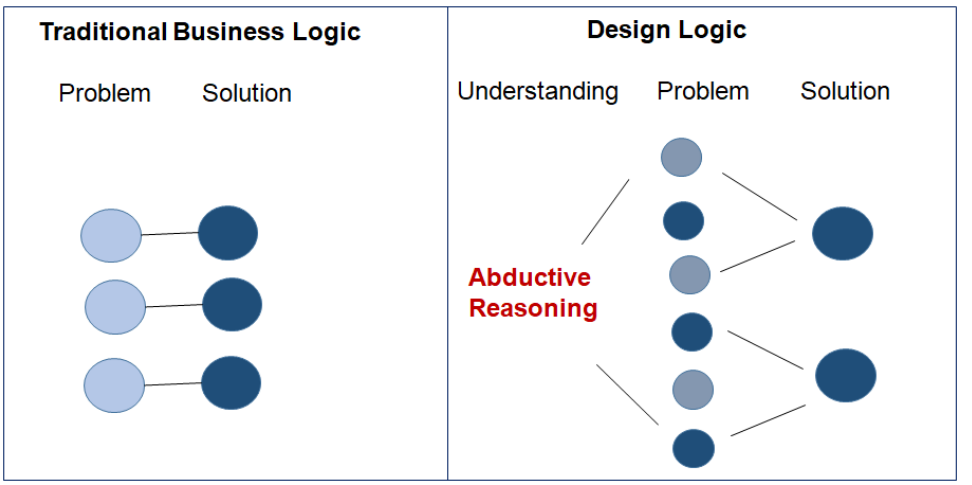


Figure 5. Types of customer needs

	What People	Techniques	Knowledge
Surface	say, think	interviews	explicit
	do, use	observation	observable, tacit
Deep	know, feel, dream	generative techniques	latent

selection of the providers' offerings involved in a customer's larger value-in-use equation. Nevertheless, customer value (or customer needs) are yet to be identified by some methods and techniques.

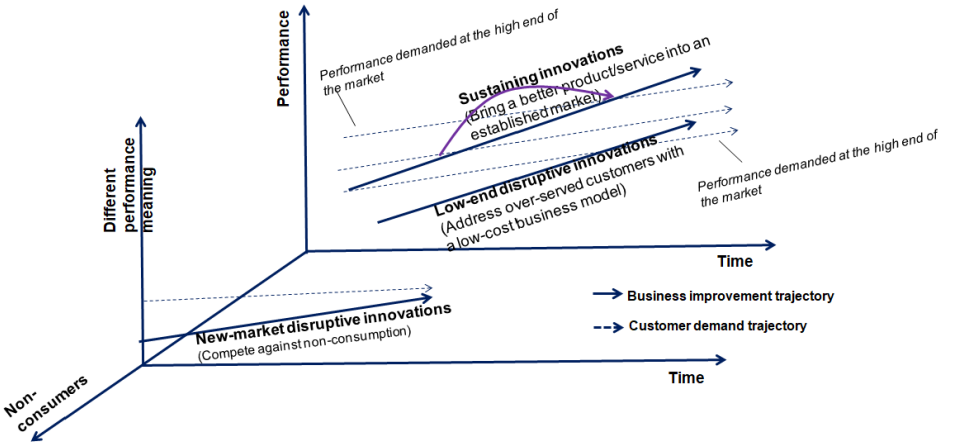
There are three types of customer needs, including explicit needs, tacit needs, and latent needs. These needs are listed in accord with the increasing depth of the need, which is depicted in Figure 5 (Sleeswijk Visser, 2009). Explicit needs are what people can easily communicate verbally when asked questions in interviews or focus groups. Tacit needs are what is difficult to verbalize, yet ready to acquire the comprehension by seeing what individuals do or use. An example would be trying to explain to someone how to maintain balance while roller skating.

Latent needs are what people have not identified as a need or do not perceive something as a need, but recognize that it might be a need in the future (i.e., what people dream). However, latent needs can be uncovered by some generative methods and techniques that dive into people's emotions, feelings, thinking, communications, and behaviors to generate meaningful insights.

The deeper needs would then have more prominent life impacts and affect more customers. We argue that customer needs embodying CDL would go deeper than those with SDL, let alone those with GDL. However, the creation of meaningful customer value to satisfy new customer needs must also make business sense. This would relate to the business priority decision of a focal B in face of disruption, threats, innovations, or technological advancements.

As shown in Figure 6, there are two different types of disruption innovations (Christensen, 2013), and they are characterized by three dimensions including (1) the performance of the service or product on the vertical axis, (2) the

Figure 6. Types of disruption threats

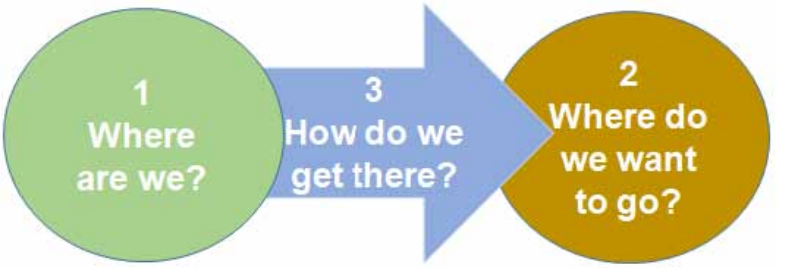


time on the horizontal dimension, and (3) the new customer markets and consumption contexts on the third axis.

Targeting high-end customers in an existent market with better performance than what was previously available is different than sustaining an innovation that improves existing products and services. The first type of disruptive innovation is called low-end disruption, which is when innovations attack overserved mass markets by diminishing expenses and expanding the quality in an existent market and consumption context (Christensen, 2013). The second type of disruptive innovation is called a new market disruptive innovation, which is when newly created markets are separated from traditional markets by leveraging new technologies and creating new business models. New market disruptive innovation may also exploit old technologies in new ways, which can make the old market's technology obscure in comparison to the new market and new technology (Christensen, 2013).

Recently, there are constant disruption threats and market changes in various industries. Even the perpetually perceived brands experience challengers who are prepared to go up against their famous markets. For making the decision of business priority, a focal B needs to keep finding, getting the hang of, remain mindful of new market opportunities, and evaluate the provisioned customer value versus that of the potential contenders or threats even if the scope of disruptive technology markets are obscure. Consequently, strategic thinking is necessary to make the right business priority decision.

Figure 7. Strategic thinking questions



Fundamentally, a focal B's strategic thinking involves answering three basic questions as depicted in Figure 7 (Atkins & Cone, 2014), and the order of those questions matters: (1) Where are we? (2) Where do we want to go? (3) How do we get there?

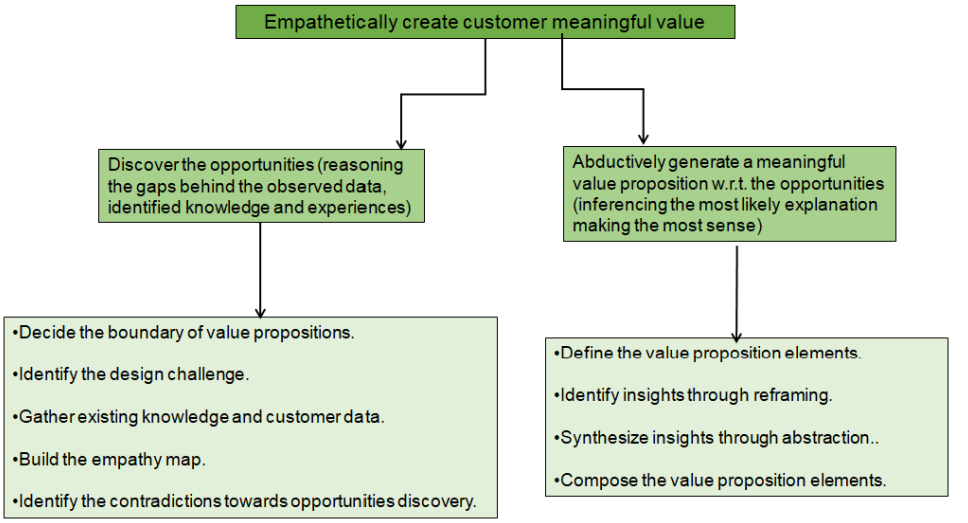
Assuming the role of a focal B, the questions begin by provoking the position of the present circumstances within a universe of exploration, and then it seeks a desired future state within the specified scope of the universe. Starting from these two questions is essential, or it will fall under the pitfall of taking actions without an unmistakable feeling of direction. Simply in the wake of having recognized the beginning and end points, it is then prepared to stride on the path of creating the meaningful customer value.

After understanding the above-mentioned theories and concepts, what follows are the descriptions of the method used to create meaningful customer value. These descriptions will be provided in a hierarchical manner by presenting the instructional activities to carry out in a top-down, level-by-level manner.

DESIGN METHOD

The high-value design method is to empathetically create meaningful customer value, taking on two main steps, which are shown in Figure 8. The first step is discovering the opportunities (reasoning the gaps behind the observed data, identified knowledge, and experiences), and the second step is abductively generating a meaningful value proposition (inferencing the most likely explanation making the most sense) with respect to the opportunities.

Figure 8. Steps of the high-value design method

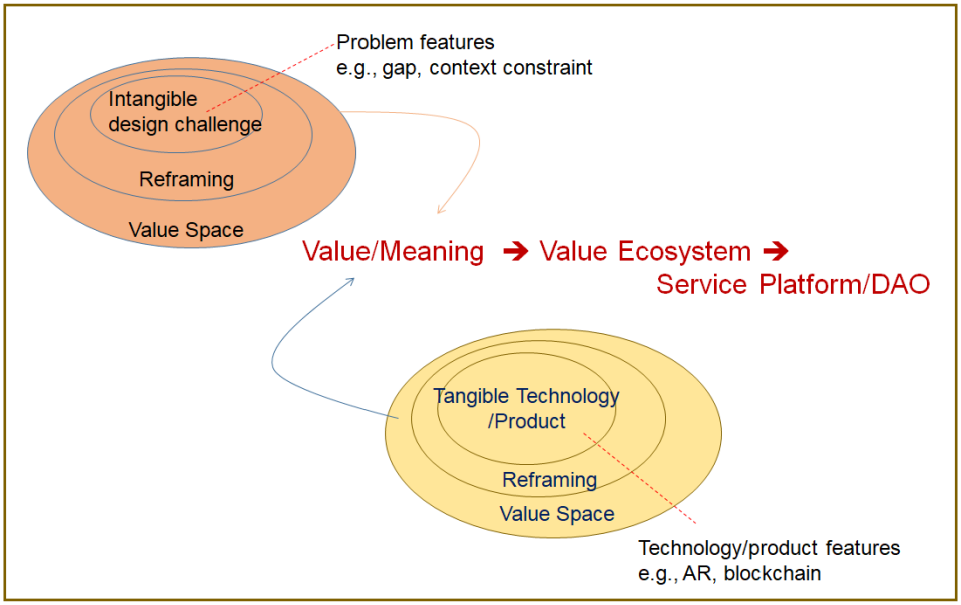


Discover the Opportunities

Discovering the opportunities mainly consists of the following steps: (1) decide the boundary of value propositions, (2) identify the design challenge, (3) gather existing knowledge and customer data, (4) build the empathy map, and (5) identify the contradictions toward opportunities discovery (that subsequently help drive the generation of value proposition as depicted in Figure 8).

Figure 9. The first strategic thinking question

Figure 10. Triggering points that call forth the value design process

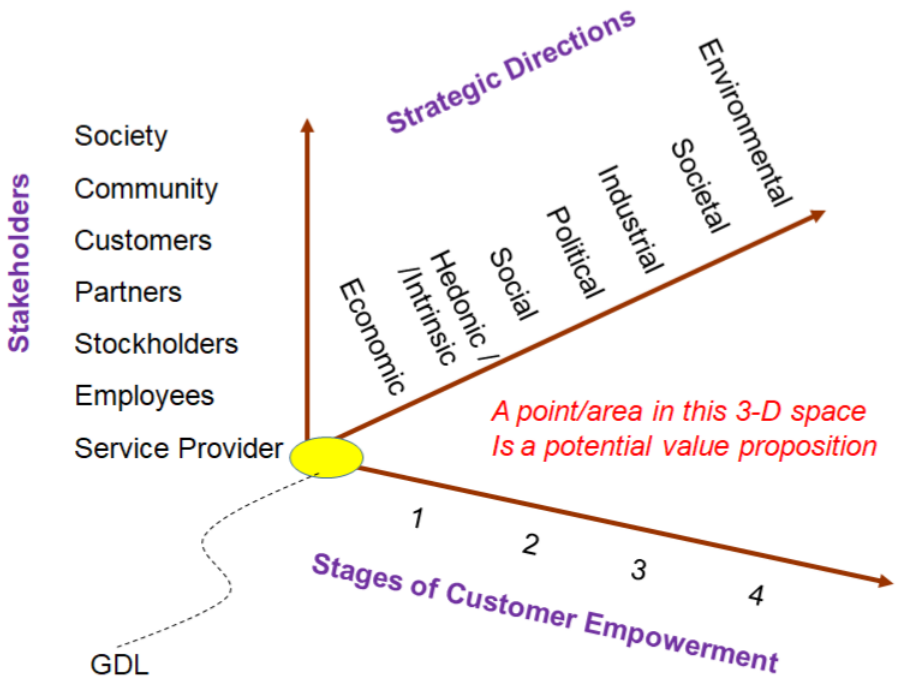


Decide the Boundary of Value Propositions

Given the universe of possible values under exploration (i.e., a value universe), a boundary of value propositions is defined as a designated subspace of the universe (i.e., a value space). Connecting to the "Where are we?" question in the aforementioned concepts of strategic thinking (Figure 9), a value space needs to be decided before generating a high value positioned in this designated value space. Further, a value space characterizes how the symmetry of providers and customers could be empowered and drive the new perspective on the value design and the subsequent value ecosystem development.

Centering to a value space is a triggering point that calls forth the value design process. There are two types of triggering points as depicted in Figure 10: (1) intangible soft design challenge (e.g., challenging problem features of relevance to QoL) and (2) tangible hard technology or product (e.g., provocative features of relevance to the particular technology, product, or service). For instance, the triggering point for the RTD (or CDD) running scenario as a whole (e.g., regional growth and innovation) belongs to the first type of intangible soft design challenge, while an SMB of RTD/CDD (e.g., branded by its core product or service and wanting to reinvent itself) then belongs to the second type of tangible hard product or service. In addition,

Figure 11. The value universe



given a trigger, the designated value space would roughly signal the attempted business priority of a focal B in the face of disruption, threats, or innovations. This will be explained later with the understanding of the value universe.

The value universe adopted in this book is defined in terms of three dimensions (Figure 11) that specify a systematic view of knowledge and data and the ways to explore a value proposition and its follow-up value for the ecosystem (Kwan & Yuan, 2011). The three dimensions comprise the universe of varieties for the value propositions. The first dimension is customer empowerment that is about a focal B's choice of customer empowerment strength. Along this dimension, the stages of value chain, traditional value network, improved value chain, and customer-driven value ecosystem are annotated in numerical order to indicate the increasing strength of customer empowerment within the context of the value creation and delivery. The second dimension is strategic direction that is about the strategic directions of a focal B for the creation of a value proposition. The value proposition may consider different facets such as economic (to maximize wealth), social/ societal (to ensure quality of ongoing integrations and interactions), and

environmental (to achieve natural balance). The third dimension involves a focal B's choices of stakeholders. The stakeholders are considered to be in a participatory process that considers the interactions between a focal B, customers, and the other entities within their value co-creation and delivery contexts.

That is, each value proposition can be positioned at a point or area within the value universe defined by the three dimensions, and each dimension has a few nominal and ordinal levels based on its increasing influencing extents. The first is the customer empowerment level or the numerated order that considers an increasing trend of empowerment given to customers for value co-creation (Kwan & Yuan, 2011). Second is the value strategy level, or the strategic directions of a focal B for value creation that considers the increasing value and how it impacts the economic, intrinsic, social, societal, environmental factors. The third is the stakeholder levels, which refer to the increasing scope of coverage for stakeholders involved in a participatory process and considers the interactions between a focal B and its partners, customers, communities, or the society within the value co-creation context.

The value universe with the three dimensions can provide a holistic perspective to explore the generation of value propositions and value ecosystems considering SDL/CDL (customer empowerment in value creation and delivery), value-based strategy about business objective priority within a larger dynamic context (Adam et al., 2004; Brown et al., 2006; Robbins, 2006; Weinberg, 2001). For example, the triple bottom line concerns the economic, social and environmental values, and system thinking concerns value ecosystems modeled in terms of entities, interactions, and outcomes. The holistic perspective can also help position the value design problem in terms of a comprehensive exploration of the possible innovation opportunities.

A value proposition (situated within the value universe) indicates an analysis and quantified review of the business benefits, costs, and value that a focal B can deliver to prospective customer segments (Barnes et al., 2009). It also indicates the creation of the value proposition is a working strategy (Kaplan & Norton, 2004). On the other hand, a strategy typically involves a course of activities to achieve its premise that a certain future position can offer benefits for reaching certain goals, which may include customer value, stockholder value, or competitive market position (Porter, 2008). In the value universe, the dimension of the strategic direction is to manifest how the creation of the value proposition is in line with the value-based strategy. Figure11 shows that a holistic approach to the value-based strategy can involve different types

of strategic directions (e.g., economic, hedonic or intrinsic, social, political, societal, environmental, etc.).

In addition, this value-based strategy approach employs system thinking (Checkland, 1999) to involve stakeholders in a participatory process and consider the interactions between a focal B, the customer, and the other entities in their business context. Within the notion of system thinking (O'Connor & McDermott, 1997), a system is a set of entities that interact to produce behavior (i.e., a macro view), and this view focuses on feedback relationships between the thing being studied and the other parts of the system to manage the interactions, not the activity. Accordingly, it is good for complex problems because it helps to see the big picture.

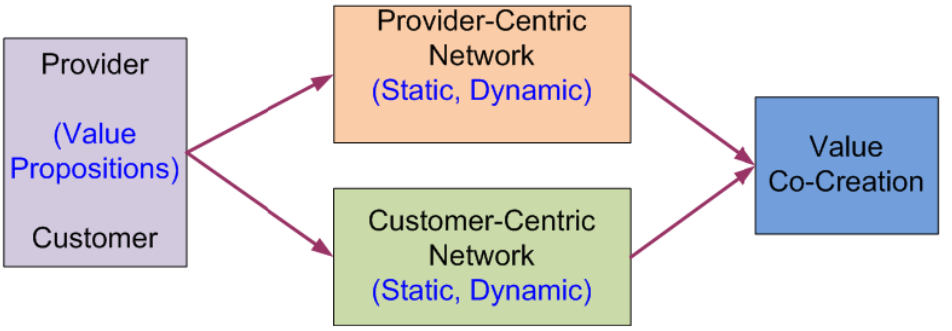
For instance, the value (i.e., economics) is uniquely co-created with respect to the customer's needs or wants and the provider's (i.e., a focal B) value proposition. The resulting value subsequently manifests in the form of intangible knowledge and information or tangible outcomes that impact the real world. The real world has different social, societal, and environmental facets depending on the customer and the provider. For instance, to the customer, the social facet regards the social network of the customer, while to the provider, it concerns the value ecosystem and the partners being integrated. Those impact the real world and affect the perceptions of the customer's needs or wants as well as the value constellation on the provider side. Similarly, these impacts also affect the perception of the provider and the needs and wants in retrospect on the customer side. The value proposition of the provider could be evolved in order to have the opportunity to make a positive difference in the combined success on the economic, social, societal environmental facets to achieve business sustainability.

Finally, the dimensions for the stages of customer empowerment are annotated in numerical order, which indicate an increasing strength of customer empowerment within the context of the value co-creation and delivery. The details will be provided in the following paragraphs.

Determinants of Value Co-Creation and Stages of Customer Empowerment

The four stages of customer empowerment can be described and explained based on the determinants for value co-creation as shown in Figure 12 (Kwan & Yuan, 2011). These determinants include value propositions from the focal

Figure 12. Determinants of Value Co-Creation



provider and the customer, the provider-centric network, and the customer-centric network. These networks could be configured statically or dynamically.

These determinants of value co-creation have the following five assumptions. First, the network is a primary economic mechanism for value conversion and for describing the value creation dynamics (Allee, 2008). Second, the value proposition offered by a provider-centric network may not sufficiently fulfill the needs of customers in terms of their own determined value according to CDL. Third, customers might need to expend extra efforts to fill the gap. They may do this with additional self-service (Harvey, 2005) or by creating new customer choices. Fourth, this self-service or creation of new customer choices could range from a simple labor effort to driving another network (e.g., a customer-centric social network) to engage in dynamic value co-creation to fill the gap. The final assumption is that the combined network could enhance customer's value as long as the increase in the overall cost does not offset the magnitude of the increase in value.

By the same token, the provider's value could also be increased because of the expected increase in the sale volume (e.g., due to increased customer retention). This could also decrease the cost of offering the service as well as warrant a price increase because of the service innovation opportunities created. In short, the notion of value co-creation could be extended to incorporate the opportunities for value varieties and service innovations.

These determinants of value co-creation can embody the following scenarios of service network creation: provider static, customer static, provider dynamic, and customer dynamic. *Provider static* refers to when the service network is already determined by the provider and the end points of the network are known. *Customer static* means that the customer does not have any way of altering the end points of the network, and they have to select

the predetermined end points. On the other hand, *provider dynamic* is when the service network is created dynamically by the provider. For example, it could be created through some cost optimizing algorithm that chooses the intermediate nodes (partners, etc.) This can also apply to the situation where the cost is not the only consideration (e.g., reduction in carbon footprint or other sustainability considerations). Finally, *customer dynamic* is when the end points of the network are not known ahead of time. The customer creates these end points to maximize their value from the service. That is, the value proposition from the provider only provides some predetermined value that is accepted by the customer who is then empowered to enhance the value based on their creation of the dynamic service network endpoints.

If the static cases of value co-creation for the provider's value proposition is well defined and the customer accepts the proposition, then the outcomes are very much predictable. However, the value co-creation in the dynamic cases is less predictable since extra efforts are engaged either by the provider side or the customer side to achieve extra benefits.

Table 2 and Figure 13 show the tabulated and schematic representations of the four variations of empowerment provided to the customer within the value ecosystem (Kwan and Yuan, 2011). The *value chain* is characterized by a one-sided (i.e., provider) value proposition and thus the value varieties for the customer and the metrics of service quality are predetermined. The

Table 2. Extended Value Co-Creation

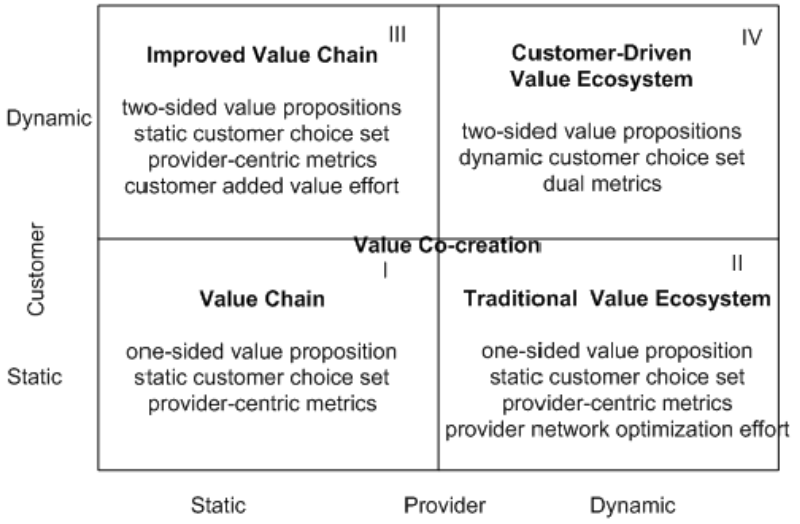
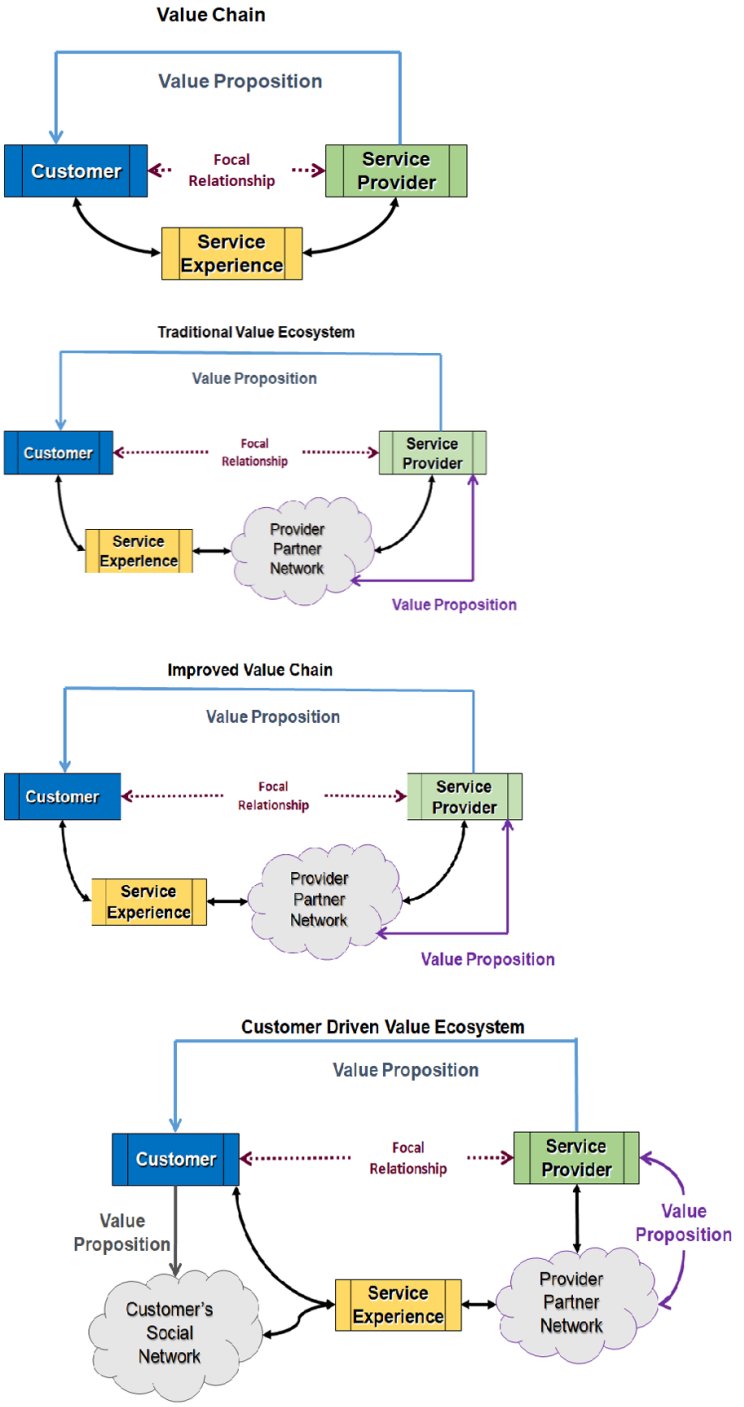


Figure 13. Schematic representations of the four variations of customer empowerment



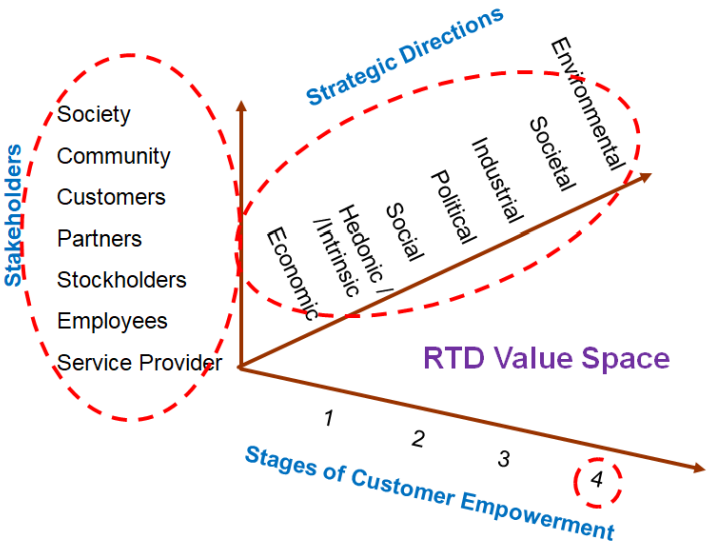
traditional value ecosystem is characterized by a one-sided (i.e., provider) value proposition and thus the value varieties for customer and the metric of service quality are predetermined, but the provider side would expend extra efforts in optimizing the network for the service delivery. The *improved value chain* is characterized by two-sided (i.e., both provider and customer) value propositions but the customer side has to expend extra efforts to enhance their own value beyond the provider's service quality and metrics. Finally, the *customer-driven value ecosystem* is characterized by two-sided (i.e., both provider and customer) value propositions, and the network for the customer side will be involved to co-create the value with the provider's network.

The customer-driven value ecosystem is annotated by the number four in Figure 13, which depicts the customer and service provider as symmetric network integrators and sources of value propositions. The customer's ability to drive the value creation is recognized in these explicit roles that go beyond the notion of the customer and service provider as resource integrators expounded in SDL/CDL.

Kwan and Yuan (2011) have shown the customer-driven service value network is superior to the other three network variations with the following salient properties. The goals of a customer-driven service value network include service productivity (e.g., the cost of building the network and its relationships), customer satisfaction (e.g., increase in value varieties with more choices such as self-service), and service innovation (e.g., forming innovative design choices). The network is built with human tacit knowledge and applies interdisciplinary theories to ensure certain solution qualities (e.g., minimized cost, maximized satisfaction, maximized opportunities for service innovation). Moreover, network development and operation can be managed and facilitated by specifically designed digital artifacts that minimize the operating cost while increasing productivity. Examples of related digital artifacts include the mechanisms to semi-automate the value co-production process that consider customer satisfaction and expectation management (Hsieh & Yuan, 2019; Tung & Yuan, 2010) and the mechanisms used to conduct cloud service governance and integration (Plummer & Kenney, 2009).

In summary, after deciding a value space followed by a design challenge, the designers could iteratively bridge what they observed (the design context) to what they already knew (their past knowledge and experience). This way, they can frame the design challenge situation properly in order to attain the valued insight, which is defined as the potential innovative opportunities with the empathy of the customers and the stakeholders. Finding what caused the design challenge situation, who the stakeholders are within the value space,

Figure 14. The assumed value space of the running scenarios of RTD/CDD



and what they desire are very crucial. The framing and reframing process aims to refresh the perspectives to view the design challenge situation, which could lead to the discovery of potential innovative opportunities. Reframing refers to shifting the semantic perspective to see things in a new way by re-embedding the design challenge situation in a new (and not necessarily logical) context so as to extrapolate likely customer goals and design implications.

For the running scenarios of RTD/CDD, the value space assumes to be the one shown in Figure 14, which shows the exploration of customer-driven ways to achieve innovation, productivity, and growth toward sustainable prosperity individually and collectively in regional tourism or creative city.

Identify the Design Challenge

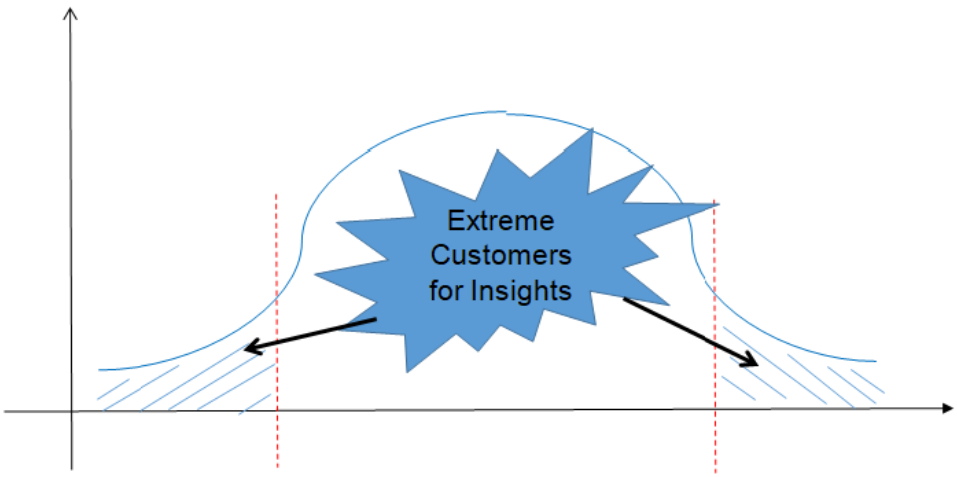
A design challenge is a statement about an aforementioned triggering point (Figure 10) situated within a designated value space (Figure 11) but is phrased in a human-centered way with the sense of possibility. A good design challenge statement should be framed in human terms (rather than just technology, product, or service functionality) and highlight the chosen value space along the three value universe dimensions. The design challenge statement should serve as the symbolic starting anchor of a business reinvention project.

Exemplars are like "How can people in societies feel comfortable and connected under the sharing economy service trend?", "How can we create well-being while casting a financially safe and indulging net for senior individuals in societies?", and "How can the blockchain technology help surge government political trustworthiness among citizens and businesses?" For the running scenario of RTD, its design challenge could be "In the global trend of a regional tourism/creative city, how can we help SMBs utilize their maximum potential for engaging customers/collaborators to escape from their sufferings of low innovation, productivity, and growth toward the prosperity of RTD/CDD?"

Gather Existing Knowledge and Customer Data

This step consists of two major actions. The first step in gathering existing knowledge and customer data is to understand the existent relevant markets, industries, stakeholders, technologies, and relevant resolutions and perceived constraints of the challenges. The second step is to identify potential customers and stakeholders within the designated value space to talk with. This should encompass 2/3 of extreme customers and 1/3 of normal customers (Figure 15) and should have an empathic understanding of the world through their experiences and emotions. Extreme users refer to those individuals who are completely familiar/unfamiliar, accessible/inaccessible, or agreeing/opposing

Figure 15. Potential customers and stakeholders covering 2/3 of extreme customers and 1/3 of normal customers

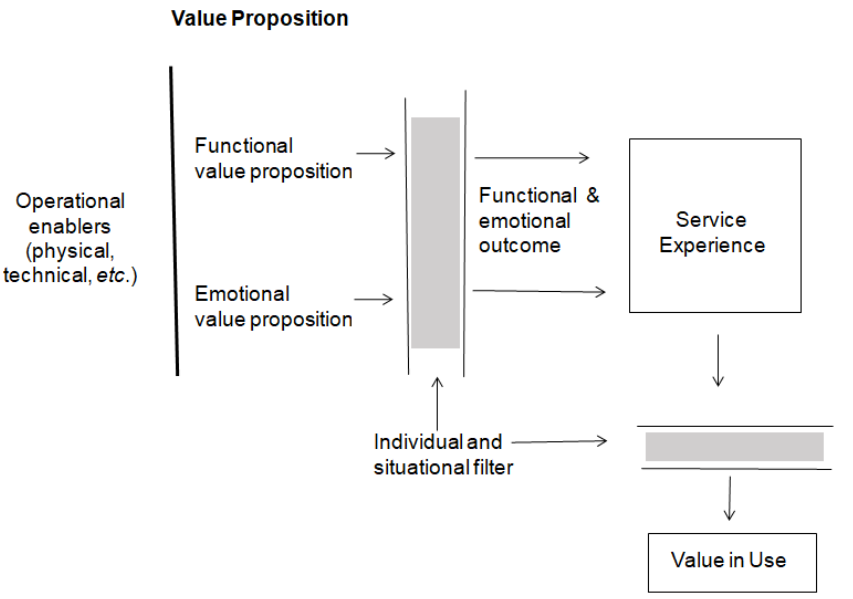


with the products, services, or relevant concepts for a focal B. Extreme users can help by either highlighting key issues or problems or by inspiring insights for improvements or innovations ("Extremes and mainstreams," 2019).

For the running scenario of RTD, exemplars of extreme SMBs include those that have the weakest bargaining power, those that negotiate with travel agents, and those that have strong resources to provide one-stop services or products to travel customers and do not collaborate with external businesses. Extreme travel customers include backpackers who prefer low-cost and independent travels and who want to experience what they consider the real destinations rather than packaged tours and those who seldom travel. Normal travel customers refer to those who go to travel agents, book holiday packages, and travel with a larger group of prepacked tourists. Similar concepts can also apply to other types of stakeholders if necessary.

For empathy, it is important to observe (i.e., seeing customers and their behavior with regard to their whole lives or businesses) and engage (i.e., interacting with and talking with stakeholders through both planned and short intercepting to find the emotions that direct behaviors). In other words, a potential value proposition could be characterized as either functional value proposition or emotional value proposition, and these as depicted in Figure 16 (Sandström et al., 2008). In accord with SDL/CDL, the value-

Figure 16. A value proposition features the senses of the functional and the emotional

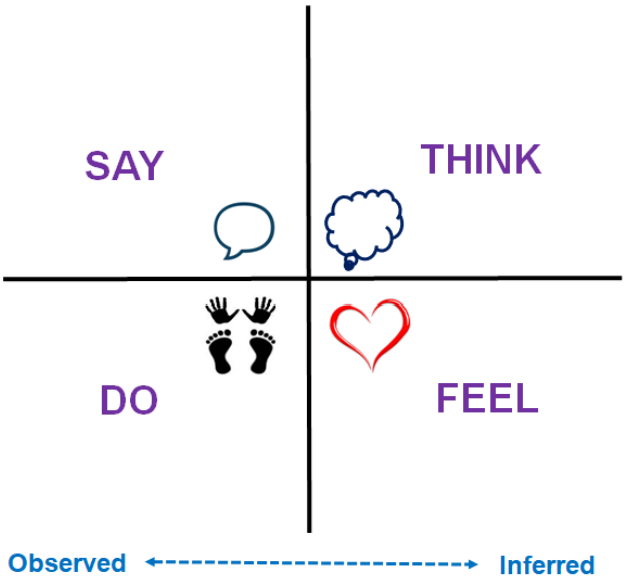


in-use conception of the potential value proposition could be considered as an individual stakeholder's evaluation of their experiences (functional and emotional) of the service designated by the potential value (Sandström et al., 2008). Or, their service experience could be regarded as the total sum of the customer's cognitive, emotional, and behavioral responses that occur in sequence or coexist to form a mental mark or memory within a service process (Edvardsson et al., 2005). The gathered knowledge and user data provides the baseline to infer the functional and the emotional responses.

Build Empathy Map

An empathy map is a visualization tool (Figure 17) used to visualize what a product or service team knows about customers to help the team construct compassion with their customers (dSchool, 2010a). This tool can be used to help the team construct a broader and deeper understanding of the customers and the other stakeholders. As the team identifies what they know about the customers and stakeholders through the points of the data on the diagrams, they can accomplish a more holistic view of the stakeholders' reality and their issues. Empathy maps can catch one explicit stakeholder or can mirror an

Figure 17. Empathy map



accumulation of numerous stakeholders, and it is an organized and empathic approach to visualize what we know about the stakeholders.

An empathy map consists of four quadrants (dSchool, 2010a). The four quadrants reflect four important traits, which the stakeholders had shown amid the observation and exploration stage. The four quadrants refer to what the stakeholders SAY, DO, THINK, and FEEL:

- **SAY:** What are significant quotes and defining words the stakeholders said out loud in interviews?
- **DO:** What actions and behaviors did the stakeholders take? How did the stakeholders go about doing it?
- **THINK:** What might the stakeholders be thinking but not be willing to vocalize? What does this help infer about their sub-conscious beliefs? What are their motivations, their goals, and their desires?
- **FEEL:** What emotions might the stakeholders be feeling? How did the stakeholders feel about the experience? Take subtle cues like non-verbal communication and their selection of words and tone of voice into account.

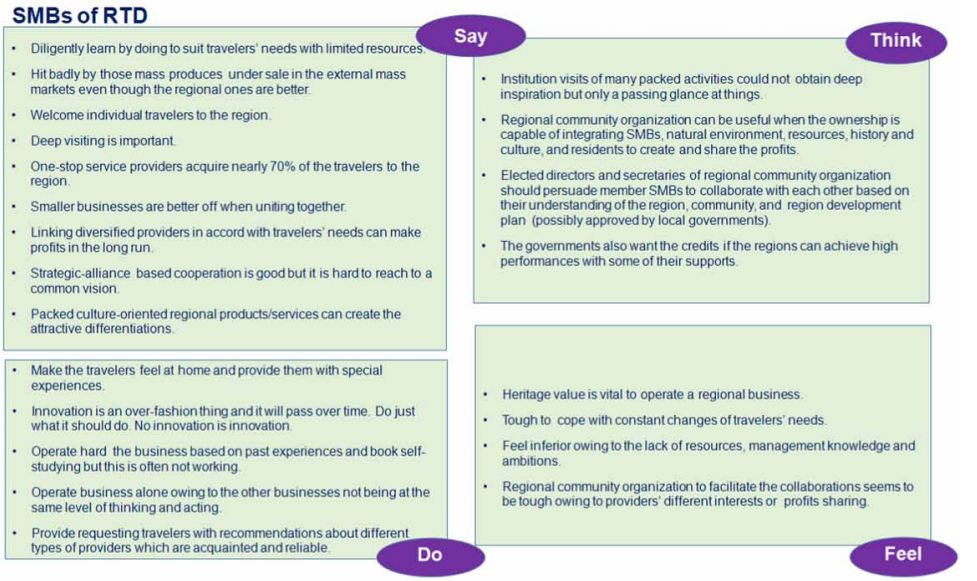
One way to obtain the empathy map data is to engage stakeholders to develop deeper empathy through well-thought-out questioning. Interviews can capture what a stakeholder said and did, as well as gain a better understanding

Figure 18. Tips about how to interview

Interview Tips

Never say "usually" when asking a question. Instead, ask about a specific instance or occurrence, such as "tell me about the last time you _____"
Ask why. Even when you think you know the answer, ask people why they do or say things. The answers will sometimes surprise you. A conversation started from one question should go on as long as it needs to.
Encourage stories. Whether or not the stories people tell are true, they reveal how they think about the world. Ask questions that get people telling stories.
Look for inconsistencies. Sometimes what people say and what they do are different. These inconsistencies often hide interesting insights.
Listen to nonverbal cues. Be aware of body language and emotions.
Don't be afraid of silence. Interviewers often feel the need to ask another question when there is a pause. If you allow for silence, a person can reflect on what they've just said and may reveal something deeper.
Don't suggest answers to your questions. Even if they pause before answering, don't help them by suggesting an answer. This can unintentionally get people to say things that agree with your expectations.
Ask questions neutrally. "What do you think about this idea?" is a better question than "Don't you think this idea is great?" because the first question doesn't imply that there is a right answer.
Don't ask binary questions. Binary questions can be answered in a word. You want to host a conversation built upon stories.
Only ten words to a question. Your user will get lost when encountering long questions.
Only ask one question at a time, one person at a time. Resist the urge to lookout your user.
Make sure you're prepared to capture. Always interview in pairs. If this is absolutely impossible, you MUST use a voice recorder—it is impossible to engage a user and take detailed notes at the same time.

Figure 19. Exemplar empathy map of RTD's SMBs



of what the stakeholder thinks and feels. Figure 18 then shows tips about how to interview (dSchool, 2010b).

Figure 19 shows an example of an empathy map for the running scenario of an RTD where the four quadrants reflect the SAY, DO, THINK, and FEEL roles of RTD SMBs. There should be additional empathy maps associated with different stakeholders made available for the subsequent design method's activities. Meanwhile, those exemplary data were obtained from RTD SMBs belonging to the sector of leisure agriculture that manifests as a diversified and service-oriented industry that combines agricultural production and marketing with recreation and leisure.

Identify Contradictions Toward the Opportunities

Given the empathy maps with their four quadrants of important traits, some understanding of stakeholders' needs can be inferred directly from the stakeholders' traits. Nevertheless, the deeper understanding is often based on the contradictions identified between any two traits within or across the quadrants of the empathy maps, such as the inconsistencies between what the stakeholders think and what the stakeholders do.

Figure 20. Exemplified contradictions (colored in dashed red lines) within the empathy map of RTD SMBs

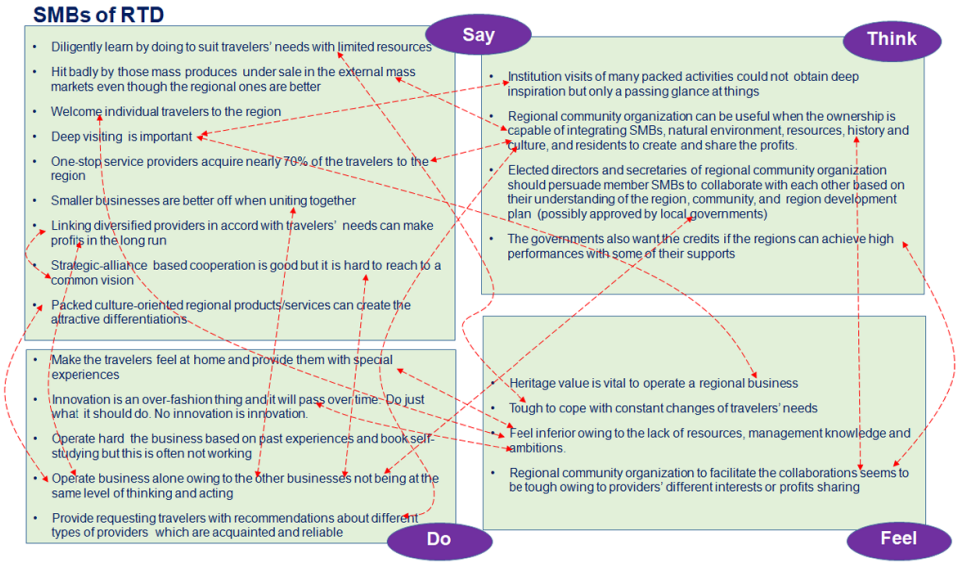
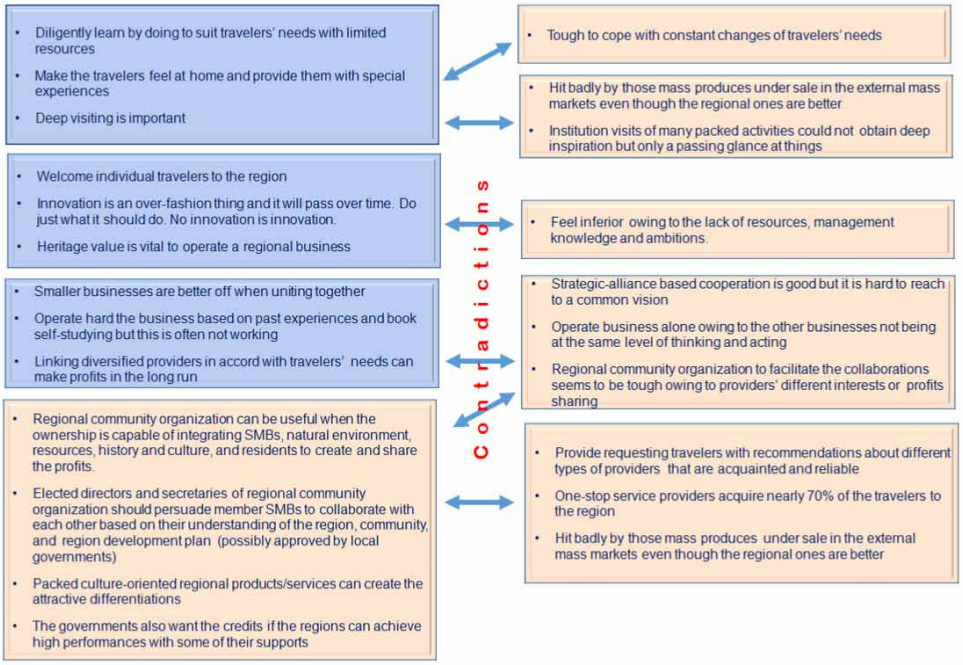


Figure 21. Summarization of the identified contradictions of RTD SMBs



In other words, the identified contradictions would indicate opportunities based on the gaps behind the observed data, identified knowledge, and experiences. Inferencing the most likely explanation that makes the most sense for these contradictions would subsequently drive the generation of a high value proposition.

Taking the SMBs empathy map of the running scenario of RTD, the red dashed lines exemplify the contradictions identified between any two traits within or across the four quadrants of the empathy map (Figure 20). Figure 21 then summarizes these contradictions.

Generate the Value Proposition

Connecting to the concepts of strategic thinking, generating the value proposition refers to "Where do we want to go?" which is shown in Figure 22. The main steps for determining where to go include: (1) defining the value proposition elements, (2) identifying insights through reframing, (3) synthesizing insights through abstraction, and (4) composing the value proposition elements.

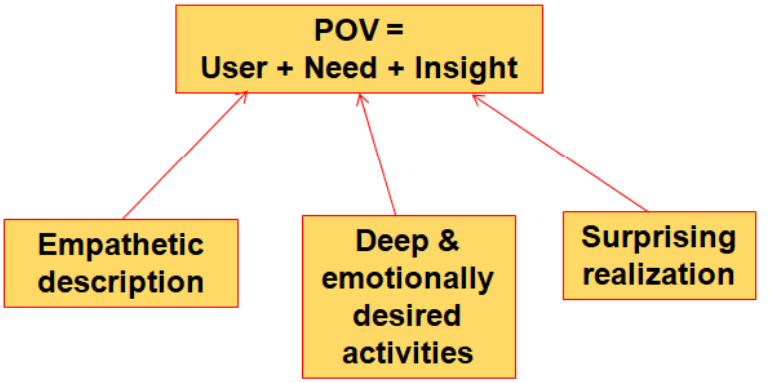
The Value Proposition Elements

A value proposition can be represented as a Point-of-View (POV) statement (as indicated below) that is the reframing of a service design challenge statement into an actionable problem statement that will dispatch into generative ideations (dSchool, 2010c).

[USER . . . (descriptive)]
needs [NEED . . . (verb)]
because [INSIGHT . . . compelling)]

Figure 22. Generating a value proposition is about "where do we want to go?"

Figure 23. The three elements of a value proposition expressed as a POV statement

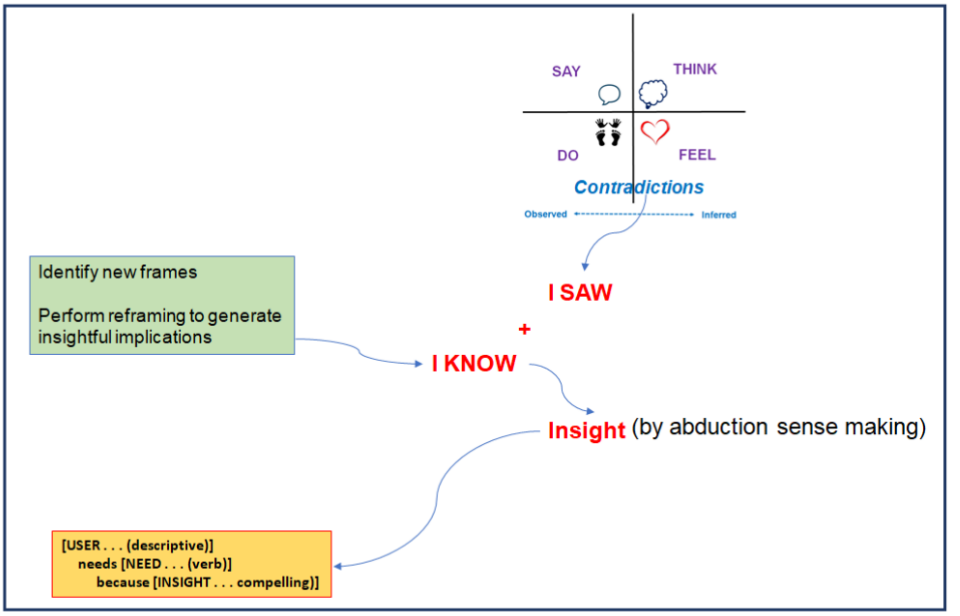


A POV has three elements (Figure 23): USER, NEED, and BECAUSE. USER refers to an empathetic description of the targeted end customers. NEED specifies the desired activities with which the USER could use help, and it is better to be represented by verbs instead of nouns (solutions) to avoid the confinement of innovation explorations. INSIGHT is a surprising realization that could be leveraged to better react to a given design challenge, and it is an acknowledgment of unexpected things that help see the design challenge in a new light (dSchool, 2010c).

Insights are derived from abduction sense-making that exhibits the logic of "what might be best" and why the explanations behind those identified contradictions can create new knowledge or insights. That is, abduction allows the precondition BECAUSE to be inferred from the consequence NEED (i.e., BECAUSE → NEED). Furthermore, the insights should not just be a reason for the need, but rather, should be a synthesized statement that can be leveraged to develop a prototype solution (dSchool, 2010c).

A good POV example is more like (dSchool, 2010c), "A teenage girl with a bleak outlook needs to feel more socially accepted when eating healthy food because in her childhood, asocial risks are more dangerous than health risks." A weaker POV example would be "A teenage girl needs more nutritious food because vitamins are vital to good health."

Figure 24. Generation of insight

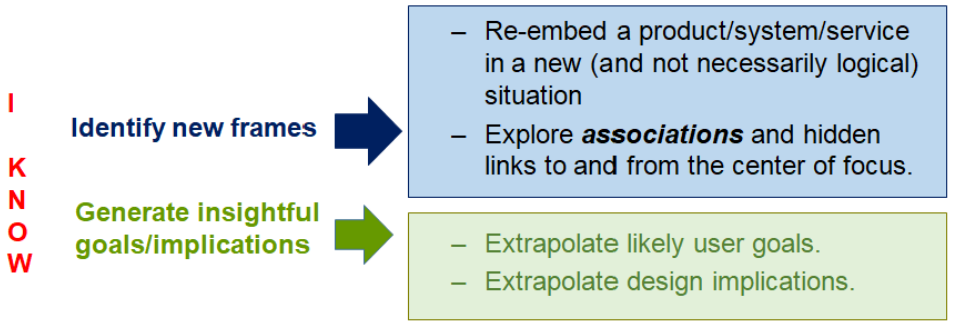


Identify Insights Through Reframing

An insight can be produced by combining the identified contradictions (called "I SAW") and resolution knowledge inspired from reframing (called "I KNOW") in new ways (Kolko, 2010). This insight discovery process iterates by combining what I SAW and what I KNOW from the process of framing and reframing. The ability to link newly found phenomenon information (i.e., those identified contradictions) with the existing knowledge is very important when discovering insights. That is, reframing is used for finding the better explanations behind the contradictions in order to discover the insights (Figure 24) in terms of changing the perspective by which the design situation of the identified contradictions are viewed.

When reframing design situations, designers are actually manipulating their mental imagery and trying to make sense of data using associations. This is a new knowledge-creating process (i.e., I KNOW), and this process is conducted using two abilities (Figure 25). The first is the ability to make associations to attain new frames; the other is to use these new frames to conduct reframing in a way that synthesizes the process of combining what people saw with the identified contradictions with what they know from

Figure 25. The I KNOW process



reframing. In this sense, reframing refers to a method of shifting semantic perspective to see things in a new way.

Associations can help identify new frames with which re-embedding a product, system, or service in a new (and not necessarily logical) circumstance. The associations can help explore hidden links in the resolution and form the central focus. In turn, this produces goals and implications through extrapolating the likely customer goals and design implications (Yuan & Hsieh, 2015).

Identify New Frames

A frame is a product of mental knowledge and meaning structures (Reckwitz, 2002). Frames are very subjective. Designers make subjective value judgments to build up their perspectives of the design situation. Hence, frames are usually very person-specific based on the designer who interviews subjects and the people who have been interviewed or observed. The purpose of reframing is to construct a new frame and use the new frame to change the perspective by which the design situation is viewed. That is, designers can reframe the design challenge to "jump out of the box" and generate some innovative thoughts (Paton & Dorst, 2011). In other words, a frame is an active perspective that both describes and perceptually changes a given situation (Kolko, 2011). Despite the fact that frames define what counts as 'data', they also really shape how the data are viewed. For example, a house fire will be seen distinctively different by the homeowner, the firefighters, and the insurance agent.

New frames for viewing a certain services or actions in new contexts can help designers discover associations, hidden links, and chances (Kolko, 2010). Jon Kolko (2014) suggested that in order to discover new chances, designers

Table 3. Five types of associations

Type of association	Definition	Examples
Context association	The relations between two concepts with a causal or sequential relation.	Hot → Sweat Wake up → Brush Teeth
Analogy association	The relations between two concepts with some shared meaning.	Life → Drama Love → Chocolate
Contiguity association	The relations between a series of concepts in contact or in proximity.	Transportation → Bike, Bus, Train, Ship, Plane
Contrast association	The relations between two concepts with contrast properties.	Happy → Sad Hot → Cold
Similarity association	The relations between two concepts that share lots of similar properties.	Bowl → Cup Hotel → B&B

can view things in new environments, from new user perspectives, and as new embodiments. For example, when designing a tooth cleaning service, designers can think about the toothbrushes used in different environments like in the kitchen or on an airplane. Also, different users have different purposes for cleaning their teeth. For instance, the elderly may need to clean their dentures whereas children may need to focus more on preventing tooth decay. Furthermore, new embodiments of toothbrushes like mouthwash and dental floss can also be created and designed. By reframing again and again, designers would find some crucial implications and insights.

Mental imagery processing abilities can be categorized into five types of associations (Dawson & Medler, 2010; Yuan & Hsieh, 2015), including context association, analogy association, contiguity association, contrast association, and similarity association (Table 3).

Generate Goals/Implications

When framing and reframing the situations, designers iteratively combine what they observe with what they already know to make sense of the situation. Therefore, the ability to conduct observation and interviews is very important. The more the details that are found, the more complete the modeling of the system will be. Another crucial ability is the ability to recall and associate

with past experiences. Every phenomenon found needs to be interpreted by the designers to give meaning to it. Hence, properly interpreting a phenomenon is one of the important skills a designers could have. Compared to novices, experts in a field of study not only have more concepts integrated in their cognitive frameworks but also have a broader linkages between subordinate and superordinate concepts (Novak, 2010). The ability to properly integrate a newly found concepts with existing knowledge influences the quality of derived insights.

On the other hand, the derived value insights could have different quality metrics, such as the insight depth, which is defined as the overall influence of the insights. This is calculated using the distance between the positioned insight and the origin of the value universe to indicate the scope of the impact or influence on the insights, assuming the Stage 4 Customer Empowerment (Figure 26). This measurement can help quantify the impact of the value proposition as exemplified below (Yuan & Hsieh, 2015):

$$\text{Insight depth} = \sqrt{S^2 + V^2}$$

(S: stakeholder type level, V: value strategy level).

Figure 26. Insight depth

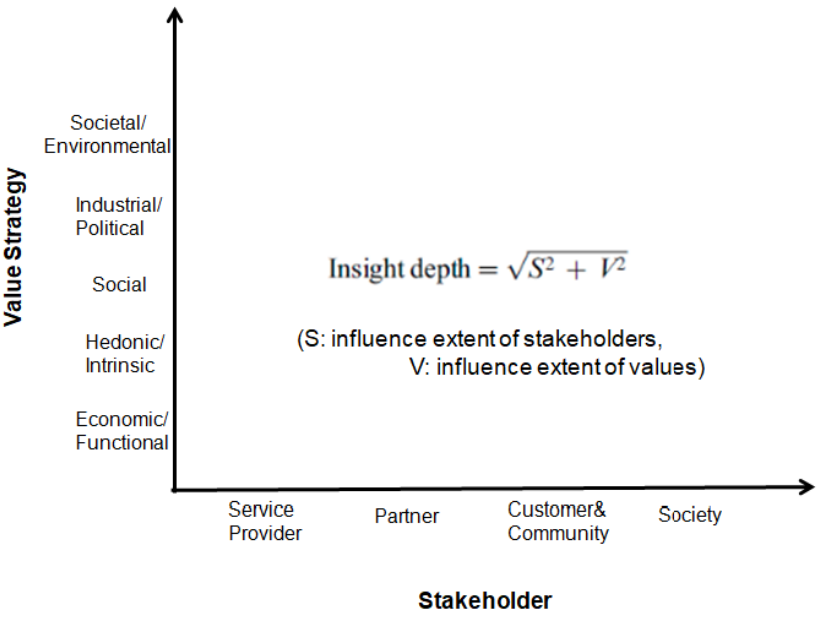


Table 4. Exemplar reframing of the running scenario about RTD SMBs

New Frame (derived from association)	Contractions Situation (I SAW)	Primary Goal (I KNOW)	Implication (Insight)
Seafood Grill Buffet (Analogy)	• Diligently learn to suit travelers' needs and provide them with special experiences of deep visiting • Tough to cope with constant changes of travelers' needs	A style of doing business where diversified products/services featuring a deep theme (e.g., seafood grill buffet) are on display for guests to take what they would like	Theme–based deep experience delivery with diversified choices for customers to select
Antarctica Cruise (Similarity)	• Diligently learn to suit travelers' needs and provide them with special experiences of deep visiting • Hit by those mass produces undersale in the external mass markets and institution visits of many packed activities with only a passing glance at things	Targeting to a focus segment of customers (e.g., Antarctica Cruises focusing on adventuresome travelers craving more far-flung destinations) who are provided with the themed products/service (e.g., the ticking clock of climate change)	The alignment required between the themed product/service offerings and the targeted customer segment
Architectural concrete (Contrast)	• Welcome individual travelers with heritage-value offerings not considering innovation • Feel inferior owing to the lack of resources, management knowledge and ambitions.	Imposing added capabilities on traditional products/services to result in added values while retaining the original essence, such as architectural concrete (the most important theme of design in modern architecture featuring the design capabilities added to the most commonly and traditional construction concrete to result in both aesthetic finish and structural ability).	Imposing added capabilities on traditional products/services to result in higher values of themed products/services for customers

Perspective	Contractions Situation (I SAW)	Primary Goal (I know)	Implication (Insight)
Two(Multi)-Sided Market (Analogy)	• SMBs are better off when uniting diversified providers to satisfy travelers' needs and make profits given self-learning-operation is often not working • Still operate business alone due to not easily reaching a common vision in light of different interests or profits sharing (which are also tough for community organization to facilitate the collaborations)	Special values being created primarily through an intermediary that enables direct interactions between two (or more) distinct groups of affiliated players and provides choices and benefits to each group exhibiting demand economies of scale and featuring same side network effects and cross-side network effects.	Provisioning choices and benefits of interactions among regional distinct groups of SMBs and customers through an intermediary that can exhibit demand economies of scale and feature same-side network effects and cross-side network effects through diversified collaborations and co-creations.
Crowdsourcing (Context)	• Regional community organization can be useful when the elected directors can have good region development plans to persuade and integrate member SMBs with the other resources (history, culture, nature, citizen/government support) to create the virtuous circle of attaining attractive differentiations/profits /supports • Still operate business alone due to not easily reaching to a common vision in light of different interests or profits sharing (that is also tough for community organization to facilitate the collaborations)	Participative online activities of engaging a 'crowd' or group of varying knowledge, heterogeneity for a common goal in terms of distributed problem-solving and production model, often yielding the consensus, innovation, efficiency, *etc.*	Participative online activities of engaging a crowd of regional SMBs and other individuals/stakeholders of varying knowledge, heterogeneity for the common goal of voluntarily undertaking the task of creating region al development plans embodying the consensus and innovation

Perspective	Contractions Situation (I SAW)	Primary Goal (I know)	Implication (Insight)
Neighborhood Watch (Contiguity)	• Regional community organization can be useful when the elected directors can have a good region development plan to persuade and integrate member SMBs with the other resources (history, culture, nature, citizen/government support) to create the virtuous cycle of attaining attractive differentiations/profits/supports • Provide requesting travelers with recommendations of acquainted/reliable different types of providers to cope with the competition from one-stop service providers acquiring many businesses and from those mass produces under sale in the external mass markets	Educating the residents of a neighborhood community on some particular community feature issues (e.g., security and safety) in order to collectively achieve a neighborhood of the wanting features.	Educating the SMBs and residents of a regional community on some particular community feature issues such as collective prosperity and community sustainability in order to collectively achieve a sustainable and prosperous region.

Given the identified contraction of the running scenario of RTD SMBs (Figure 21), Table 4 exemplifies a few new frames derived through the five types of associations upon those contradictions and their insightful goals and implications generated through reframing.

Synthesize Insights Through Abstraction

When a group of designers are involved in a design challenge problem, there will be a set of insights attained. These insights can then be synthesized in terms of the power of abstraction into ones that have a bigger market potential or higher innovation level. Abstraction is a conceptual process in which general concepts or ideas are derived from items or concepts (Wallis, 2015). An abstraction is the result of a generalization about the outcome of this process, which is frequently a concept that goes about as a super-categorical concept for all subordinate related concepts and joins these concepts as a group, domain, or segment (as exemplified in Figure 27). That is, abstraction could be regarded as a many-to-one function, and it helps map many subordinate-related concepts to one super-categorical concept that often features a higher or deeper innovation level and a greater market potential because of the crossing conceptual applicability to other domains one by one (Figure 28), fulfilling the power of abstraction.

Given multiple insights, the synthesis of these insights refers to a combination of two or more insights that together shape something new through abstraction (Wallis, 2015). This can be done by checking whether the insights sit at the same level (e.g., are they all big ideas?) or considering whether lower-level insights could be synthesized into a higher or deeper level of insights, which can be done using the abstraction approaches for grouping or the why laddering, such as the examples shown in Figure 29 (dSchool, 2010d).

For the running scenario of RTD SMBs (Table 4), Figure 30 provides an example of the abstraction approaches for the grouping or the why laddering.

Furthermore, higher-level insights could be positioned into appropriate frameworks that are a visual representation for exploring concepts and connections, such as a 2x2 matrix, and highlight the relationships between insights (dSchool, 2010e). Additionally, the framework can structure the synthesized insights, help narrow down, or prioritize the scope of the design challenge (Figure 31). Likewise, the framework can help search for patterns and push to connect these synthesized insights to an even larger context, scope, or process (e.g., CDL).

Figure 27. Power of abstraction to explore higher levels of innovation concepts

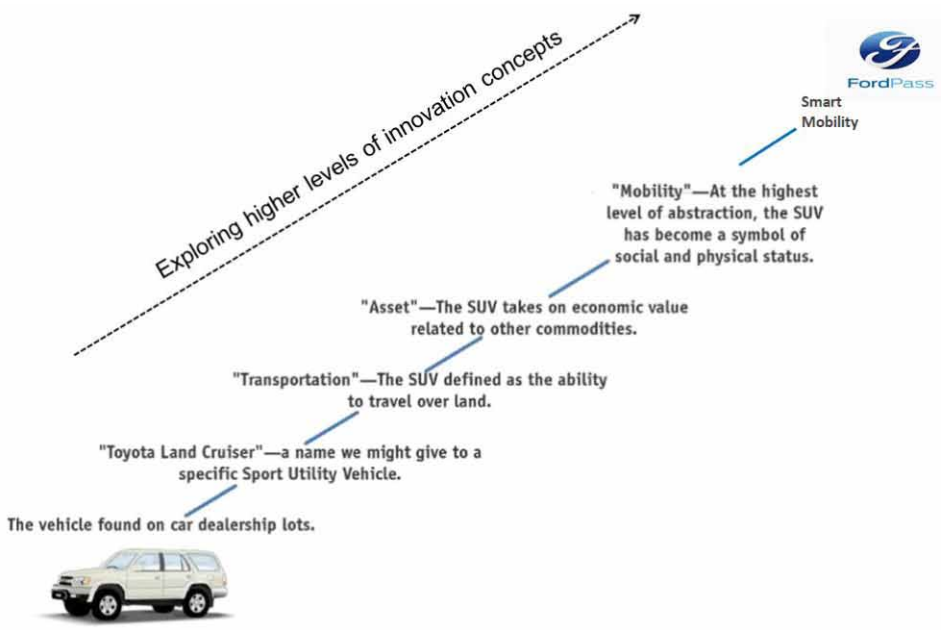


Figure 28. Power of abstraction to explore greater sizes of market potentials

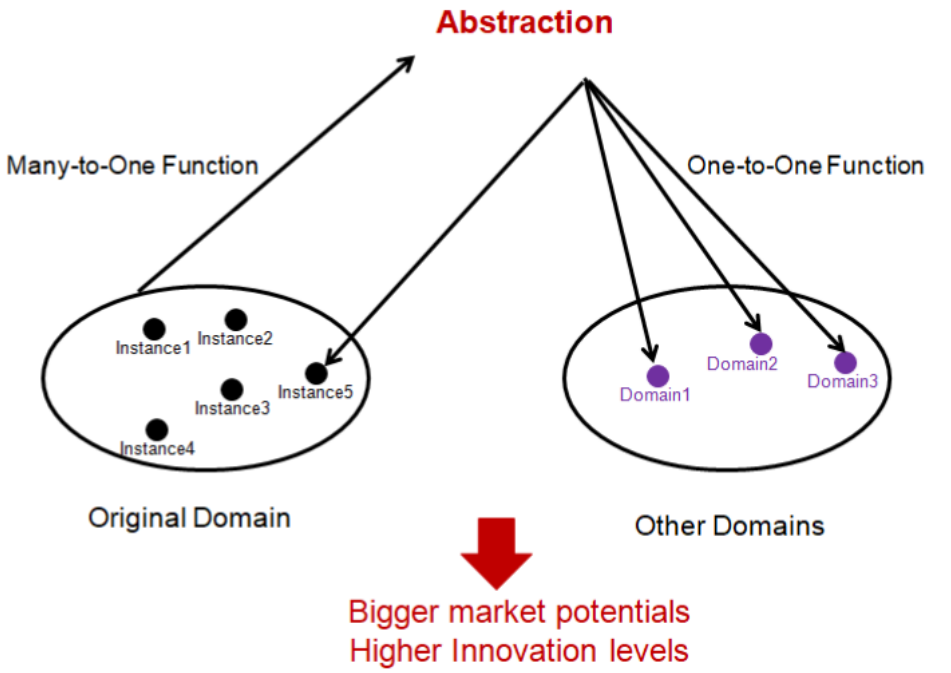
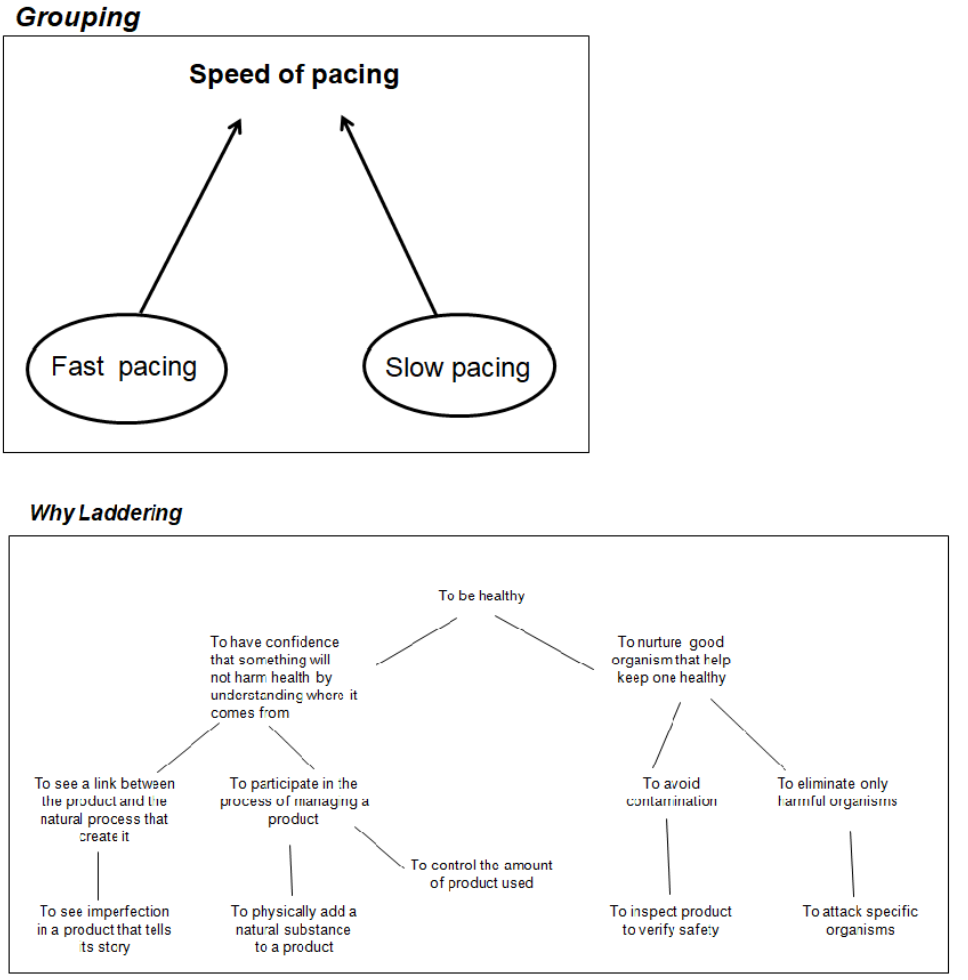
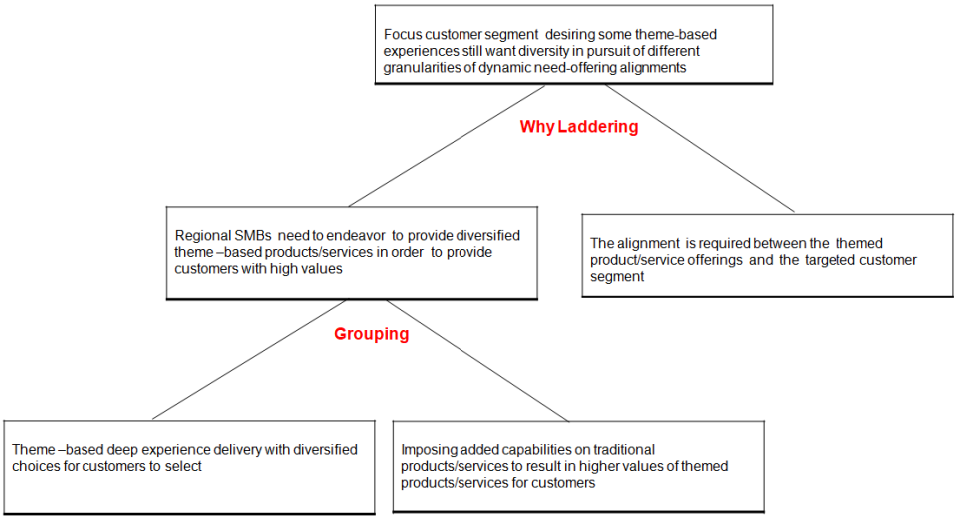


Figure 29. Insight synthesis through grouping or why laddering



For example, this could be done by picking two spectra (one on each axis), drawing a 2x2 matrix, and plotting those (synthesized) insights in the map to help contemplate the customers' issues. The next step would be to look at which quadrants are full or void and where the assumed connections separate. The discussion that is triggered by attempting to put (synthesized) insights on the matrix are frequently more valuable than producing the map itself. Designers may need to try various mixes of spectra to get one that is important and enlightening. One common use for a 2x2 matrix is a competitive landscape. For example, a void quadrant can flag a market opportunity (or an awful idea). The hope is that higher levels of (synthesized) insights represent

Figure 30. Exemplars of the grouping and the why laddering for the running scenario of RTD SMBs



areas to explore in the 2x2 matrix. Likewise, 2x2 matrices are a good way to visually communicate a relationship amid (synthesized) insights (dSchool, 2010e). Figure 32 shows the identified higher levels of (synthesized) insight areas using the framework of a 2x2 matrix for the running scenario about RTD SMBs.

In addition to the framework of the 2x2 matrix, there are other types of frameworks (O'Leary, 2017), which are depicted in Figure 33.

To sum up, multiple insights could be synthesized through abstractions into ones that could be further positioned into proper frameworks to either prioritize the scope of the design opportunities or push it to connect insights to an even larger context. Doing so helps gain even greater market potential or higher innovation levels when boiling it down to a bigger, concrete market opportunity, as shown in Figure 34 (Banerjee, 2011). This is an example of using a combination of convergent thinking and divergent thinking.

That is, in pursuit of the generation of a high value proposition, the process should combine convergent thinking and divergent thinking (Goldschmidt, 2016). Further, the value proposition is preferred to be in a more abstract space than the original challenge in order to attain even greater market opportunities. To this end, people generally use two different approaches: convergent thinking and divergent thinking. Convergent and divergent thinking have to coexist and interact with each other.

Figure 31. Exemplar framework of 2x2 matrix for the running scenario about RTD SMBs

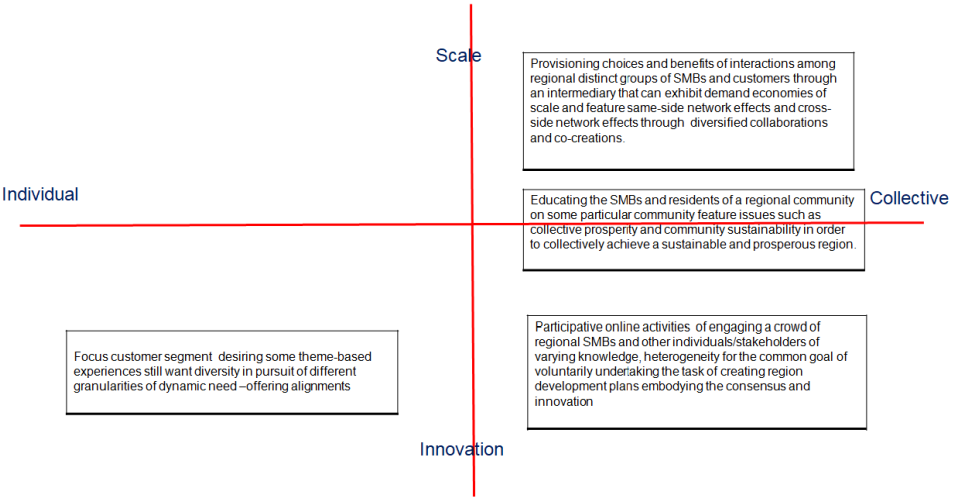


Figure 32. Exemplars of higher level insights obtained for the running scenario about RTD SMBs

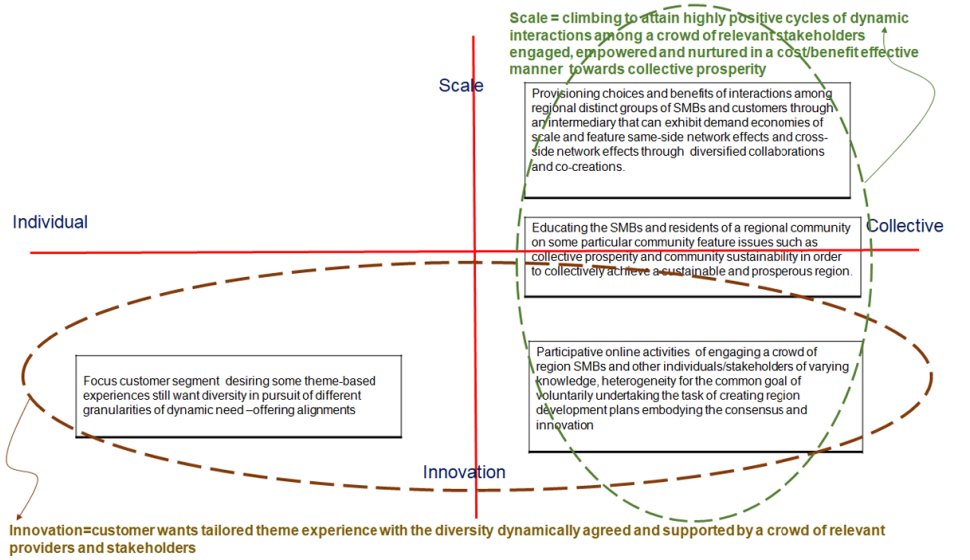
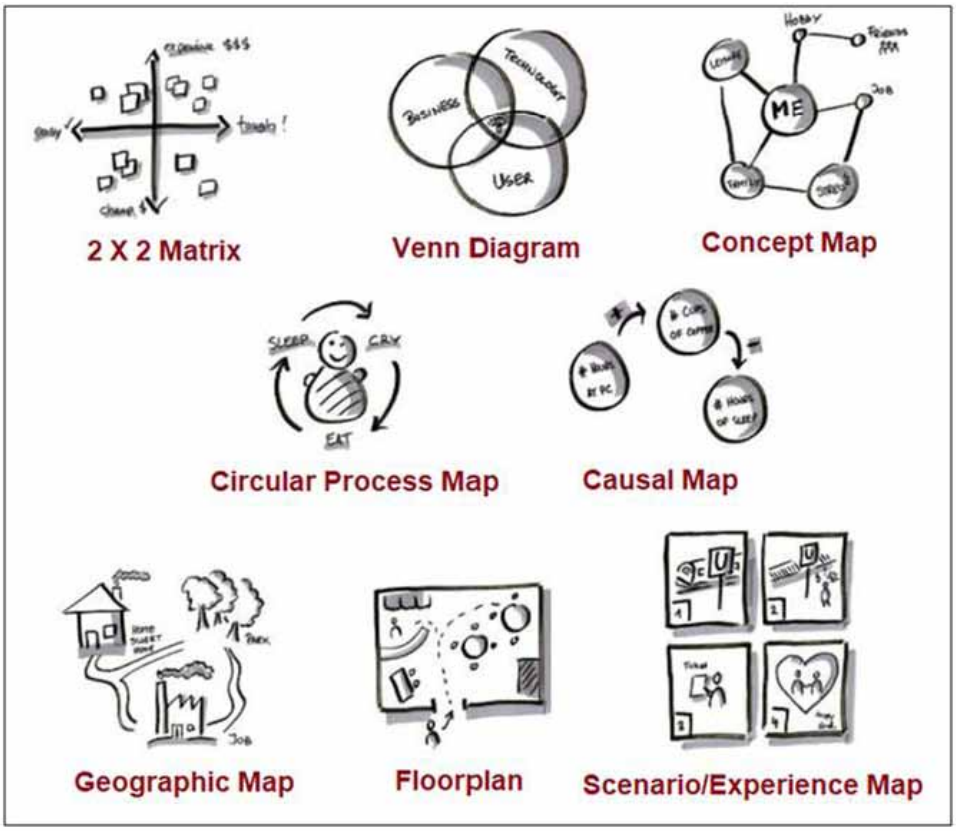


Figure 33. Types of frameworks

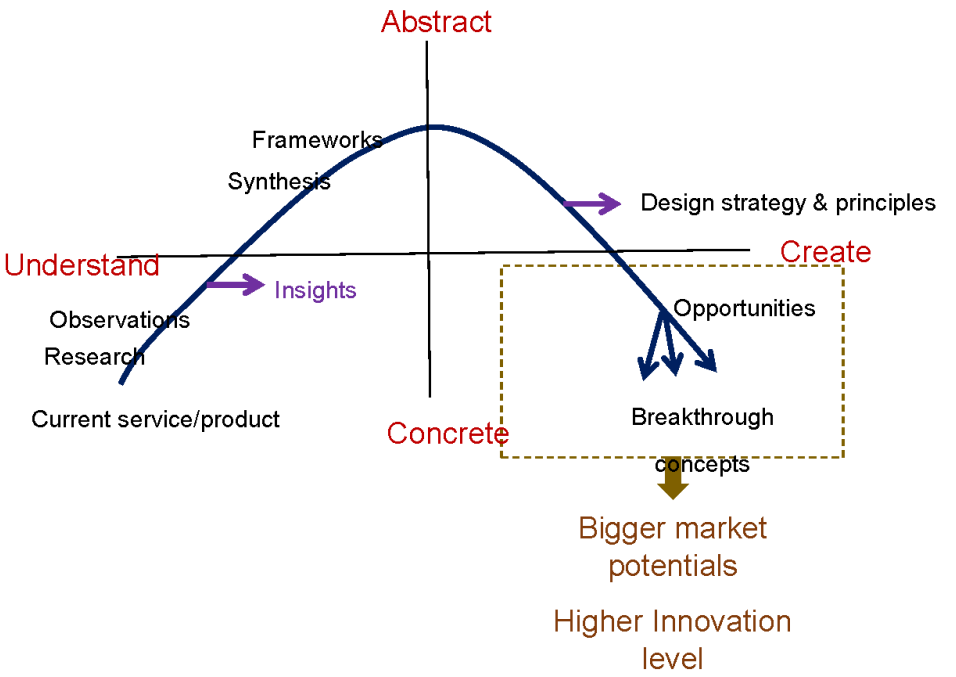


Convergent thinking is the act of taking data from an assortment of sources and narrowing the alternatives to create one proper answer. It is analytical, logical, and controlled; it puts the different thoughts back together in a sorted out, organized way. On the other hand, divergent thinking produces many different ideas about a topic in a random, unorganized way. It is taking a challenge and endeavoring to distinguish the conceivable drivers of that challenge, then posting the ways those drivers can be tended to (i.e., a practice more than just brainstorming).

Compose the Value Proposition Elements

After synthesizing the insights, there will be a prioritized and higher or deeper innovation level of synthesized insights. The insights would imply information about the empathetic characteristics of the end customers facing

Figure 34. Converging of insights through abstractions and frameworks, followed by divergent thinking of bigger market opportunities



the challenges, the resolution direction of the inferred goal or implication behind those identified contradictions, and the surprising understandings (functional/emotional) with respect to those resolution directions.

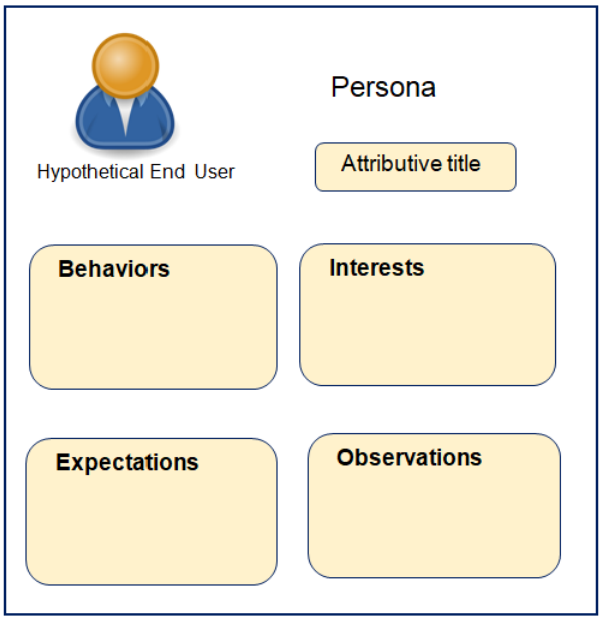
Therefore, a POV statement could then be generated and tested by articulating the current Point of View in terms of the following steps: (1) creating a persona that connects to the end customers (i.e., USER), (2) uncovering the persona's resolution needs for actions that the persona is trying to do (i.e., NEED), and (3) identifying ways the persona wants to feel in terms of the surprising understandings (i.e., INSIGHT). The value proposition composition process is to repeat such articulation until a POV making the most sense is found. For the running scenario of RTD SMBs (Figure 32), the POV can then be exemplified as shown in Figure 35.

Persona profiles are prime examples of the potential customers (Figure 36), searching for an engaging profile in order to catch an individual's nature and their motivations and intentions (Issuu, 2014). Figure 37 shows an exemplified persona of the running scenario for RTD SMBs.

Figure 35. The exemplified POV of the the running scenario of RTD SMBs

User	Regional SMB providers serving customers who desire **theme experience with diversity**
Need	be nurtured with increasingly **high positive cycles of dynamically interactive engagement and empowerment towards their individual cost/benefit effective and collective prosperity** among providers and stakeholders
Because	these positive cycles can help them efficiently find **a dynamic and tailored fit crowd of providers and stakeholders which are willing to agree and support the provision of specific theme experience**

Figure 36. Persona archetype



Breaking a Value Proposition Statement into Smaller Actionable Statements

A POV statement may further be broken up into smaller actionable pieces called "How Might We" statements (HMW) by brainstorming (dSchool, 2019b). For example, one POV could be broken down into five HMW statements in terms of looking for sub-goal aspects of the statements to realize the POV. An exemplar is shown in Figure 38.

Figure 37. The exemplified persona of the running scenario of RTD SMBs

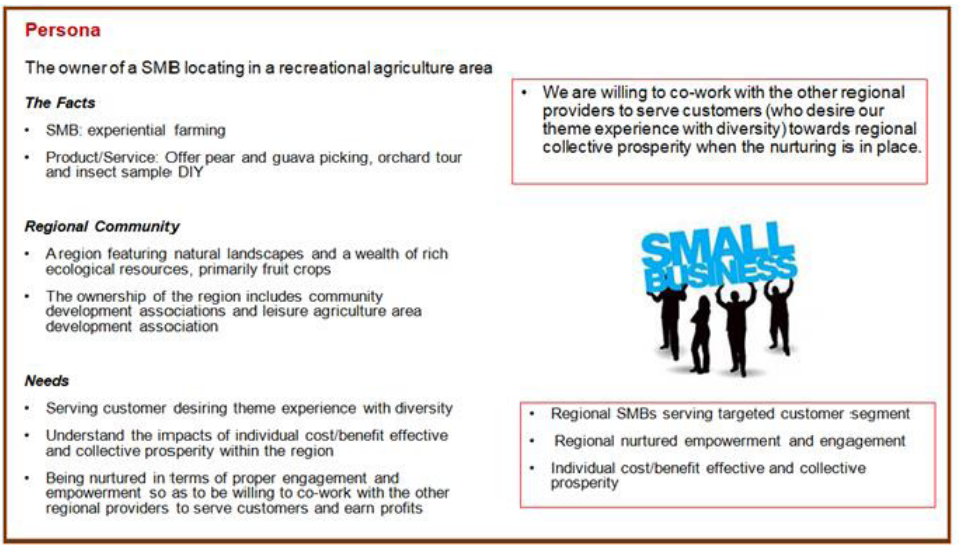


Figure 38. The exemplified HMV statements of the running scenario of RTD SMBs

User	Regional SMB providers serving customers who desire **theme experience with diversity**
Need	be nurtured with increasingly **high positive cycles of dynamically interactive engagement and empowerment towards their individual cost /benefit effective and collective prosperity** among providers and stakeholders
Because	these positive cycles can help them efficiently find **a dynamic and tailored fit crowd of providers and stakeholders which are willing to agree and support the provision of specific theme experience**

1) HMW help SMB create the most fit and attractive theme experience for customers?
2) HMV help SMB cope with the diversity wanted by customer in light of limited resources?
3) HMV help SMB alliance with other providers/stakeholders in a willingly and dynamic manner to attain the most business in accord with customer's desired theme experience with diversity?
4) HMV help region ownership understand the regional ultimate theme experience desired by customers?
5) HMV help region ownership to continuously improve the region and nurture regional SMBs in terms of developing increasingly high positive cycles of dynamically interactive engagement and empowerment towards individual cost/benefit effective and collective prosperity?

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Chapter 4
Value Ecosystem Design

ABSTRACT

Chapter 4 provides a set of key components and their underlying concepts needed to configure a value ecosystem that develops and delivers the high-value described in Chapter 3. As such, this chapter focuses on the second dimension (business objective priority on value ecosystem) of the business reinvention methodology. These components and concepts are about system thinking, value activities, value networks, value ecosystem configuration and sense-making, and evolutionary economics of ecosystems. This chapter lays the foundation for an ecosystem's value that would be further enhanced by its flexibility and empowerment as discussed in later chapters.

INTRODUCTION

Given the high-value proposition, the next thing to do is to think about how to configure a value ecosystem that develops and delivers high-value, and then tackle the issue of ecosystem flexibility, digital business strategy, and business sustainability. Accordingly, this chapter begins with the theories and concepts that pave the way for the required fundamental mindset, and then it discusses the provision of the value ecosystem design method.

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FOUNDATIONAL THEORIES AND BASIC CONCEPTS

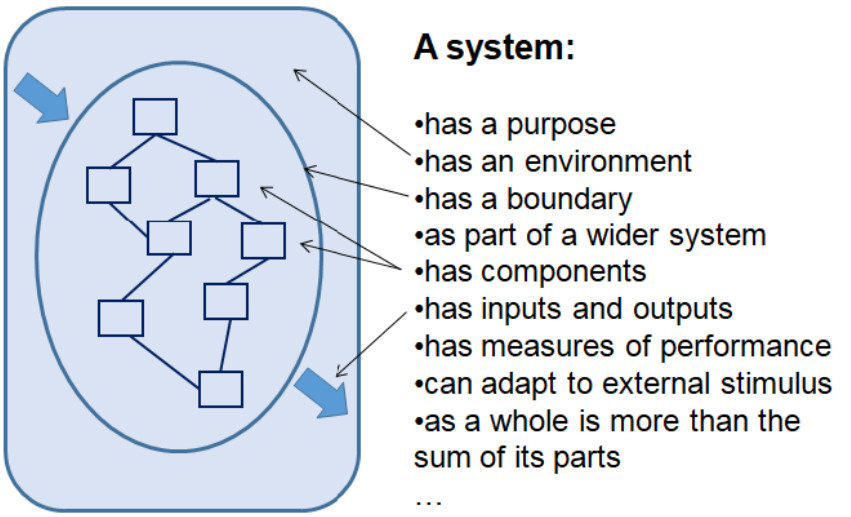
System Thinking

Within the notion of system thinking addressed by O'Connor and McDermott (1997), a system is a set of parts that interact to produce behavior (i.e., a macro view) in light of the system's purpose. This view centers around the feedback relationships between the part being investigated or explored and the other parts of the system; it deals with their interactions, not the activities. Accordingly, it is good for complex problems and helps to see the big picture.

As depicted in Figure 1 (Von Bertalanffy, 1972), the system's purpose is often the most pivotal factor of the system's behavior. The significance of each part of a system is attached to its relationship to the whole. A considerable amount of the interconnections in systems operate through the flow of information. The system's structure is the source of system behavior, and it pertains to where a system action affects (or is affected by) the surrounding environment.

According to system thinking (Checkland, 1999), a service ecosystem (or simply called service system) indicates that value co-creation stakeholders are involved in a participatory process and consider the interactions between a focal B, involved stakeholders (including digital operants enabled by technologies), customers, and their context. Given a purpose (or a value proposition), a

Figure 1. System thinking theory



service system refers to an identified whole (system) where the thing under investigation or exploration is explained as a part, revealing the behavior or properties that make up the whole and the behavior or properties of the thing to be explained in terms of its role(s) or relationship(s) inside its containing whole, as exemplified in Figure 2 (Kwan & Yuan, 2010).

A service system can be regarded as a value co-creation configuration of people, technologies, organizations associated by means of value propositions, and shared information like language, laws, and measures (Maglio et al., 2009). It is an open system of resources (operant, operand) equipped for enhancing the state of another system or its own system, where the interactive exchanges are voluntary and reciprocal toward the co-creation of the given value proposition. A service system itself can also be regarded as a resource.

The design of a service ecosystem involves seeking entities that derive the value-cocreation outcomes from their interactions that co-create the value as depicted in Figure 3 (Spohrer & Maglio, 2010). This design needs to predict and manage the continuous enhancement of entities, interactions, and outcomes over time. The design also needs to monitor its evolution and explain the specific types of entities, interactions, and outcomes that have arisen over time.

Figure 2. Service ecosystem of value co-creation

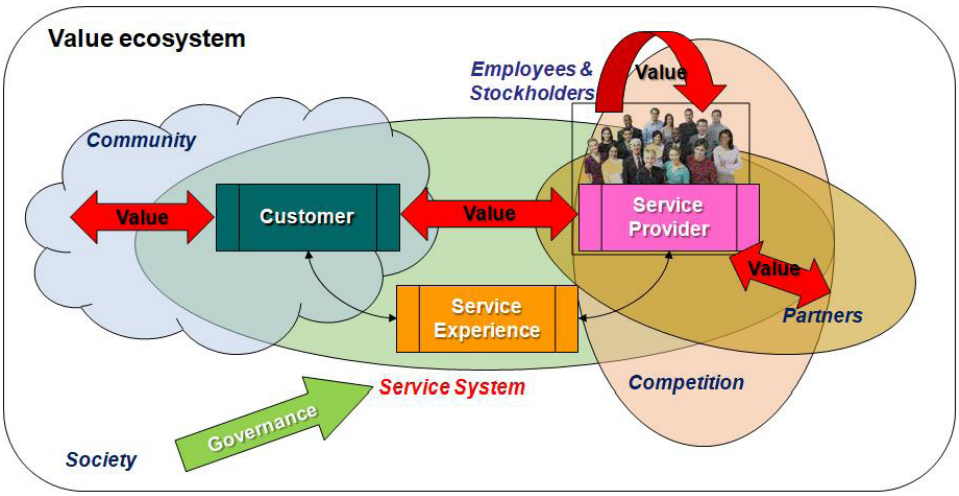
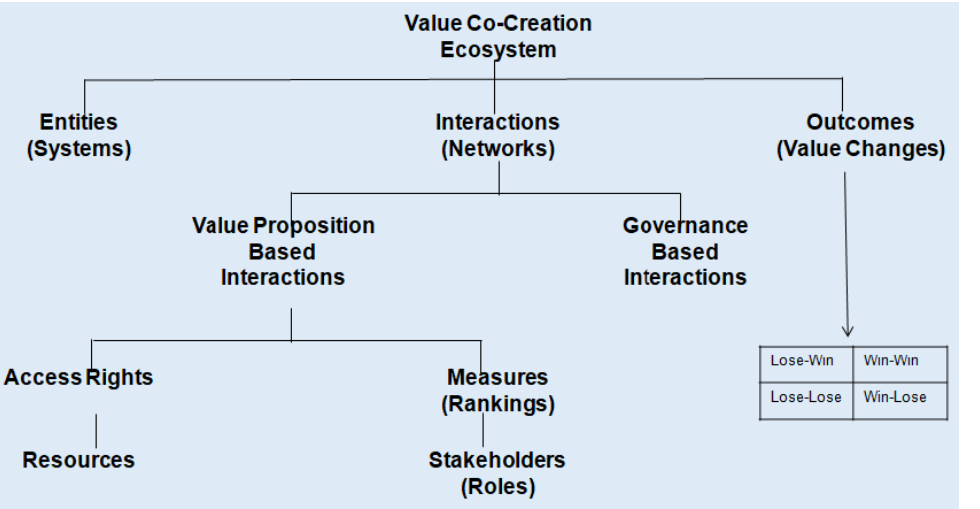


Figure 3. The elements of a service system



Service Value Networks

Service value networks can be discussed from different perspectives (e.g., an economic perspective or a social psychology perspective), which will be discussed in the following sections.

The value of a service system is that a value constellation network depends on the creation of network externalities, which bring more economic transactions between businesses and customers (Economides, 1996; Lazzarini et al., 2001). From an organizational theory viewpoint, a sustainable network that is an analogy to an organization must be effective to achieve the desired results and efficiency to maintain itself (Jarillo, 1988). The existence of a network among businesses relies on the performance (e.g., lower transaction cost, profit) and shared outcomes to the satisfaction of network members. In analyzing networks, economic researchers focus on the appropriate allocation of cost to evaluate the network's efficiency (Economides, 1996). Network externalities occur when innovation benefits the nodes or when the expected number of customers making purchases increases (Lazzarini et al., 2001). Therefore, when the number of customers in a network increases, it means there is a higher service value for customers (Stabell et al., 1998). The design of a value constellation network from an economic perspective should seek network efficiency and effectiveness by achieving efficient allocation (Jackson & Wolinsky, 1996; Conte et al., 2010) or Nash Equilibrium under game theory (Lederer, 1993).

On the other hand, from the social psychological perspective, the service value is derived from the connected business relationships that aim to improve network performance (Holm et al., 1996). In this sense, social exchange theory and social network theory are applied for measuring service value from relationships (Allee, 2000; Holm et al., 1996; Lazzarini et al., 2001). This approach measures value from the social exchange theory, which integrates psychology, sociology, and economics. Social exchange theory views social behavior as an exchange of material and non-material goods. Holm et al. (1996) indicated that a set of connected business relationships makes value creation possible in a network. Generally speaking, value definition emerges from considering the increase of benefits and the reduction of cost to social relationships and intangible assets. Besides the aforementioned perspectives of value discussion, another important perspective is the perspective of evolutionary economics, which concerns the fluidity of benefits in resources and in recyclable waste. This will be discussed in Chapter 4.

Table 1 exemplifies how a value is expressed in a value constellation network from the economic or social psychology perspective in some network related studies. Generally speaking, the value definition emerges from considering the increase of benefits and the reduction of cost to social relationships and intangible assets.

Among these studies, Allee (2008) and Caswell et al. (2008) considered intangible value. Allee's (2008) research focused on how intangible and tangible values merge. The focus of service value determination progressively evolved to emphasize the social psychological perspective. Both Caswell et al. (2008) and Tian et al. (2008) referenced Allee's approach as a means to measure intangible value. Modeling value through participant interactions also must deal with tangible value. Caswell et al. (2008) and Tian et al. (2008) calculated actual service value by using price in practice.

However, the implementation of Allee's (2008) approach for intangible value assessment requires the participants to answer questions in a spreadsheet that contains different measurement scales as well as the investigation and evaluation of price in each service and relationship, and getting the customer's feedback is not easy. Clearly, an approach is needed to assess service value alongside relationships and customer feedback in an effective way from both economic and social psychological perspectives. In a service-based economic system, the service value considers not only the supply and demand but also the desired service outcome in stakeholders' (e.g., customers, providers) network connections (Spohrer & Maglio, 2010) and in the socio-cultural-environmental contexts (Boztepe, 2007).

Table 1. Exemplified studies on value networks from an economic or social psychology perspective

Literature	Theory Perspective	Value in a network
Economides (1996)	Economics	Network externalities increase the value of goods by the expected number of unit sold.
Jackson (1996)	Economics	Value of a network depends on how agents are interconnected. Value is the aggregation of individual utilities or production.
Stabell (1998)	Economics	Service value is a function of positive network demand-side externalities. Value is derived from service, service capacity, and service opportunity.
Lederer (1993)	Economics	Value of network is from lowering the total cost of satisfying all customers' demand.
Conte et al. (2010)	Economic	Design value network by using co-petition mechanism Value is from the difference between willing to pay of customers and price of service.
Holm et al. (1996)	Social psychology	Value is from the commitment and smoothness of communication of network connection. Considering the profitability (revenue – cost) associated with network relationship to access the relationship profitability.
Allee (2000, 2008)	Social psychology	Assess value in form of the tangible and intangible parts. Benefits are advantages or favors that can be extended from one person or group to another Intangible Value = benefit – cost Tangible Value = revenue – cost
Caswell et al. (2008)	Both Economic Social psychology	Assess value by referencing the profits from interacting with partners and expected value with buying partners. Value = (profit from interacting with partners + expected value with buying partners) – cost
Tian et al. (2008)	Both Economic Social psychology	Assess value through interactions among participants by using game theory. The interactions are evaluated by considering the individual preferences and information asymmetry Value = revenue – cost

To this end, Hsieh & Yuan (2012) and Yuan & Hsieh (2018) proposed the concept of service imagery in order to respond to this new trend of service value and the service imagery approach for the formation of value constellation networks. In addition, Service-Dominant Logic (SDL) indicates that service value is determined by customers and their value-in-use, while the service benefits by definition should be subjective to different customer's perceptions (Vargo & Lush, 2004, 2008). How to effectively describe the different cognitions from customers and then understand the service value is a key point. Service imagery refers to both the economics and social psychological perspectives' service value that can be represented using images analyzed and created from customer feedback. With the appropriate analysis of customer

experiences, images can disclose service features and value for each entity in a value constellation network. Chapter 5 provides more details about service imagery when discussing the running scenarios.

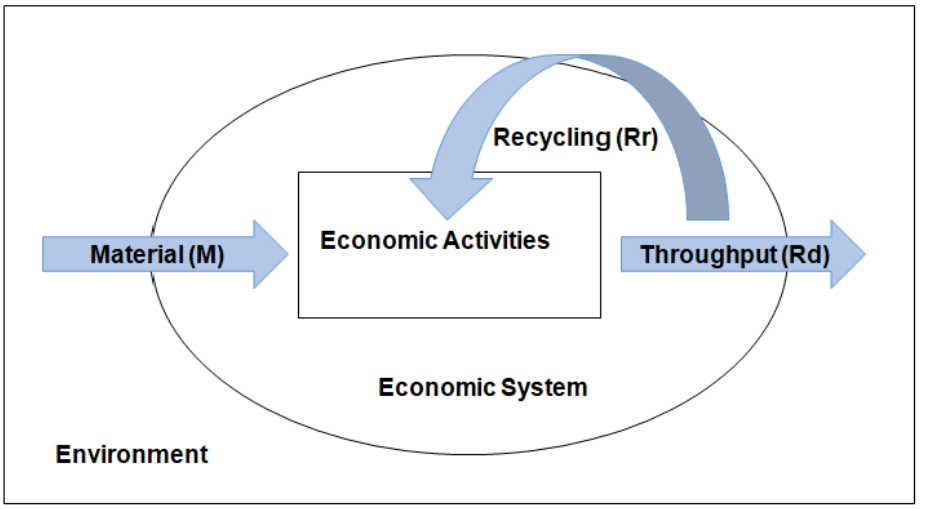
Evolutionary Economics of Ecosystems

The development of economics, society, and the environment have followed a trend of sustainable development since 1987 (World Commission on Environment and Development, 1987). Sustainable development means "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Costanza et al., 1997; Kates et al., 2005). The interactions among economics, society, and the environmental system have shifted the focus of economic theory (Mulder & Van Den Bergh, 2001). The core concept of the sustainable development evolutionary approach has made evolutionary economics a mainstream economic area (Nelson, 1995). In other words, the evolutionary economy is concerned with understanding the changes in the environment and social systems relative to long-term economic development and co-evolution with the environment (Norgaard, 1984).

For the basic economic system to interact with the environment, the Material Balance Principle (MBP) is used to characterize the relationships between an economic system and its environment (Lauwers, 2009); Figure 4 displays such characterization. An economic system generally has outputs of goods and services from producers. Materials from the natural environment provide the fundamental input for economic activities. Due to the limitation of materials from the environment, the relationship between the environment and an economic system needs to be clearly identified for the sustainable development of that economic system. MBP provides a foundation to represent the stocks and flows in an economic system.

In a broad sense, the feedback loop in MBP implies a network relationship among businesses in an economic system. When a business wants to increase the efficiency of its waste disposal or recycling, other business may be helpful. For example, cooks in a restaurant can recycle their leftovers and make fertilizer. A machine for cooks to make fertilizer more efficiently may be provided by other manufacturers. So, when the efficiency of the economic activities in a business is growing, other businesses may directly or indirectly benefit from this increased efficiency and growth.

Figure 4. Material Balance Principle

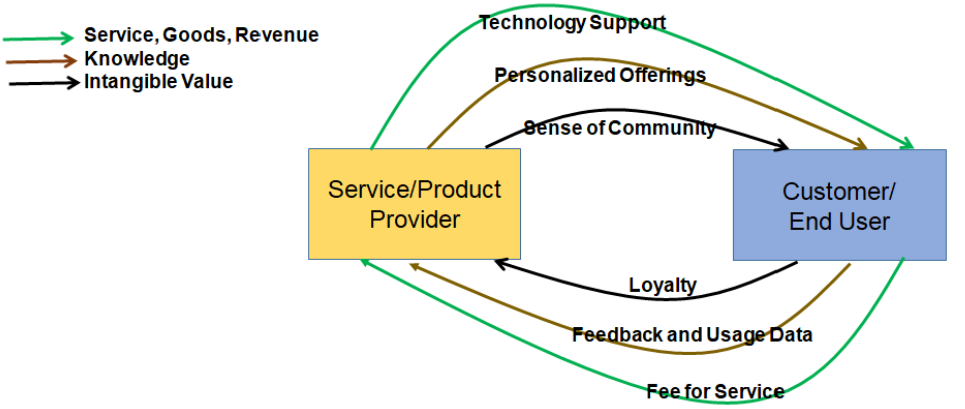


For a value ecosystem to increase its value creation, it is important to increase the fluidity of resources and recyclable waste. In a broad sense, this fluidity in benefits or wastes (called value exchanges) can be extended to the intangibles besides the tangibles among the interactions of entities within a value ecosystem (Hsieh & Yuan, 2012). There are different types of value exchanges that are to be discussed in the following section.

Types of Value Exchange Activities

Allee (2008) identifies three currencies of value as a medium of exchange interactions within a value ecosystem (Figure 5). The first type of currency includes goods, services, and revenue involved in contractual transactions; these are the relevant end deliverables for financial measures. The second type includes knowledge and information that support the core product or service, but are not contractual (e.g., strategic information, planning knowledge, technical know-how, collaborative design, policy development, etc.). The third type includes intangible benefits, such as the advantages or favors that can be stretched out. It begins with one individual or group benefiting another and disclosing the motivational factors for people to engage in relationships or specific activities (e.g., sense of community, customer loyalty, image enhancement, co-branding opportunities, etc.).

Figure 5. Examples of three types of value exchanges

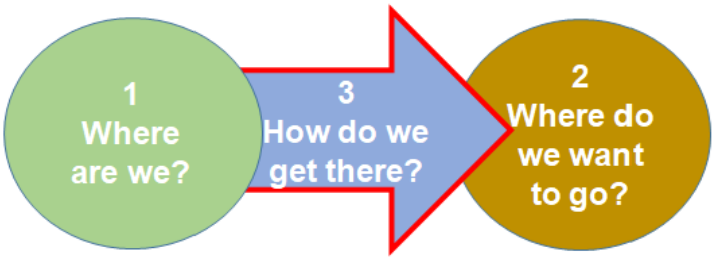


DESIGN METHOD

Connecting to the concepts of strategic thinking, ecosystem design represents "How do we get there?", which refers to a sense-making process that aims to configure a set of value exchange actors that interact with each other to realize a given value proposition, such as configuring a value ecosystem (Figure 6).

The main steps of the sense-making process of a value ecosystem design include the following steps, given a focal B actor and its value proposition. The first step is to explore all possible types of value exchange activities like those depicted in chapter 5, figure 5 (i.e., the interactions among actor operants towards the realization of a given value proposition) in an ad-hoc manner. Alternatively, the first step may include configuring the possible interactions in terms of network actor operant forms (c & b) and their interaction forms

Figure 6. The design of a value ecosystem is about "How do we get there?" within strategic thinking

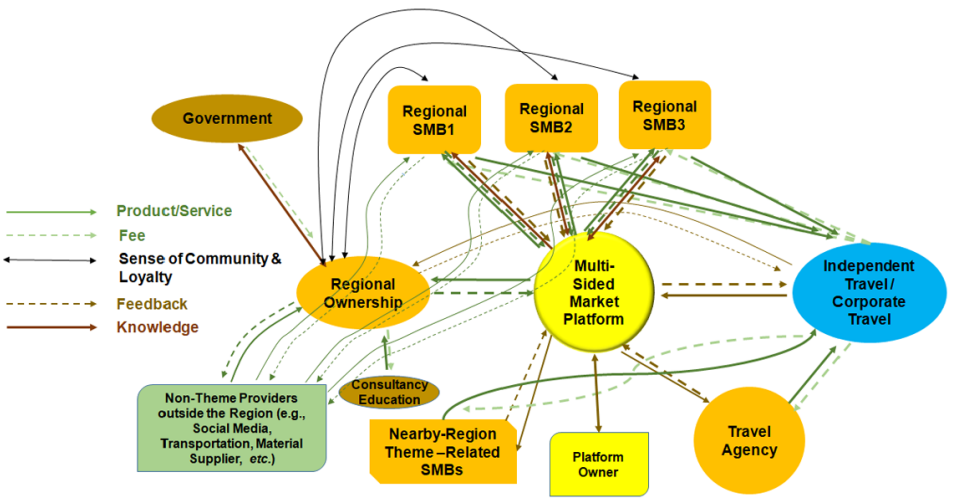


(b2c/c2c, b2b, tier 1, tier 2, etc.) in accord with the realization of the value proposition in a structured manner. The second step requires the examination of the compliance of the Customer Empowerment (Stage 4) Principle. The third step is to make sense of the roles of network actors. Finally, the fourth step is to monitor the network dynamics and make the necessary changes to actors or interactions. The details of the aforementioned steps will then be provided in the following sections.

Explore All Possible Types of Value Exchange Activities toward a Value Proposition

This step aims to brainstorm a value ecosystem configuration for a variety of actor operants, which use the different types of value exchange interactions for a given value proposition. For example, Figure 7 provides an example using the running scenario of RTD SMBs. This brainstorm drafting is an iterative process of high-level actors and interactions that add or remove for the purpose of realizing the value proposition (or its HMV statements).

Figure 7. Exemplar exploration of different types of value exchange activities for the running scenario of RTD SMBs



Configure the Possible Interactions in a Structured Manner

A high-level value ecosystem can also be configured in terms of the following ecosystem structuring approach. As depicted in Figure 8, the main idea of the approach is that those actors (or enablers) help create, design, initiate, and deploy the service system using the different types of value exchange interactions. These enablers can be differentiated and structured as service provision, tier 1, tier 2, or as auxiliary enablers (Basole & Rouse, 2008).

Those b2c/c2c service provision enablers represent those resourceful competencies required for customers to leverage with respect to their own value creation equations as shown in Figure 9 (Kwan & Yuan, 2010). The competencies include (1) consumption activity like service experience of consumed offerings, (2) co-creation activity like self-service experience, and (3) social network activity like enhanced service experience with customer-chosen end points of the social network. The above-mentioned service experience covers the tangible, intangible, contractual, or non-contractual.

Figure 8. The structure of a value ecosystem

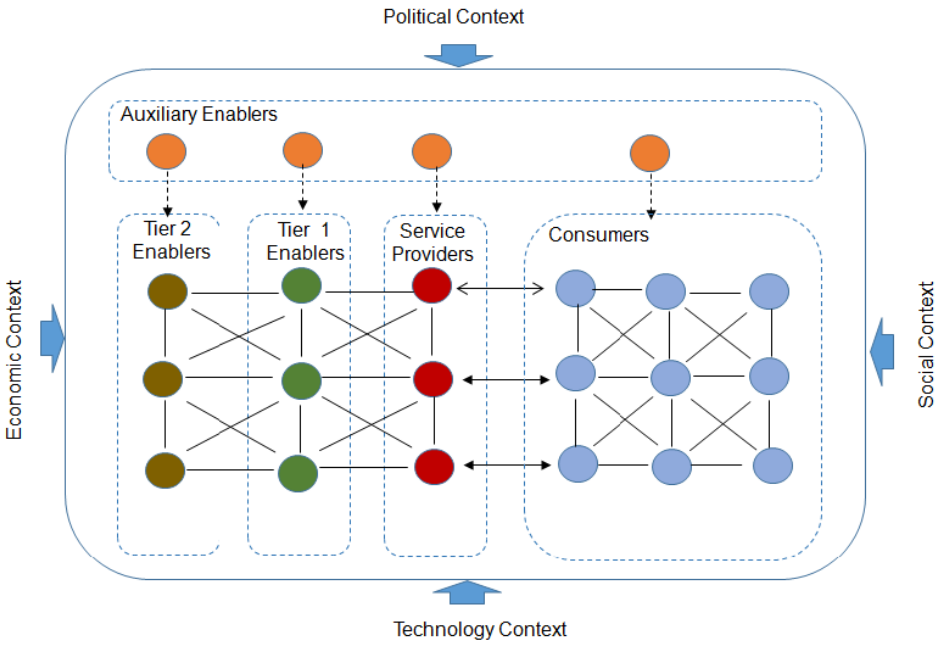
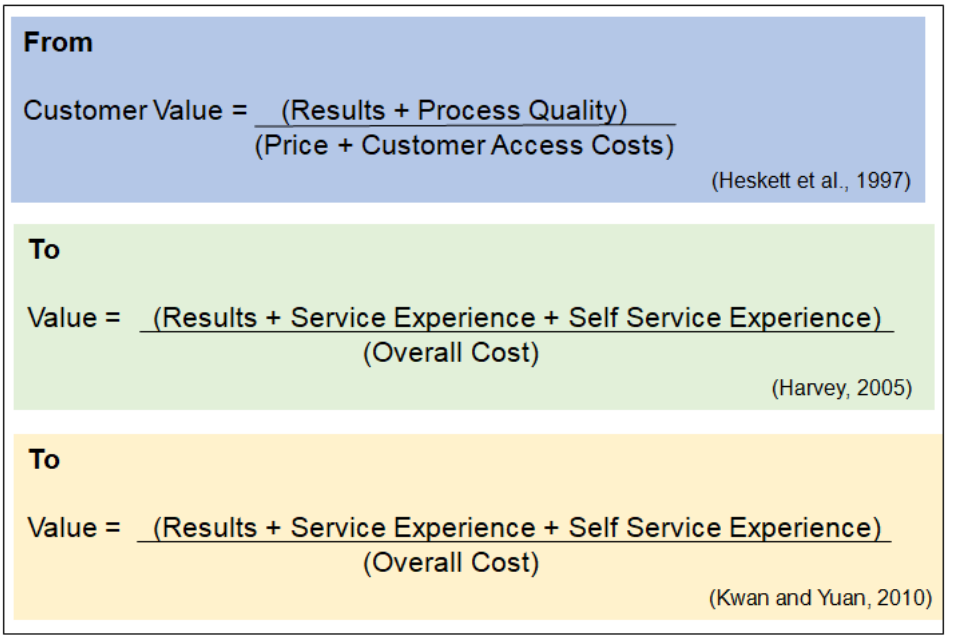


Figure 9. Types of customer value equations



Tier 1 enablers provide products or services directly to those service provision enablers (including the focal B, if applicable). These enablers could be producers, manufacturers, or other service providers (Basole & Rouse, 2008). Tier 2 enablers provide products or services to tier 1 enablers. Auxiliary enablers are those that are fundamental to the whole ecosystem but not specific to one industry. They tend to have some effect on some or all actors in the value ecosystem, such as government agencies, financial institutions (e.g., banks), and infrastructure providers (e.g., utility, facility, or transportation). An exemplar for the running scenario of RTD SMBs is shown in Figure 10. This high-level value ecosystem configuration's draft could then be extended iteratively regarding these different tiers of enablers.

Furthermore, these enablers or actors can be replaced with 'value activities' that result in the attempted value exchanges to avoid the ecosystem configuration limited only by existing market providers (Figure 11). In addition, the focal B can determine which activities it wants to carry out internally and which to leave for the other network actors (e.g., Tier 1, Tier 2, etc.). Then, potential partners could be mapped and assess to conduct external activities or delegated as other value activities.

Figure 10. Exemplified structure of a value ecosystem with tiers of enablers/actors for the running scenario of RTD SMBs

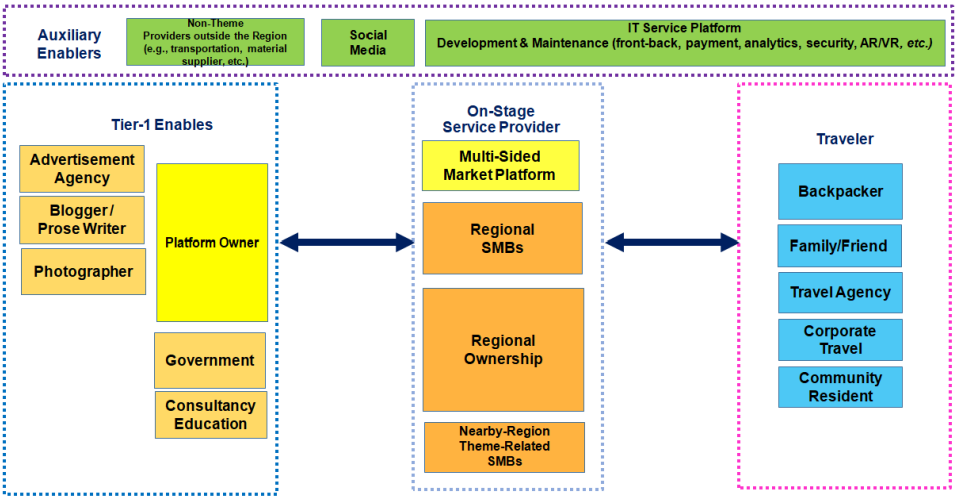
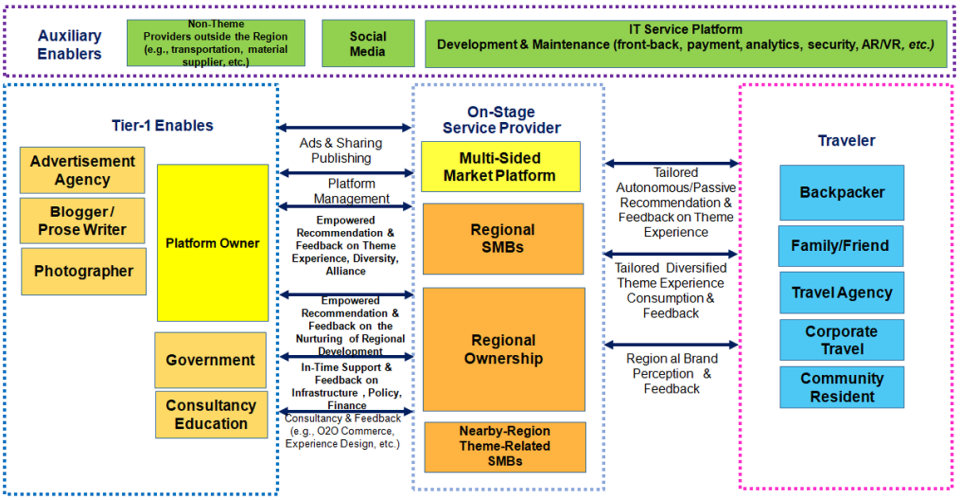


Figure 11. Exemplified structure of a value ecosystem with the designated value activities for the running scenario of RTD SMBs



The value activities that are better to be controlled internally within a focal B include the key offerings, end customer relationship management, brand management, and efficient inter-firm collaboration infrastructure (Partanen & Möller, 2012). Each of those targeted activities could be assessed in terms of the resources and capabilities required by the target activities on the part

of the focal B and their competitive industry position (e.g., using Michael Porter's five-force analysis). If the resources and capabilities required by the target activities are mismatched, the focal B could then decide to develop these capabilities or delegate them to potential partners.

Compliance of the Customer Empowerment Stage 4 Principle

The relationship with customers can be viewed as a focal B's competencies and offerings that can have value for their customers and help them leverage their own value creation activities, which can be facilitated by digital technologies. For example, these technologies can provide the ability to connect and coordinate activities between and across service providers, customers, producers, and enablers, among the three spheres of service value ecosystems, which are depicted in Figure 12 using the Customer Empowerment (Stage 4) Principle.

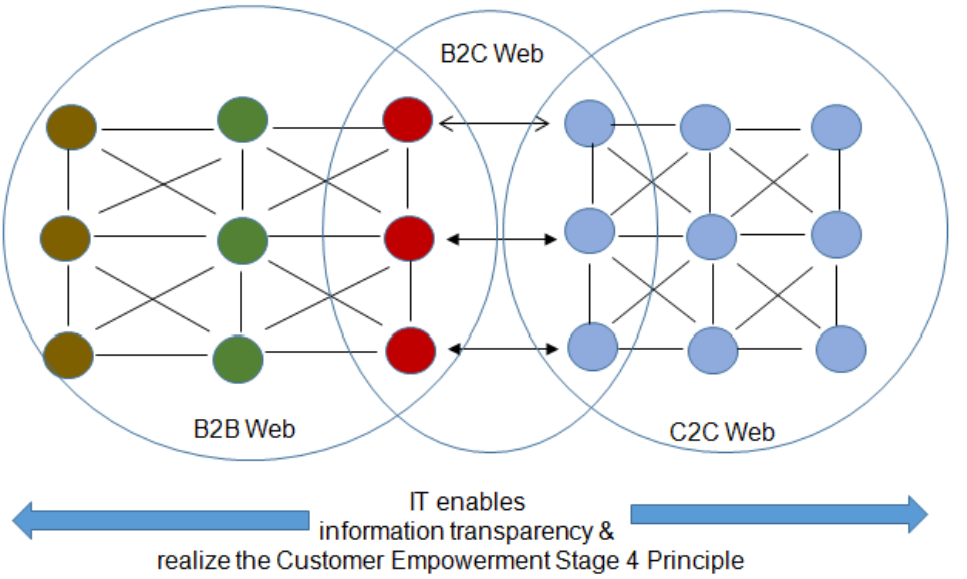
For the running scenario of RTD SMBs (Figure 11), an exemplified application of the Customer Empowerment (Stage 4) Principle is like that of a former backpacker. The backpacker could effectively arrange a fitting, themed travel experience for their family—where each member has different travel interests—using the three spheres of the service value ecosystem.

Make Sense of the Roles of Ecosystem Network Actors

Given a value ecosystem configuration, the sense-making process is conducted by examining the actors that need to make sense of their network roles. A network role reflects how an actor interprets its ecosystem network position and serves to comprehend its consequent network interaction behaviors. This sense-making can also be seen as influencing or persuading communications about how each actor's interaction behaviors (micro) are connected to the given value proposition (macro). Further, a micro actor's interpretations of its giving (its offering features) and taking (its pressing need) are also forms of sense-making.

Each actors' sense-making can be investigated along two dimensions: time and space (Abrahamsen et al., 2012). These dimensions are depicted in Figure 13, alongside an exemplar for the running scenario of RTD SMBs in Figure 14). The time dimension is concerned with "what" is happening (of relevant to POV's NEED) and "why" it is happening (of relevance to

Figure 12. Linking and coordinating activities among the three ecosystem spheres to realize the Customer Empowerment Stage 4 Principle



POV's BECAUSE). The space dimension is concerned with "where" the changes (i.e., consequences of value exchanges) are happening, and whether they result from (1) changes in an actor A (actor level), (2) changes in the relationship between actors D (duo level), or (3) changes in multiple or connected relationships N (network level).

Additional sense-making issues include the selection of actors based on the ecosystem atmosphere and environment. The atmosphere involves power dependence, cooperation, closeness, and expectations among actors, as depicted in Figure 15 (Håkansson, 1982). The environment refers to the market structure and its dynamism, internationalization, or social system.

Figure 13. An actor's sense-making

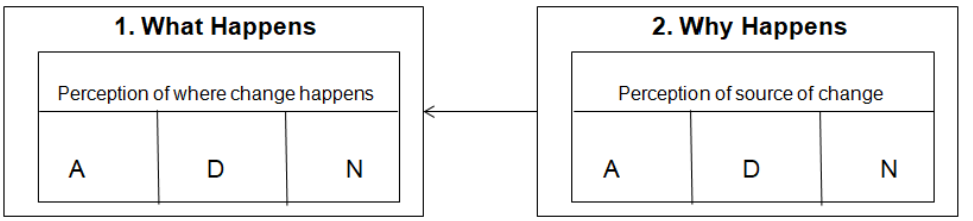
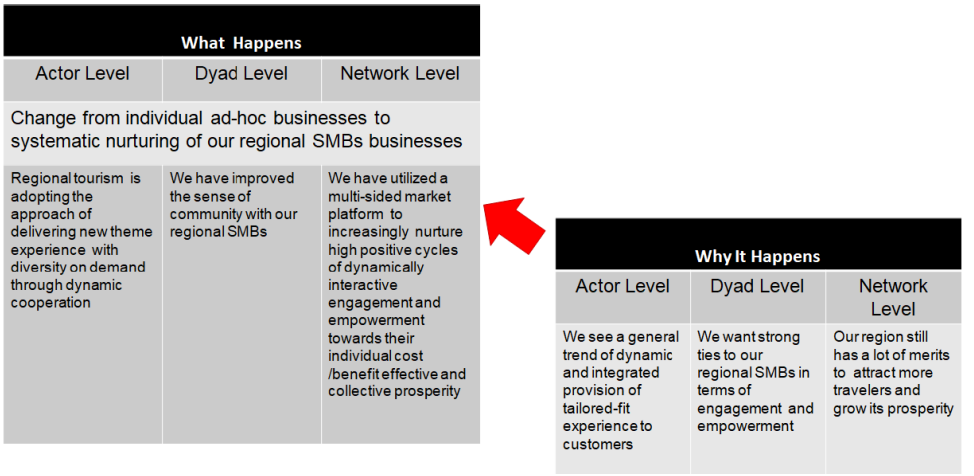


Figure 14. Exemplified ecosystem actors' sense-making for the running scenario of RTD SMBs



What Happens		
Actor Level	Dyad Level	Network Level
Change from individual ad-hoc businesses to systematic nurturing of our regional SMBs businesses		
Regional tourism is adopting the approach of delivering new theme experience with diversity on demand through dynamic cooperation	We have improved the sense of community with our regional SMBs	We have utilized a multi-sided market platform to increasingly nurture high positive cycles of dynamically interactive engagement and empowerment towards their individual cost /benefit effective and collective prosperity

Why It Happens		
Actor Level	Dyad Level	Network Level
We see a general trend of dynamic and integrated provision of tailored-fit experience to customers	We want strong ties to our regional SMBs in terms of engagement and empowerment	Our region still has a lot of merits to attract more travelers and grow its prosperity

Furthermore, the sense-making can also move from the selection of actors to the selection of interaction patterns involving multiple actors. For instance, an interaction pattern with higher levels of power dependence, cooperation, trust, and expectations could correspond to better interaction conditions among actors by configuring a value ecosystem network (Yuan & Hsu, 2017).

Monitor the Value Ecosystem Dynamics

Ecosystem networks could be dependably on the move where new thoughts challenge the status of the established ecosystem (as depicted in Figure 16). Actors are increasingly able to oversee change and act as a change agent up to the point where further ecosystem network consolidation becomes ineffective. Network dynamics could then be comprehended in terms of actors trying to change their network position, and their interaction behaviors must then be found in relation to the changing roles that the actors take on.

But, if a certain level of ecosystem network support cannot be deployed, changes will not happen. Furthermore, if the ecosystem actors concur excessively, no new ideas come into the network and the network will be more averse to change. At times, the established role interpretations need to be confronted to encourage change; otherwise, the network would end up being static. Likewise, network dynamics can be represented in terms of the changes made along the two dimensions of time and space (Abrahamsen et al., 2012).

Figure 15. The selection of actors considering power dependency, cooperation, trust and expectations

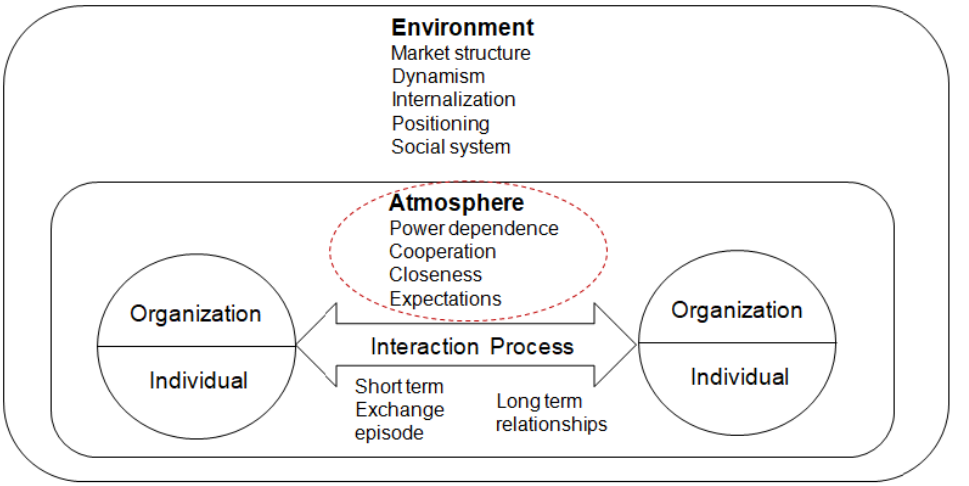
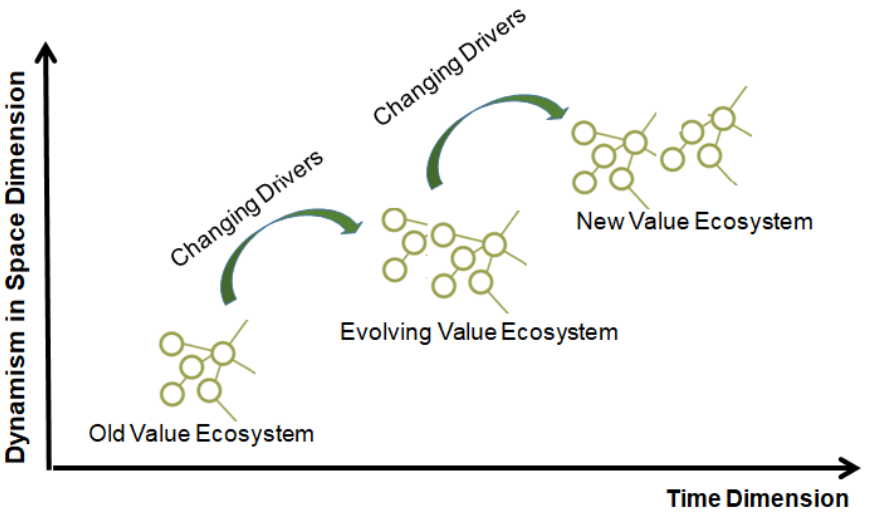


Figure 16. Exemplified ecosystem network dynamics



For the running scenario of RTD SMBs (Figure 11), an exemplar of network dynamics could be unrelated to the theme but could have a famous business come to a region, which would result in some changing roles for regional SMBs to evolve the ecosystem network.

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Chapter 5
Strategic Ecosystem Flexibility Design and Empowered Digital Business Design

ABSTRACT

To achieve a productive and sustainable high-value delivery, the issue of flexibility needs to be addressed so that the value ecosystem can cope with the uncertainty of potential internal or external changes; such changes might affect whether the value delivery is in a timely and cost-effective manner. This chapter focuses on how to flexibly configure talents, resources, organizations, and technologies (i.e., operants) toward a productive and sustainable way of delivering high-value by leveraging digital technologies. This leveraging for strategic ecosystem flexibility is two-fold. First, digital operants need to be created to serve as ecosystem actors and perform value exchanges. Second, strategic business choices need to be made so that digital solution architecture choices and additional digital operants can dynamically engage and empower actors in value co-creation. Furthermore, this also demonstrates the third dimension of the business reinvention methodology, which is about digital business strategies for ecosystem flexibility and business sustainability.

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INTRODUCTION

Given a value ecosystem's configuration is done with the sense-making process, the next step is to investigate whether this can be further improved using a productive sustainable perspective; such a perspective would deliver the high-value in response to uncertainty by utilizing digital technologies. Accordingly, to ensure a productive and sustainable high-value delivery, the issue of flexibility needs to be addressed so that the value ecosystem can respond to the uncertainty of the potential internal or external changes that might affect whether its value delivery is in a timely and cost-effective manner. Uncertainty creates risks but also opportunities in a system, and it is with the existence of uncertainty that flexibility becomes valuable.

Accordingly, strategic ecosystem flexibility concerns how to flexibly orient talent, resources, organizations, and technologies (i.e., operants) toward a productive and sustainable way of delivering high-value by leveraging digital technologies. Digital business strategies for ecosystem flexibility refers to a focal B's strategic choices of digital solution architecture and components that can dynamically engage and empower actors (including digital operants) in value co-creation.

Digital business strategy is defined as leveraging a variety of digital resources to create differential customer-centric values (Bharadwaj et al., 2013). Empowered digital business then refers to a focal B with its stakeholders' beliefs regarding their capability to execute a designated course of actions with designated levels of individual or collective performance (i.e., self-efficacy and collective efficacy) within a supporting ecosystem context that is facilitated by digital technologies. To this end, digital operants work toward stakeholder empowerment through self-efficacy and collective efficacy; both of these need to be designed and use a digital architecture that can facilitate the dynamic engagement and empowerment of stakeholders in value co-creation in the development of ecosystem flexibility.

FOUNDATIONAL THEORIES AND BASIC CONCEPTS

This section briefly discusses the concepts of digital business and empowerment. Digital business means leveraging digital technologies to transform the customer value and drive competitive advantage through the

value co-creation of a value ecosystem, in which a focal B needs to engage and empower stakeholders (including customers).

Digital technologies are substantially reshaping traditional business strategies. Bharadwaj et al. (2013) defined digital business strategy as the business strategy formulated by leveraging a variety of digital resources to create customer differential value. This definition goes beyond the conventional practical aspect of IT strategy or information systems and technologies by stressing the measurements other than effectiveness and efficiency; however, the customer value aspect drives competitive advantage and strategic differentiation.

However, the customer differential value is a function of customer choice (Keen & Williams, 2013). For instance, it is the customers rather than the web that undermines the newspaper industry since the customers prefer web-based content as opposed to print-based content. In other words, the customer-centric value is increasingly moving from concentrating on the features of products and services and is instead moving toward a system that provides the customer with a more desirable experience. In addition, Keen and Williams (2013) emphasized that successful digital businesses must empower the development of such innovation in a steady progression given that value will move, rather than detect a new opening and build the value without supposing the same value would hold. This is because the dominance of value is more and more customer-centric, meaning that fewer businesses are dictated by industry boundary, resource advantage, R&D capability, and so on.

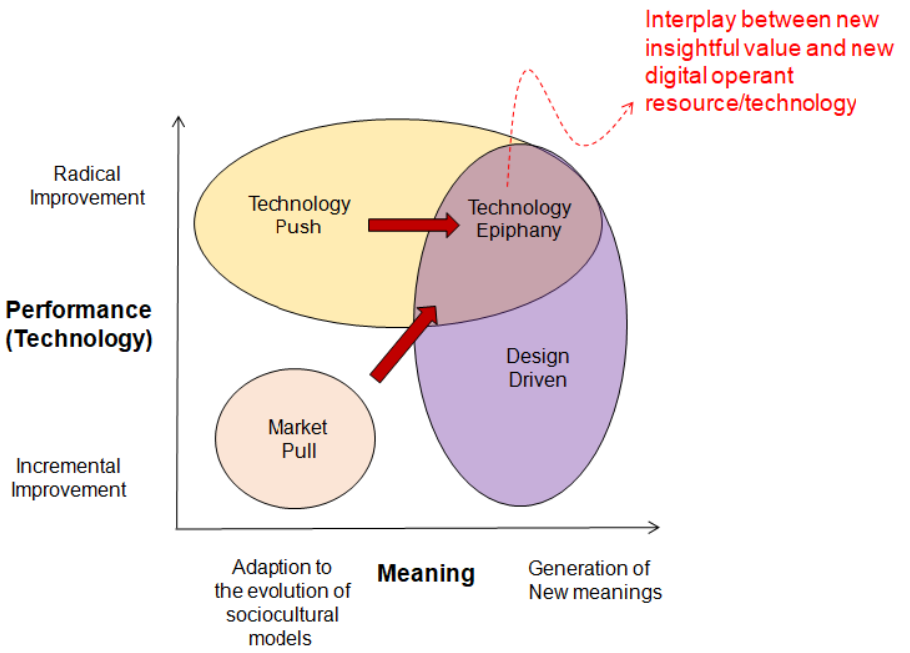
Subsequently, this customer-centric orientation makes the competitive industry environment more dynamic and impacts the development of digital business strategies. Mithas et al. (2013) showed that greater industry instability (i.e., higher unpredictable change in an industry) expands how much digital business strategy would move from the industry norm. This is on the grounds that the industry norm does not merit imitating the opposition but rather originates from various ventures (e.g., music labels vs. Apple's iTunes or Barnes & Noble vs. Amazon's Kindle ebooks). Drnevich and Croson (2013) addressed some important research directions for investigating digital business strategy, such as, coordination (about service system entities interaction), governance (about the governance of entity interaction), competence (about the identification of IT-enabled competences to drive customer differential value-based competitive advantage), and flexibility (about the reconfiguration and adjustment in response to dynamic environmental change).

This customer-centric notion of digital business strategy aligns with the notion of "technology epiphany." Verganti (2009, 2011) addressed that the

overlap (the upper right corner of the Figure 1) between technology pushes innovation (i.e., innovation from technological advancement) and design-driven innovation (i.e., innovation from new customer-centric meaning). This is referred to as "technology epiphany", which is the sources of radical innovations leading to most successful products or services in varied industries, and this area of investigation is highly promising in the coming decades. The creation of insightful and meaningful value can help find promising applications of existent technological opportunities and identify new meaningful technologies to develop (instead of launching new technologies without deep customer-centric meanings).

Digital business strategy refers to the ability to leverage digital technologies to transform the customer value equation and drive competitive advantage. Digital business is not just about technology, disruption or innovation. What makes a difference is how digital technologies affect businesses in terms of how it impacts the behavior and attitudes of its customers across all of their activities (i.e., the digital reality about the impact on customer experiences in the broadest sense). Executives need to learn from each other and understand how digital technology is utilized by customer, employees, and stakeholders.

Figure 1. Innovation strategies and the positioning of radical design



To extend the digital business conception to the value co-creation of a value ecosystem, a focal B needs to engage and empower stakeholders (including customers) in value co-creation within the value ecosystem (i.e., the processes of benefits exchanges among stakeholders for effective value delivery to the end customers). In addition, the enhancement of stakeholders' beliefs in self- and collective efficacy should also be considered. That is, digital businesses need to employ empowerment with digital technologies for effective value delivery. Doing so will help achieve general well-being at the level of individual customers as well as at the level of stakeholders and work toward the collective well-being of economic quality growth. Accordingly, digital operants for stakeholder empowerment of self-efficacy and collective efficacy need to be designed.

INTELLIGENCE FOR ECOSYSTEM FLEXIBILITY AND EMPOWERMENT

Ecosystem flexibility indicates a flexible configuration of actors toward a productive and sustainable way to deliver high-value. In other words, the actors belonging to the service provision b/c or c/c, tier 1, tier 2, and auxiliary layers of enablers (as discussed Chapter 4.2.2) should allow flexibility in their network partnerships while ensuring a productive and sustainable way of high-value delivery. To this end, the proper intelligence (i.e., the ability to perceive or infer information about adaptive behaviors in resource integration of the value ecosystem) and digital architecture should use modern digital technologies (e.g., artificial intelligence, platform, blockchain, etc.).

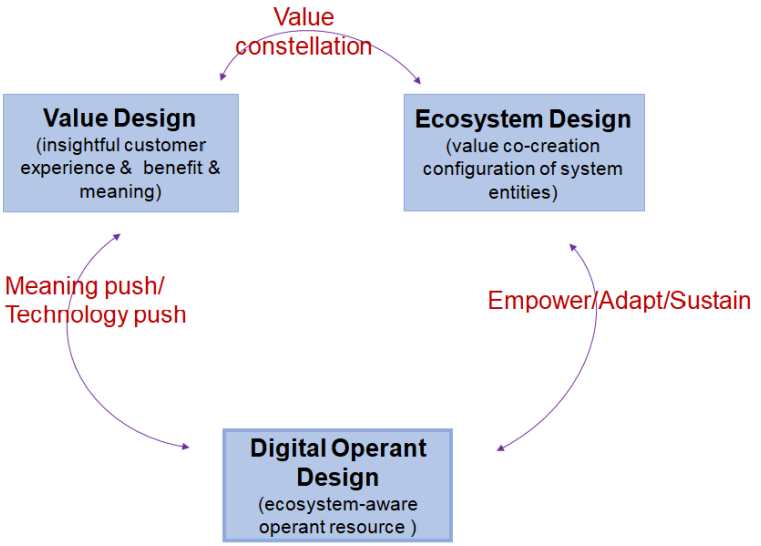
This intelligence would then involve the incorporation of ecosystem actors that could digitally manifest themselves. That is, they should digitally function or act to produce effects with intelligence, and these digital actors are also regarded as digital operants. Furthermore, the strategic choice of a proper digital architecture in support of the dynamic configuration of digital operants and ecosystem actors are needed to co-create high-value in a timely and cost-effective manner (given that a fundamental high-level structure of a digital support system is costly to change once implemented).

DIGITAL OPERANTS DESIGN

Digital operant design means the development of digital operants that can facilitate the tasks of value co-creation (meaning push or technology push) or value ecosystem flexibility and sustainability (i.e., empower/adapt/sustain) as depicted in Figure 2. This facilitation is manifested as the empowerment that can enhance the abilities of an ecosystem's actors within the co-creation context in order to adapt and react to the inside and outside dynamic forces; further, the digital architecture that supports the ecosystem should eliminate unqualified actors and attract new blood to achieve sustainability. Digital operants are manifested in the form of offering, delivery, operation, or pricing that are modular or autonomous, distributed, cross-functional, dynamic, or social.

Given a value ecosystem, the design of digital operants is two-fold. First, ecosystem actors are replaced with value activities that could be digitally encoded and operated to perform the designated value exchanges (including those embodying the empowerment intelligence for stakeholders' self-efficacy and collective efficacy. Second, the ecosystem's intelligence for ecosystem flexibility is encapsulated with artificial intelligence and digital architectures (i.e., the platform technology and the blockchain technology).

Figure 2. The capacities of digital operants



In this chapter, the two running scenarios of RTD and CDD will be used to exemplify these digital operant designs, Chapter 5.3 use the RTD running scenario to exemplify the micro design aspect of the digital operants to achieve ecosystem empowerment and flexibility, and Chapter 5.5 uses the CDD running scenario to exemplify the macro impact aspect of the value ecosystem for stakeholders in light of these digital operant designs.

Digital Operant About Ecosystem Actor to Achieve Value Exchanges

Given a value ecosystem's configuration, an actors' value activities in an ecosystem could be performed by a computer program that acts on behalf of some stakeholder in a relationship of agency; it would then be regarded as a digital operant about the ecosystem actor. This would be similar to the concept of a software agent that features the properties of being reactive, proactive and social.

For example, in Uber's value ecosystem, there is an important digital operant that is about its dynamic surge pricing (i.e., they charge more when the demand for rides is higher than the supply of vehicles). The general idea of the surge pricing algorithm is that this algorithm is run every five to ten minutes to calculate the prices of rides for locations of high demand (Faroque, 2018). In the event that a customer is searching for a Uber ride in a city amid surge hour, the digital operant's surge pricing algorithm decides the supply that is accessible right now in the city and the demand (i.e., other individuals who need a ride as of now in the city) and the operant uses these variables to determine the cost of the ride. The objective of the value activities for such an operant is to maximize the number of rides that can be offered (particularly of times with low supply and high demand). That is, Uber's surge pricing algorithm serves as an agency using a computer program that acts on behalf of Uber to provide knowledge and information that support Uber's core service but is not contractual.

Digital Operant as Ecosystem Actor in RTD Running Scenario

In the running scenario of RTD SMBs, there are vital value activities such as empowered recommendation and feedback on theme experience, diversity, and alliance. These value activities could be performed by special computer

programs that act as digital operants for some ecosystem actors. This section uses iVoyage as an example in destination tourism (Yuan et al., 2015; Yuan & Yang, 2017) to demonstrate the aforementioned design of digital operants that exhibit ecosystem intelligence in terms of the incorporation of ecosystem actors that could digitally manifest themselves. That is, they digitally function or act to produce effects with intelligence. For example, one of iVoyage's aims is to dynamically recommend an alliance of SMBs that can fulfill a tourist's theme-based emotional needs from the psychological aspect, assuming that their functional needs can be pre-processed (or post-processed).

In the context of iVoyage for destination tourism ecosystems, the tourist, SMB, and destination are regarded as the three kinds of important stakeholders. The service journey between the destination and the tourist can be regarded as a simple version of the service journey between SMB and tourist. Regional tourism SMBs pursue innovation to grow and need to collaborate to build their own destination images. This is viewed as their identification brands, which depend on the tourists' experiences and evaluations within tourists' image formation processes.

iVoyage's recommendations for service takes into account the essence of service-dominant logic (Vargo & Lusch, 2008). This approach shows that value is interactionally co-created and determined by the customer based on value-in-use within the value constellation network context of service stakeholders. Accordingly, the recommendations representing the contexts and models of products, services, and customers ought not be detached from one another, as occurs in the products- and goods-dominant sectors. Rather, in a recommendation representation, contexts or models affect each other during the interactional value co-creation process within the context of the value constellation network. The primary design idea of iVoyage's recommendation methods then lays on imagery and color.

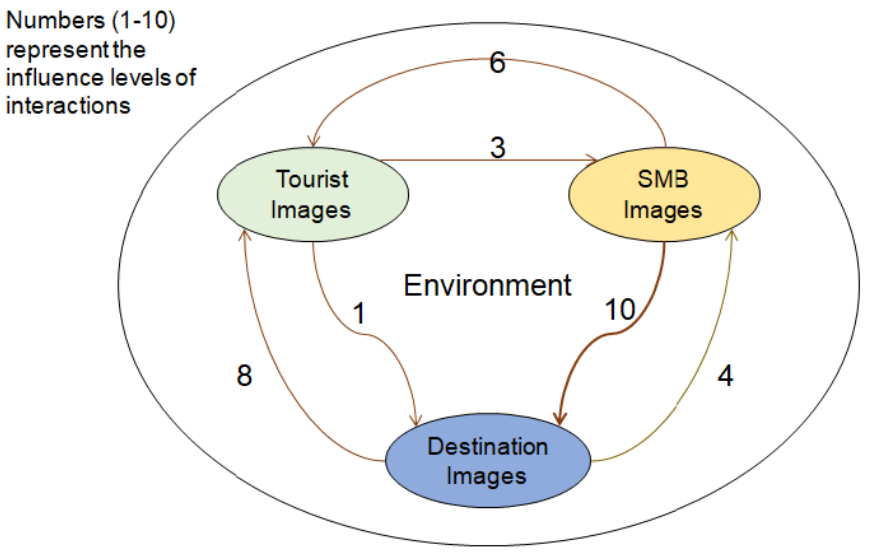
The concept of image theory (Beach, 1990) delineates an image as a cognitive structure in an individual's mind that is influenced by human knowledge and develops image models to address the psychological value cognition for both tangible and intangible values. This is similar to the concepts of brand image (Keller, 1993; Nelson, 2004) or destination image (Echtner & Ritchie, 2003). That is, images can embody the perceived customer benefits and the value of service offerings. Image models are exploited to represent the emotional perceptions of businesses based on their interactions (i.e., images can be assessed and created based on customers' feedback and their interactions with businesses).

Two primitive types of image models are defined in iVoyage that include the business image model, the customer image model, and the region image model. A business image model refers to the emotional perceptions of a business that draws from the interactions between a business and its customers. A customer image model portrays a customer's mental inclinations or emotional needs toward businesses. In order to effectively analyze and process the image model, all of the image elements are represented by emotional adjectives that could be represented by colors if necessary.

One important consideration of mapping adjectives onto colors is that a quantitative method can be utilized to investigate or compute the image data after the adjectives are supplanted with color RGB values. This can be done without losing generalizability by using imperative mapping for each emotional adjective word onto a color. The number of image elements in an image model can reach up to 122 emotional adjectives (Yuan & Yang, 2017). The destination image is computed by analyzing the images of residing SMBs and their customers and showing how it changes dynamically over time. The image of a bigger destination is then composed of images from its sub-regions.

iVoyage discerns different role images have different influences on others to a certain extent, as depicted in Figure 3 (Yuan & Yang, 2017). This is to mirror the influences of interactions among the actors of a value constellation

Figure 3. Destination tourism stakeholders' Image modeling based on their interactions of different relative influence strengths



network (e.g., a tourism destination). Those continued interactions among the actors of tourists and the destination and its inhabitant SMBs collectively co-create the individual value-in-use and beneficial results for each tourist. Figure 3 demonstrates this mutually influencing idea used in iVoyage for destination tourism. The numbers in the figure represent the exemplified relative strength of the influences between the images of roles (e.g., bold lines are those over six). When interaction contacts happen, the images of the involved entities would somewhat change as per the influences from the others' images. For instance, when an individual with a red image visits a spot with a yellow image, the individual's image will turn out to be more orange, since this shows the individual's preference progresses in an implicit way.

Destinations usually have a greater attraction to tourists than individual SMBs in a tourism destination, and SMBs generally team up to flourish in a destination. An individual tourist typically has less influence than the other two roles but convey human preferences that would be accumulated to result in important influences. Hence, different weights for the three roles in destination tourism are exemplified in Figure 3. When the interactions occur, iVoyage computationally mixes the images of the involved entities to understand the effects on their image models. An allianced collaboration of SMBs or a union of destinations can be seen as cooperation wherein the impact of each part is viewed as equivalent. The details of the aforementioned modeling and computation are discussed in the following sections.

Color can induce emotional feelings (Kobayashi, 1981; Ou et al., 2004; Suk & Irtel, 2010; Xin et al., 1998). Kobayashi (1981) asserted that every color has its own meaning, which can be mapped onto one or more words. For instance, red is seen as adventurous, sociable, and amazing (Xin et al., 1998). These emotional feelings, impressions, or images are regarded as color emotions (Ou et al. 2004). Prior research has quantified the connection between color and emotion to understand the advantages of integrating a color's physical property and its psychological nature. One important point is that color selection can be steadily objective when each color is specified by the emotions voiced. Another is the use of numerical values or standard colorimetric systems, such as RGB or CIE, to represent color emotions and facilitate dialogues between different groups like web designers and programmers (Xin et al., 1998).

Cultural differences also exist for the influence color has on emotions. But, four sets of color-emotion aspects cross-culturally exist, which include warm-cool, heavy-light, active-passive, and hard–soft (Ou et al., 2004). These aspects can be viewed as color semantics or high-level properties, which

are color-induced sensations, while low-level properties are the syntactic characteristics like hue, luminance, and saturation (Corridoni et al., 1998).

The Color Image Scale (Kobayashi, 1981, 1992), consolidates color science, color emotion, and word semantics; it unequivocally defines the meanings of 130 basic colors and more than 1000 color combinations. Each color combination is appointed with one or more image words (emotional adjectives) through evaluation and factor analysis. These colors are sorted with the Hue and Tone System, which is made up of forty hues and twelve tones (value-chroma) that depend on the ISCC-NBS color-naming method and the Munsell Color System (Kobayashi, 1981, 1992). There are three psychological components including warm-cool, soft-hard, and clear-grayish that correspond to the hue, value, and chroma in the Munsell system (Kobayashi, 1981). The closer the distance between colors on the scale, the more prominent the similitude between their images. On the Single Color Image Scale, colors belonging to the same tone are arranged by hue, whose images vary, yet have basic characteristics the tone passes on. For instance, a vivid tone would mean the tone is vivid, bold, clear, full of life, and draws attention (Kobayashi, 1992).

To execute a color mixture, the center of gravity for the color mixture can be utilized to prognosticate the color of a mixture of component lights. The additive color mixing has been broadly utilized in situations like painting restoration (Pei et al., 2004), OLED display (Wu et al., 2006), and brightness manipulation (Pei et al., 2004). The appropriate color mixture can be accomplished by utilizing a XY chromaticity diagram where the color gamut is staged on the circumference of a circle and the white color lies at the center (i.e., the color of the mixture of all different kinds of light). By assigning each component color a weight proportional to the intensity of the light, the center of gravity for the resultant figure then represents the color of the mixture of lights (Broackes, 1992).

The following equation indicates the calculation for the center of gravity for a color mixture (Lucchese et al., 2000), where C_2 (x_2, y_2, Y_2) is the result from the mixture of C_w (x_w,y_w,Y_w) and C_s (x_s, y_s, Y_s). C_2, C_w, and C_s use CIE xyY color space representations, which are converted from RGB values and undergo normalization to indicate their location in a XY chromaticity diagram.

When C_i RGB form, i = 2, w, s,

C_i (X, Y, Z) is calculated from

$$\begin{bmatrix} X \\ Y \\ Z \end{bmatrix} = \begin{bmatrix} 0.49000 & 0.31000 & 0.20000 \\ 0.17697 & 0.81240 & 0.01063 \\ 0.00000 & 0.01000 & 0.99000 \end{bmatrix} \begin{bmatrix} R \\ G \\ B \end{bmatrix}$$

C_i (x, y, Y) is calculated from

$$x = \frac{X}{X+Y+Z}, \quad y = \frac{Y}{X+Y+Z}$$

$$x_2 = \frac{x_w \frac{Y_w}{y_w} + x_s \frac{Y_s}{y_s}}{\frac{Y_w}{y_w} + \frac{Y_s}{y_s}}, \quad y_2 = \frac{Y_w + Y_s}{\frac{Y_w}{y_w} + \frac{Y_s}{y_s}}$$

In iVoyage, the representation of images comprises psychological words (i.e., a representation of image elements). These words originate from the Color Image Scale (Kobayashi, 1992) and every one of them is an emotional adjective. With a Color Image Scale, converting the feelings about products, services, and experiences into numerical notations ends up being simpler because, on the Internet, these words are often accompanied by text information that can be investigated with text mining techniques.

There are 122 image elements chosen from the Color Image Scale, and they can be classified into 14 meta groups (casual, chic, classic, clear, cool-casual, dandy, dynamic, elegant, formal, gorgeous, modern, natural, pretty, and romantic) based on their meanings. The original Color Image Scale has 130 colors and 180 emotional words that are properly mapped, which appear in Figure 4 (Kobayashi, 1992). Yuan and Yang (2017) eliminated a couple of emotional words and colors from the Color Image Scale that were too near to be properly distinguished, which resulted in a slightly changed Color Image Scale of 122 mapping relations between the emotional words and the colors.

Each image element is represented by a psychological word and has a few properties. The elements have color notations (including Munsell and RGB value) and adjective factors (evaluative, sensitive, dynamic, emotional, scale) that are subsequently incorporated in the image matching and mixing processes (Kobayashi, 1981). The raw data for constructing image models are gathered either by text mining from the Internet or through open questions from tourists and SMBs. DISCO (Kolb, 2008), so a JAVA tool that recovers

Figure 4. Color image scale: The mapping of emotional words onto colors

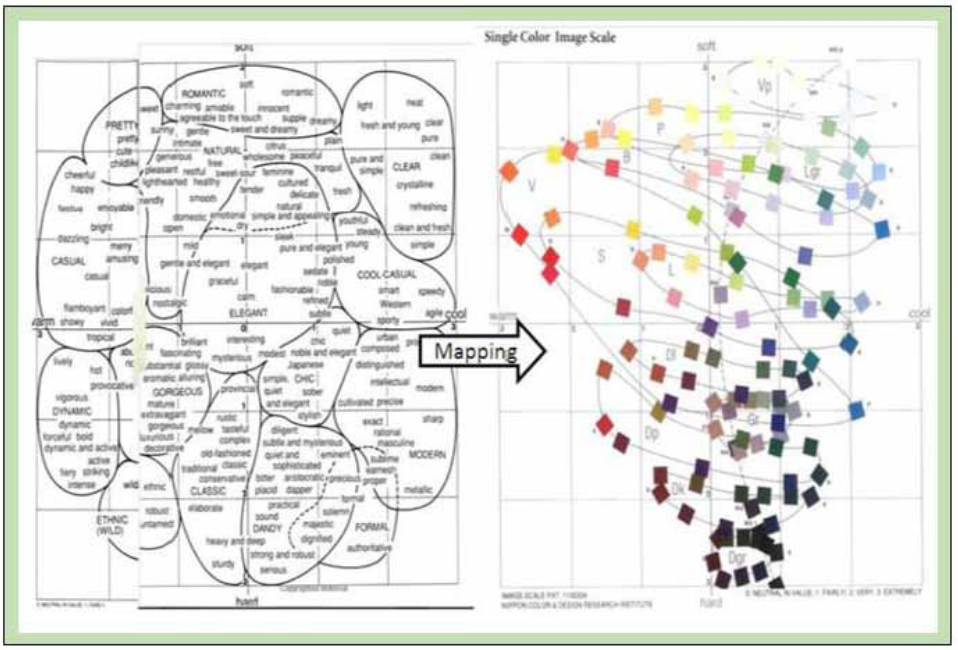


Figure 5. Image matrices in three formats

$$\begin{bmatrix} W_{0\,0} & \cdots & W_{0\,36} \\ \vdots & \ddots & \vdots \\ W_{4\,0} & \cdots & W_{4\,36} \end{bmatrix} \quad \begin{bmatrix} C_{0\,0} & \cdots & C_{0\,36} \\ \vdots & \ddots & \vdots \\ C_{4\,0} & \cdots & C_{4\,36} \end{bmatrix} \quad \begin{bmatrix} I_{0\,0} & \cdots & I_{0\,36} \\ \vdots & \ddots & \vdots \\ I_{4\,0} & \cdots & I_{4\,36} \end{bmatrix}$$

the semantic similarity between arbitrary words is used to retrieve the semantic similarity between the external words obtained from the raw data and the psychological words appearing in a Color Image Scale. As a result, all external text contents can be mapped into words within the modified Color Image Scale. This handles the worry about whether the emotional features collected by colors are adequate.

Given that image elements can be represented either by words or by colors, each image model is constructed using three matrices as shown in Figure 5 (Yuan & Yang, 2017). The matrices are about words, RGB values (r, g,

b), and their intensity values (the value equaling the count of a particular emotional word divided by the total number of emotional words appearing in those external text contents). After an image matrix is constructed with those emotional words and intensity values, the word/color translator maps those words onto colors using the Color Image Scale (Kobayashi, 1992). For simplicity, the relation between an emotional word and color is many to one (rather than the many-to-many relation in the original Color Image Scale). That is, each image element has its own meaning and can be exhibited either by multiple words or one single color.

The data sources used to model tourist images could be obtained by learning from tourist behavior. For example, the searching and browsing histories, the destinations and SMB stores selected, the feedback of emotional words conveying impressions about certain spots, satisfaction scores, and input interest about destination images (or called the short-term image of the tourist). In the beginning of the matching process, this short-term image of the tourist represents their emotional need for a destination or a tour, while the image profile of the tourist is dependent on their behavior and is viewed as the tourist's long-term image model.

The data sources for building an SMB's image could first be the SMB's manager setting up its own image by giving emotional words (e.g., the SMB owner can modify its profile anytime when its service image changes). For an alliance of SMBs, its image would be constructed by mixing images from member SMBs. Furthermore, a rolling weight (e.g., 40% that can vary with different destinations) of the SMB's image would be determined by its tourists' feedback. Also, the image of the destination where the SMB inhabits would also influence the SMB's own image. For data sources to establish a destination image, it would be set initially by the region and changed by the images of residing SMBs and their tourists over time. The image of a bigger destination is then the mixing of the sub-regions' images.

Image mixing is the updating of the images based on these dynamic interactions by using different role images that have various effects on others. This reflects the influences of interactions among the actors of a value constellation network (e.g., a destination). These continued interactions among the actors of tourists, the destination, and the residing SMBs collectively co-create the individual value-in-use and beneficial outcomes for every tourist visit in the beginning.

When a tourist inputs a query, the inquiry would be utilized as a filter to build a candidate list, and the list would then be sorted according to the tourist's image model for personalization. The query is viewed as a short-term

image representing the tourist's emotional needs which are interpreted from a query that helps arrange a trip to refresh the tourist's image model that is regarded as a long-term image.

For instance, when a tourist types a theme phrase "a place like paradise" into the search bar of the system iVoyage, various recommended tour services appear on the results screen within seconds. In iVoyage, the query strings would first be analyzed and interpreted into several affective adjectives representing some image elements (e.g., pretty, clear, sweet and dreamy, and simple). Second, iVoyage utilizes these words as filters to choose services whose image models contain at least one of these image elements. Third, for personalization, iVoyage sorts the selected candidate lists by comparing the tourist's image model to each candidate's image model. The more alike the image models are, the higher the rank the candidate would get in the final recommendation list.

In short, color emotion modeling and color mixing are devised to represent products or services and rank the recommendations based on a variety of emotional features; a quantifiable computation allows for destination tourism development. That is, these value activities showcase the design of particular digital operants embodying the required capabilities of stakeholder empowerment toward self-efficacy and collective efficacy addressed in some POV/HMV statements of the RTD running scenario.

In addition, the evaluation results demonstrate that iVoyage can help lesser-known tourism destinations be uncovered by tourists who can be emotionally satisfied. In the meantime, a destination of low service diversity has a higher sensitivity to the effects of incidental occasions (e.g., popular music show occasion held in the destination). In a destination of higher service diversity, an occasional tourism-related event would have smaller effects on the destination region. This implies that owners of tourism destinations of lower diversity and the residing SMBs may demand government financing backing or funding support to deploy a series of strategic events for tourism development while fostering their regional service diversity.

Digital Operant about Ecosystem Intelligence to Achieve Ecosystem Flexibility

For a value ecosystem configuration, the required intelligence (i.e., the ability to perceive or infer information about the adaptive behaviors in resource integration of the value ecosystem) is two-fold. First, there is the on-demand

proper selection of actors at the different layers (service provision b/c or c/c, tier 1, tier 2) of the ecosystem network, and second, there is the on-demand modification of the service b/c layer's configuration. Subsequently, this moves the tiers toward greater fulfillment of the given high-value. Either type of the ecosystem intelligence needs to monitor, predict, determine, and manage the proper adaptive actions of ecosystem actors to achieve ecosystem flexibility. These actions could then be performed in either a centralized way (using the platform technology) or a decentralized way (using the blockchain technology) through the digital architecture technologies (platform or blockchain).

Digital Operant About Ecosystem Flexibility in RTD Running Scenario

This section continues the exemplified application of destination tourism named iVoyage (Yuan et al., 2015; Yuan & Yang, 2017) to demonstrate the intelligence needed to achieve ecosystem flexibility. In iVoyage, the intelligence of value ecosystem configuration refers to its ability to perceive customers' feedback and their interactions with SMB destinations. The feedback is used to continuously monitor, analyze, and predict the image information to determine the adaptive selection behaviors of the on-demand resource integration of the service b/c actors (subsequently affecting tier 1 and tier 2) in response to a tourist's emotional or functional request. In addition, a ranked list of actor alliances is placed in increasing order of tourist's emotional fulfillment, and are provided to address the high value and the choices managed to bestow to the customers. iVoayge manages the aforementioned actions in a centralized way using platform technology.

Next, it is important to understand how each of the actor alliances can be autonomously generated to manifest the theme experience with diversity in support of the aforementioned flexibility. The details of such computation are discussed in the following sections.

iVoyage devised a mechanism for computing a metaphor-based alliance for partner recommendations (Yuan et al., 2015). The mechanism enables businesses to discover alliance partners to cooperate for innovative theme-specific service provisions considering the evaluation of customer service experiences. This is very different from traditional methods that mostly focus on the functional aspects (i.e., cost, quality, performance, etc.) of partner selection, particularly those used to develop production networks or supply chain management.

It is crucial that a customer-centric perspective is brought into the partner selection issue for service industries like tourism. These industries intrinsically involve cross-industry alliances since tourists need different sorts of services (e.g., transportation, accommodation, entertainment, etc.) amid a journey. To well exercise the customer-centric perspective, the intrinsic value (i.e., psychological or emotional value) should not be overlooked. However, these psychological and emotional aspects are frequently ignored in current strategies of alliance partner selection. The issue of how to choose partners in a way that creates superior service experiences remains unanswered. Such insufficiency gives the motivation for a mechanism to compute metaphor-based alliances for partner recommendations.

Metaphors help provoke creative and innovative thinking, and in this way, offer extraordinary potential for addressing design problems (Casakin 2007; Lubart & Getz, 1997; Weick, 2003). Metaphors are extensively viewed as a conceptual mapping of properties between two knowledge domains: the target domain and the source domain (Lakoff & Johnson, 2008; Mason, 2004). The target domain provides aspects for attribution, while the source domain (or vehicles) offer properties that may be transferable to the target (McGlone & Manfredi, 2001). Hence, metaphors help suggest the comparison made between two different things that share something in order to achieve innovative thinking.

iVoyage addressed that existing metaphors in speech or writing can be viewed as knowledge sources for growing new knowledge-based techniques that bolster human decision-making, learning, or action. Different from traditional knowledge sources (e.g., taxonomies, ontologies, dictionaries, etc.), metaphor knowledge is frequently dissipated and unstructured; hence, conventional knowledge-based techniques for representation (e.g., XML, RDF) and computation (e.g., logical tools, indexing/retrieval, text mining) might not be suitable. The proposed mechanism aims to exploit metaphors to explore innovative solutions for alliance partner selection in a heuristic and automated manner.

The goal of the mechanism is to utilize metaphors to unearth the meaning behind the proposed alliance goals and further identify possible partners. In iVoyage, an alliance theme goal is defined as a service value (i.e., evaluation of customer experience) endeavored to convey alliance to customers. Specifically, the theme goal emphasizes the emotional aspect of the service value that can be represented by images. In order to enable businesses to get their desired outcomes, a market niche assessment of different recommendation options could also be completed. Basically, the mechanism attempts to comprehend

the alliance theme goals, identify the missing image elements to achieve the theme goals, generate new metaphors, map these metaphors to a sensible arrangement of partner candidates, and evaluate and prioritize the candidates.

The underlying concepts behind the mechanism shown in Figure 6. It is a service imagery approach (i.e., a sign-value approach) that concretizes the essence of a service with evolutionary logic (Hsieh & Yuan, 2012; Yuan & Hsieh, 2018). The mechanism provides the basic foundation to formulate and communicate the innovative value propositions and design a value-creating system that can dynamically evolve in response to market changes in terms of continuously improving the competency-customer fit through meaningful resource integration. The service imagery approach can help drive and evolve the development of "what" and "how" of a service and value-creating system.

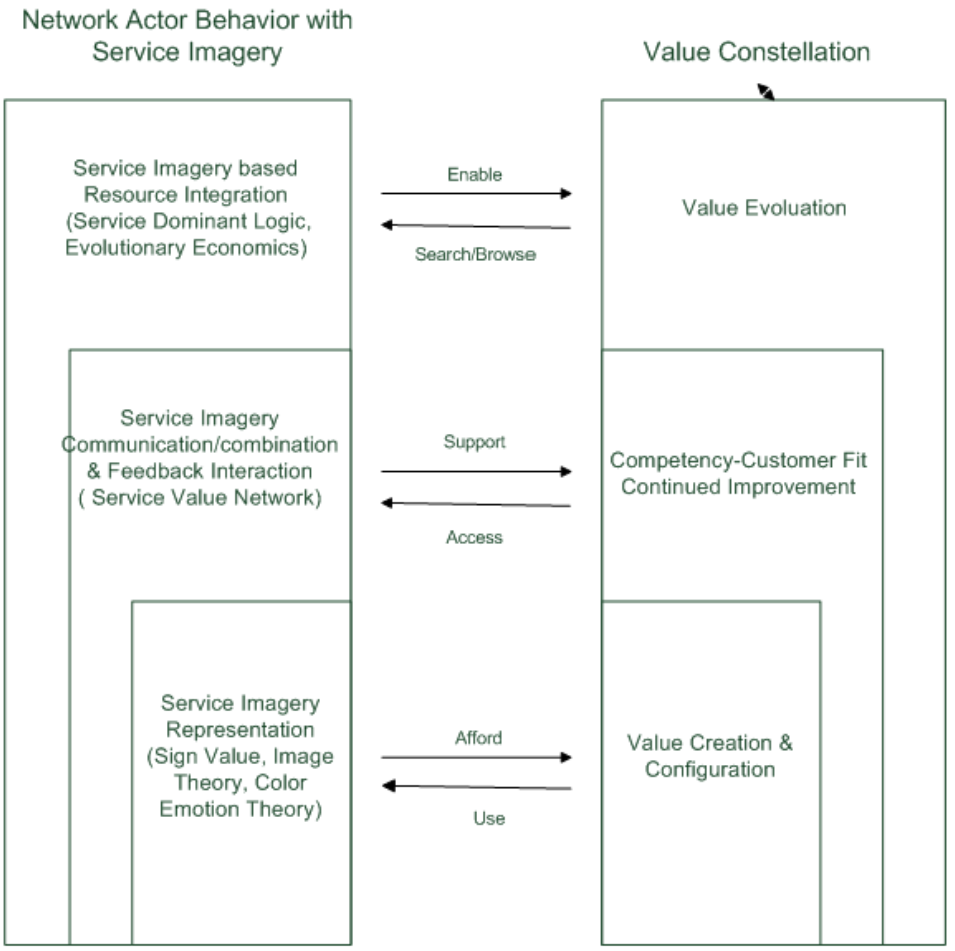
Service imagery is defined as a description of the value of a service using images. Each business or business network can be associated with a service imagery. The outcome of customer service experiences continues to accumulate service imagery to describe the service co-created by customers and businesses. Figure 6 then depicts the nested conceptual spaces of service imagery that connect value constellation and network actor behavior by exhibiting the vertical issue dependence nested relationships as well as the horizontal enabling or accessing actor-value relationships.

To configure a value constellation network according to customer needs with a cooperation theme goal (i.e., value image represented by a meaning statement), a focal B can be obtained through recommending SMB candidates (i.e., other network actors). These other SMB candidates help collectively achieve the value image of meaningful resource integration when the business itself cannot make it alone. The alliance candidate set ($AC=\{V_{b1},\ldots,V_{bn}\}$) contains recommended SMBs (V_{bf}) to achieve its value image (GI).

The cooperation between the focal B and AC refines their service image to get closer to the value image using the greedy strategy, where an SMB in AC with is considered as the current best candidate to be added into the value constellation network if the joined service imagery is closer to the value image.

In other words, the focal B may fulfill only part of the value image, but not well enough originally. When the focal B cooperates with one of the SMBs in AC, their combined service imagery is closer to the value image. Thus, the value constellation network formed by the focal B and AC through value co-creation is based on service refinement instead of on pure resource integration. To configure the value constellation network for using AC, the focal B needs to know the effect of each SMB on AC for achieving GI is

Figure 6. Nested framework for value constellation and network actor behavior using service imagery



different. Therefore, in the beginning, the contribution of goal achievement should be calculated to rate the importance of each SMB in AC.

To implement the configuration, the mechanism presumes the existence of each network actor's image model, which can be built and dynamically evolved according to the continued customer feedback and feelings about products, services, and experiences of the network actor. The main steps to configure the value constellation network are then outlined below:

Identify the value image of cooperation theme goal.

For a focal B, the cooperation theme goal is the intended service experience in the form of a short meaning statement (e.g., happy paradise, childhood memories) that would be converted to a set of psychological image attributes (i.e., trajectory image).

Identify the gap image between the trajectory image and the current image of the focal B.

This is to identify if there are trajectory image attributes that have exactly the same or similar meanings as the adjectives in the image model of the focal B. These image attributes are then regarded as the gap image that is also represented as a set of psychological image attributes (i.e., strategic image).

Search for the possible cooperation candidates for the alliance.

Assuming there is a database with records related to the business images, a list of possible candidates that have the potential to close the gap of the strategic image should be generated.

Evaluate the possible candidate sets.

Evaluate the possible candidate sets based on their image similarity to the strategic image.

Configure each candidate set into a service value network.

The business and the selected candidate set should be configured to a value constellation network in order to achieve the value image through the integration of meaningful resources.

As follows then further detail the aforementioned steps. Firstly, it is about theme goal comprehension. For example, the theme goal "paradise" should be analyzed before identifying its latent meanings. After that, the best partners to collectively accomplishing the goal can be identified. In order to comprehend metaphors, a business (the target) offers services that are just like paradise (the vehicle), the mechanism adjusts the web-driven, case-based approach, which is called the Sandonicus approach (Veale & Hao, 2007) to do the comprehending.

This approach leverages the text of the web as an abundant learning source to recognize what properties are most contextually suitable to apply to both sides, the target, and the vehicle. This approach utilizes the Google search engine as a retrieval mechanism for finding properties of words by using

Google-supported APIs, which can search for a wildcard term * for any possible words. For instance, if a query such as "* as paradise" is sent to Google, it may get a series of words, such as beautiful, gorgeous, and wonderful. This infers that paradise can be beautiful, gorgeous, and wonderful. All the more explicitly, these words can be regarded as the properties of paradise. The mechanism handles these properties as the meaning of paradise.

To stay away from undesired outcomes, for example, the sentence pattern "* as vehicle" in Google, the mechanism has an exception in the word list. Also, just the positive adjective words are used to describe the goal on the grounds that only positive aspects of the goal are viewed as significant in building good images in terms of leveraging SentiWordNet to keep only the positive adjective words in the results (Baccianella et al., 2013; Esuli & Sebastiani, 2006).

Then, gap identification gets the missing piece of the current images for the business to accomplish the goal. During the comparison process, a semantic similarity analysis is conducted to assess how close the meanings of two words are given that the image's elements are adjectives. The mechanism utilizes DISCO (extracting DIstributionally related words using CO-occurrences) to retrieve the semantic similarity between arbitrary words (Kolb, 2008) and yield a semantic similarity score. A higher score demonstrates a higher semantic similarity. In the event that any of the needed images cannot be found among the current images of the business or among the current images with a high level of similarity, such image would be regarded as a gap image. As such, gap images are those which cannot be fulfilled by existing images.

Candidate generation attains possible partner lists. The main components of this process include metaphor generation and candidate discovery. The gap images recognized before, hereafter referred to as "supertype", are utilized to generate a set of new metaphors. These metaphors are then analyzed by the metaphor comprehension process to guarantee each generated metaphor makes sense and then each metaphor can likewise be anticipated to have specific business types of potential cooperation. When these candidates are identified, goal fulfillment analysis is executed to guarantee that the candidates are cooperating and can achieve the focal B's goal. In this way, the process recognizes a set of businesses suitable for cooperation.

The fundamental thought behind the procedure is to produce new metaphors that best portray potential partners. For instance, if a new metaphor is generated like "your partner is as wonderful as a flower", the mechanism endeavors to discover a partner who can be best described as a flower. Metaphor usage in design problems is mainly about analogy inspiration. Applying analogies

to the design field can offer a heuristic problem-solving technique where a problem-solving method can be extended to another new problem.

In this mechanism, the Sandonicus approach (Veale & Hao, 2007) is extended to generate metaphors with multiple properties following a three-stage process. In the first stage, each property is put into the sentence "as property as *" and separately sent to Google search. Different sets of words are then returned. In this stage, different words (i.e., vehicles) with a given property are the new metaphors produced. In the second stage, the mechanism uses the metaphor comprehension technique to uncover the properties of the vehicles. Subsequently, a set of vehicles are produced and the properties of each vehicle are recognized. The essential criterion used to locate the most fitting vehicles are the properties of the vehicle that contain as many gap images as possible. In the third stage, the vehicle containing the most gap properties is picked, thus filling in as the new metaphor.

After a set of metaphors are created, the candidate discovery component at that point tries to match the metaphors to real companies. If a new metaphor such as "your partner is just like a flower (vehicle)" is created, the component tries to discover which business entity is most like a flower. Candidates are evaluated by the similarity level and property fulfillment of the vehicles. At last, the candidate discovery component disclosures potential companies for cooperation.

For each matched business, the mechanism computes the level of goal fulfillment. Since the goal of an SMB is to pass on and spread a particular image through the aid of cooperation, it is necessary to predict the anticipated effect of cooperation when different partner compositions are formed. Therefore, image model mixing is used to integrate the image elements of two image models and form a new one. For each new image model being formed with respect to its partner composition, an image model similarity analysis can then be conducted, leading to the identification of fulfilled images after the partner compositions are examined. For each new image model, a goal fulfillment score is calculated according to the following formula.

$$\text{Theme Goal fulfillment score} = \frac{\text{the number of goal images that can be fulfilled}}{\text{the number of goal images}}$$

The denominator is the number of goal images and the numerator is the number of goal images that are fulfilled. A higher score demonstrates a higher level of goal fulfillment, and the value is in the range of 0 and 1. The output

of the candidate generation module is then composed of the candidates with the highest goal fulfillment scores.

With the partner choices generated, niche assessment is conducted to choose which partner set is proper for cooperation. Niche assessment includes attractiveness analysis and uniqueness analysis. Attractiveness analysis estimates consumer desirability and uniqueness analysis evaluates the degree of differentiation (Yu, Ksel, & Akgu, 2007). The genuine implications behind the attractive and unique analysis components are to assess how appealing or special the anticipated images are for potential new alliances. That is, the mechanism needs to estimate the attractiveness and uniqueness of the image configuration of a new alliance when a new partnership is built. Hence, the attractiveness score is computed as in the following formula. In simpler terms, the formula calculates the percentage of customer preferences that can be matched in a new alliance image model.

$$\text{Attractiveness Score} = \frac{\text{the number of matched image models}}{\text{the total number of customer image models in the system}}$$

On the other hand, uniqueness means the degree of image differences between a new alliance and existing business entities (Cracolici & Nijkamp, 2009). An alliance image model is judged as "unique" when its image configuration generously differs from those of other image models in its designated business region. That is, uniqueness analysis examines the variation between the new alliance's image model and the present businesses in a given region, while attractiveness analysis estimates the number of customer image models that are like the new alliance's image model.

To address the degree of differentiation between the existing business image models in a business region and the new alliance image model, dissimilarity indices are calculated to compare various business image classes. The following dissimilarity index formula demonstrates the level of divergence between two given image models.

Dissimilarity index of a new alliance image model A in the business cluster

$$j = \frac{\sum_{i=1}^{\text{the number of image elements}} \left| \text{AIntensity}_i - \text{Intensity}_{ij} \right|}{2}$$

Note: $AIntensity_i$ = the intensity value of the image element i in the image model of the new alliance; $Intensity_{ij}$ = the intensity value of the image element i in the image model of the business image cluster j

The formula of the dissimilarity index is the sum of the intensity differences of the same image elements between two image models divided by two. To reach a conservative estimate, the uniqueness score of the new alliance's image model is set as the minimum value of the dissimilarity index among the different business image classes.

In light of the attractiveness and uniqueness scores being calculated, the alliances are positioned into five categories as 5 (TOP 20% among all businesses), 4 (TOP 21-40%), 3 (TOP 41-60%), 2 (TOP 61-80%), and 1 (81% -100%). By evaluating the niche of each possible partner composition, this model can recognize novel partnerships with high desirability and differentiation.

To reduce the large number of calculations in a niche assessment, image clustering can be conducted, such as SOM cluster analysis (Kohonen, 1990; Samsonova et al., 2006) being adopted to cluster both the needs of tourists and the images of SMBs. After image clustering, the characteristics of several identified clusters need to be examined when computing the uniqueness (it does not need to compute all the data entries in the database).

A brief example to illustrate this scenario would be if an SMB (being an agritourism service provider) wants to build an attractive and unique image for customers through the effort of cooperation in its region. First, the SMB provides a goal image in the form of a metaphorical statement to iVoyage (e.g., "just like a gramma's house in the countryside"). This image represents the feelings of pastoral, nostalgic, and boisterous with respect to the region's local culture. Second, through the goal comprehension process, the metaphorical statement is comprehended and the gap was identified as the elements (e.g., the feelings of nostalgia and boisterousness). Third, the metaphor generation and comprehension processes are executed to generate multiple vehicles that can be delineated as nostalgic and boisterous, and those vehicles would be mapped to real business entities. It is at that point a set of possible business entities are generated (e.g., an ox-wagon transportation service and Hakka traditional beverage service). Then, the goal fulfillment analysis is conducted to inspect how the various sets of recommended alliance partnerships differentiate from each other in fulfilling the goal of the SMB owner. Fourth, iVoyage evaluates the levels of uniqueness and attractiveness of the candidate alliance partnerships. At last, the alliance partner recommendations are produced with scores as depicted in Figure 7 (Yuan et al., 2015). Further,

Figure 7. Theme-based alliance partner recommendation

the focal SMB can set rules about autonomously determining the choices of the recommendations in accord with the incoming requests.

In short, this computing metaphor mechanism has the ability to facilitate the theme-based alliance for the partner selection process and assess customers' needs at the same time. The evaluation results show that the mechanism can help SMBs improve their levels of theme goal achievement in image building, especially in the tourism region with a high level of diversity. The image diversity of a context affects goal achievement and attractive, unique image building. The growth of uniqueness is better in a low diversity context than in a high diversity context, while the betterment of attractiveness in a high diversity context is more prominent than it is in a low diversity context.

A partial explanation for this may lie in the fact that a business in a high diversity context is as of now unique enough. In a high diversity context, the coverage of images within different businesses should be more noteworthy than it would be in a low diversity context. When comparing the images of new alliances, a couple of contrasts among the images of the current business may emerge. Consequently, this makes it challenging to additionally improve the uniqueness given that the businesses are already unique. Furthermore, if a business is really unique, new images increased through alliances that introduce missing elements for goal achievement might decrease the previous intensities of its unique image elements. It is worth noting that context diversity is not the only factor affecting the level of uniqueness. For instance, if the

images created are already normally seen, it ends up more difficult to build unique features through a common goal. That is, theme goal setting matters, particularly when the goal is very common.

In summary, the design of the aforementioned digital operants about dynamically generating value network partners for ecosystem flexibility showcases the required capabilities of developing the desired theme experience with diversity and dynamic alliancing of high business potentials, which are addressed in some POV/HMV statements of the RTD running scenario.

DIGITAL ARCHITECTURE DESIGN

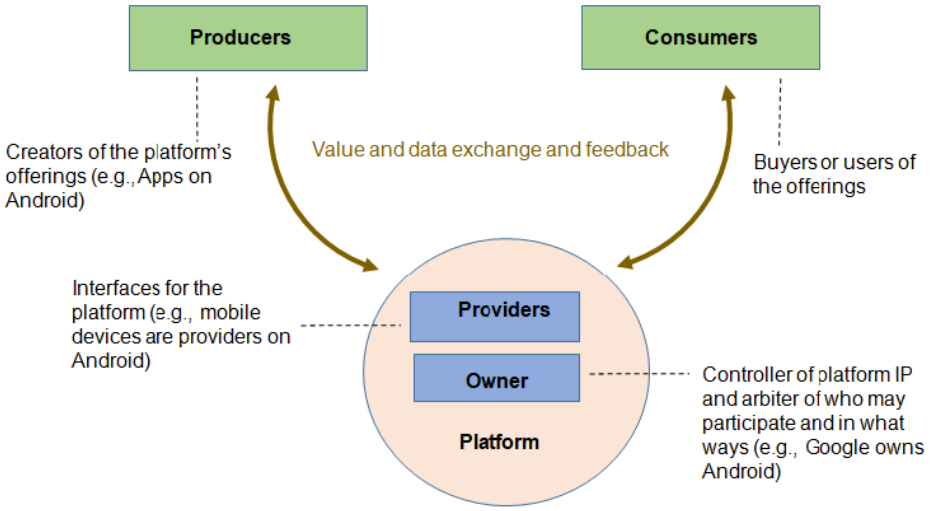
Digital architecture design refers to the strategic choice of a proper digital architecture in support of the dynamic configuration of digital operants and ecosystem actors to co-create the high-value in a timely and cost-effective manner. This strategic choice is crucial and depends on a focal B's business objective priority. That is, it concerns how open the involved ecosystem stakeholders' benefits exchanges could be enabled and facilitated in light of the centralized architecture (e.g., platform-based) and is usually less open than the decentralized one (e.g., blockchain-based).

Service Platform Architecture

A "platform" is a general term in many areas. Nowadays, the term is used to mean many entities in parallel positions interacting with each other to accomplish an explicit objective (Hung & Yuan, 2014). The term platform is used to catch the reality of a physical or virtual space in which many entities are grounded, communicating, and collaborating with each other to support the development of these entities. Further, platforms are consistently changing through structural changes and other outside forces toward more growth productivity. Service platforms of a centralized architecture such as Uber, Airbnb, and Heal intend to deliver end-to-end services that are fulfilled by a system of autonomous specialist service providers, coordinating discovery, order, installment, fulfillment, accreditation, and affirmation of the service under one roof (Platform Hunt, 2016).

For service platforms, price and quality norms and the fulfillment processes are centrally set by the platforms, which determines how the customers choose the options for the services being delivered and by whom.

Figure 8. On-demand service platform framework



Any service platform has an ecosystem with a similar fundamental structure (Figure 8), comprising four sorts of participants (Hagiu, 2014): (1) owners of platforms control the intellectual property and the platform governance, (2) providers fill in as the platforms' interface with consumers, (3) producers make the offerings, and (4) consumers utilize the offerings.

Service platforms create value primarily by enabling direct interactions between two or more participant groups. Popular examples of service platforms and the participants they link include eBay, Taobao (linking buyers and sellers), Airbnb (linking dwelling owners and renters), Uber (linking drivers and passengers), Facebook (linking users, advertisers, third-party game or content developers and affiliated third-party sites), Apple's iOS (linking application developers and users), and so forth.

Different from supply-side economics, businesses attain market power by controlling resources and increasing efficiency to ward off challenges. In this case, service platforms are characterized as the demand-side economies of scale (i.e., network effects). These are achieved by using technologies that bring efficiency to social networking, demand aggregation, and app development that assist in expanding the ecosystem network. With a higher volume of participants than competitors, it can offer a higher value for every exchange interaction because the bigger the ecosystem network, the better the matches between supply and demand and the richer the information is to

discover matches (Hagiu, 2014). The renowned examples include Alibaba, Google, Facebook, and so forth.

An additional important issue to tend to is a service platform productivity. Productivity originally meant the ratio of output to input, and it is a simple method and very suitable for manufacturing productivity. In the current service era, aside from the commonly mentioned efficiency, effectiveness, and service quality, service productivity could also be extended to cover the impact of innovation and growth to industrial productivity.

For a service platform, there are three important factors that could be used to manage the platform for higher service productivity. They are empowerment, adaptation, and sustainability (Hung & Yuan, 2014). Empowerment enhances the ability of each entity through the service ecosystem in which they are located. Adaptation leads to structural adjustment among entities for reacting to inside and outside forces. Finally, the service platform can support an ecosystem to eliminate unqualified entities and attract new blood to achieve sustainability. Also, vitality and diversity are two important mediators, and these relationships connect factors as an integrated mechanism. Vitality refers to the extent to which the owners of operant resources and empowered resources, intend to search for opportunities to connect to others in a service system, creating new or more value. Diversity then indicates the extent of divergent thinking on business idea generation that often impacts the ecosystem's long-term evolution and short-term growth.

If the choice of a service platform architecture is made based on a focal B's business objective priority, the issues of empowerment, adaptation, sustainability, vitality, and diversity have to be completely planned, developed, and deployed by the focal B to enable and facilitate the exchange of benefits for ecosystem stakeholders.

The RTD Running Scenario

This section continues using iVoyage as an example of destination tourism to demonstrate the digital architecture design of the service platform (Yuan et al., 2015; Yuan & Yang, 2017).

iVoyage is a B2B2C type of service platform to energize the tourism destinations that are rich in culture, activity, and information. iVoyage empowers three types of stakeholders. For regional SMB service providers, iVoyage empowers them in terms of automatic image modeling and the provision of recommendations of alliance partners to create innovative services

Figure 9. Capabilities of the iVoayge service platform

Platform capabilities	Service Features	B user needs	C user needs	G user needs	
Image modeling	Relieving Enabling	Make images (content, event, story, context)		Easy regional tourism establishment & maturity management	iVoyage - Value in Use
Energizer	Energizing	•Make stories •Make differentiations •Creative marketing			
•Alliance recommendations & value network assessments •Diversity measurement	2.0 relationship Scheduling	Make alliances			
Capacity/tangible resources management	Sheltering	Easy revenue/inventory management			
Trust	Uniqueness/feasibility/sustainability/reputation				
UI	Good UI design	High reach of C users			
Extranet	Connecting external ecosystems			Linkage to regional tourism associations	

Figure 10. iVoyage's digital architecture

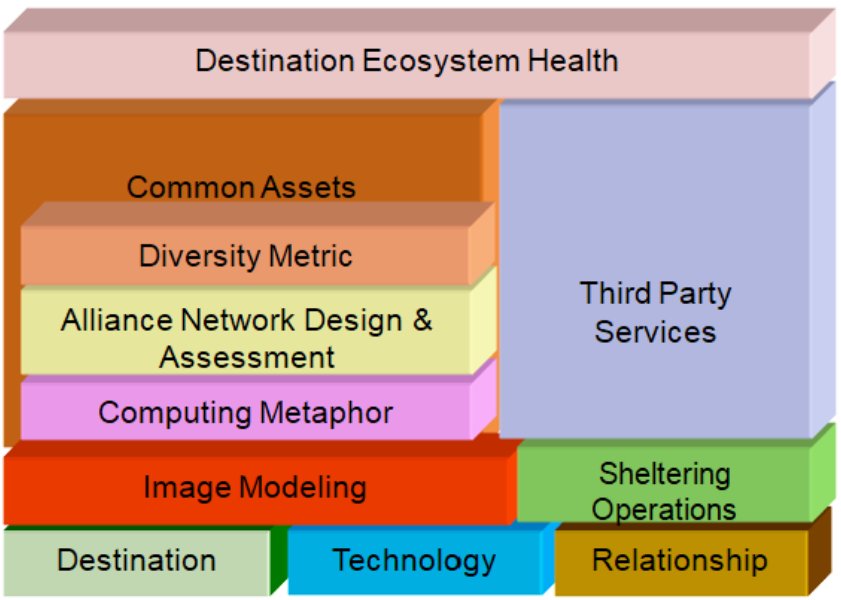
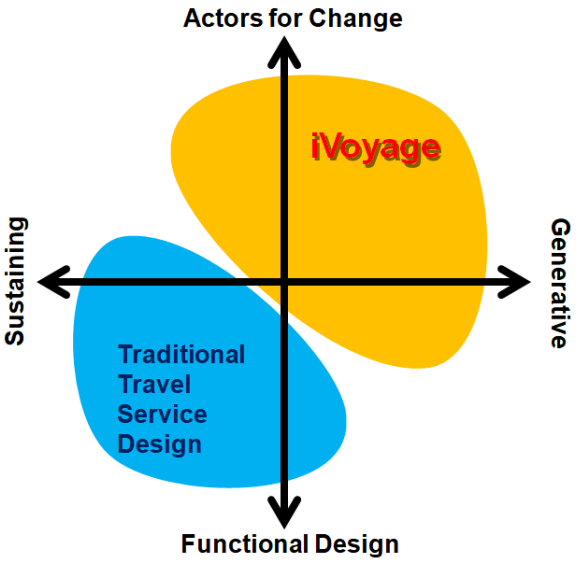


Figure 11. The design purpose of iVoayge's service platform featuring the delivery of a master-level of performance individually and collectively



with unique and trustworthy images. For tourists, iVoyage empowers them in terms of personalizing their tour service selections based on their multimodal imaginative and emotional inputs. For regional destination owners or governors, iVoyage empowers them in terms of the destination's innovative attractions and diversity management. That is, iVoyage can empower the stakeholders to position themselves best in the value chain in terms of those best able to manage the flow of information to and from the customers as well as to and from all the actors involved in the bundle of the tourism products offered (as depicted in Figure 9).

Figure 10 shows the digital architecture of iVoyage's service platform, within which imagery values serve as a means to "concretize" the essence of a theme-based service provision using digital operants such as image modeling, computing metaphor, alliance network design, and assessment together with the other relevant supporting operations and activities. That is, an imagery value can drive the design and development of a service ecosystem through the platform's technology.

In summary, the design of the iVoyage's service platform aims to empower the stakeholders to relieve, enable, shelter, and energize the development of regional tourism in terms of the generative empowerment for ecosystem actors

to make changes, while benchmarking against traditional approaches depicted in Figure 11. In addition, this platform's design features the delivery of a master-level of performance individually and collectively from the perspective of evolutionary economics that are to be detailed in the following section.

Evolutionary Economics of RTD Ecosystems

This section details the evolutionary logic behind iVoyage with which the value-creating systems can dynamically evolve in response to market changes in terms of continuously improving the competency-customer fit through meaningful resource integration as addressed in Figure 6. The evolutionary logic behind iVoyage characterizes how integrated decision-making in the context of the service imagery and service experiencing processes can be unfolded within the evolving of service economic systems toward sustainability (Hsieh & Yuan, 2012).

It is important to increase fluidity for benefits in resources and recyclable waste for a value constellation network to increase its value creation. To represent a product or service for an economic activity, input resources and materials should be transformed into an output product or service with other balances. In contrast to Goods Dominant Logic (GDL), Service-Dominant Logic (SDL) considers that the value of a service lies in a collaboration involving both the providers and the consumers (value-in-use), rather than simply the creation and delivery process from the producers to the customers (value-in-exchange) (Vargo & Lusch, 2004, 2008).

To relate MBP to SDL, materials and resources in an economic system could be classified into operant resources (e.g., knowledge, skills, and capabilities)

Figure 12. Input and output of traditional economic activities

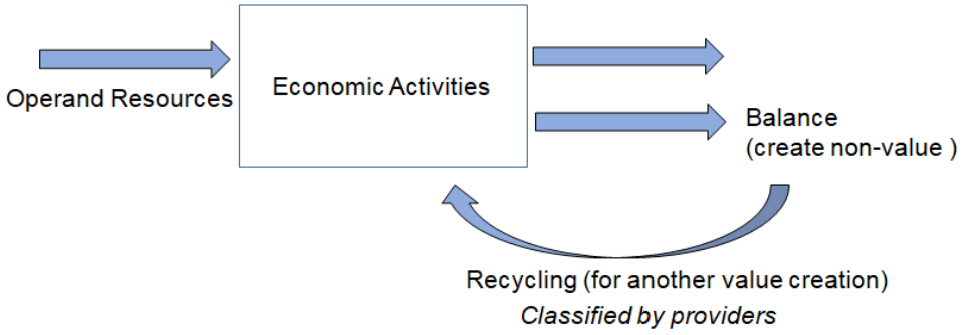
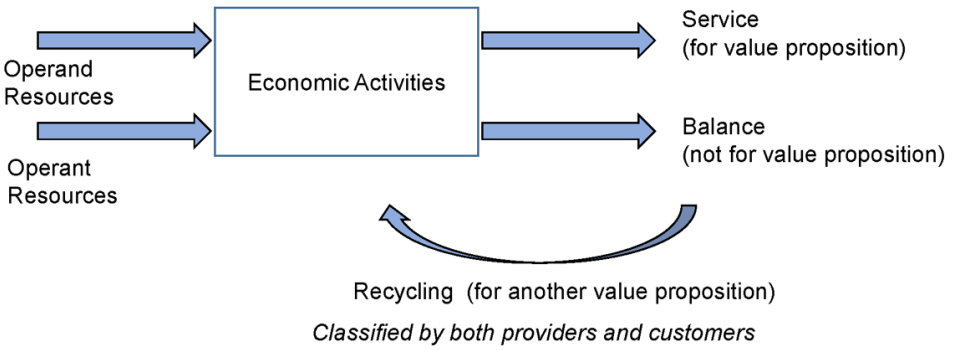


Figure 13. Input and output of economic activities under SDL



and operand resources (e.g., mineral, oil, or gas). SDL also indicates how the value of outputs from economic activities are determined by customers since the true value of an output cannot be precisely estimated before being experienced by customers. Therefore, in the context of MBP, an economic system evolving from GDL to SDL could be represented in Figure 12 and Figure 13 (Hsieh & Yuan, 2012).

The balance and recycling part indicated in Figure 12 and 13 could also be interpreted differently. In a service economic system, because the input part consists of both tangible and intangible resources, the output in the balance part could have both tangible and intangible forms. When businesses recycle their balances from their output, another value proposition could be created for themselves or other businesses. For example, oil companies drill for oil, which is viewed as an operand resource, to produce gasoline for cars and create value. Gasoline is viewed as a product in GDL. The production of gasoline inevitably separates asphalt and other materials in the balance part. For creating additional value, oil companies sell asphalt to other manufacturers for road construction.

In another example, food service is the integration of both operand resources (e.g., ingredients) and operant resources (e.g., cooking skills and environment atmosphere). In SDL, food service creates value only if customers satisfy the entire service. In this sense, the entire food service may not satisfy every customer due to differences in taste. If the dessert in the entire set does not fit some customers' tastes, it may create non-value. However, this dessert may be liked by customers in other service sets or sold separately. In other words, customers determine the value of service in different contexts. The balance part in GDL and SDL differs in terms of who classifies the balance

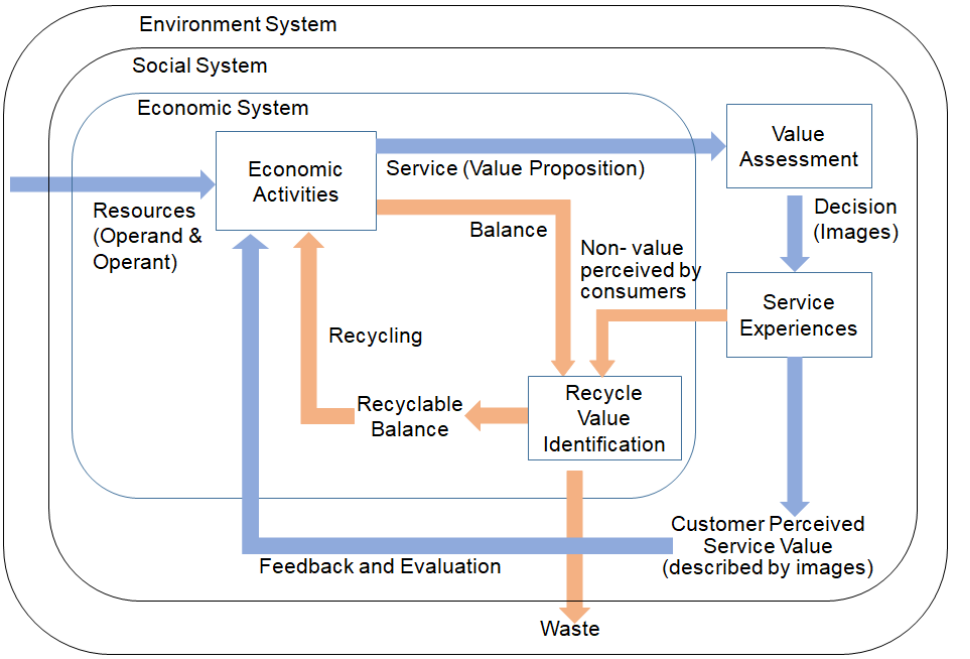
from the output (producers in GDL and producers and customers in SDL). Additionally, the recycling value of the balance part also follows the same logic as the determination of the balance part.

To extend Figure 13 to relate to not only the economic factors but also to the social and environmental aspects, Figure 14 shows the extended framework to depict the evolution of service value, which is characterized by continuously improving the competency-customer fit through meaningful resource integration. Both operant and operand resources are consumed by economic activities and output the service value and balance at the beginning. The balance refers to things not considered in the inclusion of the service provision (e.g., waste produced during cooking), and after service delivery, customers will assess the service values. According to image theory, before the decisions are made by customers, service value is evaluated through customer images. This process concerns not only monetary value in economic systems, but also value from a psychological perspective related to the interactions with other people in the social system. Service value and non-value balance could then be identified following the service experience.

All non-value balance that is filtered out by the provider and customer could be collected for recycling. The recyclable non-value balance can be described using images to mark its potential value using the customer's psychological perspective that considers diversity, selection, innovation, and bounded rationality. By identifying the potential value of the balance, the provider could create another value proposition themselves or share the balance with other partners. The balance may have tangible (e.g., residue during production process) and intangible forms (e.g., knowledge and skills); or, it might be useful in other contexts. For the value network interconnected in economic, social, and environmental systems, resources and capabilities are recycled and discovered from the balance and could add diversity to the whole system. The benefit of the potential value identification encourages the recycling process and the efficiency of the entire economic system could then be increased.

Additionally, from the customer's perspective, customers in economic systems give monetary value to exchange the output from economic activities. The social and environmental systems in which customers live could also affect the value evaluation of the output from economic activities. Therefore, both the customers' and the related stakeholders' service experiences could become useful references when determining the service value from economic activities. However, a service's value in use that is perceived by customers in social systems is determined not only by the functional values but also by

Figure 14. Evolutionary logic framework of value-creating systems for increasing value creation



the psychological and emotional values to meet customers' needs (Sandstrom et al., 2008).

That is, the service value could be the results that the customer perceives from service experiences, and the role of the psychological aspect from social systems in the shift from GDL to SDL should also be considered when producers and customers classify and recycle the balance value. Interactions among customers will create new needs in the whole service system. Resources for the former value proposition may be reallocated to satisfy the new needs from customers and a new balance will result from this process. Under this circumstance, both the consensus of service value identification in social systems and the activities in economic systems are evolving with the increasing diversity of the environmental system. Accumulations and integrations of the value evolution in the long term may influence human society and what is inherited by future generations.

In this evolutionary logic framework (Figure 14), service value assessment for service and recyclable balance from the customer's perspective is based on images. Cooperation in a value constellation network consists of businesses

for service propositions and their provisions can be formed on the foundation of images such as the images that the service wants to provide for customers (Hsieh & Yuan, 2012). Consequently, businesses are able to develop their own value constellation networks that correspond to customer needs through image combination. In addition, businesses can consume materials from the natural environment more efficiently, so the environmental impact of business development could be reduced. A better balance between the environment and business development can thereby be achieved through the conceptual framework of the value evolution of service systems.

In this sense, there could be three arguments behind the evolutionary logic framework. The first is that the development of a value network for value creation evolves alongside economic, social, and environmental systems. The second is that customer service experiences are the references for configuring value constellation networks. The third is that the service imagery approach can positively influence a customer's perceived service value following their service experiences.

For the first argument, MBP includes only economic and environmental systems. Since the value of products and services from economic systems could be influenced by the understandings of ethics, morals, laws, knowledge, cultures and so on, social systems cannot be ignored with the shift in value determination from producers to customers. Changes in human cognition in a social system could also influence human behavior, decision-making, and value assessment. Therefore, the development of a value constellation network for value creation should also involve social systems.

On the other hand, customer service experiences are assumed to be the references for businesses to allocate their resources for configuring their value constellation networks. Their network images could positively affect how customers perceive service value following service experiences. The latter two arguments indicate that the resource consumption by a single business for value creation may not be as efficient as cooperative services of value constellation networks involving multiple businesses (i.e., a focal B together with its alliance). In other words, a single business may create less value and more non-value than cooperative services of value constellation networks. Cooperative services may recycle the non-value parts and identify recyclable value through the appropriate value constellation. In other words, the concept of service imagery can serve as the vehicle for configuring the service system entities that continuously improve the recycling process and the efficiency of the entire economic system, thus increasing the benefit of the potential value identified.

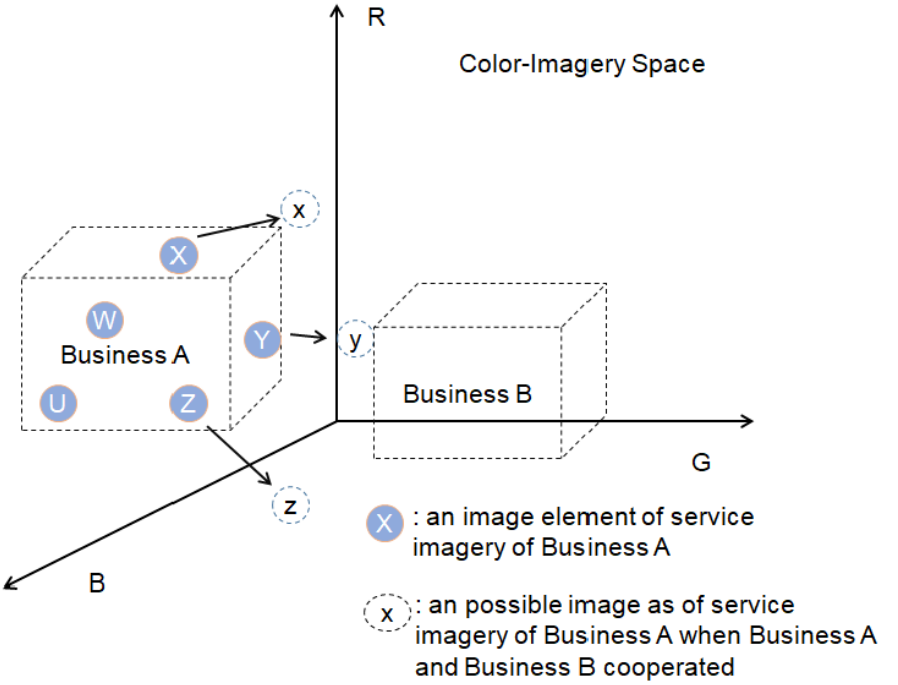
In short, service imagery can contribute to the design of service economic systems using diversity and innovation to increase the value creation of value constellation networks. In addition, service imagery could also improve the service productivity of an economic system in terms of effectively transforming a variety of resources to service productions, perceived service outcomes, and qualities and utilization capacity of service processes (Grönroos & Ojasalo, 2004).

In addition, the balance part creates non-value and may be different according to different value perceptions from customers. For a specific service provision, the balanced output containing tangible and intangible parts is identified by different stakeholders. To recycle the balance and achieve sustainable development, the feedback from customers helps understand the value of balance. This means that when considering customer images as a way to assess service value in social systems, human needs should be taken into consideration in economic activities. Customers become operant resources to better integrate economic and social systems. Accordingly, a value constellation network consisting of businesses for service propositions and provisions can be formed on the foundation of images (i.e., the images the service wants to provide for customers).

Furthermore, the service imagery approach has two important properties: service imagery diffusion and service imagery generalization. For the diffusion of service imagery, a regional tourism SMB seeks partners to fulfill a service design challenge identified from their customers, and the cooperation realized by the service imagery approach may diffuse image elements of the service imagery for the SMB, as depicted in Figure 15 (Hsieh & Yuan, 2012). This is because the service imagery resulting from customer service experiences for the entire service journey may influence the entire service value network.

In other words, the SMB cooperating with others may create a new service imagery based on customer experiences influences its original service imagery. Therefore, when the SMB is an active service provider and takes on a value constellation network, the synergy of the network may help businesses achieve or find new service imagery as a new position in the tourism region. On the other hand, a service provision or journey from business cooperation might be viewed as a whole from the customers' viewpoint for the value propositions. That is, this co-created value of B2B cooperative relationships is still determined by the customer interfacing B2C relationships; non-customer interfacing enables businesses in a value constellation network to receive some passive changes to their service imagery. The essences of service imagery and its diffusion, therefore, enable the potential innovation of operant resources

Figure 15. Diffusion of service imagery

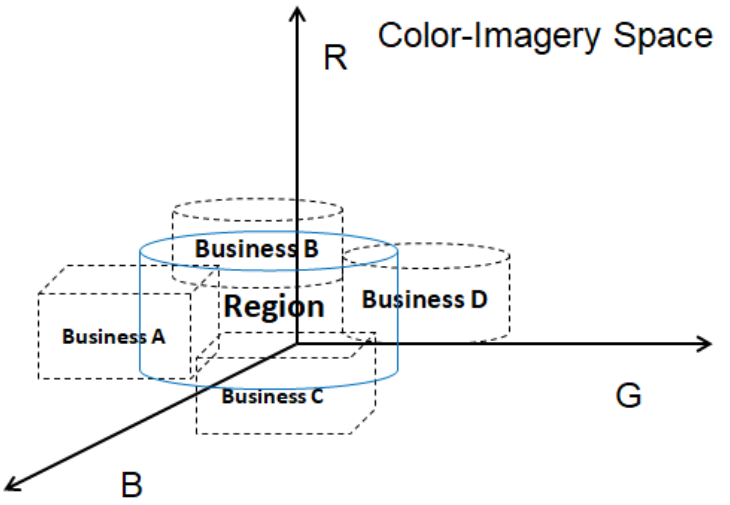


of the SMB. The SMB can also learn how to apply its operant resources in different ways through changes in service imagery.

For the generalization of service imagery, in tourism, the destination image of a region can be viewed as the generalization of different images from economic, social, and environmental perspectives and from different stakeholders' viewpoints, as depicted in Figure 16 (Hsieh & Yuan, 2012). The service imagery of businesses influences the entire image of a region. Therefore, service imagery can scale up from services to service providers, and even to the region of service providers. The process of the scale-up of service imagery can be viewed as a service imagery generalization that is the result of value co-creation in the tourism region. A tourism region may be famous for its environment and culture. Businesses in this region may thus utilize the environmental and cultural resources for their service design, and the development of the business becomes an inseparable part of that region.

Every unique service experience for service imagery creation from a customer's interactions with regional businesses and the region can be accumulated and contribute to destination image building. The primary service

Figure 16. Generalization of service imagery

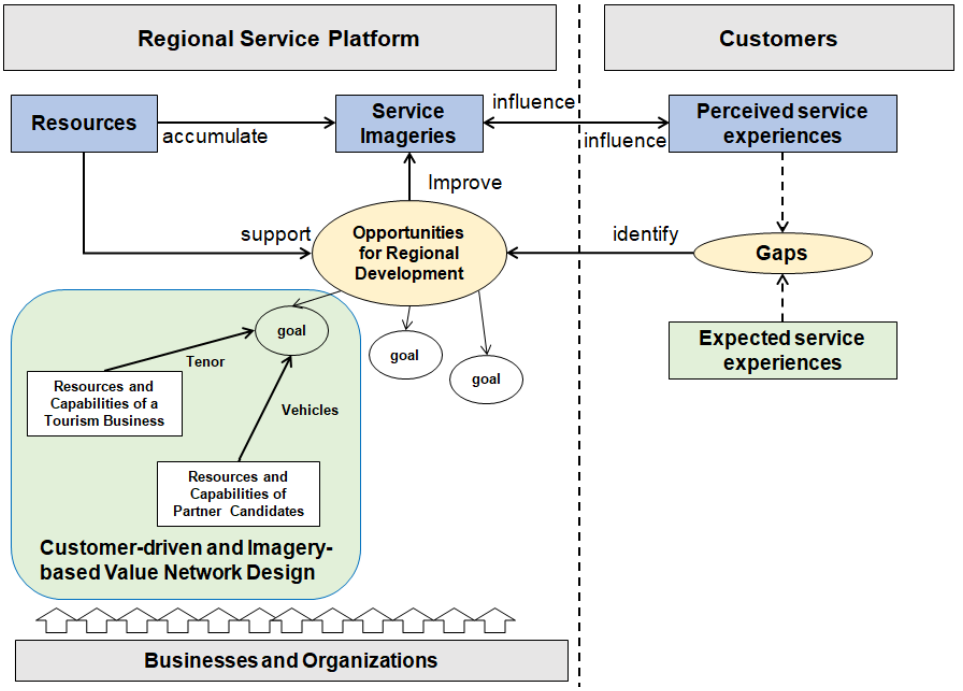


features of a region can then be represented by service imagery obtained by generalizing the service based on all the interactions taking place in its regional economic system. That is, service imagery can be viewed as a primary service feature representation for the region. The meanings and contents of service imagery can be assigned from the business, social, or cultural perspectives. Then, by integrating the diverse contents, service imagery can contribute to the representation of results for value co-creation.

In addition, the service imagery approach can assist regional tourism development, as depicted in Figure 17. This is done by bridging the gap to understand, discover, and design appropriate and innovative service value propositions for customers and by reviewing customer feedback on services and regional development goals (Hsieh & Yuan, 2012). By accumulating knowledge from the interaction with customers using service imagery, highly productive and innovative growth value networks can be formed for a developing region.

The tourism region and destination images can be modeled and managed separately by a regional service platform and service imagery. Tourism businesses develop their services using the resources from their own social and environmental resources. Destination images are formed from the service experiences of tourists. For the destination images accumulated from customer service experiences, the service imagery created from each co-created service can be used to describe the customer understanding of a region.

Figure 17. Service imagery-based regional development model

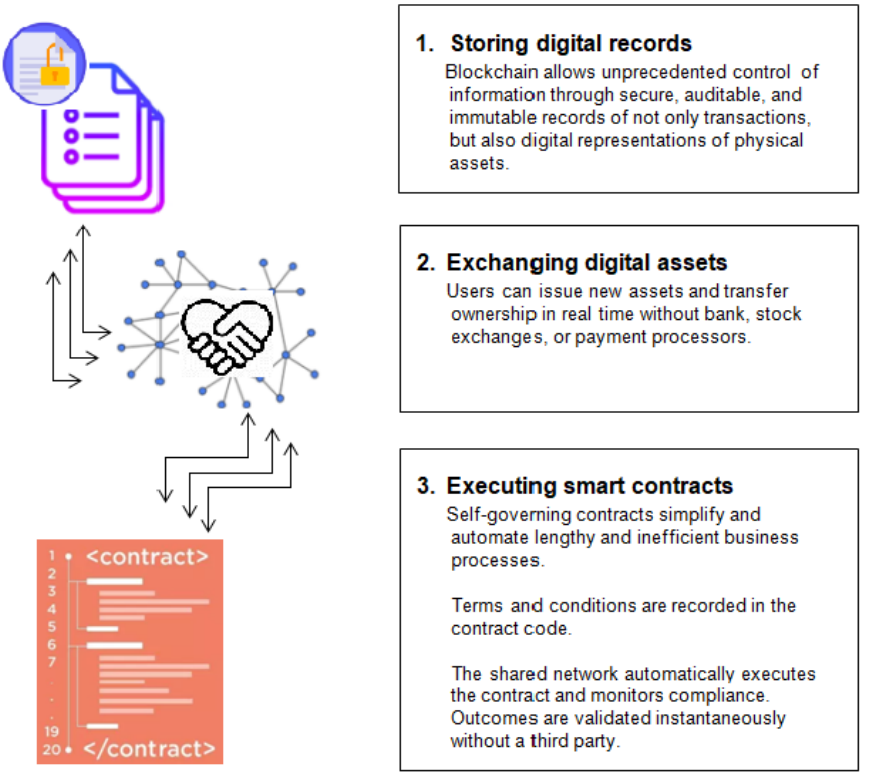


Further, in regard to the regional tourism application, it is believed that the service imagery approach could also have the potential to be applied to different service industries (e.g., creative industry in the CDD scenario) because it improves the knowledge of value co-creation results from the social-psychological aspect. As decisions on service value are shifted from service providers to customers, service providers could effectively review their value and trajectory image in order to improve their customer service experiences with the service imagery approach.

Blockchain Architecture

Blockchain is a digital architecture of decentralized networks that offers trustworthiness, transparency, and security, which are vital for many businesses, as depicted in Figure 18 (Piscini et al., 2018). The immutability and visibility of blockchain transactions are completely consensus-based and transparent. The automatic settlement mechanism enables the enforcement of contracts without gathering or middle-men controlling the procedure. Since data is

Figure 18. The elements of the Blockchain architecture



distributed across the network, no single entity can control the stream of data (i.e., distributed ledger). Decentralization additionally implies security is increased since data is not put away on a solitary server. This distributed nature of blockchain provides an unparalleled level of trust and any user of the blockchain system can also inquire transactions instantaneously (Piscini et al., 2018).

The blockchain technology can be applied to improve and solve a lot of important problems of businesses regardless of being B2B or B2C, in retail, advertising, entertainment or any other industry. Blockchain tends to be utilized when trust administrations are required by business applications to fabricate the basic trust foundation. Furthermore, utilizing blockchain can offer the possibility to diminish expenses and offers the opportunity for businesses to develop and maintain the infrastructure at lower costs than traditional centralized infrastructures. This is because multiple nodes in a

blockchain distributed network connect and act in a coherent and flexible manner in terms of smart contracts.

Furthermore, decentralized business models are increasingly popular In what is called the "sharing economy". However, these models still have aggregator platforms that control the data and the ecosystems, which implies an unbalanced apportionment of value among all participants. Blockchain can help democratize the value exchanges in sharing-economy businesses by eliminating the need for centralized aggregator platforms.

The following sections provide important elements of blockchain applications, such as Decentralized Autonomous Organization (DAO), smart property, and smart contract.

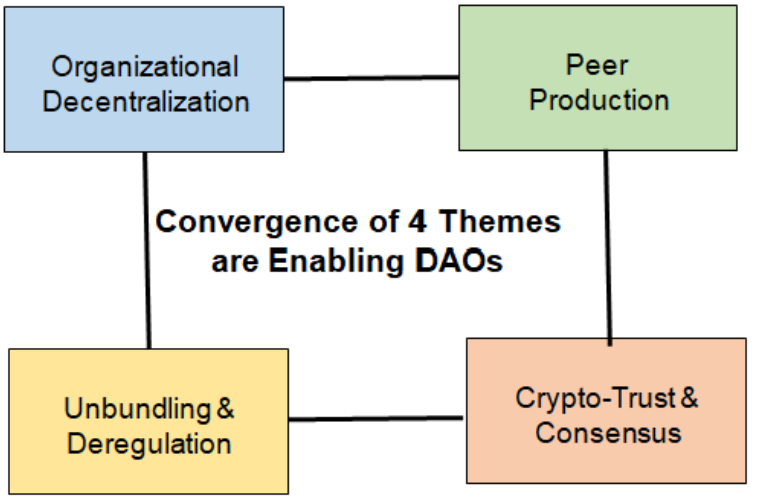
Decentralized Autonomous Organization (DAO)

The DAO is the value ecosystem in the context of blockchain. DAOs use long-term smart contracts that contain properties and encode the bylaws of an entire organization (Buterin, 2014a). A DAO can be activated by deploying it to the Ethereum, which is an open-source public blockchain-based distributed computing platform that integrates a Turing complete programming language with smart contract processing functionality (Jentzsch, 2016). What Ethereum intends to provide is a blockchain used to create smart contracts that can encode arbitrary state transition functions, allowing users to create any of the systems involving ownership transfer of properties, as well as many others that we have not yet imagined, simply by writing up the business logic in a few lines of code (Buterin, 2014b).

Multiple smart contracts can be bound together to form decentralized organizations that operate according to specific predefined rules and procedures in smart contracts. Multiple smart contracts are nothing more than a collection of contracts and relationships into reality (Wright & De Filippi, 2015). DAO is an idealistic convergent outcome of different themes (organizational decentralization, peer production, cryptocurrency-related technology, deregulation of crowdfunding, and unbundling of services), as depicted in Figure 19 (Mougayar, 2016).

Nowadays, many organizations have the ambition to provide an ecosystem that can be fully trusted by stakeholders, including customers, suppliers, or other corporate partners. However, the issues of transparency, unavailability, and untraceable can be hard to deal with, and the blockchain technology can solve these problems once and for all. Due to the characteristics of blockchain,

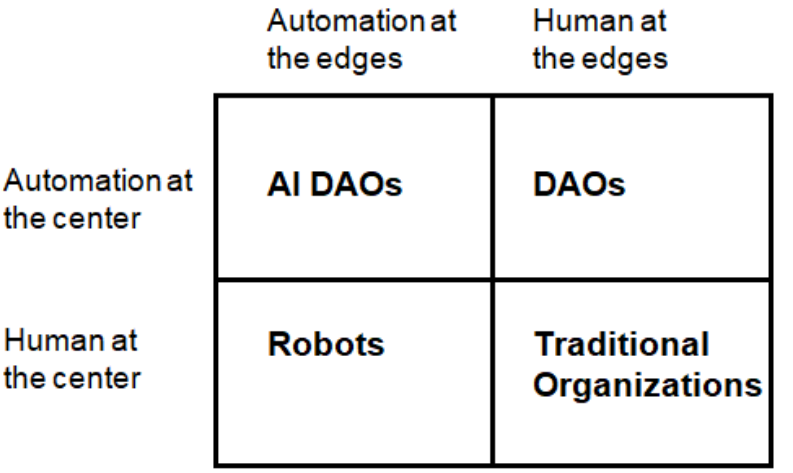
Figure 19. DAO features



it can become the most appropriate infrastructure for an ecosystem to build on. The stakeholders (who are willing to participate in this ecosystem) can provide their smart contracts (which define their obligations, rights, smart properties they own, and the value of the activities they provide), and synchronize these smart contracts with all the stakeholders inside the ecosystem in order to achieve consensus. Therefore, the ecosystem becomes trustworthy to all stakeholders. Further, the transactions made by the stakeholders inside the ecosystem are be executed by all the nodes that participate in this blockchain network, which makes it much easier to provide a high-availability service. Last but not least, all transactions executed are recorded in blocks and accessible to all stakeholders within the ecosystem, which makes it traceable for each stakeholder.

To further advance DAO, artificial intelligence (AI) can be adopted to improve future organizations (i,e, AI DAO). For example, AI algorithms can process the data shared on the blockchain to find the best possible decisions for shareholders. Buterin (2014a) addressed how to provide automation at the center and edges of a business to help it evolve from the "boring old organization" to the "holy grail" of an AI business. An AI DAO organization is completely autonomous, while a DAO still needs humans to prepare the smart contracts or special interactions according to the DAO protocol. In other words, automation is at the center and humans are at the edges (as depicted

Figure 20. The positioning of AI DAOs



in Figure 20) when benchmarking with traditional organizations, pure hard/soft robots, and DAOs (Buterin, 2014a).

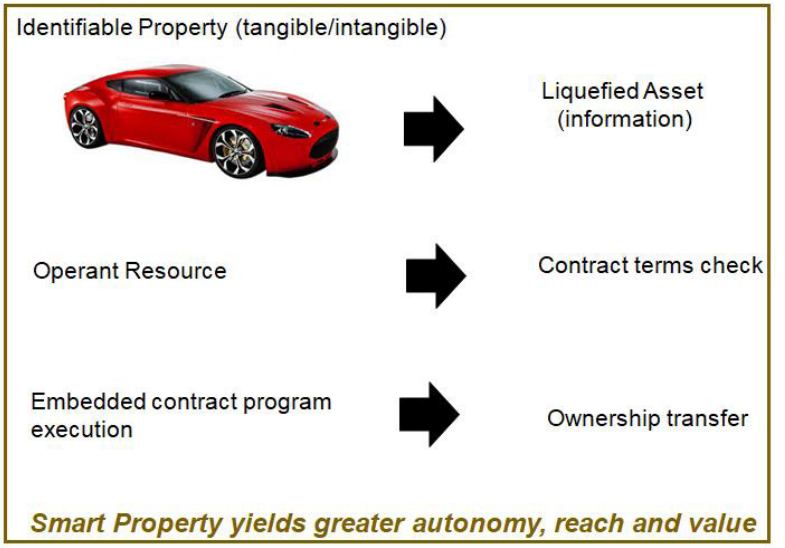
Smart Property

Blockchain can be used for any kind of asset utilization and exchange, including both tangible and intangible assets. Tangible assets could be physical assets like a home, car, or goods, and intangible assets are things like shares, copyrights, or patents. A blockchain-encoded property becomes a smart property if it is transactional via the execution of smart contracts (Swan, 2015).

Devices and other tangible property can be registered onto a blockchain and turned into smart property using smart contracts, which allows tangible property to be controlled over the Internet and by other machines (Wright & De Filippi, 2015). Different relationships and credentials could be encoded into the blockchain with regard to certain cryptographically activated properties (such as key locks or bank accounts) to ensure that only certain people own the access to the property's features at any given time (Wright & De Filippi, 2015).

In the era of the service or experience economy, service-dominant logic (SDL) and its foundational premises (replacing traditional goods and services with a view of value co-creation) propose some new perspectives on service innovation (Vargo & Lusch, 2004, 2008). SDL emphasizes operant resources (i.e., resources that are able to act on other operand or operant resources such

Figure 21. Example of loan against automobile collateral



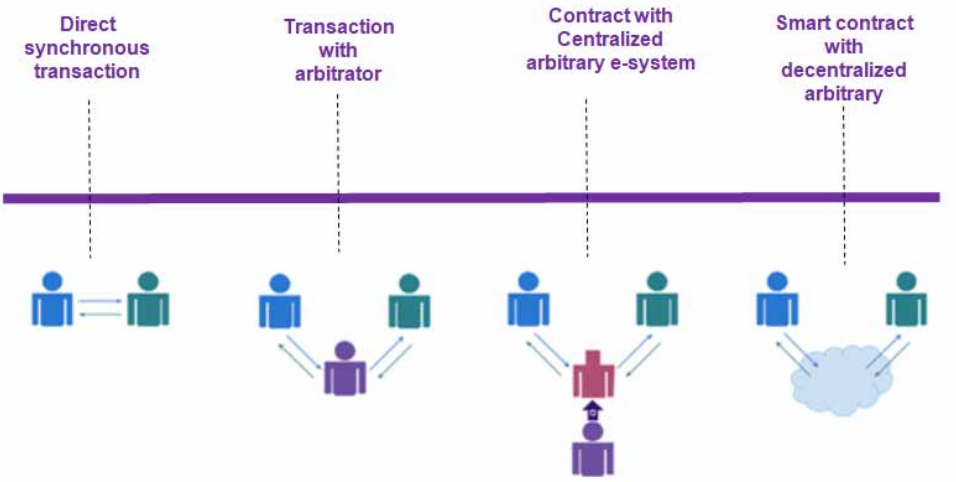
as knowledge, skills, and technologies) and value the co-creation of service ecosystem entities. Accordingly, smart properties are regarded as operant resources in the context of SDL to cope with the current era of the service and experience economy.

For example, when a loan is obtained using an automobile as collateral (Figure 21), an automobile can be a smart property characterized by being Internet identifiable (i.e., liquefied asset), an operant resource (i.e., resource that acts on other operand or operant resources), and is embedded with the contract program (i.e., the program that executes ownership transfer). The DAO enables the automated transfer of property ownership between the borrowers and the lenders without intermediaries in terms of the automobile operant's contract terms and in terms of the ownership transfer using the embedded program. Different from traditional collateral businesses, the DAO can yield greater autonomy, reach, and value.

Smart Contract

Smart contracts refer to systems that automatically move digital properties or assets based on arbitrary, pre-defined rules (Buterin, 2014b). A contract in the traditional sense is an agreement that defines the obligations or rights for two or more parties to exchange something. However, each party must

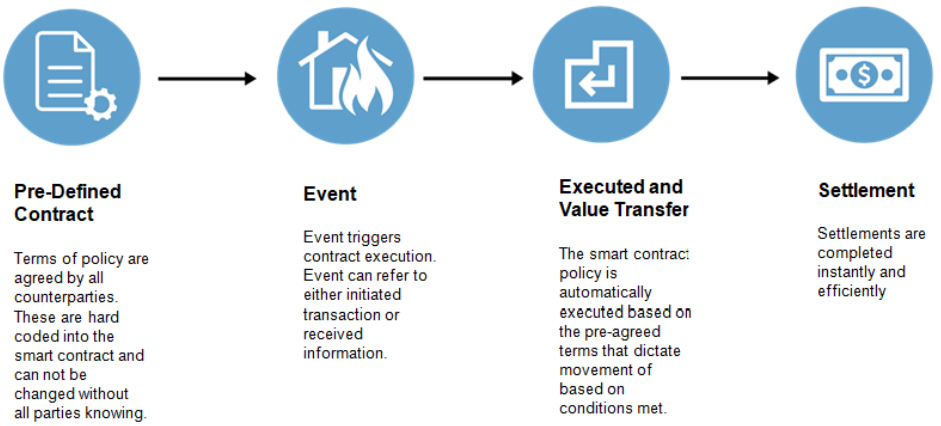
Figure 22. Evolution of contract



trust the other party to fulfill its side of obligations. This is different from the traditional notion of a contract, which is depicted in Figure 22 ("Smart Contracts," 2019).

In smart contracts, stored cryptographic value can be unlocked if certain conditions are satisfied and met. The benefit of this is that it removes the necessity of trust between parties while still featuring the same kind of agreement that defines the obligations and rights of the contract. This is because a smart contract is both defined and executed by the programming

Figure 23. Smart contract processing



code automatically without discretion (Swan, 2015). Smart contracts represent the implementation of a contractual agreement in blockchain, where the legal provisions have been formalized into source code. Contracting parties can thus structure their relationships more efficiently and in a self-executing manner without the ambiguity of words (Wright & De Filippi, 2015). This is illustrated in Figure 23 ("Understanding Smart Contracts," 2015).

According to Swan (2015), there are three distinct elements of smart contracts: autonomy, self-sufficiency, and decentralized. The first element is autonomy. After a smart contract is launched and running, a contract and its initiating or deploying agent no longer need to be in contact. The second element self-sufficiency. Smart contracts are self-sufficient to marshal resources; this means that they raise funds by providing services and spend funds on needed resources, such as processing units and storage infrastructure. Finally, the third element of smart contracts is that they are decentralized. Smart contracts are not stored in a single centralized server. Instead, they are distributed and self-executing across all the network nodes. In short, smart contract can help: (1) turn legal obligations into automated processes, (2) decrease reliance on third-party trust, (3) lower transaction costs, (4) self-execute programs, (5) decrease tampering, and (6) manifest SDL in the current era of the service and experience economy.

Should the choice of a blockchain-based distributed architecture be made based on a focal B's business objective priority, the issues of empowerment, adaptation, sustainability, vitality, and diversity could be exercised by the focal B and any interested and qualified participants on the chain; this approach, in terms of smart properties and smart contracts, helps realize the benefit of exchanges with the DAO ecosystem's stakeholders.

For the running scenario of RTD, iVoayge's centralized way to empower regional stakeholders toward a theme-based experience delivery of master-level performance could be extended and adapted in the context of blockchain. For example, special images regarded as digital assets would subsequently involve the asset ownership, asset ownership transfer, asset transaction, consumption footprint, and asset transaction contract.

THE CDD RUNNING SCENARIO

This section focuses on the descriptions of the macro impact aspect of value ecosystem stakeholders in light of the aforementioned digital operant designs using the CDD running scenario. Chapter 1's Figure 2 has shown the

imperative elements of three psychological needs (competence, autonomy, and relatedness) that the value ecosystem initiated by a focal B should support because customers become more assured and self-determined with these psychological needs satisfied. In turn, this contributes to an ongoing sense of well-being. Two types of empowerment (internal empowerment and external empowerment) can then provide the continuous support for competence, autonomy, and the sense of relatedness to not only empower customers' self-efficacy but it also results in well-being, whether it is related to individuals (enhancing individuals' judgments of their capabilities to execute designated courses of action with designated levels of performance) or collectives (a customer's belief in self-efficacy subsequently enhancing their aptitude to work with their community to produce desired effects or goals).

An exemplified service system cTaipei of the CDD running scenario is used to demonstrate the macro aspects of value ecosystem impacts. cTaipei is a service platform, exemplified in Figure 24 (Chou & Yuan, 2015), that enables residents or visitors to exchange their ideas in connection to creative community images. The fundamental focus of this platform pivots on service-dominant logic (Vargo & Lusch, 2004) and image theory, which suggests fourteen image description categories that can be used to outline the unique creative features of different districts in cTaipei. cTaipei residents or visitors pick image descriptions to describe a particular district based on their own perceptions. Further, they are allowed to interface interact and exchange their

Figure 24. A cTaipei platform webpage screenshot

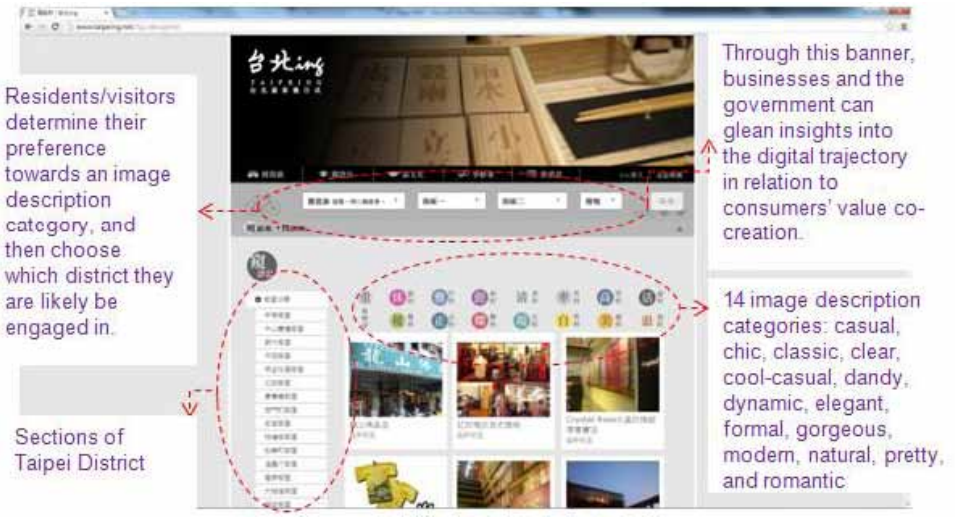


Table 1. Evidence that the cTaipei community empowered the citizens

Supports for empowerment	Action on cTaipei	The results of empowerment
Perceived Institutional Climate		
Readiness of policies and rules	cTaipei to develop a sustainable creative Taipei city	Sense of control
		Awareness of responsibility
Readiness of information and technology	Open businesses' structure and resources	Effectively access for resources
	Develop a platform to support value exchange	
Supports for Autonomy		
Participatory niches	Respect every resident's/visitor's expertise	Residents'/visitors' participatory skills
Opportunities for role structure	Provide experience for residents/visitors to structure roles in the group	Sense of accountability
Inclusive decision making	Provide opportunities for residents/visitors to learn decision making skills	Policy influence
Supports for the Sense of Relatedness		
Social support	Respond to every query and comments	Participatory behaviours work with others
Interpersonal tie		Tolerance for diversity
Supports for Competence		
Optimal challenges	Provides opportunities to take challenges	Commitment to the goal
Participatory rewards	Devise non-monetary rewards or offer opportunities to citizens to learn new skill	
Co-empowerment	Provide opportunities to let customers share responsibilities and leadership	Pluralistic leadership

ideas about the descriptions. These exchanges were accumulated and computed to generate the most present perceptions of districts or any individual service within a district (Yuan & Yang, 2017).

cTaipei was a pioneering example that helps understand customer needs and the process of empowerment based on self-determined behavior and its connection to better well-being, as shown in Table 1 (Chou & Yuan, 2015). By fulfilling customers' personal and social needs through cTaipei, service providers could build a better understanding of the resident's and visitor's cognitions, emotions, and expectations in connection to the development of a creative Taipei city. Service providers can create and propose values that meet or even go beyond the expectations of the residents and visitors. Additionally, Taipei residents and visitors can access information about a service, build their own dialogues, take part in community activities with which they have similar interests, and contribute their own knowledge (Yuan & Yang, 2017). Their participative processes get continuous support, which

brings about more voluntary engagement in cTaipei (Chou & Yuan, 2015). The details of cTaipei are briefly described below.

cTaipei was devised based on residents' and visitors' appetites for building a creative Taipei. Therefore, the cTaipei platform was designed with support from Taipei city government and local communities. Residents and visitors can access information and services related to arts, culture, architecture, history, local business, and even transportation when they enter the platform. Nevertheless, the motives of residents and visitors to stay engaged may change throughout time as they gain more experience interacting with others on the cTaipei platform. For instance, users may expect that their opinions can be adopted by local businesses. Accordingly, an underlying and steady understanding of target customers' motives to engage in a service is vital to better develop the service's offerings and the subsequent empowerment and co-creation strategies.

That is, customers are motivated to engage in a focal service's value co-creation for a period of time when they perceive that their personal and social motives can be fulfilled by the service. Therefore, customers would be continually motivated to take part in a focal service's value co-creation in the long term when they perceive that their changing personal and social motives can also be fulfilled by the service.

Furthermore, customer perceptions of the institutional atmosphere are crucial to better facilitate the external empowering process (Diener & Biswas-Diener, 2005). To empower customers, it is important to define the fundamental goal of value co-creation in the very beginning, as well as better convey how and why a specific goal benefits customers (Zhang & Huang, 2010). In this manner, changes in institutional rules and processes are necessary to make space for customers to discuss issues, participate in the service setting, and access basic resources. Existing formal and informal institutional barriers have to be dismantled for customers to take active actions and broaden their choices to take part in value co-creation.

By employing the digital operants devised by Yuan and Yang (2017), cTaipei allowed customers not only to search for and access information but also allowed them to create their very own informal community through a technology-based platform. Taipei residents and visitors could have broad access to an assortment of things with the help of these digital operants; for instance, they could search for information, contribute their ideas, and even form a community network for a specific street through the interactions in the cTaipei platform (Yuan & Yang, 2017). The governance needs to adequately formulate related policies and open up resources in the interactive platform

so as to engage customers through a specific value proposition within the platform. That is, the availability of a focal service's institutional atmosphere (including policies, rules, and information and technology) in connection to value co-creation is an indispensable external empowerment element because it aids in customer belief in self-efficacy, co-creation participation, and contributes to their well-being and satisfaction of their perceived quality of life.

In addition, a service's support for autonomy is a substantial form of external empowerment that strengthens customers' beliefs in self-efficacy. This form of support does not attempt to gain control over customers. Instead, customers should be well-informed of their accountability for the value co-creation results. Thus, this raises their determination to act and subsequently affects their well-being.

cTaipei provided various types of support for customer autonomy. Voluntary groups were formed to direct individual customers to improve their knowledge, skill sets, and experience development. To encourage residents and visitors to take part in the activity of describing images of different districts, cTaipei aggregated the diverse skills of residents and visitors to build different social communities based on their interests so that they had the option to utilize their voices effectively during community decision-making processes. For instance, through the convenience of mobile ballot applications, many cities asked their residents and visitors to choose the colors for city emblems. That is, a focal service's support for autonomy (including a participatory niche, opportunity role structure, and inclusive decision-making) in connection to value co-creation is an indispensable external empowerment element for the customer's belief in self-efficacy for co-creation support and consequently adds to their well-being satisfaction of the perceived quality of life.

Furthermore, customer needs for the sense of relatedness are important to develop feelings of connectedness with and belonging to their communities. Social support and interpersonal ties are viable methods for service providers to support customers' needs for relatedness. Perceived social support refers to an exchange of resources that are perceived by the provider or the recipient to upgrade the benefit of the receipt (Rosenbaum & Massiah, 2011). Interpersonal ties require time, emotional intensity, mutual confiding, and reciprocal exchange (Yim et al., 2008). Social support and interpersonal ties among employees have been shown to assemble organizational solidarity and to empower a more extensive community (Rosenbaum & Massiah, 2011). Given that active customer engagement cannot be driven when there

is inadequate support from the interaction with others (Spohrer et al., 2008), reciprocal support among members better empowers feelings of efficacy and willingness to act.

cTaipei deliberately created the capacity to enhance social support and interpersonal ties. For instance, the first activity conducted by cTaipei was to choose depictions of representative images for specific communities. The activity urged the residents and visitors to give perceptions about images of different districts in Taipei while enabling them to express their thoughts through the leverage of social media. Residents and visitors were then asked, "Can you (hyperlink to the respondent's name) please give an example or a rationale behind why this image description represents that community?" Residents and visitors offered their personal expertise within the specific forums. This procedure improved the ties between residents and visitors and cTaipei. That is, a focal service's support for a sense of relatedness (including social support and interpersonal ties) in connection to value co-creation is a necessary external empowerment element for the customer's belief in self-efficacy for co-creation participation and thus contributes to their well-being and satisfaction of perceived quality of life.

Customers' knowledge, skills, and experiences are essential sources that are vital throughout value co-creation processes. These resources strongly drive customers' faith in self-efficacy (Diener & Biswas-Diener, 2005). Without this psychological faith in self-efficacy, customers are probably not going to act or seek out a particular goal. Chen et al. (2012) indicated that a lack of customers' knowledge, skills, experiences, and other related resources are vital for value co-creation; without customers' knowledge, skills, and experiences, the platform would not be able to adequately reciprocate customers' sharing behaviors in co-creation processes. Furthermore, value co-creation might be a long process where customers need to invest time, effort, and other resources in value co-creation.

cTaipei advocated that a creative community can be represented by specific image descriptions which would then be able to enhance the unique images perceived by community members or other residents and visitors. This would create many communication dialogues on the platform. Experience sharing, related to the knowledge of residents and visitors, raises their belief in self-efficacy. Therefore, a customer's investment of personal skills, knowledge, time, and energy in a focal service's value co-creation is a vital internal empowerment element for the customer's belief in self-efficacy for co-

creation participation, and in this way, adds to their well-being, satisfaction, and perceived quality of life.

Given that customers are bound to feel empowered when they have encountered success in the past, services may use technology to create opportunities for customers to directly watch over others' successful experiences in value co-creation. By using the observational learning technique, Dabholkar and Sheng (2012) found that watching someone else perform a specific behavior results in the desired performance upgrades for customer belief in self-efficacy. cTaipei also adopted an observational learning technique to share other members' positive experiences in the value co-creation processes.

A scoreboard was devised to perceive each participant's number of constructive comments and ideas. cTaipei also provided members' backgrounds and contact information when members agreed to interact with other residents and visitors. By fostering other residents' and visitors' positive experiences of co-creation on cTaipei, the positive and negative experiences of other customers could be witnessed, making a consequent learning knowledge-base and a record of their actions. This design acknowledges each participant's expertise as well as allows social interactions between customers, which play an important role in strengthening customers' belief in efficacy for participating in value co-creation. That is, customers' past performance in relation to a focal service's value co-creation is an essential internal empowerment element for a customer's belief in self-efficacy for value co-creation participation and consequently adds to their well-being, satisfaction, and quality of life.

As discussed, the coexistence of external and internal empowerment enhances a customer's belief in self-efficacy and therefore prompts actions. External empowerment also heavily influences internal empowerment which affects subsequent actions. In cTaipei, a Taipei resident or visitor may search for external conditions when they believed they were psychologically empowered to effectively contribute a thought that could improve the development of a creative Taipei. Nevertheless, in the searching process, when the resident or visitor found that the external conditions allowed them to act were inadequate and would not be able to make a measurable contribution toward a creative city, they may feel disappointed and not really empowered. This would cut down the belief in self-efficacy and subsequent willingness to contribute.

That is, a focal service's support for the external empowerment elements would strengthen the customer's perception of internal empowerment, and the coexistence of the two types of empowerment would also drive the customer's

belief in self-efficacy for co-creation participation. In this way, it would add to their well-being and satisfaction of perceived quality of life.

In addition, customers' perceived well-being and satisfaction affect their actions for a specific value co-creation goal; however, it may be moderated by an individual's resource availability. Customers' belief in self-efficacy would also be increased by a perceived shared goal and accordingly impact their commitment to a specific value co-creation goal. That is, a customer's satisfaction with a focal service influences their capability to conduct a specific behavior and affects their motivational, cognitive, and affective intervening processes (Bandura, 1995). These processes substantially motivate customers to pursue a goal and believe that the goal can be accomplished through these efforts (Bandura, 1995). Zhang and Huang (2010) demonstrated that a customer's commitment to a specific goal is motivated by previous accomplished actions; subsequently, it is expected that customers will demonstrate more prominent motivation to further seek out a goal.

At the point when individual customers are empowered and motivated to act by perceiving shared goals, their commitment and action to a specific goal may impact other customers' commitments to accomplish the goal for the benefit of the related others. A specific member's active engagement and action toward a community-shared goal could drive and impact others outside the community. cTaipei was created based on a paramount goal: to oversee the progression of a sustainable creative Taipei city. This goal was accompanied by a reasonable set of accepted rules to externally empower and drive residents' and visitors' internal needs for empowerment and increased their confidence in efficacy. All things considered, it successfully drove members to voluntarily participate in value co-creation during the beginning phase of building cTaipei; this led to individual customer action and their commitment to value co-creation—a goal that improved the faith in the collective efficacy and collective commitment.

In addition, a customer's successful experience of confronting a difficult challenge would meet their needs for competence, which thereby raises their commitment to embracing more challenges (Deci & Ryan, 2000). Optimal challenges and participatory rewards have been recommended as two strategic measures to upgrade successful customer experiences (Deci & Ryan, 2000). Optimal challenge refers to an individual's perception of an activity that may require their full capability (Ryan et al., 2008). Optimal challenge experiences are better than non-optimal experiences at generating positive effects on well-being (Durr, 2009).

For instance, cTaipei introduced an event, "tell a story related to pictures about nostalgic Taipei", which made a hot-catch social topic among residents and visitors. In connection to the event, cTaipei launched a competition to ask residents and visitors to explore and conspire the best nostalgic stories and pictures among various Taipei districts. To counteract unhealthy arguments, the management team of cTaipei acted as a consultant facilitate constructive competitions among communities.

Furthermore, participatory rewards are essential for emphatically engaging customers' continuous participation (Füller, 2010). While the contribution of particular conduct, for example, volunteering for philanthropy tasks might be too high, service providers may utilize monetary and non-monetary rewards to support customers' needs for competence and better tie them to the value co-creation processes (Van Doorn et al., 2010). Likewise, cTaipei posted the number of contributions of each member, which enabled individuals to contribute to creative idea generation while recognizing their ability and endeavors. As a result, they had a strong commitment to actively engage in cTaipei.

In addition, co-empowerment perceives and regards every customer's differences (Bond & Keys, 1993), which enhances their belief in collective efficacy for collective commitment and actions toward shared goals. Services may provide support for co-empowerment by making settings that help people display their legitimacy and voice their interests over time (Bond & Keys, 1993). Then, they are likely to believe that they can add to the communal goals. cTaipei created a platform setting for goal-based collaboration. The creative goal-driven events could be launched by individuals or groups, which promoted the participation of other residents and visitors. It additionally energized voluntary participation in different events where residents and visitors served as partial employees (Dholakia et al., 2009).

In this way, residents and visitors could exercise control and figure out how to take responsibilities when engaging in different roles. As such, they could show their competence, believe in collective efficacy, and commit to the goal of developing a creative Taipei city. That is, a focal service's support of competence (including optimal challenges and participatory rewards and co-empowerment) in connection to value co-creation would enhance individual and collective commitment as well as the collective belief in the efficacy of a shared goal.

Succinctly, when a service provides support for the three psychological needs of customers through customer empowerment in the value co-creation processes, collective commitment enhances well-being regardless of whether

it is on an individual or collective level. Rather than fame, wealth, and power, well-being has a solid bind to customers' constant experience of living well (Ryan et al., 2008). Customers' constant feeling of living well will also be upgraded when they continuously experiencing competence, autonomy, and a sense of relatedness.

Despite the fact that the existing literature has yet to demonstrate a direct effect of the fulfillment of these three needs on collective well-being, a lack of satisfaction of the three psychological needs, in any case, appears to firmly effect negative feelings (Ryan et al., 2008). Given that inter-customer support positively influences customer well-being (Rosenbaum, 2008), customers experience social gratifications through interacting with other customers (Roy, 2009). A nearness between the satisfaction of the needs and well-being can then be learned.

In summary, cTaipei employed the design of particular digital operant to proficiently convey new and diverse forms of information to residents and visitors. In this sense, cTaipei adequately built a two-way interaction among residents and visitors in a way that actualized the empowerment processes. It also provisioned the support for external empowerment, customer needs for competence, autonomy, and a sense of relatedness in value co-creation; accordingly, this resulted in collective customers' constant experience of living well. That is, cTaipei demonstrates the macro impact aspect of a value ecosystem where customers become more assured and self-determined with these psychological needs satisfied by leveraging digital operants and adding to an ongoing sense of well-being.

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Chapter 6
Digital Business Operation Design

ABSTRACT

The previous chapters discussed the key components of the business reinvention methodology. This chapter focuses on how to operate a value ecosystem (resulting from the exercise of those key components) for coherent, high-value service delivery; this involves the operation design referred to as a fitting arrangement of operational strategies (including org-ware, stage-ware, customer-ware, and link-ware) for various forms of customer variability. This chapter demonstrates these operational strategies using a running scenario that involves the creation of additional digital operants that add to the productive operations of delivering service experiences.

INTRODUCTION

This chapter extends the business reinvention methodology offered in previous chapters by discussing the operation design, which refers to a fitting arrangement of operational strategies for the coherent delivery of service experiences.

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FOUNDATIONAL THEORIES AND BASIC CONCEPTS

Operational Strategy

Voss et al. (2008) advocated that businesses that want to be experience-oriented need to embed and integrate the customer experience concept into their service delivery processes. From this point of view, the service operation strategy refers to the integrated processes through which a business can accommodate various resources (e.g., human resources, technology, etc.) by delivering the right offerings to the right customers at the right time (Roth & Menor, 2003). Subsequently, this enables the business to furnish customer experiences at various touchpoints in a coherent manner.

Voss et al. (2008) provided an Experience Strategy Framework that identifies four service experience strategies, including stage-ware (bricks and mortar or services-cape), org-ware (infrastructural management systems and policies), customer-ware (customer touchpoints) and link-ware (coordination, integration, and adaptation of systems and processes), as depicted in Figure 1. Implementing the service experience strategies is then regarded as actualizing the operational strategy choices to shape the total customer experience at various touchpoints to evoke an emotional response in the customer, which would ideally result in a purchase, loyalty, and other engagement behaviors.

Connecting to the business reinvention methodology dimensions (Figure 1), the design of the service operations can also incorporate additional digital operants to facilitate service value delivery (as depicted in Figure 2), in addition to providing digital businesses with empowerment strategies for ecosystem flexibility and high-value fulfillment. In particular, the link-ware needs to take charge of such digital operants for proper coordination, integration, and adaptation of systems and processes.

Customer Variability

Customers are frequently an essential piece of the service delivery processes. Because customers judge the quality of their experience based on the variability they perceive, businesses need to find a way to manage customer-introduced variability. According to Frei (2006), there are five types of customer-induced variability: arrival, request, capability, effort, and subjective preferences. With arrival variability, the customers do not place demands at the same time or at a time convenient for the company. Request variability is when the

Figure 1. Framework of service operational strategy choices

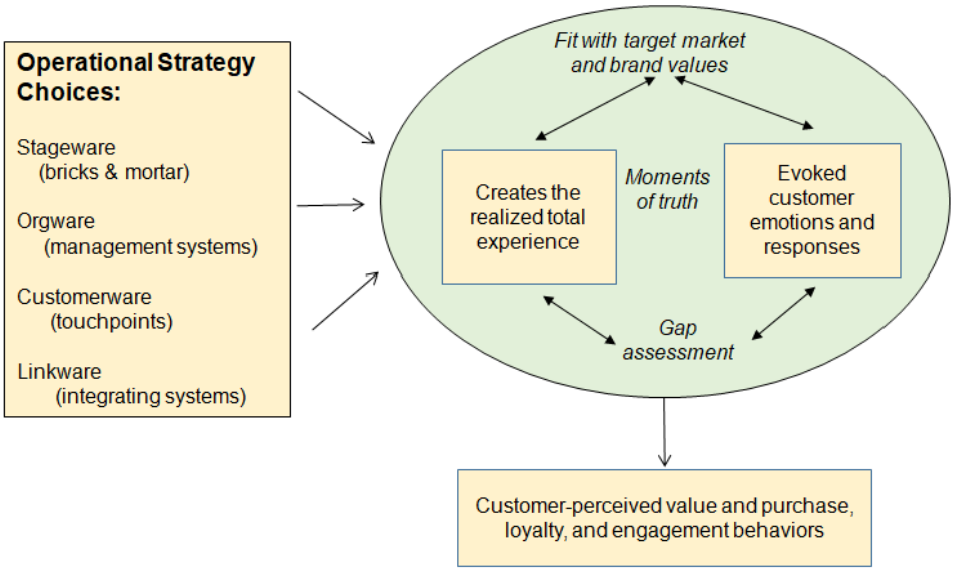
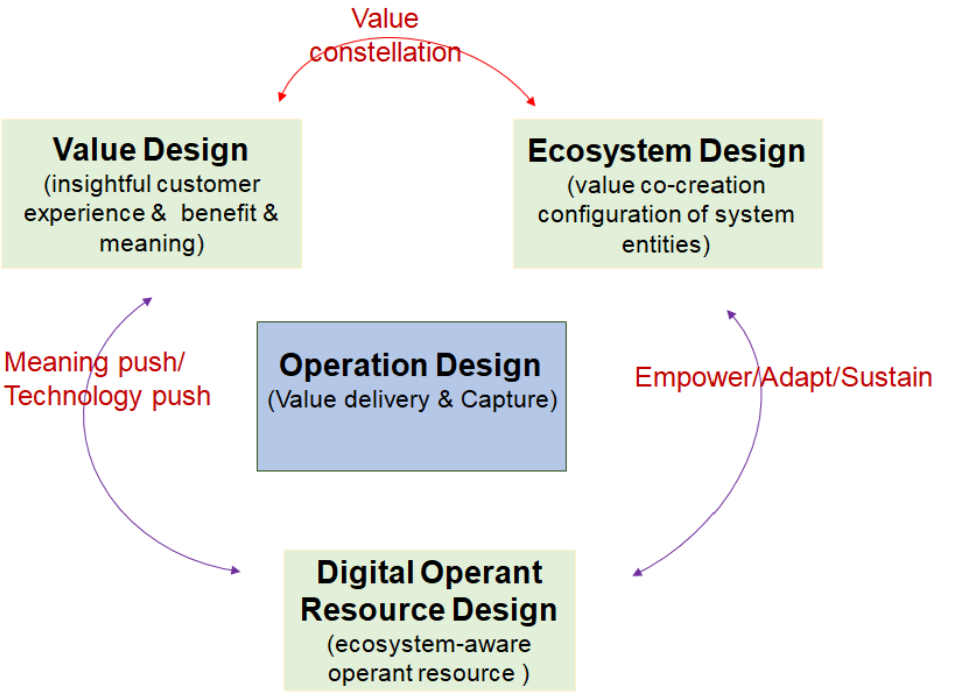


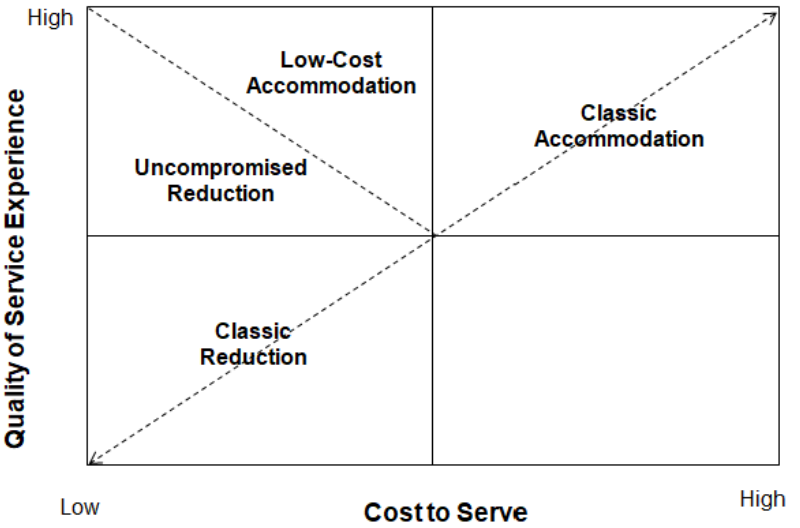
Figure 2. Digital operants deployed to facilitate the operations of service value delivery and capture



customers may request different services or ask for many different things. With capability variability, not all customers have the ability to perform tasks needed to receive the service when customers are active participants in the production and delivery of a service. Effort variability concerns the effort the customers make to receive the services when they perform a role in the service delivery processes. Subjective preferences refer to how the customers vary their opinions about what it means to be treated well. There are four strategic responses to customer variability (Figure 3): classic accommodation, classic reduction, low-cost accommodation, and uncompromised reduction (Frei, 2006).

Classical reduction means that businesses adopt reduction strategies to attract price-conscious customers who expect to compromise service experience for low prices (e.g., people choosing discount airlines at the expense of an inferior service experience). Classical accommodation then involves asking employees to serve the variations among customers. Employees figure out how to analyze customer types and make on-the-fly adjustments to suit their preferences, which protects the customers from making modifications of their own. However, it costs more to hire, train, and retain employees who can accommodate customers. That is, the success of an accommodation strategy relies on a business' capacity to convince customers to pay more to cover the additional experience.

Figure 3. Strategic responses to customer variability



Rather than switching off between expense and quality (i.e., classical reduction and classical accommodation), Frei (2006) recommended that businesses accommodate customer-introduced variability without raising its expenses by hiring low-cost labor, automating tasks, and creating self-service. Likewise, businesses can abbreviate customer-introduced variability without sacrificing service quality by creating complementary demands to soften arrivals and target a focused segment customers based on their requests, capabilities, efforts and subjective preferences.

In short, effective management of variability in service operations does not mean that reducing variability is the right thing to do, and it is important to understand how businesses can achieve both low cost and variability accommodations.

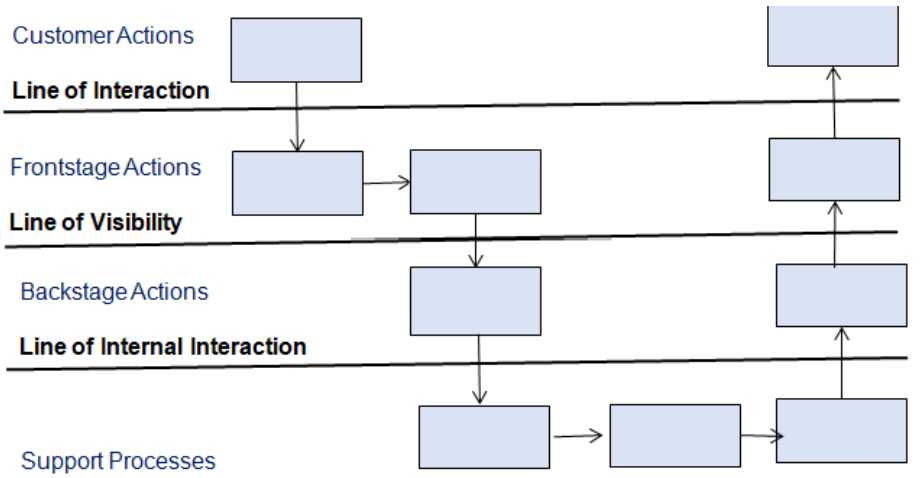
Service Blueprint

A present product or service is often delivered through a variety of touchpoints that cross channels and mix both digital and human interactions. A service blueprint manifests the interactions among service customers, digital and physical touchpoints, and service employees; this includes the frontstage activities that impact the customer directly and the backstage activities that the customer does not see, which are illustrated in Figure 4 (Bitner et al., 2008). A service blueprint is a two-dimensional diagram of a service operational process where the horizontal axis shows the chronology of actions conducted by a service customer, a service provider, and the vertical axis distinguishes between different areas of actions. A service blueprint incorporates the perspectives of customer, provider, and relevant stakeholders who are involved in the operations in terms of their key interactions and touchpoints.

There are three essential requirements of a service blueprint. First is the line of interaction or the service encounter points where customer and service interact. The second is the line of visibility; beyond this line, the customer can no longer see into service. The third is the line of internal interaction where the supporting partners that are not unique to the service are involved (i.e., customer-independent activities that are separating from customer-induced activities mentioned in the former two situations). In the middle of these lines are five swimlanes that catch the building blocks of a service blueprint.

Physical evidence refers to anything that a customer can see, touch, hear, or smell; this is not just referring to storefronts or websites but also includes signs, forms, products, etc. Customer actions refer to what a customer has

Figure 4. Service blueprint template



to do to use the service at touchpoints. The frontstage includes all of the activities that customer can see while going through the service journey. The backstage includes the activities that are necessary to deliver the requested service but that customer cannot see or directly interact with. Finally, the support processes are anything that supports the service delivery without being unique to the service (i.e., customer request independent activities).

A service blueprint can further be expanded to include additional swimlanes, such as splitting up the frontstage when there are multiple providers' touchpoints working together to create the service experience (i.e., each additional swimlane corresponds to a service provider's interactions (physical or digital); the same goes for the splitting of the backstage or support processes.

The use of a service blueprint is three-fold. First, it is necessary to understand the service ecosystem and its actors as to how the service might be achieved, operated and managed upon broadening or narrowing the audience for a service. Second, it is regarded as a rough and rapid prototype that is a build-to-think form of look-like/work-like/interact-like; these communications can help think in realistic terms about how someone would interact with the service concept and answer questions about desirability, feasibility, viability, etc. Finally, it allows for the creation of further prototypes and testing before a service is really launched to customers.

DESIGN METHOD

Ecosystem operations involve the design of four operational strategy choices: stage-ware (bricks and mortar or the servicescape), org-ware (infrastructural management systems and policies), customer-ware (customer touchpoints), and link-ware (coordination, integration, and adaptation of systems and processes). These choices occur in light of the five types of customer-induced variability, which include arrival, request, capability, effort, and subjective preference. In addition, the design could use digital operants or architectures to further automate tasks, create self-service, or cope with customer-induced variabilities with respect to different segments of customers. Continuing with the cTaipei application, the four operational strategy choices will be used to demonstrate these ecosystem operational designs.

The CDD Running Scenario

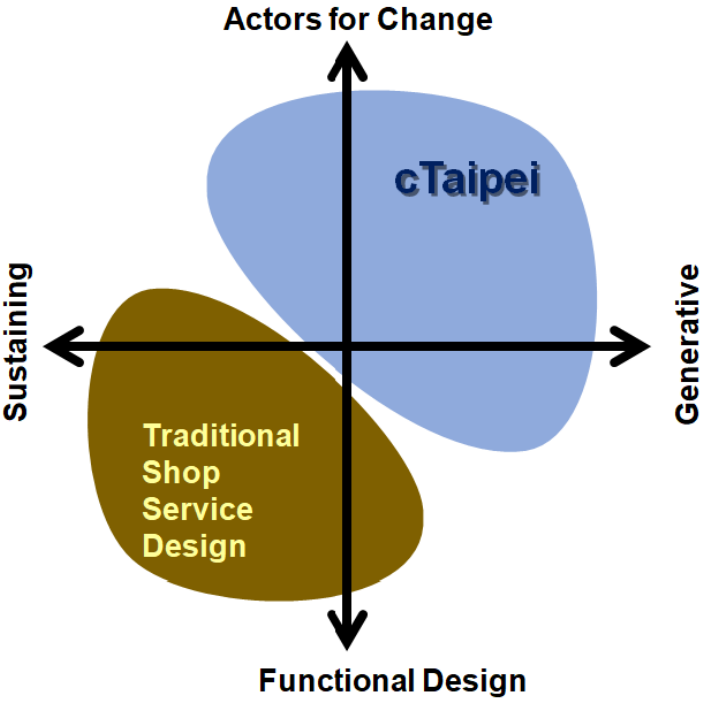
The stakeholders for the cTaipei ecosystem include the citizens, the SMB shops, the districts, and the government. The aim of cTaipei operations is to achieve both operational productivity and ecosystem flexibility toward cTaipei's high-value (i.e., the innovation of stakeholders' co-creation of creative Taipei by increasing unique attractions for shops and districts) in light of the trend for citizens to not want standardized products, services, or experiences and their preference to tailor their experience to their own specific needs and tastes. This implies that shops and districts need to be empowered to continuously innovate so they can develop unique and attractive images. In other words, stakeholder actors who position themselves best in cTaipei's value ecosystem will be those who are best able to manage the flow of information to and from the customers to generate proper changes in accord with the high-value (as depicted in Figure 5).

The design details of the four operational strategy choices also involve the design of additional digital operants in cTaipei as detailed, which are further described in the following sections (Yuan et al., 2017).

CDD Org-Ware - Infrastructural Management Systems and Policies

CDD org-ware aims to deploy customer engagement in a holistic manner that can incorporate elements of numerous new media and broader ecosystems like

Figure 5. The operational positioning of cTaipei (top right quadrant)



brand partnerships and invigorating a virtuous circle of actualizing customer engagement behavior (CEB) toward superior results. The org-ware would consider new media's distinctive information service and technologies (e.g., the search engine, social recommender, and social media) that can be properly choreographed to accomplish such virtuous circles in the context of broader ecosystems of brand partnerships. The rationales behind this org-ware design are provided in the following sections.

Digital business ecosystems are fast-paced, yet additionally tumultuous (El Sawy & Pereira, 2013). Turbulence is a causal surface of the environment that originates from the complex interconnections between players (Selsky et al. 2007). All players are interconnected with the broader ecosystem, so contenders often work together in "coopetition" to set up technical standards or common platforms. Furthermore, the ascent of new media channels such as search engines like Google, social recommenders like TripAdvisor, and social media like Facebook, enable customers to play a progressively dynamic role; in this sense, they operate like market players and reach nearly everyone, anywhere and whenever. Likewise, new media has empowered consumers to

promote and distribute their own offers (Hennig-Thurau et al., 2010). Acar and Puntoni (2016) noted that customer empowerment should incorporate a deeper connection with the central company's brand (i.e., spending a little time thinking about the brand and connecting to it more).

The business world has started to regard engaged customers as operant resources and has examined various issues of customer engagement, as well as their potential to achieve superior results (Kumar et al., 2010; van Doorn et al., 2010). For instance, Netflix passes the task of movie reviewing on to customers so movie renters can be exposed to a wider set of potential long-tail titles. This way, they can try to understand customers' consumption goals and rethink their brands, which means the brands are in the minds of their end customers (Sorescu et al., 2011).

Brodie et al. (2011) characterized customer engagement as a psychological state that occurs by virtue of interactive, co-creative customer experiences with a focal agent or object (e.g., a brand) in service relationships. Customer engagement is a multifaceted concept that concerns the context and stakeholder-specific expression of relevant cognitive, emotional, and behavioral facets. Within interactive, dynamic business environments, customer engagement has been viewed as a strategic imperative for producing upgraded corporate performance, including sales growth (Neff, 2007), superior competitive advantage (Sedley, 2008), and profitability (Brodie et al., 2011; Voyles, 2007).

Researchers have proposed measuring customer engagement behavior (CEB) in a way that goes beyond customers' purchase transactions and could be characterized as a customer's behavioral manifestations with a brand or business focus based on their motivational drivers (Groeger et al., 2016; van Doorn et al., 2010). Examples include word-of-mouth activity, recommendations, blogging, and writing reviews. It also includes other customer-to-customer (C2C) interactions such as helping other customers or taking an interest in customer or brand communities (Libai et al., 2010; Perrigot et al., 2012) and customer-initiated interactions with organizations, other than the purchase (Bolton, 2011).

For customers in an increasingly networked society, the rise of new media has given them more alternatives to interact with businesses and other customers (Hennig Thurrau et al., 2010; Libai et al., 2010) in terms of the new media's characteristics (digital, proactive, visible, real-time, ubiquitous, network). Non-transaction customer behavior has turned out to be progressively significant (Groeger et al., 2016). However, new media has diverse vehicle types; for example, search engines, social recommenders, social media, and

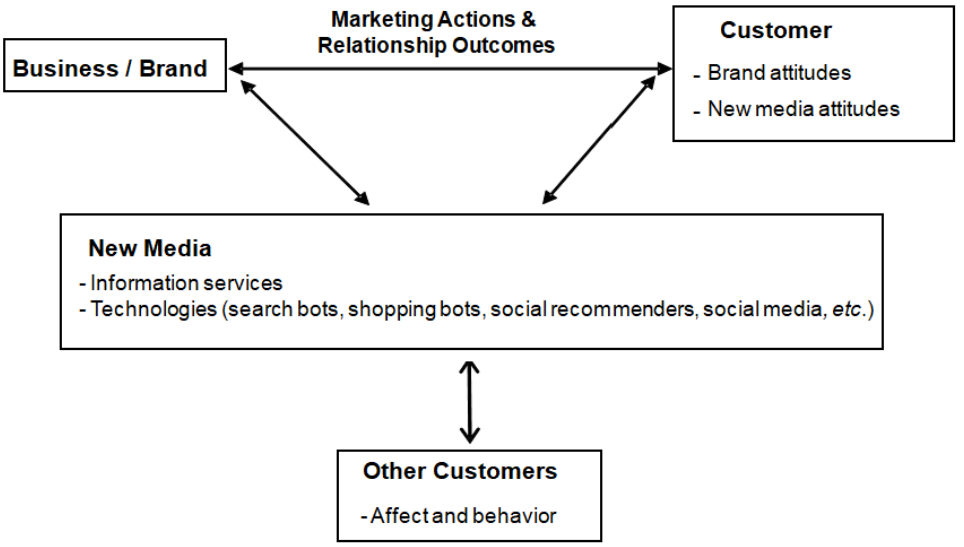
so on have different characteristics and use different technologies that are yet to be incorporated for virtuous CEB (Hennig-Thurau et al., 2010).

Businesses are additionally seeking procedures to guide non-transactional behavior in today's highly dynamic and interactive business environment (Verhoef et al., 2010). For instance, Lay's chips asked customers to make a new chip flavor in a crowd-sourcing campaign on Facebook, and they rewarded the winner with one percent of the net profit of the resulting new product. In this way, the company created value in a way that partnered the business with the customer using new media. Businesses create and deliver potentially-valuable offerings, and customers utilize these offerings to consume value (e.g., Lay's customers created and named the chip as well as designed the bag). Therefore, value is phenomenologically experienced and contextually consumed and interpreted by customers (Chesbrough, 2010; Hearn & Pace, 2006; Storbacka et al., 2016; Vargo & Lusch, 2008).

Hennig-Thurau et al. (2010) presented two main factors that influence CEB through new media, including brand attitude (e.g., feeling of benefits, satisfaction, and liking a brand) and new media attitudes (e.g., gratification being utilitarian, hedonic, social-psychological view of new media's role in life), which is displayed in Figure 6. For customer's new media attitudes, there is little that businesses can do except communicate through multi-channel new media and simplify the user interface in order to stimulate CEB. For customer's brand attitude, it could be influenced by the brand's equity or reward arrangement as well as by the processes and platforms established to support specific customer actions, such as through the customer's suggestions and ideas (van Doorn et.al, 2010).

For brand equity, businesses with a high reputation and equity are probably going to prompt higher levels of positive CEB (Walsh et al., 2009). For reward provision, businesses offer incentives to customers using referrals to increase CEB. For building the processes and platforms to support specific customer actions, businesses can use IT to construct processes for customers to lead C2C and C2B conversation through platforms such as online chat forums, event pages, and engagement sites. By improving brand attitudes, raising brand equity, offering reward provisions, and providing platforms for customers to co-create, businesses can shape a positive virtuous circle. In other words, businesses can develop information services to monitor new media's CEB data produced from C2B conversations and C2C conversations through new media. The subsequent analysis of new media CEB data can then give insights into marketing relationships or service innovation results to further inform CEB and form a virtuous cycle.

Figure 6. New media's impact on CEB



Such a significant move in the supremacy of value-laden interactive customer relationships (Morgan & Hunt, 1994) and value co-creation (Vargo & Lusch, 2004) prompts several challenges for businesses and customers. From the customer perspective, businesses need to create compelling operations that lead customers to co-create value for new products or services and sustainably improve the service experience. From the business perspective, understanding the customer's interaction with the businesses, building, and keeping the interactive relationship with the customers is vital. Within these challenges, new media assumes a significant job in enabling customers to take a more active role as market players by articulating experiences and expressing themselves in various ways (Acar & Puntoni, 2016; Hennig-Thurau et al., 2010; Maslowska et al., 2016; Perrigot et al., 2012). With the provision of new media, the value can then be extended to incorporate experiences created through the perceived use by each customer (El Sawy & Pereira, 2013).

Furthermore, to provide customers with more value, businesses have also started to operate within the broader context of business ecosystems like brand partnerships. A broader business ecosystem refers to a community of economic actors creating goods or services of value to customers. The business members of a broader business ecosystem may incorporate competitors, customers, alliance partners, or other stakeholders (Weill & Woerner, 2015). Over time, they evolve their capabilities and roles and will adjust themselves

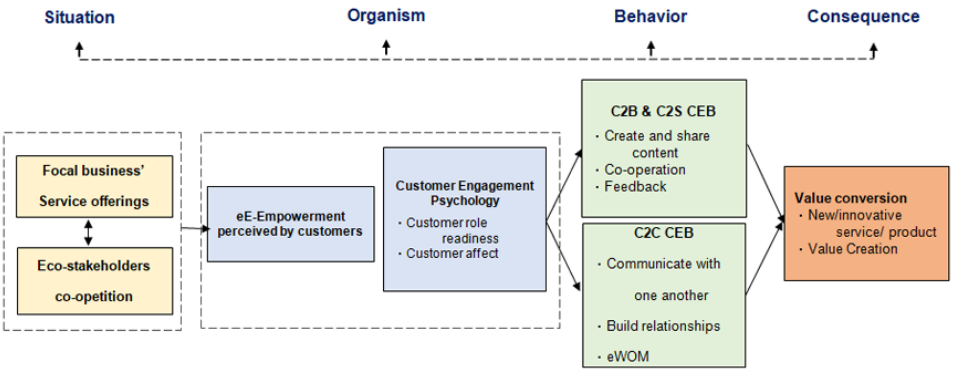
to be mutually supportive with the directions set by one or more focal businesses (Moore, 2006), such as the ecosystems of iTunes or Amazon. In a broader business ecosystem, the value can be co-created, co-adapted, and co-captivated together with the different businesses and customers in the ecosystem, which go beyond the focal businesses, their B2C customers, and word-of-mouth media stakeholders (Maslowska et al., 2016); yet, they have not been investigated for virtuous CEB.

For instance, the idea of co-creation has been investigated within collaboration brand partnerships (e.g., P&G's Being Girl including the other brands like Always and Tampax) in relation to the customer-brand relationship experience (Gyrd-Jones & Kornum, 2013). For example, a prevailing meaning for customers could be accomplished through the interactions of seeking similar brands. As such, focal businesses in the ecosystem may concentrate on making value critical to the ecosystem's prosperity while leaving numerous activities of value creation to others in the ecosystem that can be assisted through new media.

In short, CEB implies that when the focal business uses multiple new media channels, they will be able to expand value co-creation by customers, organizations, and collaboration/competition (i.e., co-opetition), and eco-stakeholders, by continuously bringing about higher levels of service offerings, experiences, and innovation. Nevertheless, existing research seldom tends to the above issues or solutions from a holistic perspective. In other words, there is a research gap surrounding whether CEBs should incorporate multiple new media channels using various characteristics or technologies; such future research should also consider the broader co-opetition ecosystem stakeholders (e.g., ecosystems of brand partnerships).

Hence, the org-ware design should regard the value of a customer's contribution to superior results as a component of customer engagement value. With such customer participation, businesses would be able to accelerate or improve the market acceptance of new offerings. Accordingly, the extent to which customers are willing to engage in conversations can fundamentally impact the value of a focal business, particularly because it influences what customers are set up to tell others and what insights they are willing to give businesses with respect to product development and enhancement. Therefore, in a broader business ecosystem, the high-value is co-created, co-adapted, and co-captivated with the different players in the ecosystem: customers, competitors, and community. Thus, the focal businesses in the ecosystem may choose to leave many value-creating activities to other co-opetition

Figure 7. The org-ware framework of cTaipei's infrastructural management systems/ policies



stakeholders in the ecosystem while concentrating on making value that is critical to the ecosystem's well-being.

Figure 7 depicts the org-ware framework of cTaipei infrastructural management systems and policies that guide the focal businesses with their eco-stakeholders to holistically perform customer engagement by leveraging multiple new media toward bountiful CEB (Yuan et al., 2017). It is grounded on the social interaction or social learning of S-O-B-C conception, which includes antecedent discriminative stimuli and consequences, intrapersonal and cognitive processes, and behavioral actions.

In the framework, e-empowerment refers to more profound connections that are provisioned and perceived by customers about the focal business directly or indirectly through the new media. From resource exchange theory and the affect theory of social exchange, Verleye et al. (2014) noted that managerial processes engender positive customer effects for the business, which brings about benefits the business and its stakeholders. In accordance with Verleye et al. (2014), customer role readiness is characterized as how much customers feel prepared for encounters with the business in terms of feeling confident and having the pertinent knowledge and skills.

Customers currently have the chance to demonstrate their engagement in the business and in its eco-stakeholders since they progressively take an interest in the creation, production, and delivery of services (Zeithaml et al., 2009). In an increasingly networked society, customers cannot just show CEB interactions with businesses and their employees; however, they may show CEBs in C2C interactions by helping other customers and by spreading positive e-WOM behaviors. Accordingly, CEBs are grouped into two types of

engaged objects, which are C2B-C2S and C2C-CEBs. Customers normally demonstrate three types of C2B-C2S in CEB interactions with businesses and their stakeholders, which are cooperation, feedback, and compliance (Verleye et al., 2014).

To achieve a virtuous circle of accomplishing CEB, measuring CEB is essential. There are several applicable approaches for measuring CEB that go beyond the traditional. Bijmolt (2010) recommended a three-stage analytics model (i.e., acquisition, development, and management) of the customer engagement life cycle. Kumar et al. (2010) gave the idea of estimating customer engagement value in terms of customer life value, customer referral value, customer influence value and customer knowledge value. To measure customer engagement behavior on new media (including social recommender), Forrester Consulting (2008) posited that customer engagement metrics can be created along the dimensions of Involvement, Interaction, Intimacy and Influence, which are exemplified in Table 1 (Yuan et al., 2017). Consolidating Forrester Consulting's four dimensions of measuring customer engagement behaviors on new media with Bijmolt's three stages of customer engagement analytics can gauge the influence of new media on customer engagement at each stage.

Table 1. Exemplified customer engagement metrics

Dimension	Definition	Exemplar Metrics
Involvement	The visits of an individual at the various business channels or touchpoints, including website, physical channel, etc.	Frequency of Web site visits
Interaction	The action that an individual does at the key touchpoint, including completing transaction, reading content, page views.	Average page views per visit Web site logins per customer Average time spent per Web site visit
Intimacy	The emotion of like affection or aversion that an individual holds for a brand.	Monitoring of customer complaints Opinions expressed in customer service calls
Influence	The likelihood of an individual will advocate on brand by his/her behavior such as providing feedback on a social recommender.	Likelihood to recommendations

Stage-Ware, Customer-Ware, and Link-Ware in the CDD Running Scenario

cTaipei's operation design strategies for stage-ware (bricks and mortar or servicescape), customer-ware (customer touchpoints) and link-ware (coordination, integration, and adaptation of systems and processes) aim to empower a focal business with its partnership stakeholders to holistically perform customer engagement (i.e., acquire, develop, and manage) by using the benefits of multiple new media vehicles for the creation of a CEB virtuous circle. The operations of the three service components (the brand partnership campaign laboratory, brand partnership campaign thermometer, the CEB data observation) provide support for the idea that cTaipei's additional digital operants empower a focal B to facilitate the realization of the attempted CEB's S-O-B-C effects as depicted in Figure 7 (Yuan et al., 2017).

Figure 24 in chapter 5 demonstrates the fourteen image description categories that residents and visitors can use to outline the unique creative features of various districts in Taipei. Taipei residents and visitors were allowed to pick image descriptions that describe a particular shop or district based on their own perceptions. As a result, they were empowered by being allowed to interact and exchange their thoughts about the descriptions (that will be accumulated and computed to attain the most current perceptions of districts or any individual services inside a shop or district).

Likewise, for SMB shops, cTaipei can empower a focal B with its partnership stakeholders to further perform customer engagement (i.e., acquire, develop, and manage) using the advantages of multiple new media vehicles to create a customer engagement behavior (CEB) virtuous circle in a holistic way. Any SMB shop owner that was considering drawing in customers on cTaipei through new media achieved superior results, which means that this can be facilitated through the backstage of the cTaipei platform by analyzing its customer data (like Google, Facebook, and iPeen). In the wake of enrolling with cTaipei, the SMB shop owner was empowered through three service components: the brand partnership campaign laboratory (for the broader ecosystem stakeholders' identification), the brand partnership campaign thermometer (for the utilization of multiple new media on customer acquisition/development), and the CEB data observation component (for the utilization of various new media on CEB development/management towards CEB co-creation). Figure 8 depicts how SMB shop owners can see their improved engagement on their webpage (Yuan et al., 2017).

Figure 8. cTaipei webpage for SMB shop owners

By means of the CEB data observation component of new media utilization, the shop owner could see their present engagement status on various new media vehicles, similar to a Facebook's fan page likes and introvert leaders, Google's browsing data, and the social recommender of iPeen review data, as depicted in Figure 9 (Yuan et al., 2017).

Likewise, cTaipei could enable a focal business to look for a brand alliance because they could easily filter by locations to find industries and brand images for a brand alliance-based campaign or cooperation to take on new customers, as depicted in Figure 10 (Yuan et al., 2017).

To acquire new customers, a shop and a brand alliance could start a new campaign to bring cTaipei site's customers to their own target site (Figure 11). Then, a specific curator page (Figure 12) would be given to the social recommender's identified expert who might have more impact on the recommender by means of their interests. The curator page would contain some information and links that could urge the experts to absorb the information and be involved in the interaction page and discover more information for the business' store; this refined information would lead to more interactions or influences on the curator page. With the expert's engagement, the customers could be impacted by the experts and comply with the engagement activities of the focal business.

Figure 9. Shop owner's Customer engagement status

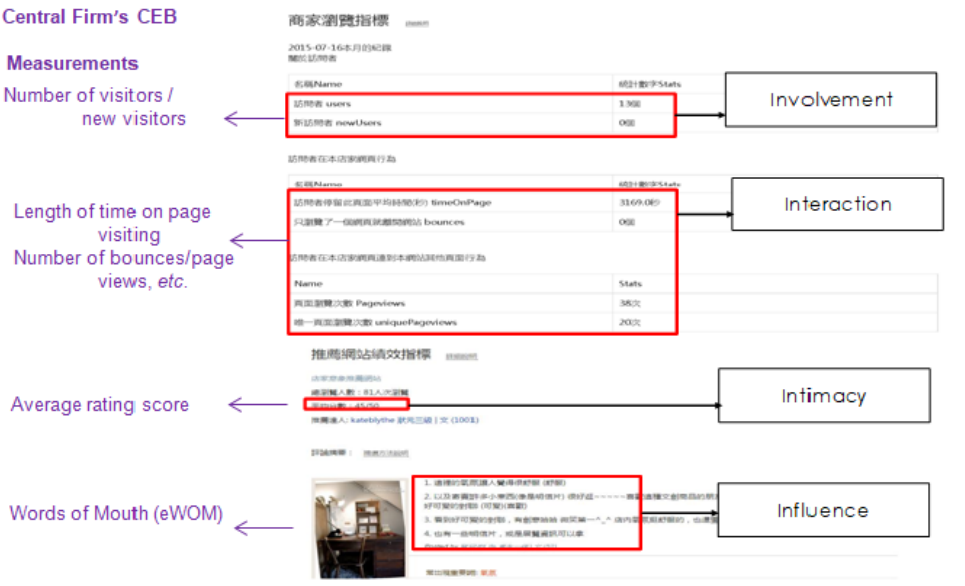
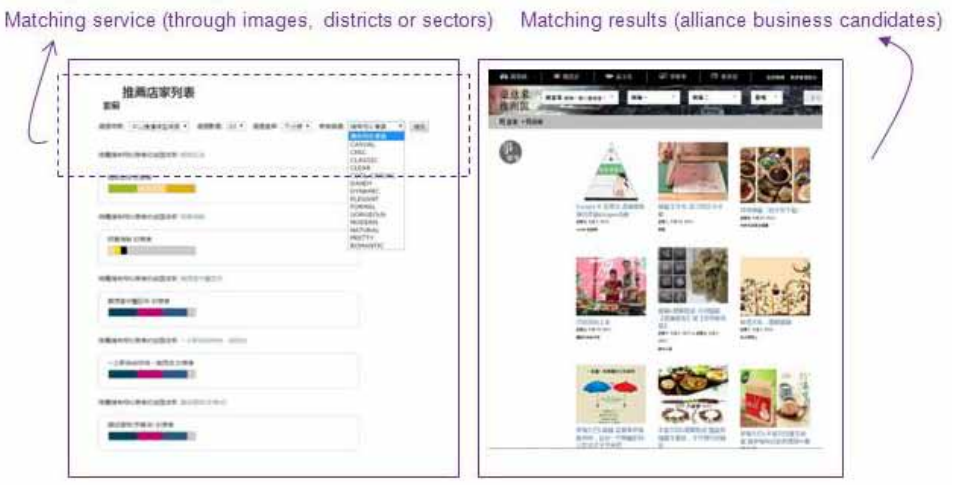


Figure 10. Brand alliance partner matching service through brand image



After launching the campaign, the Brand Partnership Campaign Thermometer Component gives the suggested activities that they can perform. For instance, they can adjust the keywords to increase web visibility (Figure 13), see the comments and feedback on the social recommender through the identified experts in the form of critical sentences containing positive, negative, and image words (Figure 14), and monitor the eWOM performance on the Facebook fan page (Figure 15) from identified introvert leaders that were engaged in this campaign (Yuan et al., 2017).

The aforementioned operation design strategies are very different from existing CEB works (that seldom address CEB involved with the integration of multiple new media channels), and the design considers the broader co-opetition ecosystem stakeholders (e.g., ecosystems of brand partnerships). These operation design strategies can also help inspire new causal pathways among broader CEB factors in the future in light of varied characteristics of

Figure 11. Campaign creation via the brand partnership campaign laboratory

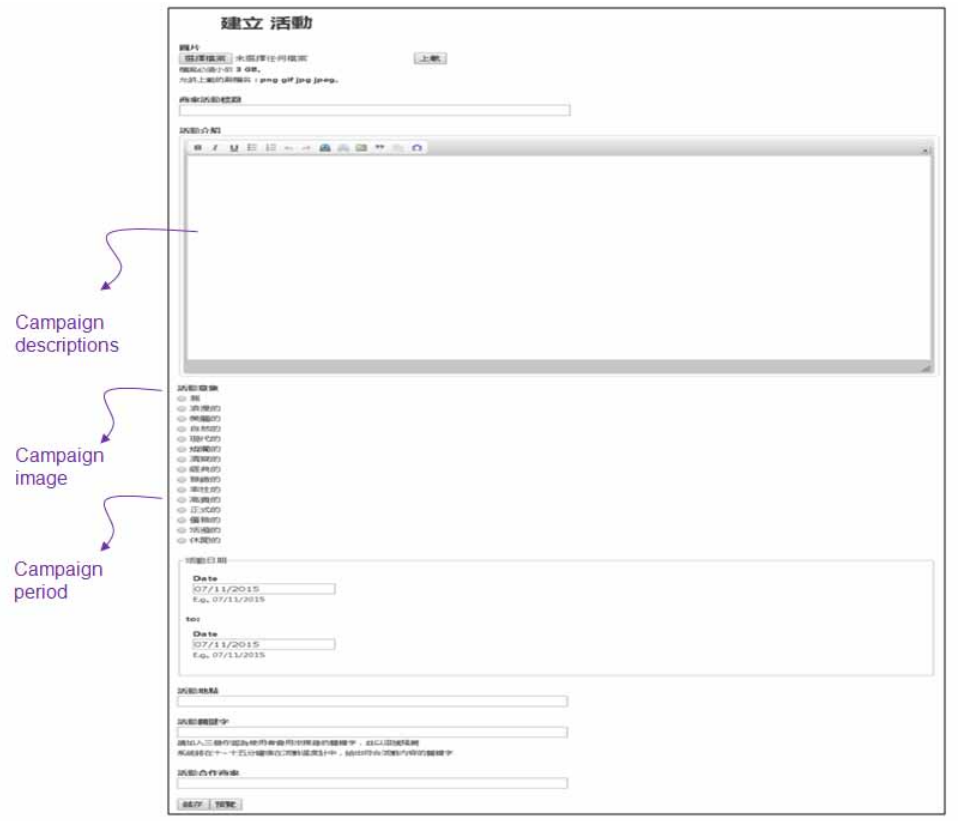


Figure 12. Curator page

new media vehicles, customers' preferences and behaviors, eco-stakeholders' preferences and behaviors, and co-creation value forms. Furthermore, these operation design strategies also showcase the incorporation of additional digital operants that facilitate the operation of service value delivery in line with designated organizational policies.

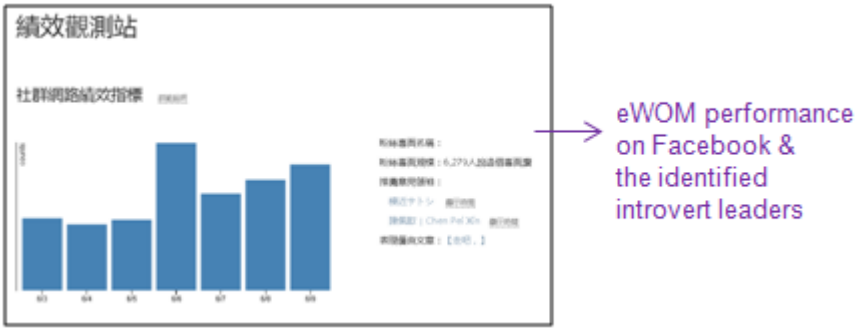
CDD Service Blueprint

The cTaipei ecosystem aims to achieve both operational productivity and ecosystem flexibility toward cTaipei's high-value in terms of stakeholders' co-creation of creative Taipei by increasing the unique attractions of shops and districts based on customer experiences. The stakeholders involved include the customer citizens and visitors, the SMB shops, the district owners,

Figure 13. Brand partnership campaign thermometer real-time decision support

Figure 14. Social recommender feedbacks on the Brand Partnership Campaign Thermometer Component

Figure 15. Facebook fan page information on the Brand Partnership Campaign Thermometer Component



and the government. Figure 16 then exemplifies a service blueprint of the CDD running scenario that manifests the operational interactions among the stakeholders, including those frontstage activities that directly impact the customer, the backstage activities that the customer does not see but are induced by the customer, and the support activities that are independent and customer-requested.

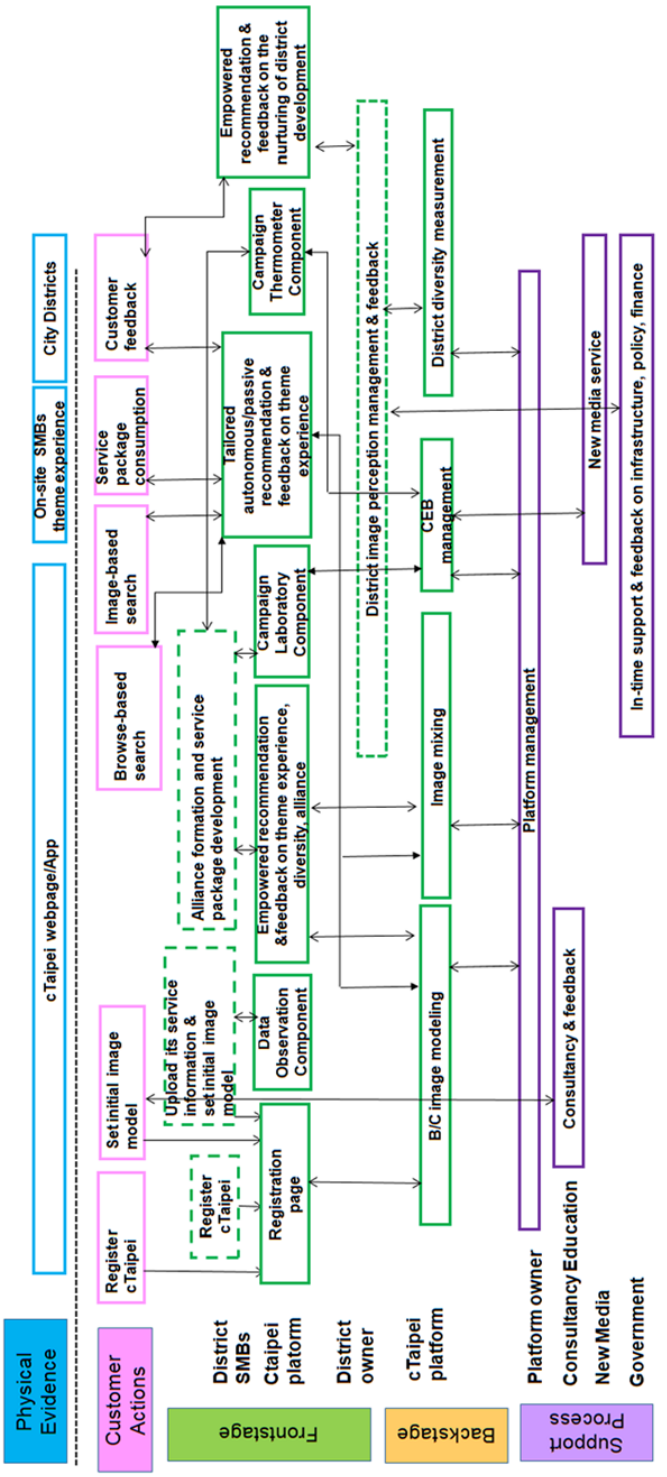


Figure 16. Exemplified service blueprint of the CDD running scenario

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Chapter 7
Business Reinvention Viability and Business Model

ABSTRACT

A business reinvention's success depends on its revenue and cost model when operating its value ecosystem to deliver the desired value. In particular, an innovative revenue model is important once the operational productivity has already been achieved by using specific digital operants and strategic digital architecture. Accordingly, this chapter provides different types of revenue sources followed by straightforward guidance for preparing a business reinvention model.

INTRODUCTION

One of the core factors for a successful business reinvention is its revenue/cost viability when operating in its ecosystem. In particular, an innovative revenue model is important when operational productivity can be achieved by utilizing digital operants and digital architecture once they can be feasibly implemented. A viable business reinvention can then be manifested through a business model that describes the rationale behind how the reinvention creates, delivers, and captures value.

In other words, the surplus has to be in place to ensure the viability of the business reinvention. Otherwise, it implies the presence of key risks (KR), regardless of the risks being value-adoption-oriented, technology-oriented, or business/team-oriented. Consequently, the value ecosystem operational

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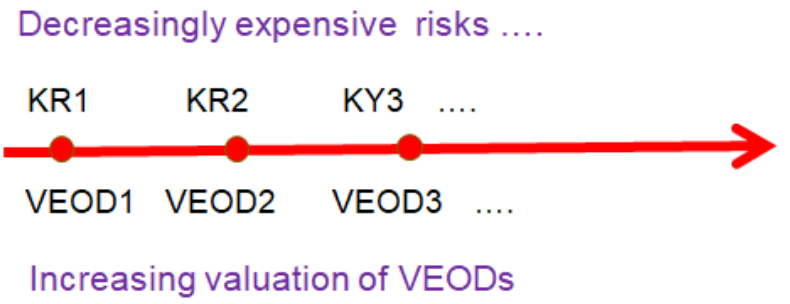
Figure 1. Iteration of VEOD adjustments for business reinvention viability



designs (VEOD) will be adjusted and tested until the viability is acceptable, as depicted in Figure 1. When the VEOD has acceptable viability, it will increase the valuation of VEODs while decreasing the KRs associated with those VEODs (i.e., the first key risk KR1 refers to the most obvious risk identified from VEOD1 that would result in the most expensive consequence if VEOD1 not properly adjusted).

BUSINESS REINVENTION VIABILITY

The viability mainly rests on the cost and revenue models for the business being reinvented. The cost model refers to how capital is used to finance business operations. In contrast, the revenue model serves to fundamentally systematize the different forms of revenues. Given a design of value ecosystem operations, the cost model is assumed to be straightforward and estimable. Nevertheless, the revenue model has a lot of room for innovation.

Table 1 shows an exploratory framework of revenue sources that can help executives design and identify their innovative revenue sources (Wirtz, 2001). This framework shows four possible forms of revenue that can be explored and differentiated along two dimensions of the contextual market environment: new to customers and new to businesses. These depend on the direct/indirect generation of revenue and transaction-dependent or transaction-independent generation of revenue. Transaction-dependent revenues are triggered by the interrelation of the business and the customer who consumes the respective services (versus transaction-independent revenues that are of no relevance to these service consumption transactions). Direct revenues are the revenues

Table 1. Four forms of revenue examples

	Direct revenue generation	Indirect revenue generation
Transaction Dependent	- Transaction revenues in the narrow sense - Connection fees - Usage fees	- Commissions
Transaction Independent	- Setup fees - Base fees	- Banner advertisement - Sponsorship - Data mining revenues

that are generated without the interaction of a third party. Indirect revenues are then earned through third parties such as agents.

The proper choices of revenue forms depend on the contextual economic and market environment. Furthermore, it is worthwhile to think about questions, such as, to what extent a revenue differentiation can be used to reduce the market risk. Figure 2 illustrates such a business contextual market environment (Booz et al., 1982), in which these two dimensions (new-to-company and new-to-market) serve as a good way to delineate a business reinvention positioning. New-to-company refers to offering completely new customer benefits relative to the previous service or product generation in the industry, while new-to-market refers to its ability to create completely new businesses.

For the CDD running scenario, Table 2 exemplifies possible revenue forms that can be explored and examined in accord with the aforementioned market environment. That is, the revenue sources would be mainly obtained from SMB shops or district governments rather than from customers. Although SMB shops are empowered by the cTaipei platform's new operations (i.e., new to business) to help SMBs bring new values/benefits to customers (i.e., new to market), the associated risks (e.g., value adoption oriented or business/team oriented) might also be high. The extent of revenue differentiation could be properly exercised to help reduce the risks, such as exercising no charges for customers, a selected subset of charges from those mentioned in

Figure 2. Contextual market environment of new-to-business and new-to-market

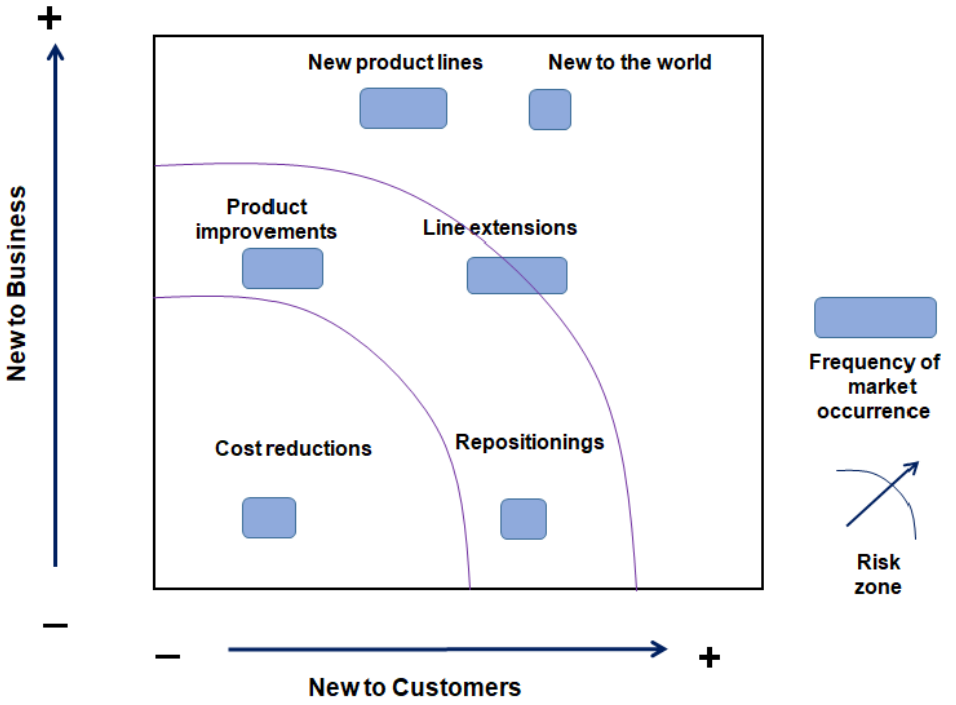


Table 2. The possible revenue sources for the CDD running scenario

	Direct revenue generation	Indirect revenue generation
Transaction Dependent	- B's theme-based alliance service fees - B's CEB service fees	- B transaction Commissions
Transaction Independent	- Regional setup fees	- Banner advertisement - Sponsorship - Data mining revenues

Table 2 for SMB shops, *etc.* Meanwhile, the revenue sources could also be obtained from cTaipei's third-party stakeholders (e.g., providing value-added services to SMB shops, district governments or end customers based on the platform's data analytics).

BUSINESS MODEL

A business model describes the rationale behind how a business creates, delivers, and captures value. Business Model Canvas is a visual-chart tool with elements describing a business' value proposition, infrastructure (key activities, key resources, and partner network), customers (customer segments, channels, and customer relationships), and finances (cost structure and revenue streams) to realize the value capture (Osterwalder & Pigneur, 2010).

When the choice of operational strategies and the cost/revenue model are suitably made, the application of the business reinvention methodology (value design, ecosystem system, and operation design) together with the cost/

Figure 3. Business Model Canvas

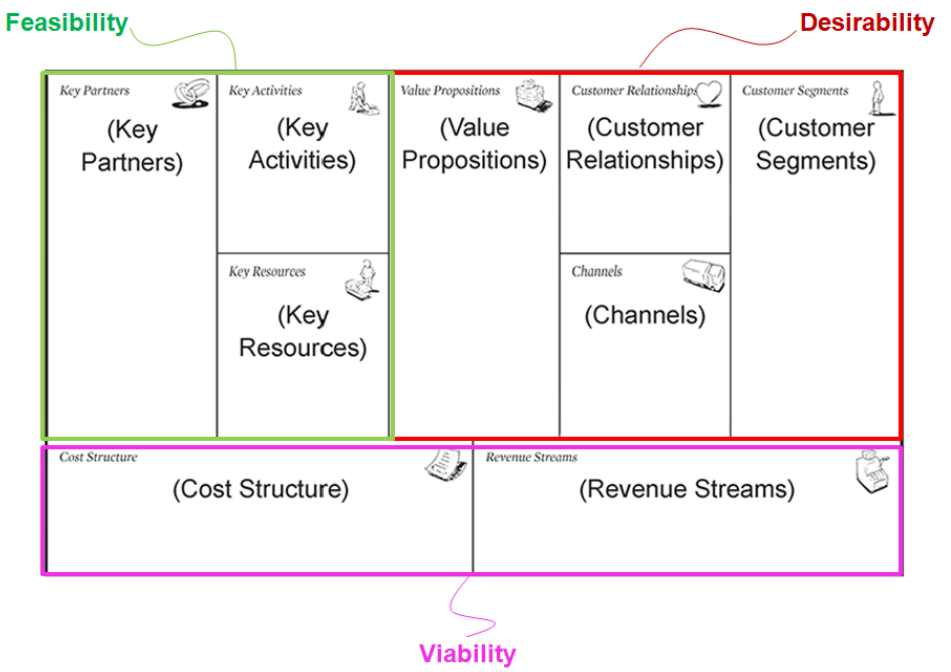
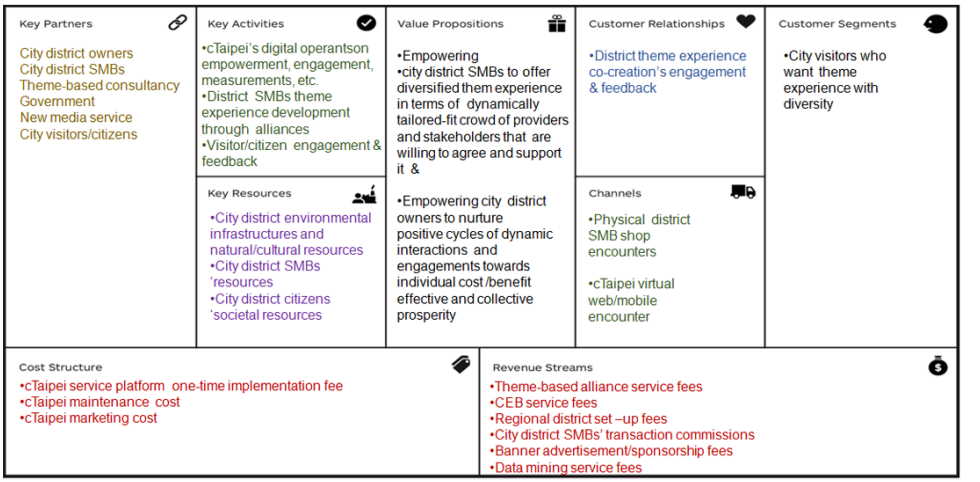


Figure 4. Exemplified business model of the CDD running scenario



revenue model can then be smoothly mapped to form the nine core elements of a business model, as depicted in Figure 3 (Osterwalder & Euchner, 2019; Osterwalder & Pigneur, 2010).

For example, on top of the business reinvention strategy, the value design and operation design could be mapped to the elements of the value proposition, the customer segment, and the customer relationships; further, the value ecosystem design and the operation design (including digital operants) could be mapped to the key partners (i.e., about desirability), the key activities, and the key resources (i.e., about feasibility). Finally, the cost/revenue model could then be mapped to the cost/revenue structures (i.e., about viability).

For the CDD running scenario, Figure 4 exemplifies a business model consisting of the aforementioned required components.

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Part 3
Strategy

Chapter 8
Business Reinvention Strategy

ABSTRACT

This chapter begins with the strategic decision-making issues for successful applications of the business reinvention methodology and discusses how businesses can decide proper strategic plans in accord with contextual situations for proper application of the methodology. This chapter models the examinations of contextual situations to assess missing components (the when and where) of the 5W1H given the methodology already addresses the who, what, why (i.e., the value design), and how (i.e., the ecosystem design and the operational design). Subsequently, this chapter reinforces the book's vision of collective wellbeing toward economic quality and growth by connecting the vision to a modern economic conception of Doughnut Economics, or the idea that "a healthy economy should be designed to thrive." Meanwhile, this chapter suggests the proper mindset and behaviors required for different business reinvention roles, which are required for successfully applying the business reinvention methodology to create the wanted results in a cost-effective and timely manner. These business reinvention roles could be regarded as creative leaders who have qualities like inviting disruptive innovation, being comfortable with ambiguity, and changing the enterprise. Finally, the emerging research opportunities and the conclusion are also discussed.

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INTRODUCTION

This chapter aims to discuss business reinvention strategies for the successful application of the business reinvention methodology. These strategies mainly concern the business reinvention strategic plans and business reinvention managerial roles and leadership. This chapter also provides emergent research opportunities to further the business reinvention methodology.

THE PLANNING OF BUSINESS REINVENTION STRATEGY

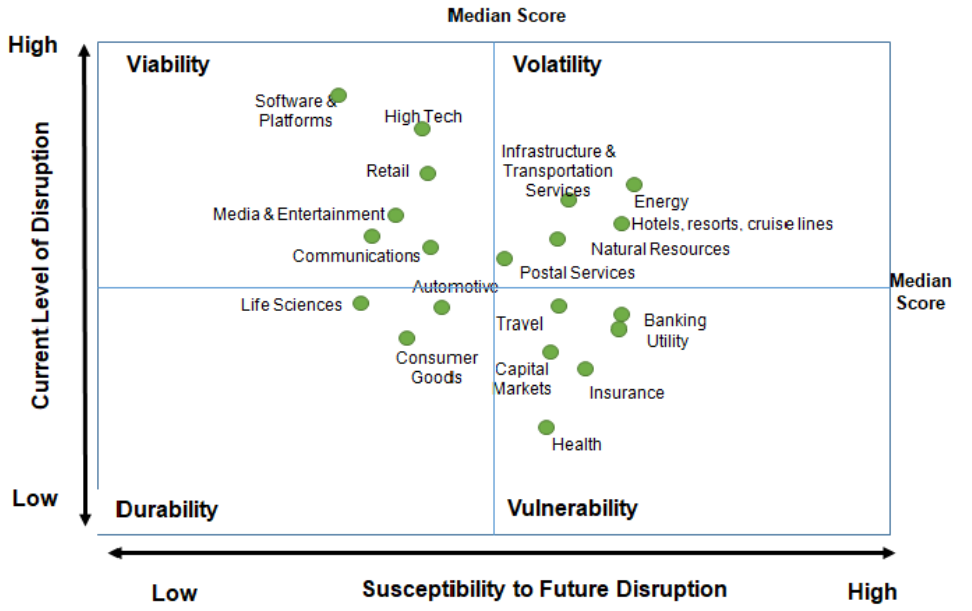
Successful applications of the business reinvention methodology vary in different business or industry contexts. The appropriate strategic plan should be in accord with the company's contextual situations in order to properly exercise the methodology along the three dimensions (value for the customer, ecosystem for value, and intelligence for ecosystem flexibility). This chapter details the contextual situations as the assessments for the missing components (when and where) of the 5W1H given the methodology already addresses the who, what, why (i.e., the value design) and the how (i.e., the ecosystem design and the operational design). With the careful examination of the contextual situations, proper decisions for business reinvention strategic plans can be made.

Recognize the Underlying Industry Disruption Threats (Near/Long) (When)

Industry disruption refers to a process where a smaller business with fewer resources can successfully challenge current established businesses. Industry disruption, as Abbosh et al. (2018) have found, is sensibly predictable. Furthermore, with insights about its predictability comes opportunity. For instance, Amazon, Airbnb, Uber, and LinkedIn have essentially changed the grocery, hospitality, taxi, and recruiting industries. This phenomenon has been gradually extending to industries like health, banking, insurance, and so forth. This implies that no industry will be left unaffected. It is only a matter of time (i.e., the issue of "when") before that can be sensibly predicted using the assessment of their current and future industry disruption status.

For business executives to assess how susceptible their industry is to disruption, it is better for them to be armed with the knowledge required to

Figure 1. Four states of disruption



define the right strategic response and act with confidence. Accordingly, Figure 1 provides such industry disruption distributions along two dimensions (susceptibility to future disruption and current disruption level), which yields four categories of disruption: durability, vulnerability, volatility, and viability (Abbosh et al., 2018). These industry disruption distributions can help executives predict the tempo required for their businesses to deal with upcoming potential disruptions.

In the durability state, the incumbents of efficient and mature industries (e.g., beverages as Coca-Cola or tires like Bridgestone) often possess established brands, proprietary innovation, business secrets, or control distribution channels. These advantages can be used to control for the sudden inundation of non-conventional competition if the executives are set up to react to changing trends of customer demands and exploit growth opportunities (Abbosh et al., 2018).

In the vulnerability state, incumbents benefit from the continued presence of high barriers to entry such as regulations and capital requirements. Businesses in this state frequently confront increasing pressure to enhance efficiency and repress operating costs in their traditional businesses, and this often pulls in astute opportunistic disruptors. For the example of the medical services, newer

businesses are joining the market with the incorporated capacity to utilize associated sensors and artificial intelligence to progressively screen the states of patients; this is particularly true for those experiencing ongoing conditions. Consequently, an increasing number of incumbents are being impelled to embrace these technologies to remain competitive (Abbosh et al., 2018).

In the volatility stage, industries encounter a large amount of disruption and will soon be susceptible to even more disruption. Traditionally, strong entry barriers have deceased. Stationary assets like car fleets, hotels, bank branches, and landline infrastructure have become weaknesses. For example, in transportation, on-demand options have irritated the market, and traditional taxis are battling back tardily with similar apps (Abbosh et al., 2018).

The state of viability is where new or reborn industries have persevered through a noteworthy disruption. The competitive landscape brings opportunities for new structural efficiencies. However, high innovation rates imply that sources of competitive advantage are often fleeting as new disruptors constantly rise. In this state, disruption has become constant. For example, the newspaper-publishing industry experienced a spectacular fall in print sales and advertising, and some newspapers have reactivated themselves as digital platforms or have investigated moving to membership models. In any case, this industry keeps on confronting noteworthy and diligent difficulties identified with advertisement income (Abbosh et al., 2018).

Other research has mentioned situations where business executives are required to recognize their timing of business reinvention, such as the signals that the situated industry has significant regulatory burdens, the customers have to work at managing their costs, or the customers' experience is not positive or even neutral (Beck & Libert, 2018). For example, startups are now changing different areas of the educational process. Schoology (which secured $57 million in funding) creates a platform for teachers, parents, and students to audit work and communicate with one another. Newsela uses artificial intelligence to change news articles into age-suitable audiences and peruse appreciation materials. Since its founding in 2012, it has effectively advanced into three-fourths of America's schools.

Digital Business vs. Financial Performance (When)

The development of digital operants and digital architecture is vital to a value ecosystem's flexibility and sustainability. However, a few key issues arise when large commitments to developing digital competencies meet fundamental financial performance problems (Davenport & Westerman, 2018).

The first issue is that the economy or the desirability of products/services can affect a company's success as much or more than just its digital capabilities. Second, it is important to align the digital investments with the readiness of the situated industry for both customers and competitors (Davenport & Westerman, 2018). For example, when P&G was making its digital push in 2012 and 2013, it was already well in front of most businesses in the consumer products industry. P&G could likely have lost little ground to contenders had it invested in digital in a more focused manner. Today it does as such, and no digital initiative is commenced at P&G if it does not fit the strategy and is connected to the value. This is a good digital governance discipline that can help the business be better prepared for competitive attacks.

Third, at the point when things are not going so well in the current business, the call of another plan of action can turn out to be more dominant than it should. The possibility of propelling a charm technology-based business is enticing, but the digital can become all-consuming and executives should give careful consideration to the new and insufficient to the old (Davenport & Westerman, 2018). For instance, Sears' investments in analytics were not a bad thought, but the company's facilities and services needed investment more.

Finally, digital is multi-faceted and does not involve just technology. Digital transformation is a progressing process of changing the manner in which the business works. It requires essential investments in skills, projects, and infrastructure, and it also requires the business to clean up IT systems, blend people, machines, and business processes that can lead to possible messiness or chaos. It also requires the top executives to constantly monitor and intervene to ensure that both digital executives and non-digital executives are using sound judgment about their change endeavors.

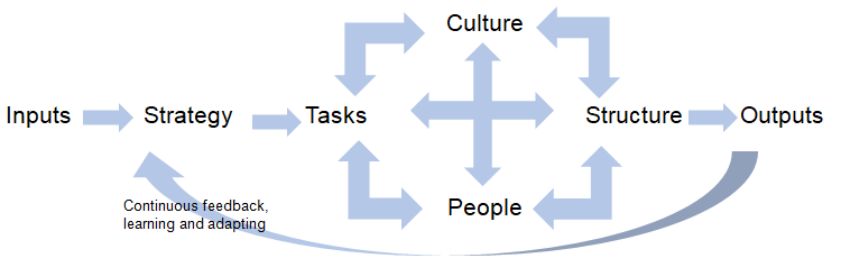
Executives have to understand what new technologies can do and understand their impact on markets, products or services, and distribution channels. In the midst of the upheaval and uncertainty in the technological era, it tends to be exceptionally hard to recognize ventures you have to make in front of the market and speculations must be in a state of harmony with market availability. It may be enticing to consider the early periods of radical innovative change as an opportunity to dominate a new market as opposed to learning about the market. Investing ahead of the curve makes sense when you know what the curve is. Be that as it may, with digital transformation there is a great deal of investigation and comprehension needed before the curve begins to come to shape (Davenport & Westerman, 2018).

In short, digital business transformation involves the recognition of the complexity of what companies should embrace regarding the culture, people, structure, and tasks aligned with each other so that executives can effectively address the challenges of a constantly changing digital landscape, as shown in Figure 2 (Kane et al., 2016). The executives need to decide "when" their digital congruence is ready before driving the creation of their value ecosystem and changes across their organizations to avoid financial performance problems in the future.

Efficiency/Sustainability/Creation Based DCE (Where)

Social media, wearables, and the Internet of things are just some of the technologies that are affecting markets and creating changes in how people communicate, connect, and discover. This brings tremendous implications for businesses and everything where people are involved. It is not so much that technology is part of people's everyday life or that technology is tenacious in its blast on humanity. The genuine danger and opportunity in technology's impacts lie in the evolution of customer and employee behavior, values, and desires. Businesses are faced with a dilemma as they invest resources and budgets in the same old existing technologies and business strategies versus that of the unfamiliar in how those investments align in accord with market and behavior shifts.

Figure 2. Digital congruence issues



Strategy	Tasks	Culture	People	Structure
•Adopt zoom out/in planning •Communicate both vision and risks •Integrate digital strategy into corporate strategy •Learn, innovate and repeat	•Modularize work where appropriate •Build stronger relationships with partners •Organize work around projects, rather than functional silos	•Build risk/failure tolerance •Pilot projects rather than large initiates •Drive scalable learning •Hire for culture fit ahead of tech fit	•Adopt a talent replenishment model •Rethink traditional models of working •Balance soft and tech skills at business levels	•Build collaborative and distributed leadership •Define and build out your business ecosystem •Scale back scale ahead •Distribute leadership

If consumer behavior is evolving as a result of technology, businesses either contend to advance beyond it, constantly respond to it, or they downplay it. A standout amongst the most hazardous perspectives around digital maturity is that technology is both a part of the solution and also a part of the problem (Solis, 2015). Digital transformation refers to the purposeful endeavors to adapt to this attack of disruptive technologies and how it affects customer and employee behaviors. As technology turns into a perpetual phenomenon in everyday life, businesses are compelled to refresh their legacy technology techniques and support approaches that are all the more likely reflect how this present reality is developing. Furthermore, the need to do so is ending up progressively compulsory.

Customer experience has been characterized as the quality of a consumer's encounters with a business' products, services, and brand in light of the aforementioned technology impacts (Lemon & Verhoef, 2016). While a strong customer experience can deliver immense results (e.g., more customers, more sales, and more loyalty), many businesses still battle to recognize the arrangement of activities that will best accomplish them. This does not need to be the situation. Pioneers can achieve these objectives on the off chance that they center around something progressively explicit, such as the digital customer experience.

Digital Consumer Experience (DCE) refers to the creation of a simple, coherent, essential, and personalized digital experience (Borowski, 2015). Since DEC is inevitable in light of the aforementioned business readiness of digital congruence, executives need to decide "where" the DCE can take place over the business objective priorities of the value ecosystem (efficiency, sustainability or creation as addressed in Chapter 2 Figure 1). That is, the DEC can appear to be in line with the business objective priorities on improved operational efficiency, improved business productivity, viability, or improved value proposition.

Digital Business like Urban Planning Considering Financial Performance (Where)

Most businesses want to keep pace with new digital businesses, yet end up hindered by the need to fix the everyday challenges that their decades-old IT systems create (Beswick, 2017). How do you redesign and reconstruct key infrastructure while keeping the everyday work going? This kind of

challenge is frequently alluded to as "repairing the airplane while you're flying it." Another more enlightening analogy might be the redesign of a metropolis' infrastructure.

In particular, there are three urban planning strategies, usually pursued by major metropolises, that executives can use for inspiration to pursue digital competition (Beswick, 2017). They include three urban planning strategies:

- Dubai-type (developing new landmark at first like making the tallest building), e.g., developing visual and high-impact apps or improving data analytics capabilities separately from the core IT system, that is, providing an accelerator to the back-end reinvention that needs to pursue.
- Boston-type (removing roadblocks like tearing down an aging elevated highway with a passage roadway to stay away from the labyrinth of clogged streets in downtown), e.g., removing inconsistent sales data for proper shelving.
- Shanghai-type (starting from scratch – Pudong district), e.g., rebuilding core IT from scratch in the cloud.

In short, executives should chart a course for "where" they can improve their digital capabilities by learning from the urban planning of major cities, which have confronted challenges on an even larger scale. Given that digital transformation is almost always difficult and expensive, learning to think like a city planner can help.

Business Reinvention Strategic Planning

Given that successful application of the business reinvention methodology (addressing the who, what why, and how) vary in different business and industry contexts (addressing the when and where), the strategic planning of the business reinvention strategy and the business model can then be developed in stages with respect to the business reinvention methodology framework (Figure 3).

Any business attempting to reinvent itself would move from inward to outward indirectly or directly until its maximum human well-being fulfillment point (i.e., the round orange point in Figure 3). A business reinvention strategy refers to their choice for the way to do indirect and direct movements.

Figure 3. Conception of business reinvention strategic planning

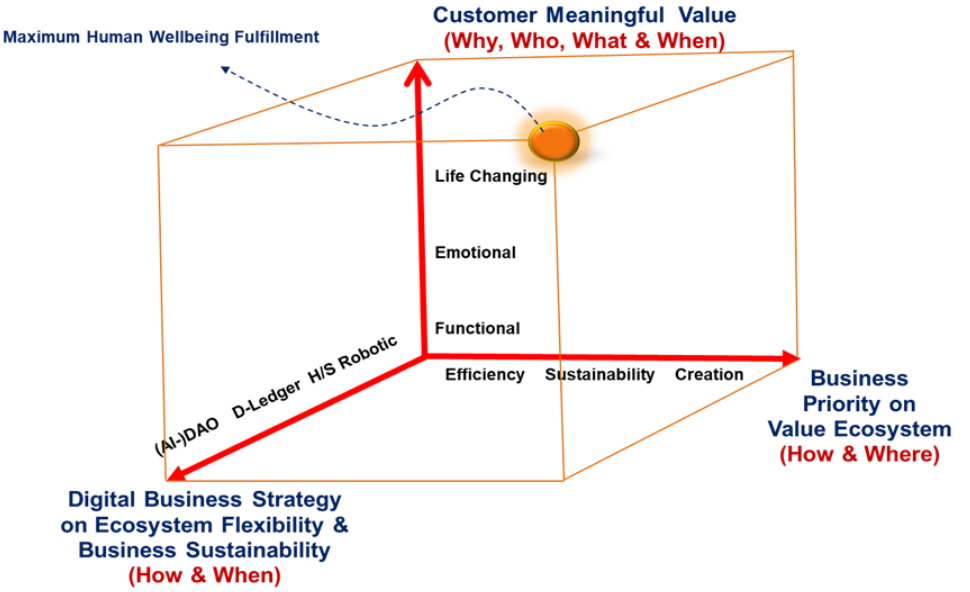
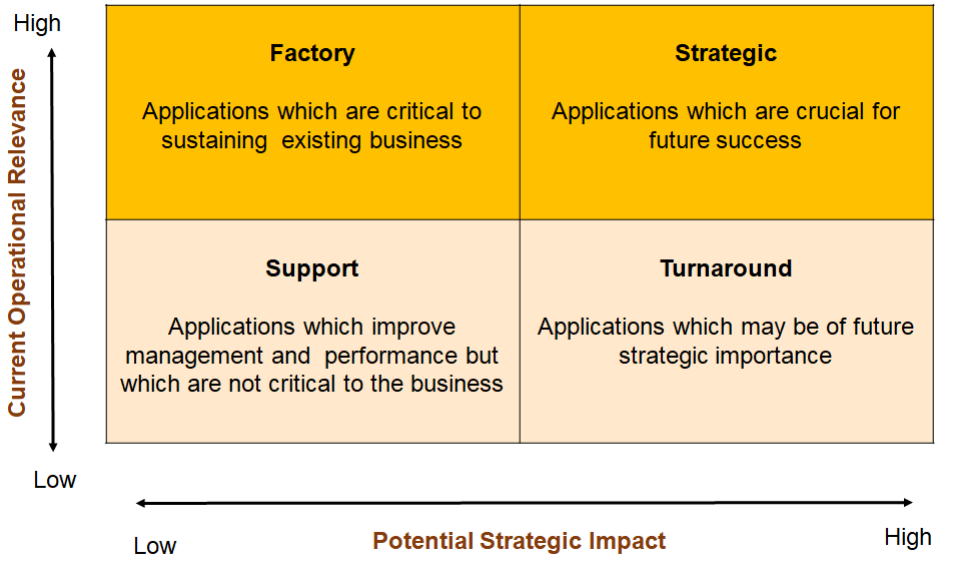


Figure 4. Relevance and impact grid



Connecting to Nolan and McFarlan (2005)'s relevance and impact strategic grid (Figure 4), the movement would go from the left-hand side (support mode or factory mode) to the right-hand side (turnaround mode or strategic mode).

BUSINESS REINVENTION TOWARD COLLECTIVE WELL-BEING AND ECONOMIC QUALITY AND GROWTH

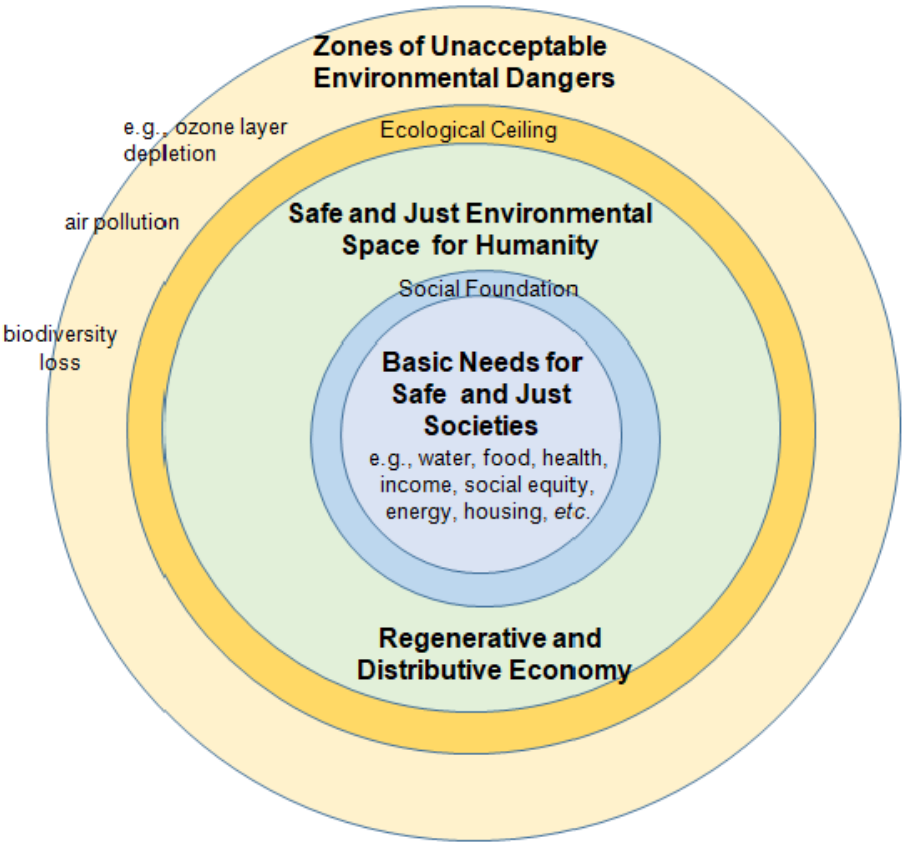
As discussed in the previous chapters, the business reinvention methodology is believed to provide a systematic set of tools, models, and methods that can generate a collective well-being for economic quality growth that is relevant to a modern economic conception; Doughnut Economics refers to the idea that "a healthy economy should be designed to thrive." As such, this chapter connects this conception to our methodology. Furthermore, this section also addresses the managerial implications for different business reinvention roles followed by the fruitful avenues for related future research.

Doughnut Economics

Oxford Economist Kate Raworth recently presented the Doughnut Economics conception that posits that humanity's central challenge in the 21st century is to provide human rights for all people within the capacity of earth's life-support systems (Figure 5). Given that humans have already infringed on at least three planetary boundaries (on climate change, nitrogen use, and biodiversity loss), over one billion people still do not have a way to meet their most basic needs (Raworth, 2017). Kate Raworth also advocates for human need economies that "make us thrive, whether or not they grow" (meaning that people are changing the image of what the economy is and how it functions); in other words, a healthy economy should be designed to thrive. This coincides with this book's argument for the importance of collective well-being for economic growth quality based on the production and consumption of the QoL well-being values.

The present approach for quantifying success in society—GDP growth—is not a formula for the kind of economy that delivers prosperous lives or one that reflects planetary limits. In addition, once individuals have the fundamental material necessities of life, GDP growth does not really connect with increments in happiness, well-being, life expectancy, or the Social Progress Index (Raworth, 2017). That is, economies rise in terms of GDP growth, yet the people in those economies do not feel they have better lives.

Figure 5. Doughnut economics: meeting the human rights of all people within the capacity of earth's life-support systems



For example, in the UK, the percentage of people disclose themselves as being 'very happy' declined from 52% in 1957 to 36% in 2005, notwithstanding genuine salary doubling in that period. What makes matters worse is that these GDP-growth-based models are specifically in dispute with our long-term ability to flourish on this planet. The challenge is being able to provide an expanding population with enough of a social foundation so that the entirety of their human rights are met.

Nevertheless, how can we provide social foundations for everyone while staying within our ecological limits? What sort of economic mindset would get us there? How do we re-orientate business and economics to provide prosperous lives more effectively and without jeopardizing humankind's long-term chances to prevail? How can we create a flourishing economy, one

that is comprehensive and sustainable and will help accomplish sustainable development goals? Doughnut economics concerns how to meet the human rights of all people within the capacity of earth's life-support systems and encourages entrepreneurs to see their job as building a better world, instead of simply collecting wealth (Raworth, 2017).

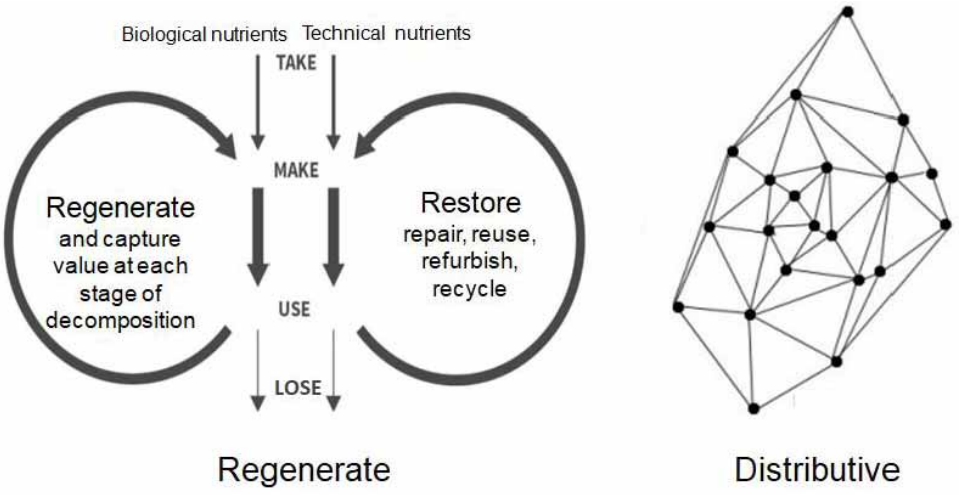
Raworth (2017) discusses the better-world design as having two core concepts: regenerative and distributive (Figure 6). The regenerative economic design ensures that instead of spending the earth's resources, people use them over and over. People figure out how to function with, not against, the repetitive procedures of life, including those for carbon, water, and nutrients. The distributive economic design then ensures that the value created is spread more impartially among the individuals who produced it with the rise of digital networks.

To further realize the advantages of Doughnut Economics, the regenerative and distributive concepts are further broken down and explored to find learnable and usable tools, models, and methods.

Business Reinvention and Doughnut Economics

The business reinvention methodology commendably provides a systematic set of tools, models, and methods to realize the helpfulness of Doughnut Economics. The regenerative concept can be connected to the notion of the

Figure 6. A healthy economy should be designed to thrive using the two core principles - regenerative and distributive



boundary of value propositions (that is defined as a space of the possible values under exploration) and the high-value design. The distributive concept is then connected to our notion of the value ecosystem design and the design of digital operants and digital architectures. In other words, a healthy economy should be designed to thrive and should be made up of as many QoL well-being values that are designed, produced, and consumed in different forms of collective well-being to achieve greater economic quality.

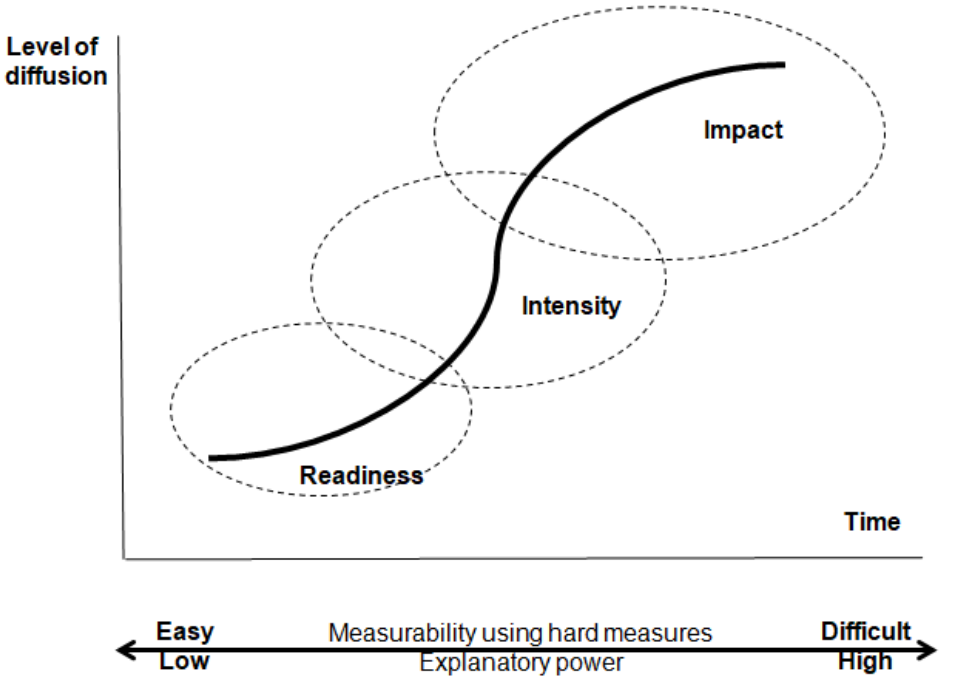
Since the design and creation of the QoL well-being values depend on the overall goods and services provided by businesses, industries, or governments, the business components required to achieve collective well-being. Further, it enables service providers to better design their initiating role to drive the co-creation of QoL well-being values while gaining more collective well-being for economic quality and growth.

MANAGERIAL IMPLICATIONS FOR DIFFERENT BUSINESS REINVENTION ROLES

In the context of the co-creation of QoL well-being values for economic quality and growth, businesses, industrial organizations, governments, or even end customers face disruption in the form of threats or innovations; further they need the proper mindset and behavior for the successful application of the business reinvention methodology to create the wanted results in a timely manner. These disruptions exist regardless of whether the business, organization, government, or customer is playing the initiating role for either type of triggering point (intangible soft design challenge with relevant QoL features or tangible, hard technology or products with relevant features for the particular technology, product, or service). In addition, those requirements would vary based on different business reinvention roles.

Berman & Dalzell-Payne (2018) addressed that traditional managerial strategies and approaches are increasingly not suitable for business contexts/environments being radically changed by new digital technologies and emphasized that the emergent managerial strategies need to be proactively driving customer value. However, when considering any co-creation for QoL well-being values as a socio-technical innovation (an instantiated system of socio and technical elements engaged in goal-directed behavior), the OECD's diffusion model (Figure 7) can be used to discuss the requirements for the different business reinvention roles over different stages (OECD, 2011).

Figure 7. OECD's diffusion model of socio-technical innovation

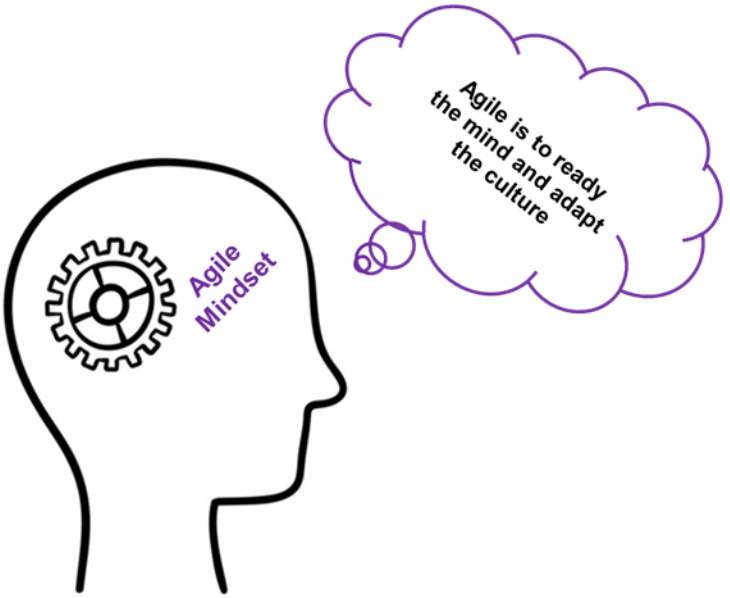


The diffusion model provides the linear stages of diffusion, which include readiness, intensity, and impact (OECD, 2011). Readiness is the ability for businesses and individuals to adopt new innovations that are not yet widely diffused and should be analyzed by focusing on whether the preconditions for further dissemination are adequately developed. The intensity or use refer to the specific innovations that have reached higher rates of penetration and would be better evaluated by looking into how much, in which ways, and for what reasons the innovation is employed. Impact refers to changes in behavior, economic structure, and performance as result of use.

Accordingly, the proper mindset and behavior along the linear stages of diffusion are required for different business reinvention roles to successfully implement the business reinvention methodology.

For example, "being agile" is the first requirement in the readiness stage for providers or enablers. Being agile refers to a culture of change that is a transformation in beliefs and behaviors, as shown in Figure 8 (Moreira, 2014). An agile mindset requires a change by more than one individual; rather, it requires change by various individuals inside the business, and this

Figure 8. Agile mindset



takes time. To facilitate speed, businesses must design themselves to limit the obstacles for completing work. This requires empowering and supporting problem-solvers. To this end, growing numbers of businesses are creating small, cross-functional, agile teams. Each team owns the delivery of a digital offering or a set of services that contribute to an offering. Typically, teams define their own objectives and their own metrics for success (Ross, 2018).

A culture shift toward being agile would help inform the mind and shape behaviors. Focusing on the cultural aspects of agility is required for "readiness." Agility is a soft skills that will become increasingly valuable given that the business reinvention methodology already takes on other soft skills like empathy, context sensing, collaboration, and convergent and divergent thinking (in light of the common norm that people learn and perform is currently skewed toward hard skills like analysis, decision-making, and analytical judgment).

Along the linear stages of diffusion, Table 1 shows the proper mindset and behavior required for different business reinvention roles, including the initiating role of the focal B, the service-provision B role, the enabling B role, the end customer C role (which are the specified roles involved in a value ecosystem). At the readiness stage of diffusion, the involved B roles all need to have a soft skills mindset and behavior (as indicated in the table),

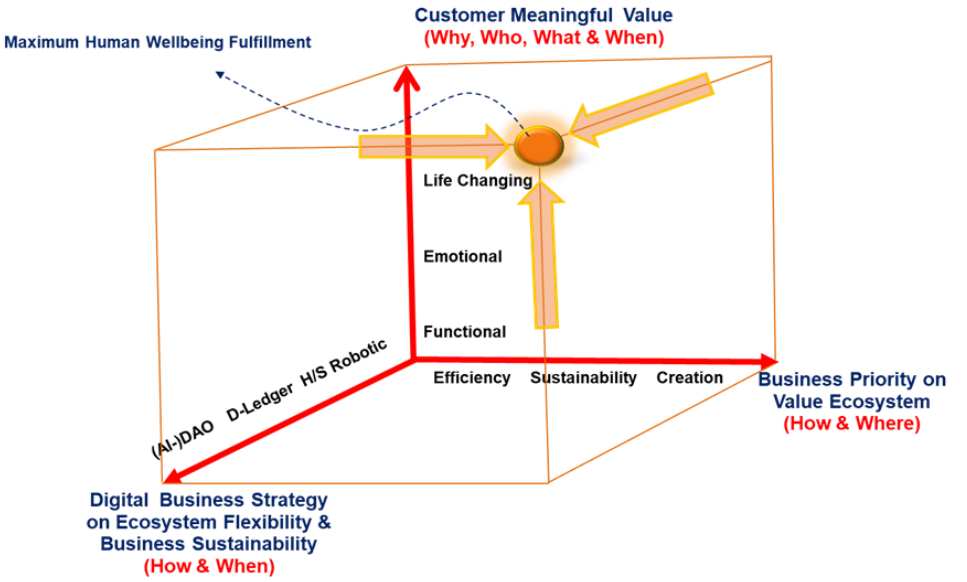
Table 1. The proper mindset and behavior of different business reinvention roles

Diffusion Level/ Business Reinvent Role	**Readiness**	**Intensity**	**Impact**
Initiating Role of a Focal B	Be agile; Know how to apply the methodology;	Measure & tune	Expand
Service-Provision B role	Be agile; Know the methodology;	Assess & tune	Expand
Enabling B Role	Be agile Know the methodology;	Assess & tune	Expand
End Customer Role	Wellbeing pursuer	Engage	Extend

such as being agile and knowing and applying the methodology. The C role is assumed to be a well-being pursuer that recognizes the importance of QoL now and in the near future.

At the intensity stage of diffusion, the involved B roles all need to recognize the importance of operational productivity and tune their behaviors in response to measurements and assessments, while the C role is willing to be properly engaged for obtaining well-being. At the impact stage of diffusion, the involved B roles all need to recognize the importance of expanding and advancing so they can achieve higher levels of well-being values, business priority, and digital strategy for the next phase, which is depicted in Figure 9. The C role also extends their needs of wanting a higher level of well-being individually or collectively.

Figure 9. Expanding and advancing the status quo by the involved B roles



The leadership of those different business reinvention roles (a focal B initiating role, service-provision B role, and enabling B role) is regarded as creative. According to a 2010 IBM survey of more than 1,500 Chief Executive Officers (CEOs) from 60 countries and 33 industries worldwide, CEOs expressed that creativity is the most important talent for successfully driving businesses in an increasingly complex world. The creative leadership features are depicted in Figurer 10 and include qualities like inviting disruptive innovation, being comfortable with ambiguity, and changing the enterprise ("IBM," 2010). These qualities should be cultivated among business reinvention roles. In addition, the deployment of the business reinvention methodology is a perfect exercise for creative leadership (as depicted in Figure 11).

Furthermore, exercising the business reinvention methodology can help build successful purpose-driven organizations and meaningful brands that can create more engaged employees and customers; it also impacts profit and makes investors see feelings as meaning that often lasts for years (Dial, 2015).

Figure 10. Creative leadership features

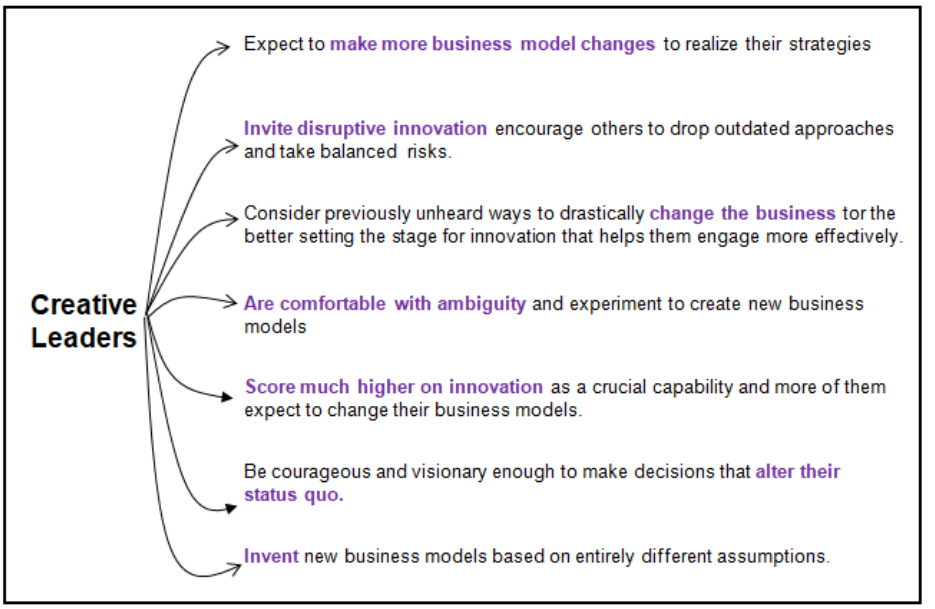
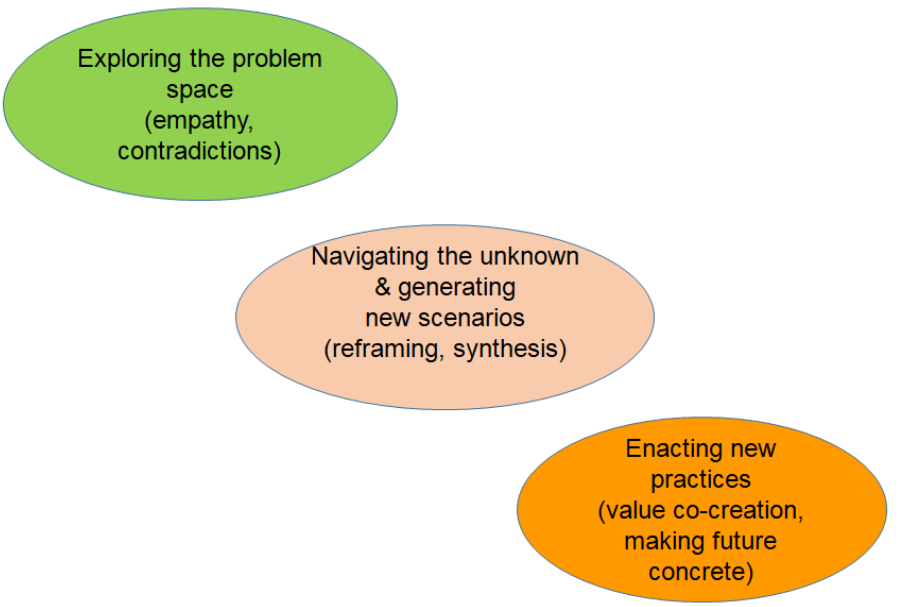


Figure 11. The exercise of creative leadership through the business reinvention methodology



EMERGING RESEARCH OPPORTUNITIES

However, there are still many emergent research directions to further this business reinvention methodology.

High Human Value Design

One common challenge of high human value design rests on the insight discovery process that requires intensive human effort and experiences. This process repeats frame creation and reframing in order to refresh the perspectives for viewing the design problem space and uncover empathetic and innovative opportunities. The methodology presented in this book provides a well-structured set of models and methods for non-professional designers to exercise the insight discovery process, and attempts to equip people in non-designer business reinvention roles with the capability to create new, powerful human value. Nevertheless, there is still room for improvement in the provisioned models and methods. For example, future research could focus on ways to limit exercise loading without jeopardizing the value.

Value Ecosystem Design

Configuring the possible making-sense entity interactions of a value ecosystem often requires high human efforts. The methodology presented in this book provides a structured way to exercise the configuration and the sense-making process with respect to a high human value. However, there is still room for more productive ways to link the value to the entity interactions and to their sense-making reasoning.

Digital Operant and Architecture Design for Ecosystem Flexibility and Empowerment

In hopes of developing a technology epiphany with a high, meaningful human value and its respective value ecosystem configuration, the identification of new, meaningful technologies needs to be researched. The current methodology provides a set of rational guidelines for the design of new meaningful technologies. The digital operants and architectures facilitate ecosystem value co-creation, ecosystem flexibility, and ecosystem sustainability using empowerment and intelligence. Nevertheless, it is believed that other

development directions for new meaningful technologies are also worthy of further exploration. Furthermore, these endeavors would involve a high amount of communication among multi-disciplinary teams of people. As such, T-shaped professionals (i.e., those who have a diverse range of capabilities) in high demand as they can easily adjust their team connections to adapt and communicate, as well as identify new technologies for business reinvention.

Ecosystem Operation Design

To deliver the service value and experiences to customers who can capture the value at various customer touchpoints across ecosystem actors directly or indirectly, the current methodology provides a structured way to exercise the operational design. However, the design might incur additional digital operants besides managing operational strategy choices and customer-induced variabilities. Therefore, future research can provide an in-depth analysis of the relationships among the customer perceived value and experience gaps, operational strategy choices, customer-induced variabilities, and operational digital operants. Such analysis would uncover more subtle models for ecosystem operation design.

Business Reinvention Viability Design

Given the success of a business reinvention also depends on its revenue/cost viability when operating its value ecosystem, the methodology provides some guidelines about this viability design. Nevertheless, future research can further explore other viability models or tools to enrich this area of business reinvention and viability design. Further, it is likely that it is better to have the business reinvention viability progress phase by phase in accord with the contextual cues from the business or industry as they may change over time. Accordingly, in-depth explorations for the evolution of revenue/cost viability for business reinvention are also important.

Business Reinvention Strategy

Since the proper applications of the business reinvention methodology might vary in different business or industry contexts, a set of guidelines about making strategic plans to properly exercising the methodology are provisioned in this book. These guidelines are manifested in terms of the assessments of 5W1H

contextual situations as discussed in this book. However, future research can explore other strategic issues or models required to learn about successfully exercising the methodology along the three dimensions (value for customer, ecosystem value, and intelligence for ecosystem flexibility).

Business Reinvention Managerial Roles

Since there are different business reinvention roles involved in exercising the business reinvention methodology, their creative leadership mindset and behaviors are very important. Because the different roles may vary, a set of guidelines about the respective proper mindset and behaviors are provisioned in this book. However, future research can further investigate the possible gaps or challenges behind these business reinvention roles when exercising the methodology along the business reinvention diffusion stages of readiness, intensity, and impact.

Relationships Among Key Components

For maximum human well-being fulfillment, the business reinvention methodology suggests sets of stages with increasing levels of well-being that extends along the three dimensions. For simplicity of exercising the methodology, it presumes linear relationships for well-being advancement within each dimension and across dimensions. However, it is worthy of in-depth investigations about the possibilities of non-linear relationships and the subsequent correlations with respect to maximizing human well-being fulfillment.

Academic-Practitioner Gap

The topic of business reinvention is more practitioner-oriented but also suffers from the lack of more rigorous, systematic and multi-disciplinary models, methods, and guidelines to lower the barriers and increase the chance of success for the various business reinvention practices. The business reinvention methodology attempts to provide a set of systematic and multi-disciplinary models, methods, guidelines; however, future research needs to be conducted using the model, method, and guidelines to bridge the academic-practitioner gap.

CONCLUSION

The global trend for high-quality economic growth and digital technologies is breaking down industry barriers to create new business opportunities. Business reinvention is a process through which a business is changed to drive its growth in terms of a human-centered, innovation-driven, and business-sustainable approach toward the improved QoL or well-beings through service ecosystems.

This book provides a systematic and multi-disciplinary business reinvention methodology to help a focal business change through a service ecosystem in terms of ecosystem value, flexibility, and empowerment. The main ideas are about empathetically redesigning the value proposition for high human value, strategically rethinking the ecosystem flexibility to develop and deliver the high value, and innovatively architecting the ecosystem into a digital business using digital technologies to empower the focal business and stakeholders to achieve ecosystem flexibility and business sustainability.

This business reinvention methodology is composed of a set of key components along three dimensions (customer meaningful value, business priority on value ecosystem, and digital strategy for ecosystem flexibility and business sustainability). These key components include high human value design, value ecosystem design, digital operant design, and digital architecture design, ecosystem operation design, and business reinvention viability design,. Together, these components help achieve ecosystem value, flexibility and empowerment. Business reinvention strategy, business reinvention managerial roles, as well as the relationships among these key components along the methodology's three dimensions, then represent the strategic decision-making issues on successful applications of this business reinvention methodology.

The contributions of this business reinvention methodology feature systematic, multi-disciplinary, and a hybrid of inside-out and outside-in aspects that reduce the academic-practitioner gap. In other words, this business reinvention methodology is a well-integrated set of models, methods, and principles that help lower the impediments and barriers to increase the chance of successful business reinvention exercises. This methodology is believed to be the first multi-disciplinary attempt worldwide to tackle the globally important question of business reinvention.

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Index

M

O

P

R

S

U

W