Handbook of Research on

The Platform Economy and the Evolution of E-Commerce

Myriam Ertz

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Handbook of Research on the Platform Economy and the Evolution of E-Commerce

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List of Contributors

Table of Contents

Section 7
New Frontiers in the Platform Economy

Detailed Table of Contents

collaborative relations between users and providers willing to share assets through digital platforms (DP). Even evolving fast, there is an opportunity to discuss how DP establishes connections between users and providers and uses a digital agency to mediate and flatten consumption relations in SE. Therefore, the authors propose a framework and future research directions that explore characteristics of the actants (roles, agency, behavioral attitudes) in the process of flattening consumption relations through DP in SE (connections, mediation, induction). To structure this framework, the authors consolidated the various definitions of its main elements and adopted the actor-network theory concept of translation as the theoretical-methodological approach to analyze the associations that determined how flattening consumption relations occur in SE.

This study aims to develop a typological configuration that characterizes the full spectrum of collaborative platform economy business practice in the real world. The analysis is conducted on the basis of a large-scale data set which contains information on 1,335 representative platforms in more than 60 countries on five continents, covering almost all collaborative platform economy business practices mentioned in academic journals and public media. Leveraging the k-means clustering method, an empirical typology comprising seven categories of collaborative platform economy business practice is proposed: collaborative support platform, resource supply platform, authentic C2C platform, C2C mutualized mobility platform, hybrid service platform, B2C service platforms, collaborative finance platform. In addition, with the help of operating status data of the collaborative platform economy, a cross-comparative analysis was also carried out on the category differences and geographic differences.

Research on the gig economy has rarely addressed the study on the motivations for the provision of labour services on digital platforms. Through a sample of 3,619 gigers in Europe, obtained from the COLLEM research, results have been obtained for labour providers (only gigers) and for labour and capital use providers (gigers and renters). The valuation of labour, being an internal resource of the gigers, has a great set of economic foundations, working conditions, and labour relations. On the other hand, the valuation of labour and capital uses is more focused on their economic and labour relations fundamentals, notably reducing the role of working conditions. These motivations suggest different platform strategies and public employment policies for both groups. While the promotion of the general job quality would also encourage the gig-job quality, the promotion of the labour and capital uses valuation requires specific actions on the platform operations.

conscious consumers still hungry for the latest styles. While these new business models filled a gap in the market and saw, in some cases, profit in the millions, the phenomenon remained rather niche. The recent pandemic, alongside other isomorphic pressures, have put further constraints on these fashion rental businesses and their entrepreneurs, leaving them struggling in the current economic climate. This chapter explores the entrepreneurial motivations behind rental platforms, the different platform models in operation, and the challenges these businesses face in the 21st century, including increased technological developments, environmental sustainability, and external pressures, such as the most recent pandemic, which saw economies shutting down. Empirically, the authors draw upon a novel dataset comprising six international case studies.

Section 4
Pathways to Success for E-Commerce Platforms

The chapter aims at understanding the predictors of customer satisfaction with online shopping in India by using self-determination theory. This research validates perceived enjoyment, social influence, social media interactions, reverse logistics, and pay-on-delivery (POD) mode of payment as new predictors of customer satisfaction in online shopping. Data was collected through a self-administered and structured questionnaire targeting online shoppers in North Indian states. A sample of 424 online shoppers was considered in this research. Structural equation modelling (SEM) was used to evaluate the constructs. CFA was applied to calculate validity and composite reliability. To examine the hypothesized relationships, path analysis was carried out. The findings of the chapter revealed that social influence, reverse logistics, and POD mode of payment had a significant positive impact on customer satisfaction. Perceived enjoyment emerged as the strongest predictor of online shopping satisfaction. In contrast, social media interactions emerged as non-significant.

The importance of marketplaces in e-commerce has increased. More and more merchants are trying to use e-commerce platforms as a distribution channel. With the increasing competition, merchants are faced with the challenge of continuing to sell their products to consumers through marketplaces at a profit. This is especially true if the consumer has already chosen a certain product and now only decides from which merchant to buy the product. This chapter therefore examines for different customer segments which merchant-related factors — also and in particular apart from the price — influence the purchase decision. After reviewing relevant literature, various factors are identified through structured interviews. An online survey is then used to simulate a total of 3,485 purchase decisions with different factor characteristics. In addition to the price, the ratings of a merchant and the delivery time are identified as central factors influencing the purchase decision.

Today, an increasing number of firms are embracing blockchain as part of their efforts to achieve operational efficiency and improve performance, thereby acting as a catalyst to bring about digital transformation. Gartner listed blockchain as the most promising technology in digital marketing in the year 2019. Blockchain is driving digital transformation by forcing organizations to rethink how they operate, in terms of identifying ineffectiveness of traditional approaches to doing business, to address their business needs, promote innovation, and through establishment of standard frameworks. Blockchain shows massive disruption potential in the area of customer relationship management and enhancing consumer experience, besides improving trust, security, and privacy. Therefore, this chapter focuses on providing an enlightenment on how blockchain can specifically address the areas of transformation in digital marketing, prominent frameworks in use, and listing the benefits and challenges of implementing this technology.

This chapter visits some of the fundamental concepts from platform economics, network effects, and network externalities. Further on, it discusses definitions of two-sided and multi-sided markets, how they are treated as business models. These concepts are further compared to the concept service ecosystem. A case of a payment service provider whose business model contributes to the growth of e-commerce is included. The purpose is to tease out how research on platforms has developed since e-commerce was in its infancy. The fundamental concepts developed in network economics are still valid and have been translated into different fields with a focus on value creation, information, and interaction. How platforms within platforms spur each other's growth is an area that has the potential to reach new insights on the platform economy.

In a context of hyper connectivity, the designers of commercial websites are constantly seeking to generate favorable psychological states among internet users and to re-enchant them. This research aims to study the effect of the interaction between the social dimensions of interactivity on psychological states and the approach behavior of the e-consumer. Experimentation is chosen as the most appropriate method for testing the proposed model. An online experiment was conducted with 662 internet users. A merchant website was designed for the purposes of the study incorporating the interaction forms investigated. The results of this research underline the power of the social dimension of interactivity in the mediated market environments and show that a socially interactive site can generate the user's flow state, as well as a feeling of being physically present in a remote environment. This relation is moderated by the perceived risk.

Section 6
Social Media for the Platform Economy and E-Commerce

Section 7
New Frontiers in the Platform Economy

Seeing the success of digital platforms and advancement, social media marketing has strengthened the relationship between buyer and seller from a mere commercial transaction to a personal connection. The outcomes of this interaction are meticulous, and like other industries, it has also revolutionised the luxury products industry. It has become pertinent for the luxury brands to participate in the online visibility for customer awareness, customer engagement, customer acquisition, and customer retention. Though certain challenges are there, there is a need to develop strategies to mitigate them for better positioning, building online trust and online value.

Though hospitality education relies strongly on experiential learning, the COVID-19 pandemic has compelled all the higher educational institutions including the institute of hotel managements (IHMs) to restrict on-campus learning. As the only possible solution to deliver uninterrupted knowledge and skills to the students under these adverse circumstances, the management of these IHMs has quickly retorted to virtual classrooms. Many virtual platforms such as Google Meet, Microsoft Teams, Zoom, Cisco Webex, etc. emerged as the elixir for the institutions with customized features to fulfil the learning needs of the students. This necessitates the need to not only examine and compare the perceptions of these platforms based on virtual classroom service quality, perceived ease of use, and perceived usefulness but also to understand the impact of these perceptions on the future scope in terms of satisfaction and behavioral intentions of the hospitality students in IHMs.

Foreword

The platform economy and e-commerce have risen in prominence over the last two decades. However, with the COVID-19 pandemic, this trend has dramatically accelerated over the last two years when many physical stores and venues closed due to social distancing, lockdowns, and curfews. Consequently, the digitalization of commerce has appeared as a crucial means to consolidate consumption and exchange activities between individuals, organizations, and across the world.

This book sheds light on the digital transformation in commerce with a particular emphasis on platforms, applications and supporting technologies. Digitalization has now appeared as a real necessity for all companies, large and small, in all sectors from manufacturing to services. Meanwhile, few books examine the area of digital transformation in commerce and this book aims to fill this significant gap in the area. Written in the form of a handbook, it investigates the platform and e-commerce from a variety of perspectives. This handbook offers deep insights into different elements of digitalization in commerce. While anchored in solid conceptual and empirical research, it offers useful solutions and recommendations for managers and practitioners, who are already active or aim to be more active in the platform economy and e-commerce area.

The various chapters of the book are well connected to each other and provide an integrated perspective of the platform economy and the evolution of e-commerce. The platform economy including sharing economy platforms, or more specifically collaborative economy platforms, are amply discussed in this regard as they are considered an increasingly important portion of e-commerce. Therefore, readers will find value in this handbook that mobilizes diverse disciplines, methodological and conceptual approaches to offer a combination of theoretical and managerial contributions in relation to the platform economy and e-commerce. The handbook will be extremely useful from a pedagogical perspective to equip undergraduate and postgraduate students in management and information systems with the most recent advances in the platform economy and e-commerce. It will also be highly valuable to scholars, practitioners and decision-makers who work in this area or have a marked interest in it. I gladly welcome this handbook and recommend its reading to anyone who shares an interest in the platform economy and e-commerce.

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Preface

Over the past two decades, there have been two significant developments in relation to information communication technology (ICT). First, there has been increased integration of interactivity in digital ecosystems, not only for social purposes but also for commercial and strategic reasons. Interactivity blends the whole spectrum of social media, a term that sounds new but whose artifacts have been around for over three decades. They include at least 13 types, including blogs, forums, virtual worlds, microblogs, social bookmarking, social gaming, social networks, video sharing, photo sharing, business networks, enterprise social networking, products/services review, and collaborative project management (Aichner and Jacob, 2015). That list could potentially grow even longer since social media, in particular, are forms of an electronic communication through which users create online communities to share information, ideas, personal messages, and other content (such as videos) (Merriam-Webster, n.d.). Web users' empowerment through these tools enhanced their capacities to co-create and coordinate action to the point of sharing and trading goods and services with each other, which gave rise to the whole collaborative economy (more colloquially known as the sharing economy) phenomenon (for an early summary and review see Botsman and Rogers' [2010] book). Second, the boom in mobile technologies epitomized by smartphones, tablets, and multiple other mobile gaming devices and wearables, dramatically changed consumer behavior and business models. Although more traceable than ever, consumers could access a host of products and services from virtually any place at any time, while entrepreneurs needed to adapt their business operations and strategies to this new reality.

Consequently, organizations are increasingly becoming dependent on virtual marketplaces on which they, along with consumers, trade goods and services in multifaceted exchange configurations (e.g., B2C, B2B, C2C, C2B), while location and time become less and less important. Whereas in the past, organizations considered the Web an additional channel called e-commerce to boost their sales, today, organizations are increasingly embedded in an ever-expanding digital network, and are significantly disadvantaged if they remain outside. The COVID-19 pandemic was a catalyst in this regard since lockdowns, quarantines, social distancing, and non-essential business closing created significant difficulties for businesses that did not offer digital marketplaces to their customers. Many took this as an opportunity to initiate or accelerate digitalization efforts, often by rejoining established platforms or subscribing to turnkey online marketplace services. For many, this was a matter of economic and financial survival. The challenge, of course, was to quickly and effectively assimilate in a crash-course-like mode, vast quantities of information and knowledge related to digital commerce. What became clear to many was that platforms are and will continue to be an increasingly central aspect of business with all their challenges (privacy, taxation, and regulation) and opportunities (productivity, efficiency, and convenience).

One of the key distinguishers of platforms from traditional pipeline types of business models is that "platforms enable direct interaction between two sides. Instead of goods being processed from raw material to manufacturing, shipped to the local market, advertised and marketed to potential customers, sold by a reseller, and finally shipped to the customers, a platform enables more direct interaction in which a producer can produce, reach and deliver goods or services directly to the end-user" (Karhu et al., 2018, p. 8). These are typically online sales or technology frameworks known as "transaction platforms" acting as digital matchmakers, multisided markets or two-sided markets (e.g., Airbnb, Uber, Facebook, Amazon or Baidu) (Gawer & Cusumano, 2014). In addition to transaction platforms, it should be mentioned that the platform economy also comprises "innovation platforms," which provide a technological foundation upon which third parties may produce content, products, and services directly resold to organizations or users (e.g., Microsoft, Intel) (Gawer & Cusumano, 2014). "Integrated platforms" mix both transaction and innovation features (e.g., Google, Apple, Alibaba) (Gawer & Cusumano, 2014). Lastly, "investment platforms" operate at a higher-order level by investing in other platforms or acting as holdings of platforms (Gawer & Cusumano, 2014). Therefore, the platform economy is a particularly interesting subject matter in marketing, a science that has been dedicated - from its inception - to the efficient movement of goods (and later services) from a provider to an end-user (Wilkie & Moore, 2003). Cutting middlemen is not particularly pleasant for some businesses, but it coincides with consumers' interests while making the "aggregate marketing system" more efficient overall (Ertz & Sarigöllü, 2019). Therefore, platforms are transforming the economic landscape and reshaping it into a new digital establishment.

While little to no arguments surface in favor of a return to a pre-platform economy, the economy seems indeed poised for a dramatic digital transformation that will essentially revolve around platform ecosystems. At the same time, commerce will essentially be electronic (e-commerce). Past research emphasized that platforms may not necessarily endanger traditional businesses, and they may even benefit from them (Accenture, 2016; Asadullah et al., 2018). However, this requires that practitioners and researchers be equipped with a thorough understanding of the digital transformation that the world is currently undergoing and how they might benefit from the platform business model. The Handbook aims at contributing in this regard through nineteen different chapters that shed light on diverse aspects of the platform economy and e-commerce. Issues related to the platform economy are plenty, but the following chapters focus predominantly on business and economic challenges while offering insightful recommendations for the present and perspectives for the future.

The introductory chapter entitled "Digital Transformation and the Evolution of the Platform Economy," written by Maxim Shatkin, sets the table on the digital transformation and the evolution of the platform economy. It provides a fine overview of the evolution of the platform economy through the lens of digital transformation and in relation to other key constructs, namely Industry 3.0 (I3.0) and Industry 4.0 (I4.0). The author suggests that the platform economy belongs to both I3.0 and I4.0 and goes through two cycles of digital transformation within them. In I3.0, the starting point of the platform economy is the digitization of social and commercial interactions over user-generated content. The resulting issues of trust and regulation of user interactions find solutions in new business models based on online reputation systems and algorithmic regulation. The specificity of I4.0 is the tendency to platform products, homes, factories, and cities through broad digitization of interactions between humans and things, and things and things. For the platform economy, the new cycle of digital transformation in the context of I4.0 means creating business models based on the ultimate customization of both the production and consumption of product-as-platforms and the rental of digital product models. This interesting research illuminates how the platform economy connects with the broader Industry 4.0 nexus.

THE PLATFORM ECONOMY AND COUSINS SHARING ECONOMY, COLLABORATIVE ECONOMY, AND GIG ECONOMY

The first section of the Handbook articulates explicitly the intrinsic relationship between the platform economy and the collaborative economy (or sharing economy). In fact, most platforms being of the match-making type, brought peer-to-peer, rhizomatic exchanges to unprecedented levels (Asadullah et al., 2018). Therefore, the three chapters of this section aim to connect the platform economy, as an umbrella concept, with similar digital economy terms while emphasizing their inherent intertwining.

First, the chapter "Flattening Relations in the Sharing Economy: A Framework to Analyze Users, Digital Platforms, and Providers" by Alexandre Borba da Silveira, Norberto Hoppen, and Patricia Kinast de Camillis emphasizes that the Sharing Economy (SE) includes economic, social, and technological arrangements to promote collaborative relations between users and providers willing to share assets through digital platforms (DP). Their conceptual study discusses how DP establish connections between users and providers and use a digital agency to mediate and flatten consumption relations in SE. Therefore, the authors propose a framework and future research directions that explore characteristics of the actants (roles, agency, behavioral attitudes) in the process of flattening consumption relations through DP in SE (connections, mediation, induction). To structure this framework, the authors consolidate the various definitions of the main SE elements and adopt the Actor-Network Theory (ANT) concept of translation as the theoretical-methodological approach to analyze the associations determining how flattening consumption relations occur in the SE.

In their chapter "Mapping the Collaborative Platform Economy Business Practice: A Typological Study," Shouheng Sun, Dafei Yang, and Xue Yan provide an impressive typology of the collaborative platform economy. The study develops a typological configuration that characterizes the full spectrum of collaborative platform economy business practice in the real world. The analysis is based on a large-scale data set containing information on 1,335 representative platforms in more than 60 countries on five continents, covering almost all collaborative platform economy business practices mentioned in academic journals and public media. Drawing on the *k*-means clustering method, an empirical typology comprising seven categories of collaborative platform economy business practice is proposed with the following labels: "collaborative support platform," "resource supply platform," "authentic C2C platform", "C2C mutualized mobility platform", "hybrid service platform," "B2C service platforms", and "collaborative finance platform." In addition, with the help of operating status data of the collaborative platform economy, the authors carry out a cross-comparative analysis of category differences and geographic differences. This work is a primer for anyone who seeks to better grasp the different types of collaborative platform economies in the world.

Taking the specific definition of the gig economy as work mediated by online labor market platforms (e.g., MTurk, Upwork, TaskRabbit, PeoplePerHour, Deliveroo), Joan Torrent-Sellens, Pilar Ficapal-Cusí, and Myriam Ertz's chapter "Motivations for Labor Provision on Digital Platforms in Europe: Examining the Differences Between Only Gigers and Gigers and Renters" explores the troubling realm of the gig economy. Their research is motivated by the fact that gig economy scholarship has rarely addressed the study on the motivations for providing labor services on digital platforms. Their study makes up for that gap in extant research. Through a sample of 3,619 gigers in Europe, obtained from the COLLEM research, results have been obtained for labor providers (only gigers) and for labor and capital use providers (gigers and renters). Being an internal resource of the gigers, the valuation of labor has a great set of economic foundations, working conditions, and labor relations. On the other hand, the valuation

of labor and capital uses is more focused on their economic and labor relations fundamentals, notably reducing the role of working conditions. These motivations suggest different platform strategies and public employment policies for both groups. While promoting the general job quality would also encourage the gig-job quality, the promotion of the labor and capital uses valuation requires specific actions on platform operations, hence on the platforms' side.

The collaborative economy (CE) involves an intensification of peer-to-peer commerce either directly or through the presence of an intermediary. Collaborative online exchanges are supported by digital processes that involve the increased use of new technologies. As an intrinsically connected economy, the CE is inclined to integrate the most recent technological advances, particularly smart contracts. In past studies, Ertz and Boily (2019, 2020) suggest that this technology can have important impacts on the intensification of exchanges between peers. Émilie Boily's chapter "Smart Contract and Collaborative Platforms: Exploring the Impacts of the Computerized Transaction Protocol on the Collaborative Economy" consists of a conceptual review analyzing how the CE connects to smart contract technology by observing, in particular, the motivations of users on digital sharing platforms. The chapter also presents the organizational and managerial implications associated with the implementation of smart contracts in terms of governance, transaction costs, and user trust on collaborative online platforms. Finally, a comparison with conventional contracts is also initiated.

THE PLATFORM ECONOMY AND THE SECONDHAND ECONOMY

It remains debatable for many whether the secondhand economy - including swapping, selling, donating, or leasing/renting/pooling/sharing pre-owned goods (Durif et al., 2016) - should be part of the collaborative/sharing economy, not to mention the platform economy. Yet, as Sun et al. (2021) demonstrated in their chapter, a significant proportion of collaborative platforms involve C2C exchanges that may notably involve pre-owned goods. Besides, if digital platforms are used to perform secondhand exchanges, those platforms are, in fact, constitutive of the platform economy. Two fine pieces of research, one conceptual, the other empirical, make an excellent contribution in this regard by further demonstrating how the secondhand economy connects, at least partially, to the platform economy by means of digital platforms.

Catherine Ann Armstrong Soule and Sara K. Hanson's chapter entitled "An Overview, Framework, and Research Propositions of Secondhand Exchange in the Platform Economy" describes secondhand exchange in the context of the platform economy. Consumers have long engaged in reselling and buying used items as an alternative to purchasing firsthand items, but researchers have little understanding of how these exchanges are different theoretically from traditional consumption patterns. This chapter presents a clear definition of secondhand exchange and separates it from related concepts, including lateral exchange markets, the sharing economy, access-based consumption, and collaborative consumption. It is suggested that secondhand exchange and related consumer behavior in the platform economy can be understood by considering platform differences related to: 1) when and how product ownership is transferred (i.e., direct and indirect), 2) the level of platform intermediation (i.e., low, moderate, or high), and 3) buyers' knowledge of reseller identity (i.e., unknown, obscured, and known). Research propositions are presented for these dimensions for each facet of the consumption process (i.e., buying, owning, and disposal).

The chapter "My Wardrobe in the Cloud: An International Comparison of Fashion Rental" written by Claudia E. Henninger, Eri Amasawa, Taylor Brydges, Emma Johnson, and Felix M. Piontek focuses more specifically on the rise of renting and rental platforms in relation to broader macroenvironmental forces. More specifically, in response to the 2008 global financial crisis, many disruptive business model innovations emerged. As a result, the fashion industry saw the introduction of fashion rental platforms aimed at appealing to price-conscious consumers still hungry for the latest styles. However, while these new business models filled a gap in the market and saw, in some cases, profit in the millions, the phenomenon remained rather a niche. Moreover, alongside other isomorphic pressures, the recent pandemic has put further constraints on these fashion rental businesses and their entrepreneurs, leaving them struggling in the current economic climate. This chapter explores the entrepreneurial motivations behind rental platforms, the different platform models in operation, and the challenges these businesses face in the 21st century, including increased technological developments, environmental sustainability, and external pressures, such as the most recent pandemic, which saw economies shutting down. Empirically, the authors draw upon a unique dataset comprising six international case studies.

SUCCESS FACTORS FOR E-COMMERCE PLATFORMS

While an increasing number of organizations decide to move online, several may struggle to digitally adjust to new ways of doing business. Even established digital businesses might be keen on adopting refined business practices that will further improve their performances. The following four chapters aim at equipping a broad range of organizations, from digitally-native vertical brands to digital newcomers, with key insights into online consumer behavior and key strategic insights for conducting successful e-commerce.

Since e-commerce is a rising phenomenon in developing countries, the chapter entitled "Customer Satisfaction Towards Online Shopping by Empirical Validation of Self-Determination Theory," by Urvashi Tandon and Myriam Ertz, aims at understanding the predictors of customer satisfaction with online shopping in India by using self-determination theory. This research validates perceived enjoyment, social influence, social media interactions, reverse logistics, and Pay-on-Delivery (POD) mode of payment as new predictors of customer satisfaction in online shopping. The authors collected data through a self-administered and structured questionnaire targeting online shoppers in North Indian states. A sample of 424 online shoppers was considered in this research. Structural Equation Modelling (SEM) is then used to evaluate the constructs and examine the hypothesized relationships. The findings of the paper reveal that social influence, reverse logistics, and POD mode of payment have a significant positive impact on customer satisfaction. Perceived enjoyment emerged as the strongest predictor of online shopping satisfaction. In contrast, social media interactions emerged as non-significant. This chapter sheds additional light on the importance of enjoyment and operational efficiency compared to social media activity. It better informs managers about the importance they should devote to social media interactions.

For many years, the importance of marketplaces in e-commerce increases. As a result, more and more merchants are trying to use e-commerce platforms as a distribution channel. With the increasing competition, merchants face the challenge of selling their products to consumers through marketplaces at a profit. This is especially true if the consumer has already chosen a certain product and now only decides from which merchant to buy the product. The chapter entitled "Merchants Competing on E-Commerce Platforms: Influencing Factors on Buying Behavior," and written by Atilla Wohllebe, therefore examines

for different customer segments which merchant-related factors - apart from the price - influence the purchase decision. After reviewing relevant literature, various factors are identified through structured interviews. An online survey is then used to simulate a total of 3,485 purchase decisions with different factor characteristics. In addition to the price, a merchant's ratings and the delivery time are identified as central factors influencing the purchase decision.

Understanding and promoting purchases is an important aspect of e-commerce. However, according to the relationship paradigm that has come to prevail over the transactional one in marketing, organizations should devote significant attention to those individuals who are already part of their customer base to foster repurchase. By investigating repurchase in the specific context of an emerging country, the chapter "Shipment Tracking, Delivery Speed, and Product Presentation as Antecedents of Repurchase Intention: Predictors of Online Shopping Repurchase Intention," written by Urvashi Tandon, aims at understanding the predictors of attitude and repurchase intention with online shopping by using Signaling theory. Data was collected through a self-administered and structured questionnaire targeting online shoppers in North Indian states. A sample of 519 online shoppers was considered in this research. The author uses Structural Equation Modelling (SEM) to evaluate the interrelationships among constructs and tests the hypothesized relationships. The findings of the paper revealed that delivery speed and product presentation had a significant positive impact on attitude towards online shopping. In contrast, shipment tracking emerged as a non-significant antecedent of attitude. The study further provides evidence to the fact that trust mediates the relationship between attitude and repurchase intention.

During the COVID-19 pandemic, the production, distribution, and demand fulfillment of perishable food products emerged as a foremost challenge for the supply chain due to the unavailability of timely and accurate information sharing. Although digitization and some platforms, in particular, have been criticized for taking advantage of the closing of smaller businesses and destroying jobs, digitization in its essence also provided a host of benefits and opportunities. The chapter entitled "Digitization of Information Sharing to Minimize the Impact of COVID-19 in Food Supply Chain" by Shashi, Rajwinder Singh, Piera Centobelli, and Roberto Cerchione aims to test the relationships between the different types of information sharing, cost-saving performance, and supply chain relationships. In doing so, a survey study was carried out involving food supply chain practitioners, and proposed research claims were tested using a structural equation modeling approach. The results confirmed the positive impact of day-to-day information and periodic information on cost-saving performance and supply chain relationships. However, the impact of day-to-day information was significantly higher on cost-saving performance and supply chain relationships than the impact of periodic information. The study findings may support supply chain practitioners in understanding the different types of information that need to be shared in networks and their related impact on the overall profitability of the supply chain.

TECHNOLOGY AND INNOVATION UNDERPINNING THE PLATFORM ECONOMY

As a technological phenomenon, it is impossible to approach the platform economy without a deeper focus on its technological components. The following chapters investigate the impact and future prospects of established and emerging technologies on the platform economy.

Today, an increasing number of firms embrace Blockchain as part of their efforts to achieve operational efficiency and improve performance, thereby acting as a catalyst to bring about digital transformation. As a result, Blockchain is often perceived as the most promising technology in digital marketing (Frank,

2018). Blockchain is driving digital transformation by forcing organizations to rethink how they operate - in terms of identifying the ineffectiveness of traditional approaches to doing business, addressing their business needs, promoting innovation, and establishing standard frameworks. Furthermore, Blockchain shows massive disruption potential in the area of Customer Relationship Management and enhancing the consumer experience, besides improving trust, security, and privacy. Therefore, the chapter by Parminder Varma, Shivinder Nijjer, Bhalinder Kaur, and Sandhir Sharma, entitled "Blockchain for Transformation in Digital Marketing," sheds light on how Blockchain can specifically address the areas of transformation in digital marketing, on prominent frameworks in use, and on listing the benefits and challenges of implementing this technology. This insightful work goes probably beyond the sole realm of the platform economy as it might be transversally applicable to many business settings.

The rise of platforms cannot be dissociated from the successful implementation of online payment systems, which ensured smooth online transactions, to the point where the question of a cashless society is increasingly brought to the fore. Taking a specific angle of research, Carin Rehcrona's chapter entitled "Payment Systems as a Driver for Platform Growth in E-Commerce: Network Effects and Business Models" visits some of the fundamental concepts from platform economics, network effects, and network externalities (see also Karhu et al. [2018] for a review of platform economy characteristics). In her study, she discusses definitions of two-sided and multisided markets, and how they are treated as business models. These concepts are further compared to the concept service ecosystem. The case of a payment service provider whose business model contributes to the growth of e-commerce is included. The case outlines how research on platforms has developed since e-commerce inception. Rehncrona argues that the fundamental concepts developed in network economics are still valid and have been translated into different fields focusing on value creation, information, and interaction. Finally, research on how platforms within platforms spur each other's growth in an ecosystem-like fashion might provide new insights into the platform economy.

In hyper-connectivity, the designers of commercial websites are constantly seeking to generate favorable psychological states among Internet users and re-enchant them. Sihem Ben Saad and Fatma Choura's chapter entitled "Effectiveness of Social Interactivity in Merchant Websites on Emotional and Behavioral Responses: Study of the Anthropomorphic Virtual Agent and the Commercial Discussion Forum" aims to study the effect of the interaction between the social dimensions of interactivity on individuals' psychological states and the approach behavior of the e-consumer. An experimental methodology is chosen as the most appropriate method for testing the model proposed by the authors. An online experiment is conducted with 662 Internet users. A merchant website is designed for the study by incorporating the interaction forms investigated. The results of this research underline the power of the social dimension of interactivity in the mediated market environments and show that a socially interactive site can generate the user's flow state, as well as a feeling of being physically present in a remote environment. The perceived risk moderates this relation. While Tandon and Ertz's chapter emphasized how social media interactions were less important regarding other factors, Ben Saad and Choura's chapter reassert the importance of social interactivity but via other tools, including virtual agents and discussion forums.

SOCIAL MEDIA FOR THE PLATFORM ECONOMY AND E-COMMERCE

Although social media interactions might not significantly influence purchase behavior, social media play a crucial role in the platform economy. First, many social media are platforms – especially social

networks, but not only. Second, social media are increasingly stepping stones toward websites and e-commerce platforms. Third, social media in general and social networks in particular (but also blogs or microblogs), are increasingly avenues for e-commerce through what is commonly called "social commerce" (e.g., F-commerce [Facebook commerce], I-commerce [I-Instagram commerce], T-commerce [Twitter commerce]). It is, therefore, quintessential to integrate a discussion of social media in the broader context of the platform economy.

Technological advances have caused great business changes. In this new business environment, the Internet has become an indispensable technology tool in creating new business models, based on the exchange relations between customers/suppliers/distributors/partners, with a significant increase in online purchasing transactions. This virtual environment has propelled the development of e-commerce and created efficiency gains while triggering changes in consumer habits, thus changing consumer behavior. Online purchase presents an important change in consumer behavior. Thus, understanding online consumer behavior is essential to understand the impact of this behavior on business. In his chapter "A Look at the New Online Consumer Behavior on Social Media Platforms," Albérico Travassos Rosário conducts a systematic analysis of the literature from 2015 to 2020 on online consumer behavior to verify research topics and development patterns. By so doing, he identifies trends in online consumer behavior and recognizes research gaps by providing avenues for further research into online consumer behavior.

Social commerce, defined as "the buying and selling of goods or services directly within a social media platform" (Gomez, 2021), is a growing research field, partly because it shifts social media traditional role of communication-enabler to that of a transaction-enabler. However, there is still limited discussion on how social commerce companies can thrive in emerging markets such as Indonesia, given some differences in terms of customer and other supporting infrastructure characteristics. The chapter entitled "The Landscape of Social Commerce in Indonesia" by Adilla Anggraeni, and Derian Felix covers the growth of social commerce, the social commerce landscape in an emerging economy (i.e., Indonesia), and different elements of social commerce; including customer engagement, customer interaction and digital influencers. Their work can be put in parallel with that of another Indonesian scholar, Hermawan Katarjaya, who, together with Philip Kotler and Iwan Setiawan, developed the concept of Marketing 4.0 (Kotler et al., 2019), in which they place social media and social commerce as key tools for the future development of marketing and business, notably through social listening, netnography, and sentiment analysis capabilities.

While social commerce is on the rise, sectors, and industries relying heavily on close interactions with consumers, such as the banking industry eye the opportunity offered by social media to develop social banking. Akwesi Assensoh-Kodua's chapter "This Thing of Social Media! Indeed a Platform for Running or Developing Business in the Financial Sector" examines networking platforms and how they can run or develop a business in the financial sector. The latter is a very broad sector that ranges from mutual funds, leasing companies, brokers, and credit insurance companies to other money markets. Nevertheless, recent studies in this sector have only focused on the money market, thus, creating a vacuum of how social media can run or develop the banking sector through platforms. The study collects online data from bank clients. The chapter highlights how firms operating in the financial sector may manage social media to avoid the shortcomings and pitfalls commonly associated with social media for successful social banking.

FRONTIERS AND PERSPECTIVES IN THE PLATFORM ECONOMY

At the very beginning of e-commerce, some products were thought to be impossible to sell over the Internet. The most notorious example used to be the clothing, shoes, and accessories product category. Time has proven that this was not true, and clothing now represents a significant proportion of products sold online. Groceries are another example. Meanwhile, some sectors were still thought to be impermeable to the digital wave. The final two chapters of the Handbook delve deeper into two such sectors, in particular, the luxury industry and education (in hospitality). Experience, quality, prestige, and image justified the imbalance in the sale of luxury products online compared to other tangible products. Yet, convenience appeared to prevail and fuelled the expansion of luxury e-commerce.

In their chapter entitled "The Paradox of Luxury in Digitalization," Shamily Jaggi, Gursimranjit Singh, and Sheetal explore luxury and digitalization in more detail. To them, the success of digital platforms and advances in social media marketing have shifted the relationship between buyer and seller from mere commercial transactions to a personal connection. This transformative process has impacted the luxury goods industry, which relies precisely on creating unique personal relations and an outstanding, high-end consumer experience. Like in any other sector, luxury brands seek to draw on digital platforms to foster online visibility, thereby creating customer awareness, customer engagement, customer acquisition, and customer retention. However, the authors underline a number of specific challenges related to trust and value, among others, that need to be overcome to develop incisive strategies and maintain luxury brands' positioning.

Despite the rise of education platforms (e.g., Coursera) or massive open online courses (MOOCs), education has also been typically thought to resist the digitalization tide. Education has been historically associated with in-person, physical, mentor-mentee relationships. In some areas, such as tourism and hospitality, which put a strong emphasis on behavioral etiquette and manners, education was even impossible to digitalize. Yet, the COVID-19 pandemic reshaped our views on those strong-held beliefs as faculty, directors and students figured out ways to maintain the teaching curriculum despite campus closure. In their chapter entitled "Examining Virtual Classroom Platforms in Hospitality Education Effect of Service Quality, Perceived Ease of Use, and Perceived Usefulness: Virtual Classroom Platforms in Hospitality Education," Pratik Ghosh and Deepika Jhamb take India as a study case and assert that albeit hospitality education relies strongly on experiential learning, the COVID-19 pandemic has compelled all the higher educational institutions including the Institute of Hotel Managements (IHMs) to restrict in-campus learning. As distance learning appeared as the only possible solution to deliver uninterrupted knowledge and skills to the students, the management of these IHMs have quickly retorted to virtual classrooms as the only possible solution under these adverse circumstances. Many virtual platforms (e.g., Google Meet, Microsoft Teams, Zoom, Cisco Webex) provided institutions with customized features to fulfill students' learning needs. Despite giant technological leaps in the sector, challenges remain to ensure that those platforms offer the same level of student satisfaction as traditional learning. To this end, the authors examine how perceived virtual classroom service quality, perceived ease of use, and perceived usefulness impact satisfaction and behavioral intentions of hospitality students. The results provide useful implications for managers and scholars while suggesting future areas for research and recommendations for practice.

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Section 1
Introduction

Chapter 1
Digital Transformation and the Evolution of the Platform Economy

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ABSTRACT

This chapter provides an overview of the evolution of the platform economy through the lens of digital transformation and transit from Industry 3.0 (I3.0) to Industry 4.0 (I4.0). The platform economy belongs to both I3.0 and I4.0 and goes through two cycles of digital transformation within them. In I3.0, the starting point of the platform economy is the digitization of social and commercial interactions over user-generated content. The resulting issues of trust and regulation of user interactions find solutions in new business models based on online reputation systems and algorithmic regulation. The specificity of I4.0 is the tendency to platform products, homes, factories, and cities through broad digitization of interactions between humans and things, and things and things. For the platform economy, the new cycle of digital transformation in the context of I4.0 means creating business models based on the ultimate customization of both the production and consumption of product-as-platforms and the rental of digital product models.

INTRODUCTION

At the start of the third decade of this century, the evolution of digital platforms and the platform economy has attracted increasing scholarly attention. In previous years, the emergence and diffusion of a new business model associated with "an intermediary owning a digital exchange platform or marketplace" (Ertz et al., 2019, p. 30) focused the interest of researchers to describe the different forms of this business model, its technical, commercial, social and legal facets. At the same time, the study of the internal logic of the development of digital platforms during the 2010s remained a marginal area in the academic literature. Few studies have focused on the evolutionary dynamics of individual platforms as ecosystems

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(Tiwana et al., 2010; Basole and Karla, 2011). De Reuver et al. (2018) noted a lack of understanding of platform dynamics in the long run.

By 2022, more than two decades of digital platforms have accumulated enough material to create holistic models of their evolution. Montealegre and Iyengar (2021) develop a framework for understanding the evolution of digital platforms through the lens of ambidexterity, which refers to the organization's ability to balance renewal (exploration) and refinement (exploitation) simultaneously over time. This framework presents three phases of a digital platform evolution: initiating, developing, and growing. Sun and Ertz (2021) explore the internal structure and growth mechanism of a transportation platform from a systemic perspective. Su and Liu (2021) offer a broader view of the development stages of the e-commerce platform in China through the lens of introducing technologies such as big data, cloud computing, and algorithms. However, the paper is rather descriptive and does not offer a model capable of explaining the evolutionary logic described.

Meanwhile, the technological context of the deployment of the platform economy and e-commerce, epitomized in the concepts of digital transformation and the transit from Industry 3.0 (I3.0) to Industry 4.0 (I4.0), encourages the consideration of the platform economy as a whole within global processes of technological and organizational drift. The platform economy as one of the offspring of the digital revolution or its phase (Kenney and Zysman, 2018) can be seen as part of the process of digital transformation of business and societal life. Therefore, it makes sense to consider the evolution of the platform economy through the framework of the global digital transformation.

However, this framework faces significant theoretical constraints. First, considering the evolution of the platform economy in the context of digital transformation requires a solid theory or model of digital transformation itself as an evolutionary process. Today, however, the theory of digital transformation is in its primary formative stage and needs to be refined. Secondly, in the third decade of the 21st century, digital transformation is associated with the spread of a new generation of digital technologies united under the label of I4.0, but so far, the conceptual links between the concepts of digital transformation and I4.0 have not been revealed in the academic literature.

Furthermore: the concepts of digital transformation and I4.0 problematize each other. Digital transformation has its origins in I3.0, which has also been identified with "the digital revolution" (Hermann et al., 2016), and this raises the question of the qualitative difference between the new digital technologies that allow the boundary between I3.0 and I4.0 to be drawn. I4.0 may be identified with digital transformation and digitalization (Tinmaz, 2020). This approach ignores the fact that the digital revolution that launched the digital transformation began in I3.0. Digital transformation can be seen as a process that combines I3.0 and I4.0 (digital transformation = I3.0+I4.0). Then the legitimate question arises whether it is easier to talk about stages of digital transformation rather than a new type of industry. Digital transformation can be considered a set of technologies (and models of their application in the industry) necessary to transition from I3.0 to I4.0 (Adeyeri, 2018). Then I4.0 = I3.0+digital transformation. This then begs the question of the relationship between digital transformation and the digital revolution that began amid in I3.0 (VINT, 2014): if the rapid spread of digital technologies from the early 1990s to the late 2010s was not digital transformation, then what was it?

Thus, the state of the art of the theory of digital transformation as a global process, which began with the digital revolution, does not allow a nuanced description of the differences between I3.0 and I4.0 and consequently limits the possibilities of conceptualizing the evolution of digital transformation in the context of both types of industries. In our opinion, the development of the theory of digital transformation requires a methodological turn and a change of viewpoint on the relationship between

digital transformation and I3.0/4.0, namely, the consideration of digital transformation as the internal logic of the evolution of each of the two current types of industries. This will require creating a general theory of digital transformation as an evolutionary process of digital development. The creation of this model and its application to I3.0/I4.0 in the context of the platform economy will bring us closer to the creation of a theory of its evolution.

This chapter aims to consider the evolution of the platform economy as a holistic process with an internal logic of development related to the logic of digital transformation evolution in the unique conditions of I3.0 and I4.0. To do this, in the next section, we will give an overview of the academic literature regarding digital transformation and the relationship between I3.0 and I4.0. We will then provide a general perspective on a possible evolutionary digital transformation model applicable to I3.0 and I4.0. After that, based on the digital transformation evolutionary model, we will trace the stages of the platform economy evolution within I3.0 and I4.0.

BACKGROUND

The holistic view on digital transformation, the platform economy, and Industry 4.0 proposed in this chapter ideally requires a detailed review of three huge fields of academic research, which is not feasible in the framework of a separate chapter. Therefore, we have to limit ourselves to reviewing the most relevant works that analyze the logical structure of the digital transformation and the major publications conceptualizing I3.0 and I4.0.

Stages of Digital Transformation

The conceptualization of digitization/digitalization/digital transformation has evolved in the academic literature in parallel with the proliferation of new technologies. It is not our purpose to give a systematic review of scholarly papers on this topic. Instead, we will highlight research that captures fundamental changes in the understanding of digitization/digitalization/digital transformation.

In the early days of the study of digitization/digitalization/digital transformation, these terms are used interchangeably (Gong and Ribiere, 2021) and did not have a very clear meaning.

For example, for Baraldi and Nadin (2006), digitalization refers to the support of inter-firm coordination at the network level and did not imply types or stages of digitalization. However, the complex and multi-layered nature of digitalization began to be reflected in the early 2010s. One of the first steps in this direction was the interpretation of digitalization (namely, the digitalization of science) as a process that is not limited to encoding information in digital format and which refers to the generation of scientific knowledge that would not be possible without digital technologies (Dougherty and Dunne, 2012).

Until the mid-2010s, the terms “digitization” and “digitalization” were used as synonyms, describing the transformation of analog data into a digital format (Brennen and Kreiss, 2016, p. 556). However, the meaning of digitalization then began to expand to embrace the changes in social life brought about by digital communication (Ibid.).

In the late 2010s, the terms “digitalization” and “digital transformation ” are being distinguished. OECD (2018, p. 11) defines digital transformation as “the economic and societal effects of digitization and digitalization” and stresses that digital transformation is also about the transformation within society and business needed to turn new technologies into economic and social opportunities. For example, some

vectors of digital transformation are the "transformation of space" (reducing the role of restrictions of location or jurisdiction thanks to the global Internet) and the creation of centralized platforms and ecosystems. Digitization is defined as the conversion of analog data and processes into a machine-readable format, and digitalization is the use of digital technologies and data as well as their interconnection, which results in new or changes to existing activities. Thus, digitization/digitalization/digital transformation have been interpreted as concepts of different system levels: digitization – technical level, digitalization – operational, and digital transformation – organizational and social level.

Pagani and Pardo (2017) do not use the terms "digitization' and "digital transformation" and identify three main types of digitalization based on the different types of changes provoked by digitalization in a business network. In the first type of digitalization, the digital resource is used to optimize existing activities by supporting better coordination between them. The second type is characterized by a digital resource supporting the creation of new activities (between already existing actors). In the third type, "the digital systems used by a new actor allow connections between actors that were not connected before or modify sufficiently enough the nature of the bonding" (f.i., the knowledge sharing between clients). Suppose we address the above definitions of digitization and digitalization. In that case, the first stage can be interpreted as corresponding to the logic of digitization (conversion of analog activities into digital ones to optimize them), the second to the logic of digitalization (creation of new forms of interaction), and the third type requires discussion. If it is the mechanical addition of new actors to already existing networks, we should talk about extending the scope of digitalization or digitization. On the other hand, if the emphasis is on modifying new connections (i.e., actually creating new ones), the boundary between the third and second types of digitization becomes fuzzy. The work of Pagani and Pardo (2017) leads to a critical methodological issue: distinguishing several types (stages, levels) of digitalization requires fundamental distinctions between them that are not reducible to quantitative growth. For example, the third type of digitalization (in Pagani and Pardo's terms) would be unique in the case of the inclusion in networks of principally new actors whose presence changes the rules of interaction (e.g., artificial intelligence or AI).

The conceptualization of digitization/digitalization/digital transformation as different levels of effect of digital technologies on social and economic interactions and can be called a "static model" of Dg/Dl/DT. This model goes back to the article of Venkatraman (1994), who proposed a model of "IT-enabled business transformations" that included five levels of transformations: "localized exploitation," "internal integration," "business process redesign," "business process redesign" and "business scope redefinition." It is noteworthy that Venkatraman emphasized that the levels of transformations are not stages of evolution.

In the late 2010s, a certain consensus emerged regarding the digitization/digitalization/digital transformation relationship. Digitization refers to the conversion of physical or analog into digital format. Digitalization and digital transformation differ in the degree of depth and scope of change driven by digital technologies. Digital transformation generally refers to a profound transformation of a business model and cultural, organizational, and relational changes. Digitalization pertains to potential changes in the processes and moving to digital business (Ng et al., 2018, Mergel et al., 2019).

Another approach, which considers digitization/digitalization/digital transformation as successive phases of a whole process, appeared in the academic literature at the turn of the 2010s and 2020s.

Heilig et al. (2017), who studied the stages of digital transformation of maritime ports, proposed several models of digital transformation, two of which are of interest to us. The first model is based on the model of "IT-enabled business transformations" (Venkatraman, 1994). Despite Venkatraman's remark that levels of transformations are not stages of evolution, Heilig et al., without further discussion, interpreted

these levels exactly as stages (p. 229). The authors articulated the distinction between digitization (the process of converting analog sources into a digital form), digitalization (the sociotechnical process of applying digitizing techniques to broader social and institutional contexts), and digital transformation (a broader process of transforming an organization or a network of organizations on different levels). The authors note "that the basis for all levels of digital transformation is the digitization of analog sources." Still, in their text, they do not reflect what these resources are or how they are digitized at each level.

Based on the first model and adding four critical dimensions of digital strategies (scope, scale, speed, and the sources of business value creation), Heilig et al. proposed a second model, which can be called "evolutionary. This model reflects three main generations of digital transformation in seaports, namely "paperless procedures," "automated procedures" (focused on "integration of terminal equipment and the terminals' IT infrastructure to support the automation of terminal operations"), and "smart procedures" (with the growing importance of data-driven decision making). While the first model referred to digitization as the basis for separating the levels, the second model refers to digitalization within important port operations to separate the generations. Moving on to the description of generations, the authors did not use the terms "digitization" or "digitalization" and emphasize the dimensions of digital strategies. Therefore, it is not entirely clear which changes were caused by digitization and which by digitalization.

An essential step in the development of the evolutionary model of digital transformation was made by Verhoef et al. (2021, available online since 2019), who identified three phases of digital transformation: digitization, digitalization, and digital transformation. First, digitization is the encoding of analog information into a digital format. Second, digitalization refers to altering (optimizing) existing business processes by applying digital technologies—for example, creating new online or mobile communication channels between a company and customers. Finally, digital transformation rearranges the processes to change the business logic of a firm and leads to the development of new business models.

This model of digital transformation contains two debatable points. First: the whole is called the same as its part. The use of this model will inevitably require reservations as to whether we are talking about digital transformation as a whole process or digital transformation as the third phase of digital transformation. Thus, the development of this model requires renaming either the whole process or the final phase. The second point pertains to the conceptualization of the maintenance of the digital transformation phases. Digitization digitizes not only internal and external documentation processes but also interactions between actors and their presence in the digital space. If it is not reduced to the simple establishment of digital communication channels, altering existing business processes cannot but change business models and/or create new ones. A change in business logic, described in isolation from the new disruptive technologies that enable it, should not necessarily be defined as a new phase of digital transformation (but, for example, new business models within the digitalization phase).

The model proposed by Verhoef et al. (2021) was developed by Jnr (2020) in the context of smart cities. Compared to Verhoef et al. (2021), Jnr (2020) added the following points to the transformation model:

1. The source for all stages of digital transformation is the digitization of analog sources; digitization can result in changes in the existing business model to provide value to stakeholders. Thus, for the first time, explicitly expressed is the idea that digitalization is present at all stages of transformation, resulting in the emergence of new processes, business models, and organizational changes.
2. Digitalization is described as a sociotechnical method of adopting digitizing techniques to improve social and institutional contexts and involves deploying technologies such as artificial intelligence, cloud computing, and data-driven decision-making systems. This stage of digital transformation

is described by Jnr rather briefly, so it is not entirely clear whether the improvement of social and institutional contexts means forming new business models. At the same time, this point reflects the close connection between digitalization and digitization: converting new objects and interactions into digital format requires adopting (and one might add, adapting) to the new opportunities and threats that this entails.

3. The third stage of digital transformation, also named "digital transformation," refers to the required transformations driving the digitalization based on a digital policy and is expressed in "[a]doption of new business models such as digital platforms, product-as-a-service, and mainly data-driven business models." Jnr does not explain why digital platforms are referred to as the third stage of digital transformation (and not to the second) and how business models arising in the third stage differ from the business models driven by digitization.

A holistic view of digital transformation should combine the two approaches, namely, to consider digitization/digitalization/digital transformation simultaneously as levels and stages in the development of one whole. In our opinion, such a view requires an evolutionary approach in its abstract, and more specifically, dialectical implementation, which will be proposed in a later section.

Digital Transformation and Digital Platforms

Digital transformation of social and economic interactions is epitomized in the multisided digital platform, which is a more important category for understanding digital transformation than the Internet, software, and Blockchain (Vial, 2019). Based on Hänninen et al. (2017), it can be said that the platform economy is undergoing a digital transformation of value creation (Hänninen et al., 2017). On the other hand, studies of digital business transformation predominantly focus on finance, marketing, and innovation management (Hausberg et al., 2019), while studies of the evolution of business and platform ecosystems concentrate on the interaction of interdependent actors in these ecosystems (Riasanow et al., 2020) or on describing the history of individual platforms in terms of business process logic rather than the logic of digital transformation (Skog et al., 2018). Hanafizadeh et al. (2020) distinguish four theoretical frameworks in the information systems field – technology diffusion, digital divide, e-inclusion, technology adoption and usage, and participative design – and demonstrate their inappropriateness for the policymaking and governance of digital platforms. In contrast to previous technologies, including information ones, digital platforms are multisided, shaped by interactions, and have a layered architecture. However, in their study, Hanafizadeh et al., important for the development of digital platform theory, do not pay attention to the impact of digitization interactions on platform features.

Thus, there is a lack of research in the scientific literature examining the entanglement between the development of digital platforms and the processes of digitization/digitalization/digital transformation. At the same time, it is crucial for understanding the specificity of digital transformation to distinguish between digitization processes based on I3.0 and I4.0 technologies, respectively.

Industry 3.0 and Industry 4.0

The coining in the 1980s (Rostow, 1985) and re-coining and disseminating the concept of the Fourth Industrial Revolution concept in the early 2010s (Kagermann et al., 2011) made a noticeable contribution to the structure of theoretical discourse concerning the development of the modern economy and

society. On the one hand, instead of the vague notions of "information society," "network society," "digital revolution," "digital age," etc. close to social philosophy and theoretical sociology, the academy received more nuanced methodological tools based on an understanding of generational change within digital technologies. On the other hand, defining I4.0 as a promising and emerging stage of technological development simultaneously led to a loss of interest in I3.0 and turning it into a forgotten orphan of academic discourse. For Kagermann et al. (2013), I3.0 was only a "beta version" of I4.0 and a source of safety and security issues (p.46).

One of the last significant attempts to comprehensively think about the I3.0 after 2011 was presented in The Third Industrial Revolution in Global Business (Dosi et al., 2013). However, the essays in this book contain no mention of papers published after 2007 and no mention of I4.0.

The most cited early works conceptualizing I4.0 either did not mention I3.0 at all (Schumacher et al., 2016; Qin et al., 2016; Zhou et al., 2016) or briefly mentioned it in the context of the four industrial revolutions (Drath and Horch, 2014, Trappey et al., 2016). Instead, the attention of researchers has been drawn to practical steps to migrate to I4.0 business models and technologies (Eroal et al., 2016) assessments of digital maturity and enterprise capability within this transition (Sundberg et al., 2019), and analyses of individual technologies within I4.0.

The emergence of the concept of I4.0 in the context of innovation strategies and policies of developed countries on transforming and updating manufacturing industries has led to the close connection of I4.0 with the concepts of the Industrial Internet, Enterprise Integration (Kagermann et al., 2011), smart (intelligent) manufacturing based on the cyber-physical system (Li et al., 2017), and industrial standards for new forms of the added value, data and services (Lukac, 2015; Posada et al., 2015; Trappey et al., 2016; Jiang et al., 2020).

Although the "canonical" list of technologies related to I4.0, namely cyber-physical systems, Internet of Things, Big Data, cloud computing, smart homes/factories/cities, and new forms of enterprise integration, was generally defined in 2013 (Kagermann et al., 2013), it took several years for this connection to become established in the academic literature. Some researchers have considered these technologies outside the context of I4.0 (Chen et al., 2014; Riedle et al., 2014). For example, Wang et al. (2016) included mobile Internet in their list of I4.0 technologies, but this view has not been established in the academic literature. Around 2016, the connection between I4.0 and artificial intelligence was articulated (Gómez et al., 2016).

Blockchain became associated with I4.0 around 2017 (Sikorski et al., 2017). At the same time, Lu (2017) produced one of the first systematic reviews of the early literature on I4.0 and defined I4.0 as an integrated, adapted, optimized, service-oriented, and interoperable manufacturing process which correlates with algorithms, big data, and high technologies. Also, Lou reflected the relationship of I4.0 to platform ecosystems, for which the key factors are integration and interoperability.

The emphasis on setting standards (DIN and DKE, 2018) that are often developments of existing ones (Butollo et al., 2019), and the fact that the integral features of I4.0 are closely related to projects and strategies of the 1980s-1990s (Mertens and Wiener, 2018), poses the question: is I4.0. a paradigm shift from I3.0. Rather than a new level of development of the latter? The vagueness of the boundaries between I3.0 and I4.0 led to the concept of I3.5 as a hybrid strategy between Industry 3.0 and to-be Industry 4.0 for emerging countries (Chien et al., 2017). The term initially appeared as an integration of the concept of digital decision, smart supply chain, total resource management, and smart manufacturing, use big data analysis and optimization approaches into a framework that is suitable for existing

manufacturing systems and industrial patterns in Taiwan (Chien et al., 2016). I3.5 is closely related to digital transformation as a requirement for transit to I4.0. (Ku et al., 2020).

The focus on manufacturing and industrial technology was probably one of the reasons why the concept of Industry 4.0 has become the prevailing description of emerging disruptive technologies. The presence of several conceptual frameworks to explain the ongoing technological and social changes necessitated their integration in the early 2020s. Beyond the concept of digital transformation, whose relationship to Industry 4.0 is discussed in this chapter, the relationship between Industry 4.0, circular economy, cleaner production, and sustainable development emerges in the academic debate (Khan et al., 2021; Gupta et al., 2021; Enyoghasi, and Badurdeen, 2021). At the same time, although I4.0 technologies such as the Internet of Things, Cyber-physical systems, and Blockchain assume a platform architecture for their embodiment (Pauli et al., 2021; Bourezza & Mousrij, 2021), the topic of the relationship between I4.0 and the platform economy in general remains understudied in the academic literature. In our view, the reason for this is that the emerging nature of Industry 4.0, its relationship to plans for re-manufacturing in developed economies, has put the focus of scholarly attention on the standardization and adoption of particular technologies, rather than the regulation of social and commercial interactions in platform markets. The common approaches to the study of I4.0 do not shed light on the specifics of the development of the platform economy, and studies of the platform economy pay little attention to its stages related to I3.0 and I4.0. Therefore, in the following sections, based on the evolutionary digital transformation model, we will examine the cycles of digital transformation in the platform economy during I3.0 and I4.0 and propose our definitions of these concepts.

THE EVOLUTIONARY MODEL OF DIGITAL TRANSFORMATION: A GENERAL VIEW

The state of the art of digital transformation theory can be summarized in the following theses:

1. Digital transformation is a multistage process, which includes three stages, each of which is associated with qualitative changes driven by the development of digital technology.
2. Each subsequent stage of transformation relies on the previous stages and in some way contains them in itself (this fact in the absence of an explicit theory of digital transformation confuses the concepts denoting different stages of digital transformation).
3. Digital transformation is not reducible to technological change but is part of the "evolution of technology and human experience" (Orlov, 2019) and includes social, economic, and organizational changes.

Questions that remain unanswered in the current academic literature:

1. Is there a common subject of transformation that remains identical at different stages of change, or does digital transformation consist of heterogeneous phenomena?
2. What is the character of the relationship between the different stages of digital transformation?

In our opinion, the framework appropriate to the state-of-the-art theory and capable of answering the questions posed is the evolutionary model of digital transformation. The evolutionary model is predomi-

nantly used in biology, programming, economics, and technology history (Wang, 2019; Shai, 2020) and has developed mathematical tools. For this chapter, however, only a general view on the evolutionary model is required, namely two statements going back to the Hegelian dialectic:

1. The evolution of the system under study assumes that there remains an identical subject of change at all stages of change, uniting all stages into a whole.
2. The new stage contains the previous stages as lower levels, acquiring a new, more specialized meaning.

When building a simplified (generalized) evolutionary model, we will use the inductive method (isolation of general regularities through abstraction from specific technologies within I3.0 and I4.0) and the deductive method (formation of connections between levels within individual stages of transformation on the assumption of their obligatory presence).

Next, we describe the stages of digital transformation, then define the subject of digital transformation, and finally give a refined definition of digital transformation.

Stage 1. There is a consensus in the academic literature that the starting point of digital transformation is the conversion of analog objects and processes into a digital (machine-readable) format. The logical continuation of this conversion is creating a network for the exchange of digitized information, which involves the creation of digital actors and digital channels. Connection of new actors (including their individual properties and sides) and creating new channels for the exchange of digitized data fit into the logic of the first stage. According to the established terminology, this stage is called digitization.

Stage 2. The creation of business models (including models of interaction between the state and citizens, as well as between civil society actors) would not be possible without digital technologies. Participants in digital interactions are beginning to play roles they could not play before. This requires deeper digitization of analog resources and their transformation into forms possible only in the digital space. For example, implementing a business model such as cashless payment involves digitizing money, which only makes sense within this model. According to established terminology, this stage is called digitalization.

Stage 3. There is no consensus on the nature of this stage, so the specifics of this stage will be defined inductively. The development of business models within the digitalization framework leads to creating systems and management models in which part of the decision-making process is carried out autonomously by digital means. This stage requires more deep digitization of analog resources, including social, economic, legal, and ethical norms. This, in turn, affects the implementation of business models, in which the role of their participants' changes, having to interact not only with each other but also with a fundamentally new actor - AI, which can take the form of algorithms (I3.0) or evolve through deep learning (I4.0). Given that the proposed names of this stage coincide with the name of the entire development process (namely, "digital transformation"), which is methodologically incorrect, within this chapter, we will use a technical, artificially created term (which also refers to the presence of AI at this stage of digital transformation), reflecting its main content of stage 3 - "digital decisination."

The general element present in all stages of digital transformation are interactions, which can be social, economic, and physical. Digitization creates digital analogs of these interactions, digitalization creates new configurations of interactions, "digital decisination" includes decision-making AI in the network of interactions. Therefore, social, economic, and physical interactions can be called the subject of digital transformation. Based on the above, the following definition can be given:

Digital transformation is a multistage process of change in social, economic, and physical interactions, driven by the adoption of opportunities and adaptation to the challenges posed by the invasion of digital technologies, each new generation of which triggers the transition to a new stage of transformation.

INDUSTRY 3.0: MAKING ANALOG DIGITAL

Stage 1. **Digitization.** A brief consideration of the stages of digital transformation in I3.0 through the lens of the development of the platform economy is justified, to begin with, the emergence of Web 2.0, which paved the way for the creation of User Generated Content (UGC) platforms, where users without coding skills began to upload their information (Tabarés, 2021). The platform economy begins with digitized data on goods for sale (including images of them) and services provided (including images of apartments for rent or examples of work performed to show the skill of the performer). Social networks that have gone beyond text-based chat boards invite users to share digitized images of the users themselves and events from their lives.

Digitizing images of items serves to increase trust in the seller but is vulnerable to counterfeiting. Primitive local platforms solve this problem by validating information through actions in the physical world. For example, the Russian platform YouDo[1] in the first years of its existence, required potential service providers to visit its office in Moscow in person and provide a passport (VC.RU, 2012). Sometimes Facebook, when registering a new user, requires them to take selfies as a prerequisite for joining the service (personal experience of the author).

Stage 2. Digitalization. Converting analog data to digital ones alone cannot solve the problem of trust in the content uploaded by users in sharing platforms and e-commerce. For example, in social networks, the mere digitization of photos does not contribute to data on user preferences and emotional reactions to perceived content and the actions of other users. The solution to this problem was to digitize a new category of data and build a business model implemented only through digital technology, that is, the digitalization of business.

New business models were related to the creation of online reputation systems for users via users' reviews of each other, as well as the introduction of a system for booking payment before confirming the receipt of goods or services. Therefore, this implied the digitization of such a social phenomenon as reputation through its conversion into a digital rating with a different number of measurable criteria (Bolton et al., 2013; Ert et al., 2016, Zervas et al., 2020). In addition, cross-platform signaling allows platforms to import user reputation from other platforms (Teubner et al., 2020).

New business models epitomized in social networks are associated with the datafication and commodification of user preferences, attitudes, and interactions with other users (Couldry and Mejias, 2019). Hence, this involved digitizing users' emotional reactions by sentiment analysis (Tembhurne and Diwan,

2021; Kauffmann et al., 2019). Furthermore, for the social network users, the attractiveness of a regular presence on the platform was expanded through additional options for uploading content augmented by the expression of an emotional state.

Stage 3. "Digital decisination." The logic of the platform economy involves maximizing the number of participants, which, on the one hand, increases the value of the platform for users and, on the other hand, increases the value of the platform for advertisers (Srnicek, 2017). The explosive growth in the number of platform users and interactions between them has inevitably led to an increase in the content offered and the number of interactions (especially conflicts) between users. The moderation of content and interactions requires either an increase in platform staff (which conflicts with the business model of platforms built on cost minimization) or software tools capable of giving an objective assessment of content and typical user actions. These two changes lead to a new stage of digital transformation, in which part of the operational decisions is made by an algorithm embedded in the platform's digital environment. In social media and e-commerce, the accumulation of data on user preferences and reactions has brought this data to the status of Big Data, also requiring automatic tools to process and apply it, such as in the form of automatically generated content sequences (newsfeed) (Thorson et al., 2019) and predictive purposes (Tamò Larrieux et al., 2020).

In the media, algorithms and artificial intelligence are often identified. However, unlike AI, an algorithm does not require learning but rather an elaborate program code that provides for typical situations and the program's reaction to them (Ismail, 2018). This leads to a more impersonal and context-insensitive nature of the decisions made by the platforms, which has been called "algorithmic power," establishing procedures that regulate interactions on the platform (Curchod et al., 2020).

The implementation of algorithmic power involves a new level of digitization and digitalization. Algorithms track the conformity of the behavior of platform participants to a set of defined rules and norms, which consequently must be digitized in a way that is understandable to the software. "Creators of digital infrastructures seek to infuse their norms, values, or institutional logics into the infrastructure" (Hinings et al., 2018, p. 54). The social and economic interactions of platform users focused not only on private interests, business ethics, and civil law but also on the platform rules monitored by the algorithm, form a new model of interaction that platform participants can protest. Platform algorithms interactively restrict and constrain the behavior and activities of users (Kellogg et al., 2019). For example, the Russian platform YouDo has long tried to track and punish all attempts by users to communicate with each other outside the platform (Shatkin and Yakovlev, 2020). Similarly, the platform Upwork discourages workers from working with clients off the platform (Jarrahi et al., 2019).

Limitations of the platform economy **in I3.0**. "Platforms have almost godlike powers. They are gatekeeper, rule maker, judge, and jury" (Cutolo et al., 2021). The power and innovativeness of global platforms such as Google, Apple, and Microsoft have given Germany a rise to the concept of Industry 4.0 as a defensive response (Schroeder et al., 2017). However, for the platform economy itself, the technology toolkit of Industry 3.0 has become a dead-end for further development.

The buyer, more often than not, cannot ask the seller to customize the ordered product. The seller does not know whether the product is defective, as the customer claims, and what caused the malfunction. Manufacturers, who are also sellers, can rarely track the day-to-day nature of most customers' interactions with their products. The online rating system is objectively discriminatory against bona fide newcomers, who are in unequal conditions compared to buyers and sellers who have managed to

prove (or buy) credibility. Algorithms empower some groups of clients by granting them more rights to disempower others (Curchod et al., 2020, p. 667).

A platform economy that benefits from the regulation of user interactions and the processing of big data about those interactions reduces costs but does not create new added value. The rapid development of e-commerce has not led to similar economic growth but has instead reduced commercial and private revenues through increased global competition. The platform economy has not created new sectors of the economy (Dolata, 2019). Having gone through the cycle of digital transformation within the framework of analog-to-digital conversion technologies, the platform economy has probably exhausted the opportunities for intensive development within the scope of I3.0 technologies. Creating strong trust between users, including between sellers and buyers, as well as increasing the ability to customize production quickly and cheaply according to demand, required a transition to a new type of digital technology characterized by closer connections between the tangible world and digital networks. Establishing these connections under the banner of I4.0 technologies requires a new digital transformation cycle at a new level.

Definition. Based on those elements mentioned above, we can give the following definition of I3.0 in the context of digital transformation and the platform economy. I3.0 is a complex of digital technologies, business models, and models of social relations based on the increasing digitization of primarily informational (social and economic) interactions and their regulation through algorithms.

INDUSTRY 4.0: MAKING DIGITAL MATERIAL

Stage 1. **Digitization.** As noted above, the concept of I4.0 was initially associated with the Industrial Internet and a new level of industrial automation. "The Founding Fathers" of this concept associated I4.0 with three key components (enablers) that are introduced subsequently: the Internet of things, cyber-physical systems, and smart factories (Kagermann et al., 2013). This sequence is confirmed by the logic of the development of platform ecosystems (Silva and Soares, 2020). They include software and hardware (f.i., Apple, Tesla) and so involve expanding the ecosystem by connecting new devices. The ideal embodiment of such ecosystems is smart homes and smart cities. People are surrounded by things that recognize them, understand what they want, and, depending on their technical capabilities, satisfy reasonable human needs.

The Internet of Things means a change in the basic element of the platform economy. User-generated content is being supplemented by things-generated content. For e-commerce, the Internet of Things affects greater supply chain transparency. "Companies can monitor and share information on the circulation of products in the supply chain and can analyze and predict the information that products will generate at each stage of the supply chain" (Xu et al., 2021, p. 850).

I4.0 begins with a new round of digitization, in which the object of digitization is human interaction (including physical) with material things. To do this, things must be technically connected to global and local networks (the Internet of Things, often referred to like the unique technology of I4.0) and recognize human commands. Whereas in I3.0, humans gave instructions to some things via switches and remotes, in I4.0, it is possible to control things via voice. Thus, digitizing the presence and functioning of things, digitization in I4.0 involves digitizing human speech through the development and implementation of systems for its recognition.

Speech recognition is a complex process that requires significant computing capacity, which can be incorporated into things themselves (increasing their price) or run remotely, which is technically justified given the online availability of things. Therefore, the logic of the first stage of digital transformation in I4.0 requires the inclusion of a third element - cloud computing supported by platforms - ecosystems. However, the term "ecosystem" can be understood on three levels. First, an ecosystem is a platform itself, but an ecosystem is also a collection of smart things surrounding and helping humans or integrated into a smart factory or smart city (Barns, 2020; Repette et al., 2021).

Stage 2. Digitalization. The development of global ecosystems means the multiplication and complexity of local ones functioning in a unique context. The increasing amount of computing power required to support local ecosystems leads to the problem of maintaining them with local cloud computing, i.e., platform decentralization. This problem paves the way for the creation of new models of interactions that will be interactions between global platforms and local ecosystems. This can be called the central theme of the second phase of the digital transformation within I4.0.

The main issue of this interaction is the standards by which local ecosystems will function and interact with global ones. The establishing of standards, the requirements for them is one of the hot topics discussed within the discourse associated with the I4.0 (Trappey et al., 2016). For some countries, setting their standards and maintaining the functionality of national platforms has become a national security issue. This challenge becomes relevant in light of conflicts between global platforms and national or federal governments (Khalil and Zayani, 2020). Addressing this challenge could potentially lead to the displacement of global platforms by local clusters and the fragmentation of the digital space, which would be a powerful challenge for the platform economy.

The decentralization (and especially possible fragmentation and clustering) of the platform economy is a natural barrier to portability between large clusters of platforms. In this environment, trust between users of different platform clusters can be enabled by Blockchain as a trust enabling technology (Hawlitschek, 2019). In the sharing economy, Blockchain allows users to establish trust in tangible objects and their state (Zavolokina, 2020). Although Blockchain is not related to cyber-physical systems, it has characteristics of the material world more than other digital technologies. We are talking about the irreversibility of transactions and the irreversible loss of assets based on the technology. This quality is far from the independence of classical digital technologies from the material world and marks a closer connection between the material and digital dimensions.

Will the world of Industry 4.0 be a world of "feudal fragmentation" (or even "digitieval period") and independent local platform "families"? The answer to this question will probably depend on the cost of making these families self-sufficient, which means the cost of using another promising I4.0 technology - 3D printing. 3D printing assumes a basic digital model of the item and the possibility to customize this model according to the customer's wishes. Customization of manufactured products, automatic and flexible adaptation of the production chain to changing requirements are recognized in the scholarly literature as critical aspects of I4.0 (Posada et al., 2015). However, the focus on technology, standards, and business models has overshadowed the question of the economic feasibility of smart production based on ultimate customization.

Today we cannot say if and when (and whether it will still be I4.0 and not I5.0) the 3D printer will become part of the interior of the average citizen's home. We can only speculate that over some time, the amount of investment in the creation of additive manufacturing and 3D printing will be high enough

that the return on that investment will require a considerable volume of products produced. Manufacturing and selling products in smart factories will only make sense in conjunction with commerce and distribution systems supported by global platforms that will rent processing capacity for creating digital models and production resources for printing ordered items to supplier customers. Furthermore, new materials may make it possible to make changes to things after they have been printed. The close connection between a physical thing and its digital model, which defines the parameters of its possible transformations, leads to a new stage in the digitization of the material thing, which gains the status of a "thing as a platform" (Yin et al., 2017) or "smart products" that are active actors in the process of their production (Kagermann, 2015).

Stage 3. "Digital decisination." Maintaining the activity of the local digital ecosystem, its adaptation to external and internal influences requires the introduction of artificial intelligence systems. These systems are likely to be decentralized, i.e., isolated from external forces to ensure stability and security. The creation of such systems is associated with the development of pattern recognition systems (sensors) and systems of influence on physical objects (actuators), which are now actively discussed in the academic literature. These skills, which are indispensable elements of AI, are the results of Deep Learning, which requires a considerable amount of data available only to global platforms or their associations. Therefore, it can be assumed that one of the services that the global platforms of the future will offer will be learned artificial intelligence systems and models for their further learning in specific contexts.

While smart factories and cities are now local experimental projects (e.g., Woven city (Toyota, 2021)), the implementation of AI in education, healthcare, and genomics systems is now the topic of numerous theoretical and applied studies, bringing together scientists from entirely different countries (WAM, 2021). Of particular note are educational platforms, which have gained new importance during COVID-19. Google educational programs are already becoming a challenge for traditional higher education (Leibowitz, 2020), and the introduction of AI systems in the educational process may radically transform the role of teachers and schools (Hillman, 2019).

The introduction of AI as an independent actor in social and economic interactions, especially in education and health care, will create new business models whose condition will be digitizing material things and human behavior, vocations, and careers. Certainly, these models will belong to the third stage of digital transformation in I4.0, but at the moment, we can only talk about the prospects and first steps, but not about the characteristics of the stage as a whole.

Definition. Based on the aforementioned, we can give the following definition of I4.0 in the context of digital transformation and the platform economy. I4.0 is a complex of digital technologies, business models, and models of social relations based on the digitization of human-human and human-things interactions, integrated and mediated by a system of hierarchically organized platforms, the functioning of which is supported by AI.

FUTURE RESEARCH DIRECTIONS

Nowadays, the study of the evolutionary logic of the platform economy, digital transformation, and the emergence of I4.0 is taking its first steps. This is especially true of the relationship between these key

concepts for today's economy. Therefore, the general view proposed in this chapter requires its concretization and detailed consideration of the digital transformation of the platform economy at the stage of using artificial intelligence as an I4.0 technology.

The development of digital platforms is now actively encouraged by governments, which see in them cheaper forms of interaction with citizens (especially in education and medicine) and factors of national sovereignty and geopolitical influence. Of interest to the researcher is the frontier of digitization of public services and the possibility of obtaining their analog alternatives.

A separate bundle of questions is related to promising forms of e-commerce related to access to digital models (twins) of consumer goods in smart factories and the sale of things-as-platforms. For example, how will product customization be regulated before and after the sale? Will the buyer have to pay a license to use digital models and the product to upgrade it? How will the rental price of digital models and smart factory facilities owned by platforms be priced for sellers who fulfill customer orders?

Hausberg et al. (2019) note that the topic of customization (individualization) of production and computer-controlled workflows and automated decision support are two primary research directions in the field of digital transformation. At the same time, some research deficiencies detected in many areas, of which those relevant to the platform economy may be sentiment analysis, demand forecasting and customer integration needs, long-term effects of virtual and augmented reality in marketing and sales, cost-benefit analyses, and the definition of the value of AI.

Deep learning tasks that require vast amounts of data can generate research interest in the architecture of platform clusters (constellations) and their impact on social, political, and economic processes.

CONCLUSION

This chapter offered the first holistic view of the platform economy, digital transformation, and Industry 3.0/4.0 as interrelated concepts in the academic literature. This allows us to contribute to a deeper understanding of each of these phenomena. We have offered a general view of the evolutionary model of digital transformation, revealing the relationships between digitization, digitalization, and the third stage, which we have conventionally called "digital decisination." The connection between these stages can be called dialectical because the later stages (aka higher levels) imply preserving and transforming the earlier stages (lower levels). Digital transformation is viewed not as a single historical process but as a logic of change within I3.0 and I4.0 due to the starting point of transformation - converting analog into digital. Viewing I3.0 and I4.0 through the lens of digital transformation allowed us to identify more clearly the internal logic and orientation that distinguish these two types of industry. In I3.0, digital transformation aims to predominantly digitize social interactions' space, while digital transformation in I4.0 focuses on erasing the very line between the digital and the analog (physical). These differences between I3.0 and I4.0 allow us to distinguish two stages in the evolution (as well as the digital transformation) of the platform economy. The platform economy business model in I3.0 was built on monetizing user-generated content. In contrast, Industry 4.0 platforms will be called upon to learn how to create value from the content generated by things. Based on the results of this research, we can propose the following definition of the platform economy. A platform economy is a system of information, social, economic, and material exchanges evolving based on sequential digitization of interactions between people, between people and things, between things and things, and organized in the form of digital platforms that support and regulate these exchanges through algorithms and/or artificial intelligence.

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KEY TERMS AND DEFINITIONS

Digital "Decisination": The creation of systems and management models in which part of the decision-making process is carried out autonomously by digital means (algorithms or AI).

Digital Transformation: A multistage process of change in social, economic, and physical interactions, driven by the progressive digitization of social and economic interactions, human reactions, behavior, and decision-making patterns.

Digitalization: The creation of business models that would not be possible without digital technologies involving digitizing social rules and norms.

Digitization: Converting social and economic interactions, interactions between people and objects, and between objects into a digital format.

Industry 3.0: A complex of digital technologies, business models, and models of social relations based on the increasing digitization of primarily informational (social and economic) interactions and their regulation through algorithms.

Industry 4.0: A complex of digital technologies, business models, and models of social relations based on the digitization of human-human and human-things interactions, integrated and mediated by a system of hierarchically organized platforms, the functioning of which is supported by AI.

Platform Economy: A system of information, social, economic, and material exchanges evolving based on sequential digitization of interactions between people, between people and things, between things and things, and organized in the form of digital platforms that support and regulate these exchanges through algorithms and/or artificial intelligence.

ENDNOTE

[1] The platform "YouDo" emerged in 2012 as a "service for performing tasks" as an analog of TaskRabbit and in March 2021 had 1.5 million performers. (BFM.RU, 2021). Among other Russian services for finding performers, it is distinguished by the most stringent conditions for performers, as well as regular changes in business models, which allowed the platform to exist in the difficult segment of domestic services for almost 10 years, while many competitors were failing. Initially, the platform charged performers a fee on the money they received from customers. All attempts by performers to reduce costs (through agreements with the customer to formally cancel the order and bypass the platform) are tracked by the platform, which collects data on the geo-positioning of performers and customers. In the first years of the platform's existence, its employees called customers and asked them if the deal took place and how much was paid to performers (HIGHTECH.FM, 2019). Beginning in 2016, the platform began charging performers for feedback on customer listings instead of a commission. In 2018, YouDo blocked the possibility of communication between customers and performers through comments. In addition, performers cannot see if a customer has looked at their response. At the same time, the number of identical and fake orders increased, to which performers responded by paying a fee, but the order went into the archive. This caused the suspicion that platform employees were generating these orders themselves to increase profits (360TV.RU, 2019). When disputes arise between performers and customers, the platform usually sides with the customers, interpreting all disputes in their favor. At the same time, it only takes one missed call from the service's support team to block the account of a performer. This led to the emergence of dishonest customers who took advantage of the platform's policy not to pay performers. Negative feedback about the platform made it necessary for service owners to frequently change business models and spend significant amounts of money on advertising the service.

Section 2

The Collaborative Platform Economy or Sharing Economy: A Consubstantial Component of the Platform Economy

Chapter 2
Flattening Relations in the Sharing Economy:
A Framework to Analyze Users, Digital Platforms, and Providers

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ABSTRACT

The sharing economy (SE) includes economic, social, and technological arrangements to promote collaborative relations between users and providers willing to share assets through digital platforms (DP). Even evolving fast, there is an opportunity to discuss how DP establishes connections between users and providers and uses a digital agency to mediate and flatten consumption relations in SE. Therefore, the authors propose a framework and future research directions that explore characteristics of the actants (roles, agency, behavioral attitudes) in the process of flattening consumption relations through DP in SE (connections, mediation, induction). To structure this framework, the authors consolidated the various definitions of its main elements and adopted the actor-network theory concept of translation as the theoretical-methodological approach to analyze the associations that determined how flattening consumption relations occur in SE.

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INTRODUCTION

"We are living in a world of hybrids in which relationships between subjects and objects remains contentious." Domen Bajde (2013)

With the emergence of information and communication technology (ICT), there has been a significant change in the behavior of consumers and providers that enhances new collaborative relations to share assets—products and services—through digital platforms (DP) (Acquier et al., 2017, Belk, 2014a; Eckhardt et al., 2019). In this context, the sharing economy (SE) relates to economic and technological arrangements that result from these collaborative relations. It promotes new business models in a digital movement disseminated by collaborative communities and platforms, such as Airbnb, Uber, and WeWork, changing the way people travel, use transport, and do office work (Sundararajan, 2017; De Vaujany et al., 2020; Ertz and Boily, 2019). Therefore, the combination and diffusion of informational systems, devices, and DP have formed a context with new consumption habits, involving new values, practices, and relations and that promote socio-technological development (Hamari et al., 2016; Bradley and Pargman, 2017; Ertz and Boily, 2019). These new habits represent managerial challenges that enlarge the discussion by centering the focus of analysis on the actions of consumers (users) and service providers (Razeghian and Weber, 2019) and the role of DP in mediating consumption and service relations (Laurell and Sandström, 2017; Ertz et al., 2018; Cotrim et al., 2020), thereby reshaping these relations (Sigala, 2019; Basili and Rossi, 2020).

Although this economic and social environment is evolving fast (Hamari et al., 2016; Ertz and Boily, 2019; Basili and Rossi, 2020), there is an opportunity to discuss the role and agency of DP in consumption and service relations by promoting connections, interactions, mediations, and inductions among users through their features: tools, and algorithms (De Reuver et al., 2018; Kinder et al., 2019). Currently, DP is defined as visible and invisible solutions that include websites, blogs, virtual messaging networks, mobile applications, and social networks of texts, content, images, and videos that allow the quick sharing of information, products, and services (Eckhardt et al., 2019). In the context of the SE, a broad definition of DP seems appropriate. This definition includes a community-based economy (Acquier et al., 2017; Ertz and Boily, 2019) and multisided platforms that give users temporary access to tangible and intangible resources to use some services (Sundararajan, 2017; Ertz and Leblanc-Proulx, 2018). Literature gives us examples of studies investigating (a) DP agency while mediating communication, reputation, trust, engagement, sharing practices, and service quality (De Rivera et al., 2017; Basili and Rossi, 2020); (b) key factors such as access to the SE through technology (Bardhi and Eckhardt, 2012; Belk, 2014b); (c) how DP carry out and coordinate engagement (Breidbach and Brodie, 2017); (d) the realization, moderation, and mediation of consumption sharing by DP (Basili and Rossi, 2020); and (e) the diffusion and promotion of innovative businesses (Ertz and Boily, 2019). However, these studies tend to ignore the sociotechnical process and details about agency in this triad of users, DP, and providers. This process assembles subjects and objects through the flattening of relations between users and providers with the mediation of technological artifacts to spur consumption (Bajde, 2013, 2014; Schouten et al., 2015). Furthermore, this process shows symmetry between human agents (users and providers) and nonhuman ones (DP) (Bajde, 2013). Digital technologies are not inanimate because they act, inspire meanings, and influence the relations and dynamics of consumption (Bajde, 2014; Eckhardt and Bardhi, 2016, Garud et al., 2020).

The authors observed that the studies mentioned earlier either sought to analyze specific elements of the SE in an isolated manner or analyzed the SE with a more macro view (Da Silveira, 2020). Therefore, there is a gap in the knowledge related to the mediation of DP among individuals regarding the understanding of the nature, functions, actions, inductions, relations, and results delivered and supported by multisided DP, combined with human needs and desires (Parker et al., 2016; Hamari et al., 2016; Salamzadeh and Arbatani, 2020). Both human actors (users and providers) and nonhuman actors (DP) have agency in these situations, which happen in collective and heterogeneous forms (Law, 2004; Latour, 2005). Some processes such as flattening consumption relationships between the actors involved have not yet been studied in detail in the context of the SE (Bajde, 2013; Da Silveira and Hoppen, 2019). Consequently, there is an opportunity to discuss how DP establishes connections between users and uses digital agency to mediate and flatten consumption relations in the SE (Bajde, 2014; Bardhi and Eckhardt, 2012; Harvey et al., 2017; Da Silveira, 2020).

Regarding this opportunity, the Actor-Network Theory (ANT) shows great potential to explore the understanding about relations among users, providers, and DP, because this theory assumes that humans and nonhumans are symmetrical and considers the practices in a network not only controlled and built solely by human intentionality but also by nonhuman agents (Latour, 2011, 2013). ANT is empirically realistic and enables a deep understanding of how an event or phenomenon is developed through different actors' practices and relations (Callon, 1984; Law, 1992; Van der Duim, 2007; Latour, 2011, 2013). Therefore, the authors consider ANT and, more specifically, translation, a connecting mechanism (Callon, 1984; Shin, 2016; Salamzadeh and Arbatani, 2020) of users, service providers, and platforms that can inform the discussion of how consumption relations are structured and flattened in the SE.

Therefore, based on the SE and consumption literature (Badje, 2014; Bardhi and Eckhardt, 2012; Belk, 2014a, 2014b; Kozinets et al., 2017; Eckhardt et al., 2019; Ertz and Boily, 2019), on DP literature (Basili and Rossi, 2020; De Rivera et al., 2017; De Reuver et al., 2018), and ANT (Callon, 1984; Law, 1992; Van der Duim, 2007; Latour, 2011), the authors propose a framework to explore the role of DP and its features—interfaces, data functionalities, functions, tools, and algorithms that develop mediation—as an actant of the SE in flattening consumption relations between users and service providers, in order to foster collaborative consumption relations. Mediation is built through dynamic relations that generate meaning, collaboration, and consumption actions (De Reuver et al., 2018; Basili and Rossi, 2020). In order to study how these relations occur and are consolidated, this framework is based on the following theoretical foundations: 1) the SE is a sociotechnical construct formed by a heterogeneous network between individuals and digital artifacts; 2) the flattening of relations happens between users and service providers through visible and invisible heterogeneous associations, mediated by DP and their features; and 3) ANT and its translation process (comprising the phases problematization, interessement, enrollment, and mobilization) have the capability to analyze how consumption relations are built and consolidated.

This chapter contributes to the platform economy by proposing a theoretical framework based on ANT that broadens the discussion about the relations of actors in the SE context through the exploration of the role of DP in mediating and flattening consumption and service practices. This framework also leads to future research directions on flattening consumption relationships between users and service providers in the SE.

This chapter introduces the discovery view of opportunities to analyze consumption relations in the sharing economy, directed at this flattening view. The next two conceptual sections define actors—users, providers, and DP—, and consumption relations. A selective introduction to the central concepts of ANT as applied to the problematic issues of agency, translation mechanism, and methodological procedure

to analyze relations among actors in the SE follows. Then, the proposed analytical framework, which assembles actors and relations to analyze the driving dynamic of the flattening process of consumption and service relations in the SE, will be developed. Finally, future research directions and conclusions are given.

ACTORS AND RELATIONS IN THE SHARING ECONOMY

From an integrated perspective, the SE is conceptualized as an economic system in which assets or services are shared between individuals, either for free or for a fee, over the Internet (Puschman and Alt, 2016), providing temporary access to consume resources without the transfer of ownership (Bardhi and Eckhardt, 2012). Therefore, the SE can be characterized as a dynamically balanced system of three different core elements—access through the Internet, DP, and community-based economy (Acquier et al., 2017). The SE is frequently discussed in marketing, consumer behavior, organizations, and information systems (Murillo et al., 2017; Sutherland and Jarrahi, 2018). However, an alternative way of explaining SE development is to understand the relationships among actors (human and nonhuman) in the context of service societies and decentralized and networked economies (Bardhi et al., 2012). Following this view, it is necessary to understand some key actors in the networked economy: users, service and product providers, and DP.

Users and Providers

Different types of human and nonhuman actors are found in the SE context (Da Silveira and Hoppen, 2019; Da Silveira et al., 2021). The human actors are represented by users, service providers, and business owners (Belk, 2014a; Schor, 2016) who access, rent, and share products and services through nonhuman actors, represented by DP (Smith, 2016). These products and services are under-used assets, such as cars, bicycles, space, time, skills, and money shared and rented among humans (Sundararajan, 2017; Frenken and Schor, 2017). In this way, users and providers search for access, produce solutions and share experiences concerning these under-used assets (Bardhi and Eckhardt, 2012; Laurell and Sandström, 2017). Thus, the development of consumption relations creates collaborative consumption and connections between users and providers to access, share, and consume products and services (Bardhi and Eckhardt, 2012; Belk, 2014a; Schor, 2016). These relations are influenced by individual characteristics that lead to collaborative consumption as a way of accommodating needs and desires in a more sustainable, attractive way and with a little burden for the individual (Hartl et al., 2016; Ertz and Boily, 2019; Da Silveira et al., 2021).

In the traditional market, consumers (users) purchase and access products and services out of necessity, following the desire to own something that gives pleasure (Belk, 2014a; Frenken and Schor, 2017). Therefore, products are not acquired or shared exclusively for their functional characteristics, as they have the power to carry and communicate meanings and sense (McCracken, 1986; Hartl et al., 2016). Thus, consumption is a complex experience that extends beyond rational and practical aspects and involves the feelings, attitudes, beliefs, and emotions of the consumer (Holt, 1995). However, in the SE ecosystem, individuals are defined as users not merely "consume" but use broader exchange ecosystems often involving various exchange practices (swapping, lending, receiving donations…) (Frenken and Schor, 2017; Ertz et al., 2021).

In the marketing literature, many studies focus on consumer behavior, such as studies of the processes of how and when individuals or groups select, buy, rent, and use products, services, ideas, and experiences to satisfy their needs and desires through attitudes (Bagozzi and Dholakia, 2002). The behavioral attitudes of consumers determine the amount of affection that a person has for or against an object and are characterized as a set of three components: beliefs or cognition (knowledge about the object), affection (positive or negative evaluations of the object, or feelings about an object), and conation (intention or desired behavior relative to the object) (Bergami and Bagozzi, 2000; Bagozzi and Dholakia, 2002). When analyzing consumer behavior on the Internet, researchers include other variables, such as the perception of cost, perception of risk, compatibility of devices (Wu and Wang, 2005), financial resources, credibility, self-efficacy (Wang and Zhang, 2012), price (Pagani, 2004), security (Fang et al., 2016), fun (Pagani, 2004; Bruner and Kumar, 2005), satisfaction (Pagani 2004), perception of playfulness (Fang et al., 2016), and social pressure (Nysveen et al., 2005). Furthermore, a sense of commitment is an important determinant of consumption relationship with products, services, and technologies (Morgan and Hunt, 1994). According to Bergami and Bagozzi (2000), there is a strong link between commitment and willingness to stay in an established relationship with products and services. These authors defined commitment as the desire to maintain a relationship, and this concept is often used to explain behavioral intentions.

In the SE, the user is the one who accesses, uses, rents, exchanges, and shares products and services that may or may not be idle properties (Botsman and Rogers, 2010; Bradley and Pargman, 2017), using the web, devices, and DP (Bardhi and Eckhardt, 2012; Belk, 2014a; Hamari et al., 2016). In other words, consumers can participate as users accessing, exchanging, and lending assets and services in the SE (Ertz et al., 2021). To make this possible, producers or service providers must be available (Sigala, 2019; Basili and Rossi, 2020). Providers share their skills, activities, and products to optimize their use through business models such as rental, access, or leasing (Ravenelle, 2017), through non-contractual, non-hierarchical, and monetized forms of connection and interaction (Cockayne, 2016). Providers are independent workers, also known as gigers or gig workers (Jarrahi et al., 2020; Torrent-Sellens et al., 2022), who optimize under-used assets to promote access and sharing instead of ownership, acting as independent contractors to deliver, rent, exchange, and share time, skills, expertise and products through DP with users (Ravenelle, 2017; Harvey et al., 2017).

Using the concept of behavioral intentions, De Rivera et al. (2017) defined three types of collaborative platforms in the SE: networking-oriented, transaction-oriented, and community-oriented. In these three types of platforms, users and providers create a sense of community and a sense of entrepreneurship. The sense of community refers to individuals who share the same values, attitudes, and inspirations because they belong to the same community rather than the same social network that only connects people. These users and providers show a positive attitude toward collaborative consumption and believe in its ecological or sustainable promises (Hartl et al., 2016; Da Silveira et al., 2021).

On the other hand, the digital sense of entrepreneurship is defined differently for providers and users. The main entrepreneurial focus for providers is to produce a prompt and pragmatic interaction between users without the need for real trust or the creation of a social, economic link by digital media and platforms (Fitzmaurice et al., 2020). However, a prompt and pragmatic interaction is an important attribute for users. This leads to the understanding that online commerce is structured as a form of transaction mediated by entrepreneurs' digital media (Hallem et al., 2020; Basili and Rossi, 2020). Thus, entrepreneurship sense develops and diffuses new digital business models in the marketing context (Eckhardt et al., 2019), such as ridesharing platforms such as Uber and Lyft, or lodging platforms Airbnb. Sharing

practices in the SE are thus diffused through a sense of community and a sense of entrepreneurship, which occur and develop because of digital resources.

Traditionally, companies supervise users' experiences over the entire consumption process (Eckhardt et al., 2019). To ensure high-quality consumption experiences, companies try to influence their service providers' behavior through careful selection and training and exercise power and influence to encourage desirable behavior and punish bad behavior (Lemon and Verhoef, 2016). However, in the SE, the DP and providers have only limited control over the quality of the user experience. The users assume expanded roles, which were previously assigned to organizations and institutions. Therefore, the actions and experiences of previous users may change the performance and sharing conditions of shared resources—products or services (Perren and Kozinets, 2018; Eckhardt et al., 2019; Da Silveira and Hoppen, 2019), and requests, place choice, price analysis, recommendations and evaluation on Airbnb bookings or Uber calls are representative examples of this expanded role.

Digital Platforms

In the SE context, DP are nonhuman agents that centralize and decentralize actions and promote connections, interactions, mediation, and inductions between users and providers of products and services through features, tools, and algorithms (Sutherland and Jarrahi, 2018). DP embrace visible and invisible resources that include websites, blogs, virtual messaging networks, mobile applications, and social networks with texts, content, images, and videos that allow the quick sharing of information, products, and services (Eckhardt et al., 2019). In this chapter, the authors adopt a broad definition of DP based on a community-based economy and multisided platforms that offer users temporary access to tangible and intangible resources (Sundararajan, 2017; Ertz and Leblanc-Proulx, 2018; Da Silveira et al., 2021).

However, few studies explain the role and functions of the platforms concerning connections and business generation with different partners—for example, customers, providers, DP companies (Möhlman, 2015; Sutherland and Jarrahi, 2018). Service companies such as Uber, Airbnb, Blablacar, and others, adopt DP to lower costs by leveraging individuals' underutilized assets (Sundararajan, 2017). These services change the relationship between users and providers from "go-to" to "come-to" (Smith, 2016). "Go to" relationships are generated by users, and "come-to" relationships are generated by DP when they offer relevant experiences through digital solutions intended to ease and mediate exchanges, collaborations, and sharing practices (Ertz et al., 2019; Da Silveira et al., 2021). DP assumes a relevant position in this process through visible and invisible features structured to deliver products and services more directly and transparently, focusing on experience, personalization, relevance, and added value (De Reuver et al., 2018). Thus, DP develops and orchestrates a culture in which there is the consumerization of the digital and the digitalization of the physical (Smith, 2016; Sundararajan, 2017; Salamzadeh and Arbatani, 2020). DP facilitates the creation of value and involvement in the context of sharing practices (Constantiou et al., 2017; Geissinger et al., 2018) as well as establishing data-driven strategies through online systems to manage service quality and communications between users and providers (Zuo et al., 2019).

An important issue related to the nature of DP in the SE is understanding how actions, processes, and features are represented and developed in consumption and service relations (Belk, 2014b; Ertz and Boily, 2019). DP mediate processes between users and providers and establish communication, reputation, trust, engagement, sharing practices, and effectiveness of consumption (De Rivera et al., 2017; Basili and Rossi, 2020; Bardhi and Eckhardt, 2012; Belk, 2014b; Breidbach and Brodie, 2017). There are two

types of technological features that assist in the mediation process: tools such as communication apps, messaging networks, social networks, databases, text, voice, image, and video repositories, searching tools, and payment facilities; and algorithms such as matching algorithms of product and service offer and demand, searching algorithms, reputation, and service quality mechanisms (De Reuver et al., 2018; Garud et al., 2020; Da Silveira et al., 2021). Therefore, promoting easy access to DP and their resources is also important and requires the attention of the developers that create or integrate these features (Ertz and Boily, 2019; Basili and Rossi, 2020).

CONSUMPTION RELATIONS IN THE SHARING ECONOMY

Due to the involvement of individuals in the digitalization of services through DP, it is important to pay attention to how these technologies orchestrate relationships and induce and promote the development of sharing practices between users and providers (Eckhardt and Bardhi, 2016; Da Silveira, 2020). For Basili and Rossi (2020), DP reputation systems use algorithms to enhance efficiency and increase opportunities for connection and interaction. It is crucial to understand how the process, actions, and relations developed by DP promote individual aspects to participate in and access the SE ecosystem (Sutherland and Jarrahi, 2018; De Vaujany et al., 2020).

ICT enhance new collaborative consumption relations to share or rent, adopting DP, products, and services that are underutilized, such as cars, bicycles, space, time, skills, and money (Belk, 2014; Eckhardt et al., 2019; Frenken and Schor, 2017; Sundararajan, 2017). Thus, DP centralize and decentralize actions and promote connections, mediation, and induction between users and providers to access, share, and consume products and services (Bardhi and Eckhardt, 2012; Belk, 2014a; Schor, 2016) through their features, tools, and algorithms (Sutherland and Jarrahi, 2018), in a sort of assemblage or enactment (Latour, 2005).

To study the role of DP as actants that flatten consumption relations in the SE, the authors will define some key concepts: relations, digital mediated collaborative relations, connections, mediation, and induction. These concepts are presented in Table 1.

To understand the assemblage of social and technological components through DP in the SE, it is also necessary to understand the context (Shin, 2016; Scarabotto, 2016; Bajde et al., 2019). In consumption relations, users and providers do not see or perceive the actions and mediations developed by technology (Scaraboto, 2016; Acquier et al., 2017; Breidbach and Brodie, 2017; Geissinger et al., 2018). Nevertheless, Bajde (2013) posits that it is necessary to understand how consumption associated with digital objects is subject to flattening relations between users and providers through a process that includes content and contexts, connection, mediation, and induction promoted by technological artifacts. Flattening relations are a metaphor of the visible and invisible actions enacted or assembled by the artifact that plays a role in connecting, mediating, and inducing consumers (users) and providers to implement and stabilize consumption practices through precarious networks and heterogeneous relations (Bajde, 2013; Bajde, 2014; Schouten et al., 2015). Moreover, the human and nonhuman elements are not dichotomized or perceived separately, but instead, human actors apprehend them through their approximation and relationship (Bajde et al., 2019).

Table 1. Relations among actors in the sharing economy

Types of Relations/Definitions	Characteristics
Relations Denote a movement, a displacement, a transformation, or an enrollment that shows different kinds of associations among actants (Latour, 2005).	There are different kinds of relations depending on the entities involved and on the results of the actions.
Digital mediated collaborative relations Are consumption relations of products and services in the SE.	In these consumption relations, connections link human and nonhuman actors with other human and nonhuman actors (Korsgaard, 2011; Harvey et al., 2017).
Connections Are bidirectional relations and occur through a dynamic process provided by the interfaces, functionalities, features of design, communication, and interaction of platforms (Sutherland and Jarrahi, 2018; Basili and Rossi, 2020).	Scaraboto and Fischer (2016) mention the existence of a hybrid relationship in which consumers, providers, and technologies generate connections in the SE. Therefore, the process of connecting users and providers happens through the control of the platform (De Reuver et al., 2018), in cases where the platforms perform connecting actions between users and providers automatically and in an oriented manner (Sutherland and Jarrahi, 2018).
Mediation Comprises the generation and transmission of targeted information or agency of actions by an intermediate mechanism—in this case, a DP (Harvey et al., 2017; Ertz and Boily, 2019; Basili and Rossi, 2020).	- DP act as intermediaries in mediation processes between users (Eckhardt and Bardhi, 2016). - Mediation processes can be visible or invisible, integrating offers with human needs for products and services (Ravenelle, 2017; De Rivera et al., 2017). Visible processes take place through digital features that connect users and help them to access services or goods. Invisible processes happen through hidden algorithms and features that analyze behaviors, recommendations, and relationships among users to mediate offers and promotions. (Ertz et al., 2019; Da Silveira et al., 2021). - Mediation occurs through reputation systems that manage and control connections, interactions, relationships, and sharing practices (Basili and Rossi, 2020). - Mediation results in time-saving or interactive functional and utilitarian situations and creates multiple and associative consequences among all actors (Breidbach and Brodie, 2017; Sutherland and Jarrahi, 2018). The actions of DP can generate several mediation processes that result in similar behavior, which is of interest to everyone involved in the consumption process (Bajde, 2014; Canniford and Shankar, 2016). - Mediation of consumption relationships adopts business models that comprise various resources, interfaces, functionalities, and algorithms (Laurell and Sandstrom, 2017; De Rivera et al., 2017).
Induction It is a human or nonhuman actors' action of influencing other human actors to do something (Belk, 2014b; Breidbach and Broide, 2017; De Reuver et al., 2018).	Induction consists of direct and indirect stimuli provided by DP to individuals through notifications, communication, and reputation tools (Basili and Rossi, 2020; Da Silveira et al., 2021). For instance, in direct stimuli, DP displays the results of reputation algorithms, and indirect stimuli DP intermediate personal assessments of services and providers posted by users. Both kinds of stimuli aim to promote consumption and service relationships between human actors.

Source: The Authors (2021)

From this perspective, the structure and agency of DP can implement different relationship configurations that mediate and ease collaboration, sharing, and consumption. (Eckhardt and Bardhi, 2016; Harvey et al., 2017, Ertz et al., 2019). More recently, Mair and Reischauer (2017, p. 13) reinforced that "these digital platforms mediate transactions by matching the supply side with the demand side." On the other hand, del Mar Alonso-Almeida et al. (2020) believe that increasing the number of alternatives for accessing a product/service is permissible due to the several options of accessing information through multiple digital sources (Internet, social networks, DP, and marketplaces). However, for Möhlmann (2015), the sharing relationship is dependent on both the actions of individuals and devices. In this view, relation-

ships are built through reputations that build trust for consumption and sharing. Meanwhile, Eckhardt and Bardhi (2016), Hamari et al. (2016), and Harvey et al. (2017) recognize that digital artifacts are a crucial factor in promoting, developing, and mediating the relationships between users and service providers, giving a sense of closeness and more confidence to perform sharing activities. As shown in Table 1, each type of relation contributes differently but is complementary to promote consumption and service relationships in the SE when intermediated by DP.

Platforms with digital strategies promote alliances and support for fostering collaborative consumption and sharing practices between users and providers (Da Silveira et al., 2021). In other words, the mediation and flattening process of artifacts develop connections, inductions, and engagements that heighten collaborative consumption, improving sharing practices among users and service providers (Da Silveira and Hoppen, 2019; Bajde, 2014) —for instance, the use of apps, bike stations, communication devices, interactive maps whose primary function is to reap the benefits of sharing and using bike-sharing systems for the environment and individuals' health (Da Silveira et al., 2021). Consequently, users using bike-sharing or ridesharing apps have exemplified ways to execute sustainable practices through DP (Cohen et al., 2016; Sun and Ertz, 2021). Thus, this process contributes to the materiality of sharing practices through a network of associations, alliances, and relations negotiated between individuals, information, physical equipment, and digital technological artifacts (Da Silveira et al., 2021).

ANT AND THE RELATIONS AMONG ACTORS

ANT is a theoretical-methodological approach that helps the researchers in the task of tracing associations. The core aim of ANT is to follow network associations between individuals and artifacts, human and nonhuman (Law, 1992; Latour, 2005). This theory focuses on the heterogeneous network of interests, processes, and relationships, including people, objects, technologies, policies, and organizations (Law, 1992; Latour, 2005). ANT tracks associations by describing how networks are formed, maintained, developed, and disbanded; it includes explaining how relations among actors take place to form networks (Latour, 2005; Bajde, 2013).

Considering the context of DP in the SE, ANT offers six core concepts for understanding the relations among actors. Generalized symmetry, actor/actant, agency, network, and actor-network are defined below. *Translation*, the sixth core concept and a key concept for the analytical framework developed in this chapter, is detailed.

- *Generalized symmetry* is a starting point to understand agency and actors (or actants). To be symmetric means "not to impose a priori some spurious asymmetry among intentional human action and a material world of causal relations" (Latour, 2005, p. 76), so ANT assumes that humans and nonhumans have to be analyzed symmetrically.
- *Actors or actants*, whether human or nonhuman, could be any entities that perform or mediate some form of action or make a difference in the heterogeneous network, leaving a trail; that is, "actors do something and do not just sit there, in the network" (Latour, 2005, p. 54). Researchers cannot consider human intentionality solely responsible for any action because there exists nonhuman agency, and nonhumans could be actants (Latour, 2005; Latour, 2011).

- *Agency* is defined as a property of network-associated entities, considering the role played by human and nonhuman actors (Latour, 2005; Bajde, 2013; Shim and Shin, 2016). For ANT, any element has the potential to act because agency is a dynamic collective process (Martini et al., 2013).
- *Network* describes something but not a tangible physical thing or the representation of the context. On the contrary, the network is that which is traced by translations. Therefore, it is a work net or an action net that expresses a movement connecting actors together; "whatever the word, we need something to designate flows of translations" (Latour, 2005, p. 132). The ANT network is a heterogeneous association between artifacts and individuals in a collective of assemblies that helps redistribute and reallocate action in an event or practice (Law and Mol, 1995; Latour, 2005).
- The *actor-network* concept represents a heterogeneous network of interests and aligned actions that include people, artifacts, organizations, patterns, paths, subjects, and facts. It considers at once the actor/actant and the network in which it is embedded. It is made to exist by its many ties—the more connected, the more unique it looks. Therefore, the human and nonhuman actors are a collective group that acts and interacts as a coordinated network in motion (Latour, 2005; Korsgaard, 2011; Bajde, 2014).

Generalized symmetry, actor/actant, agency, network, and actor-network are related concepts that are indispensable in understanding the translation process (Korsgaard, 2011; Alexander and Silvis, 2014).

Translation is a powerful concept to describe and understand many different relationships between individuals (human) and artifacts (nonhuman) actors/actants—between heterogeneous elements that are joined together and assembled into a network (Shin, 2016; Salamzadeh and Arbatani, 2020). The process involves expressing what others say and want, why they act as they do, and how they associate with each other; translation is a relational process (Da Silveira, 2020). Moreover, the main foundation of ANT is the perception of how human and nonhuman beings are configured as actors in stable heterogeneous networks with aligned interests and collective mobilizations (Law, 1992). Therefore, the ANT translation process explores how heterogeneous networks emerge, how they remain over time, and how they compete with other networks with different interests (Callon, 1984; Latour, 2005). The concept of translation demonstrates the dynamics of the relationships between the actors/actants and is a result of various relational transformations. The identities and interests of the multiple actants are under constant negotiation and looking for stabilization, which is crucial for structuring the relations. (Callon, 1984). Thus, "translating interests means, at the same time, offering new interpretations of these interests and channeling people in different directions [...] the results of these translations are a slow movement from one place to another" (Latour, 2005, p. 194).

In his seminal study, Callon (1984) suggests four phases to explain the translation process: (i) problematization; (ii) interessement; (iii) enrollment; (iv) mobilization. Throughout this process, the identity of actors, the possibilities of interaction, and the space for maneuver are negotiated. Translation describes how actors align the interests of others with their own (Callon, 1984; Latour, 2005). The phases are described in Table 2.

Translation considers the arrangement of any network to be a complex process by which actors/actants have been structured into a network. The distinctions between these four phases are not given a priori and do not imply an implicit temporal differentiation. As such, translation is a process, never a complete achievement, which can sometimes fail.

Table 2. The four phases of the translation process

Definitions	Characteristics
Problematization: is when an actant (or more) "establishes himself as an obligatory passage point in the network of relationships that he or they were building." (Callon, 1984: 6).	During this phase, one or more actors frame(s) the problem and define(s) the identities and interests of other actors according to their interests, demanding that the process occurs under its control so that all actors reach their goals. Callon (1984:7) calls this process an "obligatory passage point" (OPP). "OPP is usually in the direct path of the focal actor concerning pursuing its interests, so other actors may be forced to overcome certain obstacles to cross the OPP" (Shin, 2016: 439). When one or more visible or invisible actors, through their identities, define actions, commitments, relationships, the nature of the problem and establish the roles of the others involved in the network to adapt or reformulate the proposed objective, these actors become indispensable (Callon, 1984).
Interessement: is when an actant (or more) "attempts to impose and stabilize the identity of the other actors" (Callon, 1984, p. 8)	Interessement is represented by a series of processes and inscriptions by which the main actor negotiates with other actors for involvement in a program or context. It involves, therefore, attempts by an actor (actant) to convince others that the benefits he/she/it has defined for them are in line with his/her/its own benefits. So, **i**nteressement consists of the actions of the main actor who convinces the other actors to agree with the interests defined for them during the problematization phase. Because of its nature, interessement processes often involve negotiations between the actors, and the aim is to stabilize the actors' roles.
Enrollment: is when an actant (or more) promotes alliances and negotiations in order "to define and coordinate the roles" (Callon, 1984:10)	The enrollment phase is mainly related to how the previously proposed provisional order is achieved (Callon & Law, 1982). **Enrollment** occurs when actors incorporate scripts for future actions and behaviors in the network (Callon, 1984; Shin, 2016) **and** when the actors' visible and invisible roles and actions can be coordinated through a certain alignment of interests of humans and nonhumans in the network. It establishes the role of human actors and the visible and invisible resources and features in the relationship. Enrollment is a set of strategies in which the actors define, coordinate, and interrelate the various roles assigned to others. Thus, it also includes a definition of the role of each actor in a newly created network of actors.
Mobilization: is when an actant (or more) becomes a representative spokesman, which means "to render entities mobile which were not so beforehand." (Callon, 1984: 12)	Callon (1984, p.19) affirms that translating "is to establish oneself as a spokesman." **Mobilization** refers to a set of ways a representative actor uses to ensure that all actors have legitimate speakers or representatives in the group and avoid betrayal. In mobilization, primary actors borrow the strength of their passive allies and become their representatives or spokesmen. (Callon, 1984; Shin, 2016; Lee et al., 2015). By speaking on behalf of the various actants, the representative actor reinforces the previously negotiated roles, identities, and objectives. In this phase, a series of intermediaries and equivalences leads to the designation of a spokesman, so "the network can act as a single unit, which can be distinguished from its environment as an object (actor-network) with its own consistent identity" (Callon and Law, 1997, p.170).

Source: The Authors (2021)

FLATTENING RELATIONS: AN ANALYTICAL FRAMEWORK

To understand the assemblage between human actors and contexts, consumption processes, and technological components (nonhuman actants) in the SE, taking advantage of the "wiry, ropy, capillary" nature of networks (Latour, 1997:2) may help researchers to trace and understand action (Latour, 2005). Therefore, it is necessary to deeply understand the SE context through tracking actors and processes (Shin, 2016; Scarabotto, 2016; Bajde et al., 2019) and translating the entire set of traces left behind (Latour 2005:132) by an agent in motion. Therefore, it is important to understand how consumption processes associated with digital objects are flattened (Bajde, 2013).

Table 3 synthesizes and assembles conceptual elements that characterize users, providers, and DP as translation phases in the transient network built for consumption purposes in the SE. Concerning users

or consumers, these elements are behavioral attitudes, defined by the amount of affection that a person has for or against an object (Bagozzi and Dholakia, 2002), perceived values (Pagani, 2004; Wu and Wang, 2005; Fang et al., 2016; Wang and Zhang, 2012; Nysveen et al., 2005), and behavioral intentions (Morgan and Hunt, 1994; Bergami and Bagozzi, 2002) encapsulating the sense of commitment, sense of entrepreneurship discussed in an earlier section. The providers are characterized by the same conceptual elements as users, where providers share products, services, time, and talents (Sigala, 2019; Basili and Rossi, 2020). Concerning DP, these elements are features to offer users and providers temporary access to tangible and intangible resources—tools [digital communication processes to exchange messages, comments, and complaints, payment facilities] and algorithms [reputation systems to evaluate the quality of services or products]—to give them easy access to exchange, lend, buy or rent products and services (De Reuver et al., 2018; Ertz and Boily, 2019; Basili and Rossi, 2020; Da Silveira et al., 2021).

In Table 3, the intersections between the actants and the translation phases of the network (the content of the cells) are important characteristics of users, providers, and DP taking part in the flattening of consumption relations. As the actor-network created for consumption is consolidated (from translation phases problematization to mobilization), more characteristics of the human and nonhuman actors must be taken into account to explore the role of DP as a mediator flattening consumption relations between users and providers, which increases the complexity of the framework. The characteristics shown on the cells of Table 3 have been selected from the literature and from three exploratory case studies performed when structuring the framework (Da Silveira and Hoppen, 2019; Da Silveira, 2020; Da Silveira et al., 2021 [see notes below Table 3]). The columns of actions are elements of the framework that are intended to facilitate the content analysis of empirical studies on user or consumer relations, particularly the phenomenon of flattening. Actions, for example, information sharing, consumption decisions, payment, in the point of view of these researchers, can only be analyzed based on data of empirical studies. The relations developed in the actor-network are built for consumption purposes in the SE and depicted in Figure 1:

In this framework, the relations denote a movement, a displacement, a transformation, or an enrollment that shows the associations among actants (Latour, 2005). Digital mediated collaborative relations are also defined as consumption relations of products and services in the SE. These relations are assembled to share, sell, lend or rent underutilized products and services adopting DP (Belk, 2014a; Frenken and Schor, 2017; Sundararajan, 2017; Eckhardt et al., 2019).

In Figure 1, connections are the actions that link human and nonhuman actors with other human and nonhuman actors (Harvey et al., 2017) to exchange relevant information. Connections are bidirectional and occur through a dynamic process provided by the interfaces and functionalities, as well as the features of design, communication, and interaction of DP (Sutherland and Jarrahi, 2018; Basili and Rossi, 2020).

Mediation comprises the generation and transmission of targeted information or the agency of actions (De Reuver et al., 2018) by an intermediate mechanism—in this case, a DP (Kinder et al., 2019). DP act as intermediaries through direct (digital resources such as reputation algorithms) mediation processes or indirect mediation processes (digital media to allow posts of users) between actors (Eckhardt and Bardhi, 2016). Thus, the mediated collaboration and sharing process is assembled via DP. In direct processes, the provider supplies a given resource (e.g., money, time, space, products, labor, talent) to a mediator (the DP), which then transmits or dispatches it according to the users' demands (Ertz et al., 2019). In indirect processes, providers may exchange resources, services, or products directly with users. The DP plays the role of a process facilitator, leaving room for users to decide for themselves the exchange conditions (such as location, time, price, etc.).

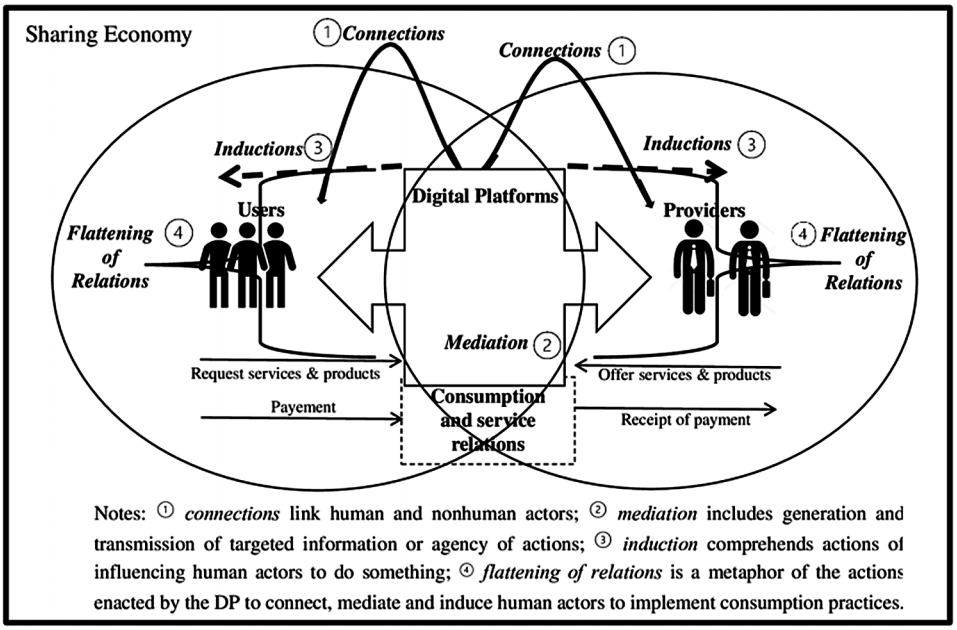
Table 3. Translation phases of the actor-network created for consumption and actor characteristics

Translation Phases	Actor Characteristics					
	Users		Providers		Digital Platforms	
	Behavioral attitudes, Perceived values, Sense of commitment.	**Actions**	**Availability to share Behavioral attitudes, Perceived values, Sense of commitment, and entrepreneurship.**	**Actions**	**Features – tools and algorithms.**	**Actions**
Problematization: Is about becoming indispensable.	Feelings about the object or service: beliefs, affection. Perception of cost, sustainability, and credibility.	Example: Decision to access service.	Availability to share. Affection and connection. Perception of cost and credibility.	Example: The decision to offer and share service.	Communication apps. Social networks. Social media.	Example: Connection process with users and providers through features and information.
Interessement: Is about stabilizing the actors' roles.	Feelings about the object or service: beliefs, affection, connection. Perception of cost, security, sustainability, credibility, fun, and compatibility of devices. Sense of community and sustainability.	Example: Reputation assessment process and service quality.	Availability to share. Affection and connection. Perception of cost, security, credibility, satisfaction, self-efficacy, and compatibility of devices. Entrepreneurship sense.	Example: Continuous offer of services. Communication to reinforce service benefits.	Communication apps. Social networks. Social media. Databases and repositories Matching, reputation, and service quality algorithms. Easy access.	Example: Communication process through features, digital solutions, and digital design.
Enrollment: Is about the alignment of interests of roles and actions.	Knowledge about the object. Feelings about the object or service: beliefs, affection, connection. Perception of cost, security, risk, sustainability, credibility, fun, self-efficacy, and device compatibility. Sense of community and sustainability.	Example: The process to develop alignment of interests to access service through beliefs, perception of costs and benefits, credibility, efficacy, and compatibility with devices.	Availability to share. Affection and connection. Perception of cost, price, security, credibility, fun, satisfaction, self-efficacy, and device compatibility. Business orientation. Sense of community, sustainability, and entrepreneurship.	Example: The process to develop alignment of interests to share service through price, quality, perception of costs and benefits, credibility, and efficacy.	Communication apps. Social networks. Social media. Databases and repositories. Payment facilities. Matching, reputation, and service quality algorithms. Easy access.	Example: Assemblage process to match users and providers with payment facilities, reputation, and service quality algorithms through easy connection, access to improve the business model orientation.
Mobilization: Is about the ways used by the designated representative-actor to ensure that all actors are legitimately represented, reinforcing roles, identities, and objectives previously negotiated.	The relational arrangements establish allies to access services. Commitment, sense of community, sustainability, and entrepreneurship.	Example: This process consolidates collaborative consumption or sharing practices through the alignment of interests to access service.	The relational arrangements establish allies to sharing services. Sense of community, entrepreneurship sense, Business model orientation.	Example: This process consolidates collaborative consumption or sharing practices through the alignment of interests to offer service.	Matching users And providers through digital media, solutions, features, databases, and algorithms to establish easy access service offered.	Example: The Flattening relations process establishes consumption relations among users and providers through easy connection, responsive interaction, easy communication, and a simple navigation process to access the service offered.

Source: The Authors (2021).

Notes: Da Silveira e Hoppen (2019) presented a first relational framework to explain, from a heterogeneous actor-network point of view, the relations of induction, connections, and mediation that occur between providers, DP, and consumers in a bike-sharing system. Da Silveira (2020), based on two other case studies, discussed how the flattening process happens between consumers and providers, intermediated by DP. Da Silveira et al. (2021) expanded the analysis of the bike-sharing system to study how the materialization of the sustainable consumption process among consumers, DP, and providers was established through the flattening relationships process.

Figure 1. Flattening Relations: An Analytical Framework
Source: The Authors (2021).



Induction consists of human or nonhuman actors' actions to influence other human actors to do something (e.g., actions leading to consumption) (Basili and Rossi, 2020; Da Silveira et al., 2021). As stated in Table 1, induction is composed of the direct and indirect stimuli provided by DP to individuals through notifications, communication, and reputation tools (Kinder et al., 2019).

In consumption relations, consumers (users) and providers do not see or perceive the actions and mediations developed by technology (Scaraboto, 2016; Acquier et al., 2017; Breidbach and Brodie, 2017; Geissinger et al., 2018). To understand how consumption is associated with digital objects in the SE, Bajde (2013) states that it is necessary to understand how this association is subject to flattening of relations between users and providers through a process that includes content and contexts, connection, mediation, and induction promoted by technological artifacts. Flattening relations is a metaphor for the visible and invisible actions enacted or assembled by the artifact that plays a role in connecting, mediating, and inducing users and providers to implement and stabilize consumption practices through precarious networks and heterogeneous relations (Bajde, 2013; Bajde, 2014; Schouten et al., 2015; Da Silveira, 2020). Human and nonhuman elements are not dichotomized or perceived separately in this relation but realized by human actors through their approximation and relationships, leading to consumption (Bajde et al., 2019).

The proposed framework is based on Table 3 and Figure 1. Table 3 assembles the human and nonhuman actors' characteristics in the four translation phases leading to the development of a consumption network, and Figure 1 highlights the relations built between the actors in this network. Adopting these two views of the consumption network, the framework should support a more profound analysis of how consumption in the SE is mediated by DP, a hybrid complex phenomenon in a single network.

This framework enables three theoretical contributions. The first consists of the systematization and consolidation of the definitions of the multiple sociotechnical elements implicated and of the relations

created in the actor-network assembled in the SE. The literature review carried out has revealed different fields of knowledge using different definitions and concepts that study the SE, such as macro and microeconomics, sociology, marketing, and IT (Pushman and Alt, 2016; Latour, 2005; Bardhi and Eckhardt, 2012; Belk, 2014b; Bajde et al., 2019). The complexity resulting from these different approaches required a consistent consolidation of concepts to structure the proposed framework.

The second contribution relates to using ANT as a theoretical and methodological approach that supports the task of tracing the associations that demonstrate how flattening relations occur through DP. One reason to choose this theory is that ANT assumes that humans and nonhumans are symmetrical when associated with a network. Thus, it allows tracking how heterogeneous nets are formed, maintained, developed, and disbanded (Latour, 2005). Another reason is that ANT can support the analysis of how humans and nonhumans are assembled into a stable heterogeneous, and complex network, traced by translations (Latour, 2005), with aligned interests and collective mobilization (Law, 1992). Through the concept of translation, ANT provides the lens that can reveal the development of a symmetrical and hybrid relation between users, providers, and DP in the SE, without an *ex-ante* definition of human roles (social determinism) or technological drivers (technological determinism).

Translation is a relational concept that demonstrates the dynamics of relationships in a network. It is based on four phrases that explain the process—problematization, interessement, enrollment, and mobilization (Callon, 1984; Alexander and Silvis, 2014). The previous section develops the concepts and processes of ANT that help to analyze the dynamicity of the actor-network, with Table 1 presenting the four translation phases and how they can support the analysis of the relationships between the actors acting in a consumption network in the SE. The third and main contribution refers to the framework developed that encompasses both the human and nonhuman elements of the consumption network and elements of the process that reveals how these elements are assembled. These elements and the assembling processes are synthesized in Table 1 and depicted in Figure 1.

Moreover, looking at exemplary case studies from the sharing economy literature, it is possible to see how ANT would help such studies. Both Salamzadeh and Arbatani (2020) and Garud et al. (2020) offer compelling evidence of ANT theory, helping to explain the social, technical interweaving in the form of processes, metaphors, and socio-structural factors. Thus, it should be strongly emphasized that the nonhuman practices and materials (e.g., Facebook media entrepreneurs and Uber digital technologies) are clearly subject to sociotechnical or discursive determination (Salamzadeh and Arbatani, 2020; Garud et al., 2020). However, the analytical proposal framework seeks to present a socio-material diagram, where humans and nonhumans are treated symmetrically in the analysis. Furthermore, the ANT translation method can contribute to such case studies by showing how the human actors are powerless without the nonhuman ones. Table 1 presents how human and nonhuman actors can develop flattening consumption relations in the SE with their characteristics, identities, and actions.

Regarding ANT, it is important to mention that its most pertinent strength is the inclusion of heterogeneous actors in the social analysis. Furthermore, the description of the process is more relevant than the definitions of the features, shedding light on the relationship between users, providers, and DP, without eliminating the possibility of the inclusion of other actors, depending on each case under analysis. To Alexander and Silvis (2014), this is done by seeing which actors are the source of translations over time. That is why, when using ANT, it's important to understand how the actions happen. Moreover, ANT moves the research further to the center of a continuum from social constructivism to technological determinism (Matthews, 2021).

Although ANT has strengths, as mentioned above, the limitation in using ANT is the vague boundaries that make it difficult to define the beginning and the end of case analysis and which elements are part of each translation phase. Thus, ANT does not provide the means by which the effects of a relationship can be quantitatively measured, so there is no predictive capacity (Alexander and Silvis, 2014). In addition to this, ANT has the advantage and challenge of decentering human agency from understanding how things happen (Matthews, 2021) or how flattening relations occur in the SE context.

FUTURE RESEARCH DIRECTIONS

Table 3 is intended to elicit the elements—actants, processes—that enable a detailed analysis of the SE phenomenon with DP mediating and flattening relations among users and providers. Table 3 may also ease the synchronous, and diachronic analysis of the elements studied (Barley, 1990). The synchronous analysis of elements enables analytical comparisons of the same elements in different empirical contexts. The diachronic analysis allows for tracing the evolution of the elements over time and a more dynamic analysis of mediation and flattening consumption relations between users, DP, and providers in the SE. Both analytical approaches lead to a broader vision of complex sociotechnical phenomena.

On the other hand, Figure 1 is intended to make feasible a fine-grained analysis of the relations built between the human and nonhuman actors involved in the actor-network. The graph that reveals the agency of the actors that leads to the structuring of the network may be associated with an asynchronous and more dynamic analysis of the process (Barley, 1990) of mediation and flattening consumption relations between users, DP, and providers in the SE, allowing a detailed view of this complex phenomenon. However, Figure 1 does not detail the recursiveness of these relations. Consequently, the proposed framework is subject to theoretical limitations that should be mitigated by future research.

Due to the multiple actants and the multiple and sometimes recursive relations established in the actor-network, to perform a sound analysis of the consumption process, empirical situations and contexts in the SE should be selected and studied. For example, the flattening of relations (Figure 1) consists of a unique combination of the elements and relations described to enact a specific set of consumption relationships inserted in a specific context of the SE. Furthermore, looking at exemplary case studies from the SE literature, it is possible to analyze how ANT could help such studies.

What is of importance is that future research follows the translations involving identities, characteristics, relations, and actions proposed in Table 3. Thus, for empirical data collection and analysis, a translation can be seen as a flattening consumption relation (Da Silveira, 2020). The action here is understood as making a difference that presents this metaphor in the sharing economy process with users, providers, digital platforms, mechanisms, features, and digital solutions (Da Silveira and Hoppen, 2019; Da Silveira et al., 2021). Such differences will typically be made whenever new actors, human and nonhuman, become involved in or are disengaged from the process, or when actors, for whatever reason, change how they act concerning other actors (Korsgaard, 2011)—for instance when fishermen decide to harvest the few remaining scallops (Callon, 1984); Facebook media entrepreneurs use analytical metrics to broadcast their advertising (Salamzadeh and Arbatani, 2020); goalkeeper service providers offer services that are mediated through digital platform economy solutions (Da Silveira, 2020); or when sustainable consumption is materialized through digital features, solutions and the physical equipment of bike-sharing services (Da Silveira et al., 2021).

Therefore, the authors suggest the development of empirical studies, more specifically longitudinal case studies, that can foster the analytical framework's development. Empirical observation and follow-up procedures are welcomed to interpret these issues (Law, 1992; Latour, 2005). ANT has various tools and data collection methods that can also be used to develop case studies (Callon, 1984; Law, 2004; Latour, 2005).

CONCLUSION

This study aimed to propose an analytical framework to explore the role of DP and its features in developing mediation and flattening consumption relations in the SE. The research adopted ANT as its theoretical and methodological foundation within this sociotechnical field that assembles users, providers, and platforms in the SE context (Latour, 2011; Lamine, 2017). To deepen the knowledge concerning assemblage issues among actors, the study described the combination of elements regarding agency among actants using concepts and approaches proposed by ANT (Callon, 1984; Law, 2004; Latour, 2005; Bajde, 2013). These ANT elements provide insights into the characteristics and actions of DP that connect, mediate, and induce consumption relationships between actors belonging to a complex network developed in the SE. In an original form, using an integrative view, the authors aimed at showing how the assemblage among users, providers, DP, and the relations between these actants are fostered in consumption relations via social and technical actions. These actants develop sharing practices through a network of associations, alliances, and relations negotiated between individuals, physical equipment, digital artifacts, and information, entailing changes in individuals' behavior in the context of the SE (Ravenelle, 2017; Bajde et al., 2019; Sigala, 2019, Da Silveira et al., 2021).

Nevertheless, the proposed framework is intended to amplify and deepen knowledge concerning how DP flattens consumption relationships. This framework allows scholars and practitioners to question and position research and practice, considering the translation elements of ANT (Callon, 1984). It assists practitioners in understanding the role and agency of DP in developing businesses in the SE that engage users. It also allows service providers in the SE business models that promote sharing practices and collaborative consumption a more profound understanding of these processes and activities.

The main implication of this study and with the framework developed is to consider and show the importance of DP agency in the SE. The digital materiality of these artifacts mediate relationships between users and providers, resulting in a flattening of the sharing practices (Bajde, 2013; Da Silveira, 2020; Da Silveira et al., 2021). Thus, some reflections on management practice have emerged from our analysis. The first reflection for those willing to steer the SE processes is the importance of identifying characteristics of the actants' roles and the relations between actants needed for advancing sharing and collaborative practices through an analytical framework approach such as the one proposed in this chapter. Second, considering the specific context of each relationship in a sociotechnical system (Shin, 2016; Shim and Shin, 2016), with the specific actions and relationships of practitioners in the SE (users and service providers), it is necessary to recognize the multiplicity and diversity of nonhuman actors involved, such as mechanisms, resources, solutions and algorithms present in a digital platform system.

Third, it is necessary to make sure these diverse actors are treated to identify and cope with the limitations of our human agency and facilitate interdependencies between the different nonhuman agencies involved in a particular dynamic consumption relation. Following the recent work of Da Silveira et al.

(2021), this would imply the importance of bringing relational ontologies into transdisciplinary research processes in SE interventions.

In this perspective, ANT presents a different view of the consumption relation in the SE. The analytical framework addresses the flattening of consumption relations as something that takes place between users and service providers through visible and invisible heterogeneous associations, mediated by digital platforms and their features, solutions, mechanisms, and characteristics.

Finally, this study proposed the conceptual structuration of a complex framework that yet shows validity limitations. Elements involved in flattening consumption relations, such as the characteristics of actants and processes presented in Table 3 and the recursiveness of the relations detailed in Figure 1, are mostly based on ANT. This theoretical and methodological foundation somehow shows vague boundaries. The developed framework is also based on a few briefly presented empirical examples (see the notes in Table 3). Consequently, future empirical research, studying diverse SE contexts, different DP, and actants, has the potential to further develop the proposed analytic framework and its validity.

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KEY TERMS AND DEFINITIONS

Actor-Network Theory: Is a theoretical and methodological approach that focuses on how associations between humans and nonhumans are formed, maintained, and developed in a heterogeneous network of interests, processes, and relationships.

Collaborative Consumption: A consumption form that promotes sharing, exchanging, and renting underutilized goods and services in the SE, using digital platforms.

Digital Platforms: Are technological artifacts that centralize and decentralize actions promoting connections, interactions, mediation, and inductions between users and providers of products and services through features, tools, and algorithms.

Enrollment: Is when an actant (or more) promotes alliances and negotiations in order to define and coordinate the roles.

Interessement: Is when an actant (or more) attempts to impose and stabilize the identity of the other actors.

Mobilization: Is when an actant (or more) become(s) a representative spokesman, which means to render entities mobile which were not so beforehand.

Problematization: Is when an actant (or more) establishes himself as an obligatory passage point in the network of relationships he or they were building.

Sharing Economy: Relates to economic and technological arrangements that result from collaborative relations to share assets—products and services—through digital platforms, leading to more sustainable consumption.

Chapter 3
Mapping the Collaborative Platform Economy Business Practice: A Typological Study

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ABSTRACT

This study aims to develop a typological configuration that characterizes the full spectrum of collaborative platform economy business practice in the real world. The analysis is conducted on the basis of a large-scale data set which contains information on 1,335 representative platforms in more than 60 countries on five continents, covering almost all collaborative platform economy business practices mentioned in academic journals and public media. Leveraging the k-means clustering method, an empirical typology comprising seven categories of collaborative platform economy business practice is proposed: collaborative support platform, resource supply platform, authentic C2C platform, C2C mutualized mobility platform, hybrid service platform, B2C service platforms, collaborative finance platform. In addition, with the help of operating status data of the collaborative platform economy, a cross-comparative analysis was also carried out on the category differences and geographic differences.

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INTRODUCTION

The rapid development of digital information technology and network technology has given consumers more power than ever before, resulting in the emergence of profound reconfiguration of market exchange in various forms (Ertz et al., 2019a, 2019b, 2019c, 2019d). One of the most striking is the collaborative platform economy which has brought revolutionary changes to the conceptualization of market exchange and made noticeable achievements over the last decade. Many collaborative platforms have risen rapidly across various well-established fields and have significantly affected all aspects of people's lives.

The collaborative platform economy is a subset of the sharing economy and collaborative consumption, which is commonly connected to the temporary and collaborative use of goods and services, mainly through the medium of digital platforms (Boily, 2022). The same nature of sharing economy and collaborative consumption also emphasizes the access-based consumption of goods and services rather than the traditional ownership-oriented consumption mode. Although the rise of the collaborative platform economy has attracted wide attention in business, government, and academia (De Vaujany et al., 2020; Ertz and Leblanc-Proulx, 2018; Frenken and Schor, 2017; Plzáková and Studnička, 2021; Sánchez-Pérez et al., 2021; Xu and Gursoy, 2021), there is a lack of empirical research regarding the increasing diversity of collaborative platform economy business practices and organization model (Zhu and Liu, 2021; Klarin and Suseno, 2021).

Business models represent a set of strategic decisions, which describe how an organization creates, transfers, and obtains value through internal activities and partnerships with stakeholders (e.g., suppliers and customers) (Osterwalder and Pigneur, 2010; Teece, 2010). Business model analysis can provide simple and powerful insight into the organizational structure and value creation process of an enterprise (Osterwalder and Pigneur, 2010; Teece, 2010; Reuschl et al., 2021). Therefore, it can be used as an effective tool to analyze and understand the inner complexity of the collaborative platform economy and elaborate on the diversity of business model types of collaborative platform economy business practices.

Currently, the business model of the collaborative platform economy has been studied by scholars in various fields from multiple angles (Acquier et al., 2017, 2019; Cohen and Munoz, 2016; Muñoz and Cohen, 2017; Plewnia and Guenther 2018; Schwanholz and Leipold, 2020; Gerwe and Silva, 2020; Reuschl et al., 2021). However, although scholars have conducted extensive and in-depth research on this topic, there are still some deficiencies. First, different studies follow different definitions and concepts of the collaborative platform economy business practice, so the scope of sharing economy business practice and specific cases selected in the analysis process is different, and the corresponding conclusions are also diverse. Second, the existing research on collaborative platform economy business models mainly concentrates on transportation, accommodation, goods, and life services and does not cover the full spectrum of business practice. Third, with the rapid development and evolution of the collaborative platform economy, the business practice of the collaborative platform economy has penetrated more and more industries and business scopes, making the business model of the collaborative platform economy more complicated. Therefore, it is very worthwhile to analyze business models of platforms based on extensive actual business practices in order to explore a more comprehensive typology of the collaborative platform economy. In addition, although these frameworks and typologies discuss and compare the differences in business models within the collaborative platform economy from different perspectives and levels, there is little research focus on the operating status of the collaborative platform, such as the size, number of active users, and funds raised in the market, which are critical to the sustainable development of the platform itself and even the entire emerging collaborative platform economy market.

Moreover, due to the difference in economy, society, and culture, developing the collaborative platform economy in different countries and regions is also different, whether for collaborative platform economy in the same field (e.g., same shared goods or service) or with the same business model. But the existing research often fails to take this geographical difference into account, which makes the research on the typology of collaborative platform economy business practice less systematic.

Therefore, this research focuses on the online platform-based component of the sharing economy and collaborative consumption, that is, the collaborative platform economy, in an attempt to make up for these research gaps. This chapter selects thousands of platforms in the collaborative platform economy across the world as the research objects, covering as much as possible all types of collaborative platform economy business practice in the real world. All these examples are platforms that are still in operation until January 2021. Combined with the actual operation situation and the business model of these platforms, this study aims to develop a comprehensive typology that can capture the wide range of business activities and organization models. The research framework and purpose of this study are as follows: 1) Develop a typology of collaborative platform economy business practice based on the clustering analysis technique which can distinguish collaborative platform economy business activities based on their similarities and differences; 2) Compare and analyses the geographical differences of the collaborative platform economy, including the differences in the development status of the same type of business model in different regions, and the differences in the development status of different types of platforms in the same region. In short, this study attempts to supplement the existing research on the collaborative platform economy business practices theoretically and empirically, offer some new insights into the business models and typology of the collaborative platform economy, in order to provide some guides and suggestions for the management decision-making of authorities and platform operators and future sustainability research of collaborative platform economy.

LITERATURE REVIEW

The concept of collaborative consumption was first proposed by Felson and Spaeth (1978), which theorized collaborative consumption based on Hawley's (1950) theory of human ecology. They provided an overly broad concept for collaborative consumption activities, that is, "the events in which one or more persons consume economic goods or services in the process of engaging in joint activities with one or more others" (Felson and Spaeth, 1978, p.614). Subsequently, with the rapid development of the collaborative platform economy, the concept and definition of the sharing economy and collaborative consumption have received a lot of extensive and in-depth research in theory and practice. However, there is no consensus on the concepts of the sharing economy and of collaborative consumption, which has been widespread ambiguity and confusion about its definition and classification among academics and the public. The sharing economy and collaborative consumption described in the literature includes a variety of consumption practices and organizational models. There are a number of concepts that designate the business practices of sharing economy and collaborative consumption: collaborative platform economy, sharing economy, peer-to-peer economy, collaborative consumption, access-based consumption, cocreation, prosumption, etc. (Botsman and Rogers, 2010; Belk, 2014; Ertz et al., 2016; Frenken and Schor, 2017; Heinrichs, 2013; Shaheen et al., 2016; Schlagwein et al. 2020; Henry et al.,2021). Diverse definitions and business activities of the sharing economy and collaborative consumption from the literature are shown in Table 1.

Table 1. Previous definitions of sharing economy and collaborative consumption

Reference	Definitions and Business Activities
Felson and Spaeth (1978)	"Those events in which one or more persons consume economic goods or services in the process of engaging in joint activities with one or more others" (p.614)
Botsman and Rogers (2010)	"traditional sharing, bartering, lending, trading, renting, gifting, and swapping." (p. xv)
Heinrichs (2013)	"individuals exchanging, redistributing, renting, sharing and donating information, goods and talent". (p. 229).
Belk (2014)	"people coordinating the acquisition and distribution of a resource for a fee or other compensation. By including other compensation, the definition also encompasses bartering, trading, and swapping, which involve giving and receiving non-monetary compensation". (p. 1597)
Ertz et al. (2016)	"the set of resource circulation systems which enable consumers to both obtain and provide, temporarily or permanently, valuable resources or services through direct interaction with other consumers or through a mediator." (p. 6).
Hamari (2016)	"the peer-to-peer-based activity of obtaining, giving or sharing the access to goods and services, coordinated through community-based online services" (p. 2047)
Cheng (2016)	"peer to peer sharing of access to under-utilized goods and services, which prioritizes utilization and accessibility over ownership, either for free or for a fee" (p. 111).
Aloni (2016)	"an economic activity in which web platforms facilitate peer-to-peer exchanges of diverse types of goods and services". (p. 1398).
Barnes and Mattsson (2016)	"access-based consumption of products or services that can be online or offline" (p. 200).
Habibi et al. (2017)	"non-ownership forms of consumption activities such as swapping, bartering, trading, renting, sharing and exchanging" (p. 113)
Frenken and Schor (2017)	"consumers granting each other temporary access to under-utilized physical assets (idle capacity), possibly for money" It can be identified by these characteristics: consumer-to-consumer interaction, temporary access and physical goods. (p. 5-6)
Ertz et al. (2019c)	"the set of resource circulation schemes that enable consumers to both receive and provide, temporarily or permanently, valuable resources or services through direct interaction with other consumers or through an intermediary." (p. 32)
Schlagwein et al. (2020)	"the sharing economy is an IT-facilitated peer-to-peer model for commercial or non-commercial sharing of under-utilized goods or service capacity through an intermediary without transfer of ownership." (p. 829)
Henry et al. (2021)	"an approach that is applied at the levels of business-to-consumer, consumer-to-consumer and business-to-business transactions and outperforms traditional services especially when applied in the digital domain." (p. 12)

According to research works of experts and scholars in different fields, there is a significant disparity in the types of business activities described within the scope of the collaborative platform economy. Some scholars provide a stricter definition, whereas some researchers suggest a broader concept. However, in the wide scheme of things, shared goods and services involved in collaborative platform economy business actives cover material, products (e.g., cars, equipment, toys, clothing, food, book), product-service systems, space (e.g., house, parking lot, office, land), energy, money (e.g., crowdfunding, peer to peer lending, bitcoin), workforce (e.g., time, skills), knowledge, education, data and online content (e.g., video, music, file, open-source software, distributed computing), etc. (Frenken and Schor, 2017; Owyang, 2016; Plewnia and Guenther, 2018).

EXISTING TYPOLOGIES OF THE COLLABORATIVE PLATFORM ECONOMY

Scholars in various fields have presented frameworks or typologies of business activities in the collaborative platform economy from multiple angles (Acquier et al., 2017, 2019; Cohen and Munoz, 2016; Muñoz and Cohen, 2017; Plewnia and Guenther 2018; Sanasi et al., 2020; Schwanholz and Leipold, 2020; Gerwe and Silva, 2020; Reuschl et al., 2021). Acquier et al. (2017) positioned the sharing economy activities as resting on three foundational cores: access economy, platform economy, and community-based economy. Muñoz and Cohen (2017) identified seven dimensions of the collaborative platform economy business model (i.e., platforms for collaboration, under-utilized resources, peer-to-peer interactions, collaborative governance, mission-driven, alternative funding, and technology reliance) and presented a typology comprising five ideal types that collectively illustrate the possible empirically-relevant business models across the collaborative platform economy. Acquier et al. (2019) developed a typology of collaborative platform economy business models based on two dimensions of value creation mechanism and value capture and distribution mechanism, revealing four configurations: shared infrastructure providers, commoners, mission-driven platforms, and matchmakers. Plewnia and Guenther (2018) identified four dimensions that can be used in different contexts to characterize sharing systems and can be combined to form one comprehensive typology: shared good or service, market structure, market orientation, and industry sector. Sanasi et al. (2020) used cluster analysis of business models to divide startups in the sharing economy into five clusters: pseudo-sharing, gig economy, crowd-based economy, pooling economy, and P2P rental. Schwanholz and Leipold (2020) developed a typology of digital sharing platforms' orientation, including social interaction, profit and sustainability, and mixed goals and business models. Gerwe and Silva (2020) proposed a typology of the for-profit platforms based on two important dimensions: the type of compensation for the service provider (nonmoney-based, money-based cost-covering, or money-based income-generating transactions) and the type of asset used in the transaction (capital or labor). Reuschl et al. (2021) provided two important dimensions to distinguish the value configuration of the sharing economy business models: customization versus standardization of shared goods and the centralization versus particularization of property rights over the shared goods.

These typologies proposed by scholars in various fields made not only theoretical and practical contributions to the development of collaborative platform economy but also provided the theoretical basis and methodological references for the exploratory research conducted in this chapter. Based on the previous research results, this study aims to develop a typological configuration that can characterize the full spectrum of collaborative platform economy business practice in the real world. By constructing a comprehensive and systematic typology framework of collaboration economy platform business practice, it tries to capture the panorama of the business activities of the global collaborative platform economy and provide a better understanding of the business characteristics of the collaborative platform economy for the authorities, menageries and the public.

METHODOLOGY

Data and Samples

The analysis presented in this study is based on thorough desk research, which resulted in a database containing the business practice information of 1335 collaborative platforms worldwide. This database

covers representative collaborative platforms in more than 60 countries on the five continents of the world. The identification of individual platforms was based on the existing scientific literature and media articles about the collaborative platform economy in respective countries. This initial identification was completed using web search engines, media content analysis, relevant literature, and information gleaned from platform economy experts. The specific process of sample data collection is as follows.

In order to make the selected sample representative, we refer to publicly published collaborative platform economy research reports and peer-reviewed journal articles around the world (Muñoz and Cohen, 2017; Fabo et al., 2017; Ritter and Schanz, 2019; Vaughan and Daverio, 2016; Owyang, 2016; China State Information Center, 2018,2019; Government of Canada, 2017). One of the important reference frames is the Honeycomb v3.0(Owyang, 2016). The Honeycomb model seeks to depict a holistic representation of the different sectors of the economy being disrupted by startups and established firms utilizing sharing economy approaches. Honeycomb v1.0, launched in 2014, consisted of just six categories and 14 subcategories (Owyang, 2015). However, with the rapid proliferation of the sharing economy, in May of 2016, a third version (i.e., v3.0) was released, which contains 16 categories and 41 subcategories (Owyang, 2016).

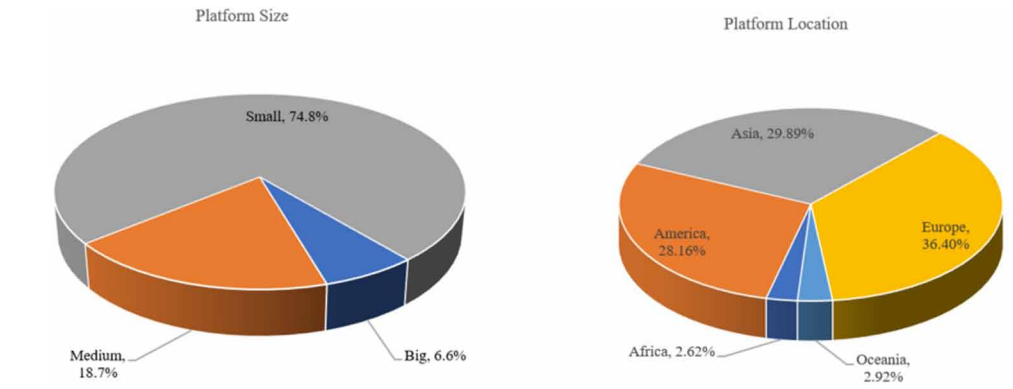
From December 2020 to January 2021, a sample of 1335 platforms (or organizations) has been selected. The operating status of all platforms is active. However, the specific operating data of the platform, such as the number of monthly active users, the total amount of funds raised, and the number of employees on the platform, are mainly derived from the database of Crunchbase and web search. Crunchbase is a platform for finding business information about private and public companies. Crunchbase information includes investments and funding information, founding members and individuals in leadership positions, mergers and acquisitions, news, and industry trends. Built initially to track startups, the Crunchbase website contains information on public and private companies globally.

The samples are distributed in about 60 countries and regions on five continents (i.e., Africa, America, Asia, Europe, Oceania). We define the location of the platform as the country of origin. If the country of origin cannot be determined, the location of the main office is selected. We distinguish the size of the platform by the number of employees. A platform with less than 100 employees is set as a small-scale platform, a platform with 100 to 1,000 employees is defined as a medium-sized platform, and a platform with more than 1,000 employees is considered a large-scale platform. In our database, the number of large, medium, and small platforms is 83 (6.6%), 236 (18.7%), and 946 (74.8%), respectively. The selected platforms are mainly from Europe (37.9%), Asia (30.4%), and America (28.2%). The detailed information is shown in Figure 1.

Analysis Framework and Techniques

The aim of this study is to provide a systematic, inductive, and quantitatively oriented methodology for developing a typology for collaborative platform economy business practice. In order to facilitate a systematic comparison of business practices involved in the collaborative platform economy, this article proposes a rigorous methodology for developing a comprehensive typological configuration, which encompasses a set of attributes for the full spectrum of collaborative platform economy business practice in the real world. Typology is the study of types or the systematic classification of the types of something according to their common characteristics, which has been extensively developed in various scientific fields (De Groot et al., 2002; Marradi, 1990; Mooi and Sarstedt, 2011). Cluster analysis is the task of grouping a set of objects in such a way that objects in the same group (i.e., cluster) are more similar to

Figure 1. The distribution of samples



each other than to those in other groups (clusters), and making the difference between different groups more significant (Bishop, 2006; Kettenring, 2006). As a scientific and effective quantitative analysis method, cluster analysis has been widely used in market research and business practice typology (Punj and Stewart, 1983; Mooi and Sarstedt, 2011; Hartmann, 2016; Ertz et al., 2019a, 2019b). For example, Mosleh et al. (2015) attempted to recognize the business model types in tourism agencies by utilizing cluster analysis. Hartmann et al. (2016) employed cluster analysis to derive a taxonomy of business models used by start-up firms that rely on data as a key resource for business. Urban et al. (2018) explored airline categorization by applying the business model canvas and clustering algorithms. By using cluster analysis, Ertz et al. (2019a, 2019b) revealed a taxonomy of business models on product lifetime extension. Park (2019) applied cluster analysis to the research of typology of business models in the global over-the-top video services industry. Sanasi et al. (2020) employed cluster analysis to divide the business models of the sharing economy startups into five clusters: pseudo-sharing, gig economy, crowd-based economy, pooling economy, and P2P rental.

Following the methodology and analysis framework of past topical literature (Hartmann et al. 2016; Urban et al., 2018; Ertz et al., 2019a, 2019b), this article employs cluster analysis to develop a typological configuration that characterizes the full spectrum of collaborative platform economy business practice in the real world. First, based on the existing scientific literature and media articles about the collaborative platform economy worldwide, we identified and selected representative collaborative platform economy and tried to make the research samples cover the full spectrum of collaborative platform economy business practice as much as possible. Second, we identified and selected characteristics and dimensions for cluster analysis. Third, we applied cluster analysis to derive a typology for collaborative platform economy business practice.

The database for cluster analysis was built based on the business practice information of 1335 platforms worldwide. In this study, we used two dimensions for cluster analysis, namely, marketing structure and the sharing activity categories. As to the marketing structure, there are two basic types of business practices in the collaborative platform economy (Zhu and Liu, 2021). One is the Consumer-to-Consumer (C2C) sharing (also known as Peer-to-Peer sharing), based on the idle resources of individuals in society (Frenken and Schor, 2017; Zhu and Liu, 2021). Digital platforms integrate these scattered idle resources and allow individual participants to provide products or services at lower prices. This type of digital platform serves as a connector between users at both ends of supply and demand; examples include *Airbnb*

and *TaskRabbit*. The other is the Business to Consumer (B2C) sharing mode, based on product-service systems, where digital platforms are the major providers of products or services. Examples include most carsharing and bike-sharing platforms (e.g., *Car2Go*, *Zipcar*, *Mobike*) (Gyimóthy and Dredge, 2017; Ma et al., 2019; Zhu and Liu, 2021). In addition, with the rapid growth and evolution of collaborative platform economy business practices, some platforms that adopt hybrid marketing strategies have emerged and have grown rapidly. Therefore, the three characteristics of this dimension are B2C, C2C, and B2C/C2C. The other dimension we choose in this study is the category of collaborative platform economy business activities. The Honeycomb v3.0 contains 16 categories of collaborative platform economy business activities: Analytics and Reputation (e.g., provide information collection, data analysis, and reputation evaluation services for collaborative platform economy business activities), Corporations & Organizations (e.g. provide employee services, platform development and operation, network and communication facilities services for collaborative platform economy), Food (include food sharing and food delivery), Goods (product sharing such as tool, clothes, equipment), Health (e.g., medical service and health care), Learning (e.g., book sharing, peer-to-peer teaching, online training), Logistics (e.g., local delivery, shipping, storage), Mobility Services (e.g., rides as a service and valet services), Municipal (e.g., city sponsored bikes), Services (i.e., online and offline personal and business services), Space (e.g., personal space sharing, work space), Utilities (e.g., energy sharing, telecommunications), Vehicle Sharing (e.g., boats sharing, car sharing, bike sharing), Wellness & Beauty (i.e., sharing activities for wellness and beauty), Worker Support (e.g., provide workers with resources, insurance and rights protection services), and Money (e.g., Crowdfunding, Cryptocurrencies, Moneylending) (Owyang, 2016). Based on this framework and taking into account the availability of sample data and the feasibility of analysis, we classify the collaborative platform economy business activities into ten categories. The details are as follows:1) support actives (e.g., Analytics and Reputation, Corporations & Organizations service, Worker Support); 2) Space (e.g., home, workspace, parking lot); 3) Good (e.g., food, tool, clothes, equipment); 4) Vehicle Sharing (e.g., boat, car, bike); 5) Health and Learning(e.g., healthcare, wellness and beauty, knowledge sharing, online training); 6) Logistics (e.g., freight and delivery service); 7) Municipal service and Utilities (e.g., municipal service vehicle, Energy, power bank sharing); 8)Services (i.e., matching freelance labor with local demand and enabling users to find immediate help with daily tasks. It does not include some low- and medium-skill services such as gardening, household chores, home maintenance, tutoring, baby/pet sitting, and home watch services, but also includes some professional cleaning and care services and other creative work such as language, programming, software development, design, etc.); 9) money (e.g., Crowdfunding, Cryptocurrencies, Moneylending); 10) Mobility Services (e.g., carpooling, ride-sharing, ride-hailing, micro-mobility sharing). Therefore, 13 sub-dimensions are used in the cluster analysis of this study. The distribution of samples in different dimensions is shown in Table 2.

Before running the cluster analysis program, a coding process is required. Concretely, the data were manually analyzed and coded by two independent coders. The first coder was one of the authors of this paper, but the second coder was not skilled in the relevant domain and not involved in the research at all. The framework features were clearly defined to both coders prior to coding to minimize coding errors (Cooper, 1988). The coding was binary for each dimension (0 = no,1 = yes). The controversial coding items were settled through discussion by the two coders, with another author of the paper acting as a judge to resolve any disagreement (Fastoso and Whitelock, 2010). After completing the coding process, we use the data to perform cluster analysis. This paper adopts the *k*-means clustering algorithm based on Euclidean distance. The *k*-means clustering is a popular unsupervised machine learning algorithm for classification. It identifies the k number of centroids and then allocates every sample data point to the

Table 2. The distribution of samples in different dimensions

Dimensions	Number of Platforms	Sample Proportions (n=1335)
Marketing structure		
C2C	810	60.67%
B2C	350	26.22%
B2C/C2C	175	13.11%
Activity category		
Mobility Services	364	27.27%
Services	214	16.03%
Vehicle Sharing	178	13.33%
Support	170	12.73%
Money	153	11.46%
Good	115	8.61%
Space	104	7.79%
Logistics	95	7.12%
Health/wellness/Learning	94	7.04%
Municipal/Utilities	86	6.44%

nearest cluster (Bishop, 2006; Fränti and Sieranoja, 2019). The *k*-means clustering analysis technique can provide optimal intra-cluster homogeneity and inter-cluster heterogeneity and reduce the risk associated with using irrelevant or inappropriate variables (Bishop, 2006; Kettenring, 2006; Fränti and Sieranoja, 2019; Sanasi et al., 2020). Therefore, it was selected for the analysis of this study. The entire calculation and analysis process is based on SPSS 23.0 software and python programming.

RESULTS

Determine the Number of Clusters

Before performing *k-means* cluster analysis, it is necessary to determine the number of clusters. (i.e., k value) This paper combines the elbow method and the Silhouette coefficients to determine the ideal number of clusters (Kaufman and Rousseeuw, 2009; Kodinariya and Makwana, 2013; Bholowalia and Kumar, 2014). The elbow method consists of plotting the explained variation as a function of the number of clusters and picking the elbow of the curve (inflection point) as the number of clusters to use. This study used the Residual Sum of Squares within clusters as the cost function. The value of the cost function will continue to decrease as the number of clusters increases. The value at the inflection point of the curve can be selected as the final number of clusters. The silhouette coefficient is a measure of how similar an object is to its own cluster (cohesion) compared to other clusters (separation). The silhouette coefficient s(i) for sample point i can be defined as shown in Equation (1) (Kaufman and Rousseeuw, 2009; Kodinariya and Makwana, 2013).

$$s(i) = \frac{b(i) - a(i)}{\max\{a(i), b(i)\}} \tag{1}$$

Where a(i) is the average distance between i and all other sample points of the cluster to which i belongs, and b(i) is the minimum of the average distances between i and all the sample points in each cluster. The silhouette coefficient ranges from −1 to +1, where a high value indicates that the object is well matched to its own cluster and poorly matched to neighboring clusters. (Kaufman and Rousseeuw, 2009; Lletı et al., 2004; Zhu et al., 2010). The result of clustering can be evaluated by the average silhouette coefficient of individual sample points. The larger the average silhouette coefficient indicates a better clustering effect. First, multiple *k*-means clustering is performed on the sample data, with the number of clusters is set to 2 to 10. The results of the elbow method are shown in Figure 2. It can be seen that the inflection point of the cost function curve occurs around k=4-7. The Silhouette coefficients of clustering with k from 4 to 7 are shown in Table 3.

Figure 2. Results of elbow method

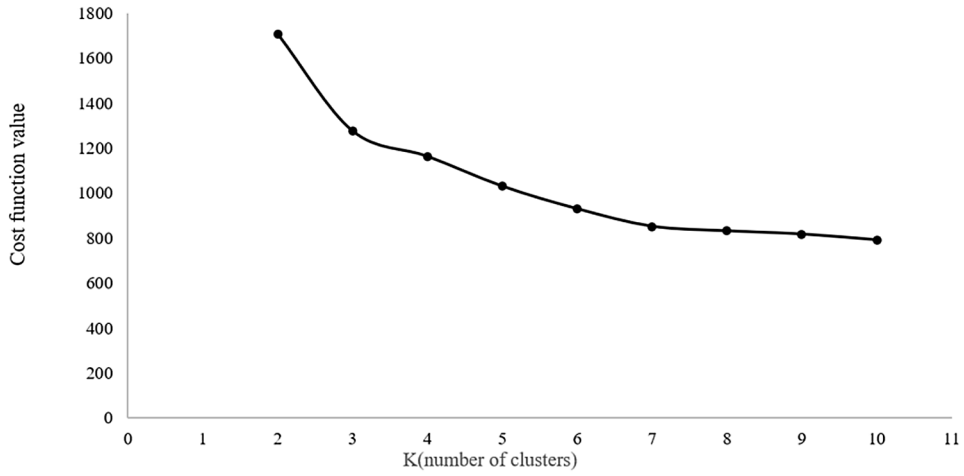


Table 3. Results of silhouette coefficients

Number of Clusters	Silhouette Coefficient
4	0.3144
5	0.3840
6	0.4567
7	0.4822

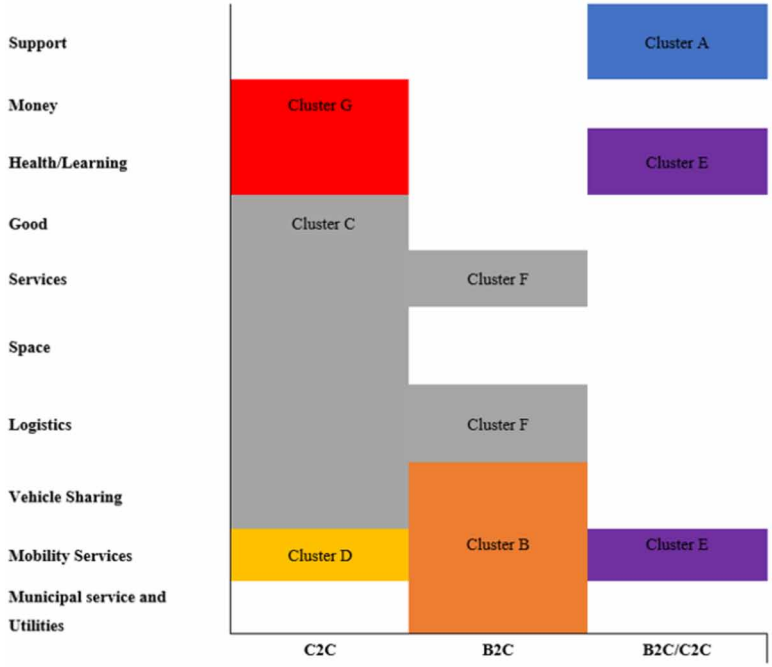
Note: The silhouette coefficient ranges from −1 to +1, where a high value indicates that the object is well matched to its own cluster and poorly matched to neighboring clusters. (Kaufman and Rousseeuw, 2009; Lletı et al., 2004; Zhu et al., 2010).

It can be seen from Table 3 that the silhouette coefficient is the largest when the k value is 7. Therefore, combining the elbow method and Silhouette coefficients results, this study chooses k=7 as the number of clusters. Therefore, the best configuration was a seven-cluster configuration.

The Results of Cluster Analysis and the Validation

Applying cluster analysis, an empirical typology comprising seven types of collaborative platform economy business practice emerged—the cluster analysis results as shown in Figure 3 and Table 4.

Figure 3. Types of collaborative platforms



Combining the results of cluster analysis and the business practices of the collaborative platform economy, we summarized seven types of collaborative platform economy: Collaborative support platform (Cluster A), Resource Supply Platform (Cluster B), Authentic C2C platform (Cluster C), C2C mutualized mobility platform (Cluster D), Hybrid service platform (Cluster E), B2C service platforms (Cluster F): Collaborative finance platform (Cluster G). The sample characteristics of each group are shown in Appendix (i.e., Table 7). It can be seen that the chi-square test between each variable and the seven-cluster grouping was highly significant. In addition, Cramer's V values measuring the strength of the association between the describing variables and the cluster grouping were all above the desirable 0.3 level of association (Except variable logistic is 0.294), suggesting moderately strong to very strong relationships. The distribution of the variables within each cluster is very diversified, further suggesting relative intragroup homogeneity and intergroup heterogeneity. These results demonstrate the robustness and validity of the proposed typology of the collaborative platform economy in this study. Therefore,

Table 4. The results of cluster analysis

	Cluster A	Cluster B	Cluster C	Cluster D	Cluster E	Cluster F	Cluster G
Marketing							
C2C	0	0	1	1	0	0	1
B2C	0	1	0	0	0	1	0
B2C-C2C	1	0	0	0	1	0	0
Shared Activity Category							
Support	1	0	0	0	0	0	0
Good	0	0	1	0	0	0	0
Health/Learning	0	0	0	0	1	0	1
Money	0	0	0	0	0	0	1
Services	0	0	1	0	0	1	0
Space	0	0	1	0	0	0	0
Logistics	0	0	1	0	0	1	0
Vehicle Sharing	0	1	1	0	0	0	0
Mobility Services	0	1	0	1	1	0	0
Municipal service and Utilities	0	1	0	0	0	0	0
Sample Size	91	213	413	200	85	137	196
Sample proportion	6.82%	15.96%	30.94%	14.98%	6.37%	10.26%	14.68%

the cluster analysis results can be used for further analysis. The specific characteristics of each category are described as follows.

Cluster A: Collaborative support platform. This type of platform provides services and technical support for the collaborative platform economy corporations & organizations and collaborative platform economy participants, such as provide analytics, identity and reputation service, worker support, etc. They contribute to establishing a collaborative platform and provide software and technical support, identification, reputation evaluation, worker support, insurance, information collection, and analysis services for the platform to promote the healthy and rapid development of the collaborative platform economy. For example, *COSMOplat* is an online platform that can provide industrial internet services for collaborative platform economy; *Eccocar* addresses the digitalization of corporate fleets and merges car sharing and fleet management under a single-vehicle brand agnostic platform that allows fleet managers to control how the fleet is used and make better decisions on future ways of sharing and using the fleet within their daily operations. *EcoVadis* offers a collaborative platform that allows companies to assess the environmental and social performance of their suppliers. *Beyond Pricing* is a revenue management platform for short-term rental owners and managers. *Everbooked* helps Airbnb hosts increase their revenue. *What's The Fare* is a comparison platform that enables its users to compare prices across Uber, sidecar, and taxi services. Breeze provides an online platform for unemployment and disability insurances. *Smile Identity* solves identity for shared economy applications. In addition, some platforms provide

advanced marketplace software for creating a new business of the collaborative platform economy, such as *Sharetribe* and *LocalMotion*.

Cluster B: Resource Supply Platform. Such platforms can supplement the supply of urban resources such as public transportation resources and infrastructure. In the transportation sector, it involves various B2C mutualized mobility platform which usually builds its own fleet to provide mobility services such as carsharing platform (e.g., *Car2Go, Zipcar, Zebra Cabs, DriveNow, EVCARD*), bike sharing and scooter sharing platform (e.g., *Mobike, BIXI, Spin, O-bike, Yulu*), B2C ride-hailing platform (e.g., *Ucar, Yongche, Shouqiyueche, LeCab*). Some of these platforms are derivative brands launched by renowned auto manufacturers such as ReachNow (supported by *BMW*), Shouqi (Supported by *Volkswagen*), Youon (Supported by Youon Technology). The others are the professional car rental company that has been operating for many years, such as Ucar, Yongche. In addition, in the type of resource supply platform, there are also some platforms that contribute to the municipal service and utilities, such as public bike systems (e.g., V*elib, Citi Bike, Youon*), street cleaning vehicles sharing (e.g., *Munirent*), sharing power bank for mobile phone (*Get Energy, Xiaodian, Jiedian*). Power bank sharing platforms allow people to rent power banks for a short duration of time and pay-as-you-go. These platforms cooperate with airports, shopping centers, hospitals, cafes, and other establishments. They also work with manufacturing and design companies. The collaborative platform economy provides new development opportunities and space for traditional manufacturing and leasing enterprises. It makes consumption activities more and more integrated into the production process, contributing to the formation of a continuum from sustainable consumption to sustainable production (Ma et al., 2019; Cohen and Munoz, 2016). Compared with the C2C mode collaborative platform economy, these traditional manufacturing and leasing enterprises have congenital advantages in terms of vehicle cost and brand effect in this market segment.

Cluster C: Authentic C2C platform. The platform in this cluster is a typical peer-to-peer (C2C) platform, which involves food, goods, services, space, logistics, vehicle sharing, and other fields. For example, as to online and offline personal and business services, *Zhubajie* is a website that connects freelancers in design, IT, marketing, and other "creative" disciplines to paid projects. *Rover* is a community network of pet sitters and dog walkers. *Bizzby* is an on-demand services platform that pairs users with professional tradesmen such as cleaners, electricians, and plumbers to service the needs of the individual. *99designs* is a creative platform that makes it easy for designers and clients to work together to create designs they love. In the shared space area, *Airbnb* is an online community marketplace for home-sharing. *9flats* provides an online portal where members can rent private places worldwide or let their own place for some extra income. *Apparcando* and *BePark* are the online platform that enables users to find and rent out parking spaces by the hour. *Ucommune* and *WeWork* create workspace community spaces designed to facilitate collaboration and engagement between entrepreneurs and startups. Bag Borrow or Steal is an online boutique in the good-sharing area where women and men borrow, collect, and share luxury accessories. Best Beer provides a barrel tracking software for craft beer and barrel sharing. *EatWith* is a community that invites people to dine in homes, connect with hosts, share stories and enjoy homemade cuisine. *Mishi* is an application that serves as an Airbnb for foodies who enjoy local and authentic homemade food in the intimacies of home. In-vehicle sharing area, *Barqo* is the C2C boat-sharing platform. *EasyCarClub* helps car owners make money by renting out their cars and helps drivers save money through local car hire.

Cluster D: C2C mutualized mobility platform. Cluster D refers to peer-to-peer mutualized mobility platforms, Such as Carpooling, peer-to-peer car sharing, and ride-hailing (e.g., *GoMore Bla Bla Car, CityMobil, Notteco, Snapp*). Carpooling means sharing a ride with other people who work or live nearby (e.g., *AmigoExpress*) (Cohen and Shaheen, 2018; Ding et al., 2019; Ferreira, Trigo, and Filipe, 2009; Shaheen and Chan, 2016). It is commonly implemented for commuting but is increasingly popular for longer one-off journeys. Carpool commuting is very popular for people who work in places with more jobs nearby and who live in places with higher residential densities. Some carpools are set up with rotating drivers who share costs, or a single driver is selected, and the passengers contribute to cover fuel and maintenance costs (Ferreira, Trigo, and Filipe, 2009; Shaheen and Chan, 2016; Ding et al., 2019).

Peer-to-peer carsharing (also known as person-to-person carsharing and peer-to-peer car rental) is the process whereby existing car owners make their vehicles available for others to rent for short periods of time (Shaheen et al., 2016; Sprei et al., 2019; Ding et al., 2019). With peer-to-peer carsharing, participating car owners are able to charge a fee to rent out their vehicles when they are not using them. Participating renters can access nearby and affordable vehicles and pay only when they need to use them. Ride-hailing service is an on-demand service, generally booked in real-time over the internet or through an app (e.g., *Uber, Didi, Lyft*) (Clewlow and Mishra, 2017; Henao and Marshall, 2019). The ride-hailing platform matches passengers with drivers of vehicles for hire and provides customized ride service.

Cluster E: Hybrid service platform. The platforms in cluster E refer to those hybrid-mode platforms (i.e., B2C/C2C), which are mainly concentrated in the field of mobility service and health/learning. In the mobility service area, some platforms not only connect private social vehicles and passengers with travel needs but also establish their own fleets through various means (e.g., cooperation with car manufacturers or car rental companies, etc.) to provide some customized services. For example, Didi built its own fleet and is equipped with full-time drivers. Drivers are hired after rigorous screening and professional training. The target customers of its high-end tailored car service and luxury car service are those who want a quality experience in their daily lives, such as a business crowd with important meetings, a family enjoying weekend time, or holding special celebrations. In addition, the platform also provides customized services for special groups such as the elderly, children, pregnant women, and the disabled. *Uber* does the same, also provides diversified mobility services such as black luxury vehicles service, premium-level vehicles service, and so on. Moreover, *Uber* and *Didi* have also expanded their business scope of mobility service to bike (or electric bike) sharing services and motorized scooters sharing services by acquiring or cooperating with other B2C micro-mobility service platforms. In addition, some learning platforms (e.g., *Udemy*) not only provide a peer-to-peer tutoring marketplace connect student and expert tutors in several different subjects, but also develop their own educational platform to provide a variety of online video tutorials, courses, and textbooks which can access by interest people through a subscription. This hybrid operating model is conducive to the expansion of the business ecosystem of the platform.

Cluster F: B2C service platform. In this cluster, these platforms provide on-demand services through their own equipment, technology, and human resources. For example, *International Services Information Dentsu* provides a computer time-sharing service, which allows a central computer resource to be shared by a large number of users sitting at terminals. *WeGoLook* develops an online verification platform designed to gather and validate information anytime for organizations and Individuals. It

offers property verification, accident scene inspection, document retrieval, and delivery services to business clients, thereby enabling businesses and individuals to leverage a global, on-demand workforce to verify data. In the logistic area, some platform builds their own professional team to provide professional moving service (e.g., *Bellhops*), freight service and food delivery service (e.g., *Deliveroo, Meituan*).

Cluster G: Collaborative finance platform. This type of platform mainly refers to peer-to-peer lending platforms and crowdfunding platforms. Peer-to-peer lending is the practice of lending money to individuals or businesses through online services that match lenders with borrowers. Peer-to-peer lending platforms enable individuals to obtain loans directly from other individuals, cutting out the financial institution as the middleman. Peer-to-peer lending can be divided into interest-based lending and interest-free lending. Interest-based lending means that the investors are looking for a return, while interest-free lending means that the lender only needs to repay the interest. The peer-to-peer lending platforms are currently mainly focused on interest-based lending (e.g., *Lending Club, Prosper*). Crowdfunding is the practice of funding a project or venture by raising small amounts of money from a large number of people. Individuals or small businesses can take advantage of it to get early-stage support for their ideas. There are mainly three typical types of crowdfunding: reward crowdfunding, free money donations, and investments in shares. For example, *Kickstarter* is an American public benefit corporation that maintains a global crowdfunding platform focused on creativity such as movies, music, stage plays, comics, journalism, video games, or technological products, and so on. People who back *Kickstarter* projects are offered tangible rewards or experiences in exchange for their pledges. *Patreon* is a crowdfunding platform for content creators to run a subscription service. It helps creators and artists earn a monthly income by providing rewards and perks to their subscribers. *Indiegogo* runs partly on a rewards-based system, which means that donors, investors, or customers willing to help fund a project or product can donate and receive a gift rather than an equity stake in the company. In addition, Indiegogo also offers equity-based campaigns, allowing unaccredited investors to participate with equity stakes. In addition, some crowdfunding platforms support the free money donations service for tuition projects and medical assistance projects, such as *GoFundMe, Shuidichou, QFund*.

Location Analysis

Due to the difference in economy, society, and culture, the development of the collaborative platform economy in different countries and regions is also different. The distribution of collaborative platform economy in different locations is shown in Figure 4, and the distribution of platform in the marketing dimension is shown in Figure 5 and Table 5.

As shown in Figure 4, the distribution of the types of collaborative platform economy varies in different locations. In Africa, Authentic C2C platform (Type C), Collaborative finance platform (Type G), and C2C mutualized mobility platform (Type D) are the main types. The number of other types of platforms is relatively small. In Asia, resource supply platforms (Type B) and C2C mutualized mobility platform (Type D) platforms occupy a significant market share. Actually, these clusters comprise a large number of platforms from the transportation sector. In Europe and Oceania, authentic C2C platforms (Type C) occupy a significant market share. Combined with Figure 5 and Table 5, it can be seen that genuine C2C platforms have the largest share in Europe. In addition, the distribution of various types of platforms in America is relatively balanced. All types of platforms have been developed to a certain extent.

Figure 4. Distribution of collaborative platforms in various locations
Note: Cluster A: Collaborative support platform; Cluster B: Resource Supply Platform; Cluster C: Authentic C2C platform; Cluster D: C2C mutualized mobility platform; Cluster E: Hybrid service platform; Cluster F: B2C service platforms; Cluster G: Collaborative finance platform

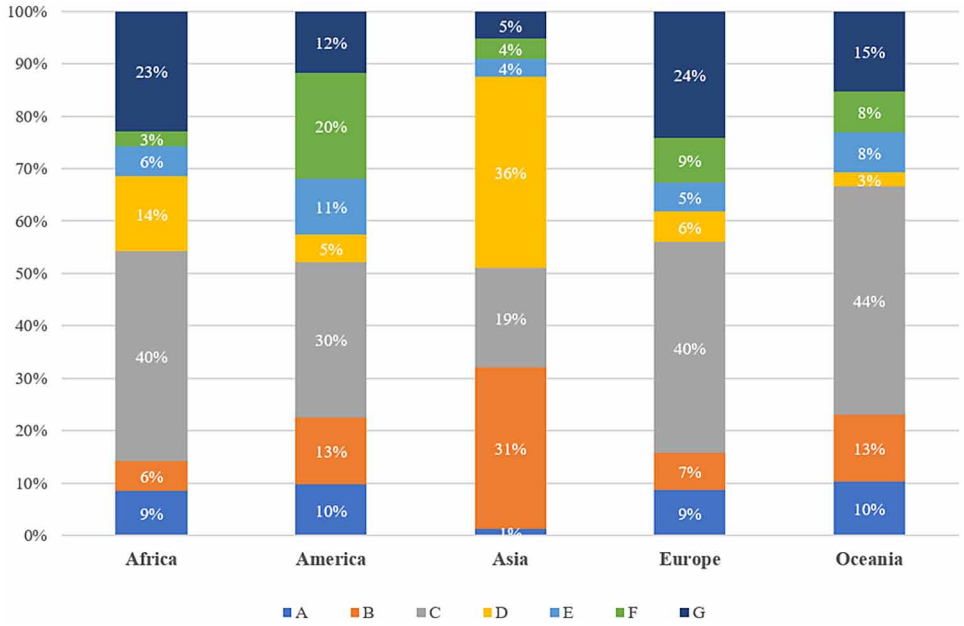


Figure 5. The distribution of platform in the marketing dimension

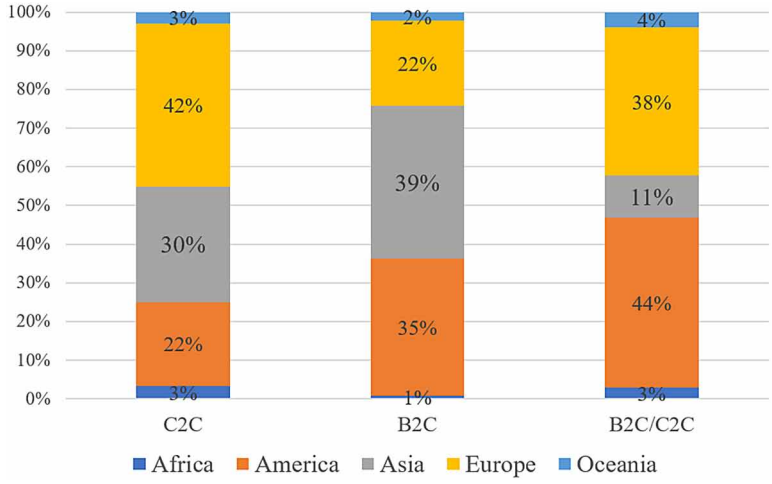


Table 5. The distribution of platforms in the marketing dimension for different locations

	Africa	America	Asia	Europe	Oceania
C2C	27	176	242	341	24
B2C	3	124	138	77	8
B2C/C2C	5	77	19	67	7

Platform Size Analysis

The distribution of platform size among different types of the collaborative platform economy is shown in Table 6.

Table 6. Distribution of platform size among different types of the collaborative platform economy

Type	Small		Medium		Large		Total
	Number of Platforms	Proportion	Number of Platforms	Proportion	Number of Platforms	Proportion	
A	63	69.23%	20	21.98%	8	8.79%	91
B	143	67.14%	60	28.17%	10	4.69%	213
C	351	84.99%	55	13.32%	7	1.69%	413
D	181	90.50%	11	5.50%	8	4.00%	200
E	41	48.24%	22	25.88%	22	25.88%	85
F	67	48.91%	46	33.58%	24	17.52%	137
G	156	79.59%	33	16.84%	7	3.57%	196
Total	1002	75.06%	247	18.50%	86	6.44%	1335

Note. Cluster A: Collaborative support platform; Cluster B: Resource Supply Platform; Cluster C: Authentic C2C platform; Cluster D: C2C mutualized mobility platform; Cluster E: Hybrid service platform; Cluster F: B2C service platforms; Cluster G: Collaborative finance platform. A platform with less than 100 employees is set as a small-scale platform, a platform with 100 to 1,000 employees is defined as a medium-sized platform, and a platform with more than 1,000 employees is considered a large-scale platform.

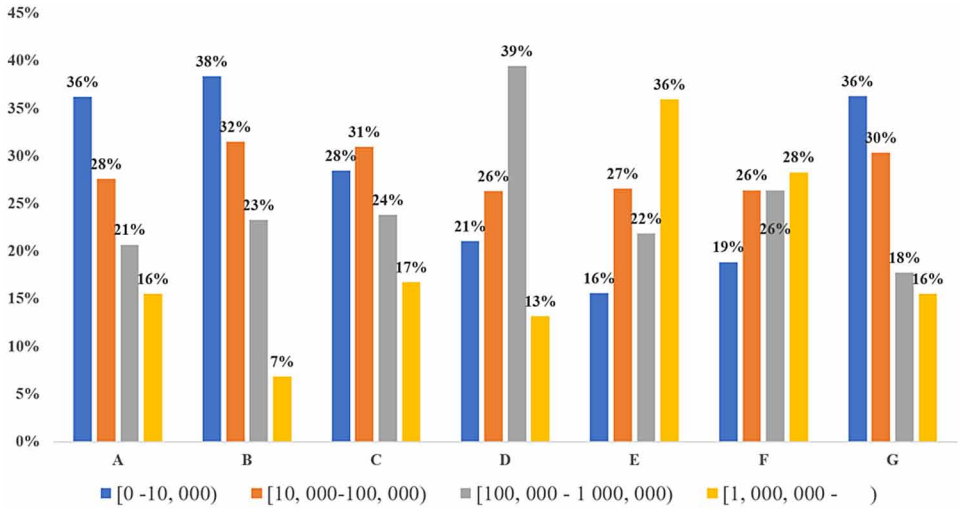
As can be seen from Table 6, types C (Authentic C2C platform), Type D (C2C mutualized mobility platform), and type G (Collaborative finance platform) are dominated by small-size platforms. In these types, small-size platforms account for more than 80%. Especially in Type C, the number of large and medium platforms is very small. On the other hand, in type E (Hybrid service platform) and type F (B2C service platforms), the proportion of large and medium-sized enterprises is relatively high. More than 50% of the large platforms in the total sample are concentrated in type E and type F.

Analysis of Platform Operation Status

In order to observe the operation status of different types of platforms, we selected two indicators of the platform's monthly active users and the total amount of funds raised for further analysis. The frequency distribution of monthly active users of different types of collaborative platforms is shown in Figure 6. We divide the number of monthly active users into four groups: less than 10,000, 10,000 to 99,999, 100,000 to 999,999, and more than 1 million.

It can be seen from Figure 6 that in the Type A (Collaborative support platform), Type B (Resource supply platform), and Type G (C2C collaborative finance platform), the number of platforms with less than 10,000 monthly active users accounted for the largest proportion (about 35% - 40%). In these types, the larger the monthly active user scale, the smaller the percentage of platforms. In the type of D (C2C mutualized mobility platform), the number of platforms with a monthly active user scale between 100,000 and 1 million accounted for the largest proportion (about 40%). In the type of E (Hybrid service platform),

Figure 6. Frequency distribution of the number of monthly active users
Note: Cluster A: Collaborative support platform; Cluster B: Resource Supply Platform; Cluster C: Authentic C2C platform; Cluster D: C2C mutualized mobility platform; Cluster E: Hybrid service platform; Cluster F: B2C service platforms; Cluster G: Collaborative finance platform.

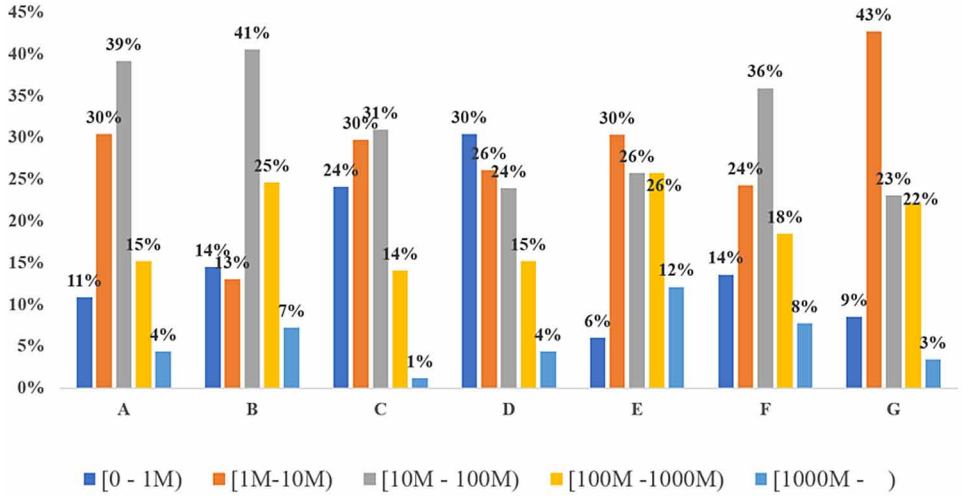


approximately 36% of platforms have more than 1 million monthly active users, accounting for the largest proportion. There are more platforms with large user bases in type C (Authentic C2C platform) and type F (B2C service platforms). In sum, with the exception of mutualized transportation platforms (e.g., cluster D), platforms dominated by C2C exchange types (e.g., clusters A: Authentic C2C platform and clusters G: collaborative finance platform) have overall lower user bases, whereas hybrid platforms with a larger share of B2C exchanges (e.g., clusters E and F) have comparatively larger user bases.

The frequency distribution of the total amount of funds raised of different types of collaborative platforms is shown in Figure 7. The funds mainly come from individual investors and institutional investors. Thus, the amount of funds raised reflects the market activity of the collaborative platform economy in related fields. At the same time, it also largely reflects the evaluation and prediction of market investors on the development prospects and profitability of the specific business field. Therefore, we divide the total amount of funds raised into five groups: less than 1M (million US dollars), 1M-10M, 10M -100M, 100M-1 000M, and more than 1 000M.

It can be seen from Figure 7 that in almost all types of the collaborative platform economy, the total amount of funds raised is generally concentrated between US$1 million and US$100 million. In type D (C2C mutualized mobility platform) and type C (C2C good and service platform), platforms with a total raised funds of less than US$1 million accounted for a relatively high proportion, accounting for 30% and 24%, respectively. Platforms with total raised funds ranging from US$100 million to US$1 billion accounts for a relatively stable proportion of each category, with a relatively high proportion in type B (Resource Supply Platform), Type E (hybrid-mode service platforms), and G (C2C money-knowledge sharing platform), accounting for about 25%. Platforms with total raised funds greater than US$1 billion accounts for a small proportion of each category. The highest proportion is about 12.2% in Type E (hybrid-mode service platforms), and the lowest proportion is only 1.2% in type C (C2C good and service platform).

Figure 7. Frequency distribution of total amount of funds raised
Note: Note: Cluster A: Collaborative support platform; Cluster B: Resource Supply Platform; Cluster C: Authentic C2C platform; Cluster D: C2C mutualized mobility platform; Cluster E: Hybrid service platform; Cluster F: B2C service platforms; Cluster G: Collaborative finance platform



DISCUSSION OF THE RESULTS

This study develops a typological configuration that characterizes the full spectrum of collaborative platform economy business practice in the real world. The analysis is conducted on the basis of a large-scale data set obtained through desk research. The database contains information on 1,335 representative collaboration economy platforms in more than 60 countries on five continents, covering almost all collaborative platform economy business practices mentioned in academic journals and public media. By using the *k*-means clustering method, a comprehensive typology of collaborative platform economy business practice is proposed. Combined with the actual operation situation and the business model of these platforms, it also compares and analyses the geographical differences of the collaborative platform economy, including the differences in the development status of the same type of business model in different regions and the differences in the development status of different types of platforms in the same region. The main contributions of this study are as follows:

The comprehensive typology of collaboration economy platform business practice proposed in this study consists of seven types of platforms: collaborative support platform, resource supply platform, authentic C2C platform, C2C mutualized mobility platform, hybrid service platform, B2C service platform, collaborative finance platform. Collaborative support platform provides services and technical support for the collaborative platform economy corporations & organizations and the collaborative platform economy participants, such as provide analytics, identity and reputation service, worker support, etc. Resource supply platforms can supplement the supply of urban supply resources such as public transportation resources and the other municipal service and utility infrastructure. Authentic C2C platform refers to the typical peer-to-peer collaborative platform economy, which mainly involves food, goods, services, space, logistics, vehicle sharing, and other fields. C2C mutualized mobility platform refers to peer-to-peer mutualized mobility platforms, such as Carpooling, ride-sharing, and ride-hailing platforms. The hybrid service platforms refer to those hybrid-mode platforms (i.e., B2C/C2C), which are mainly

concentrated in the field of mobility service and health/learning. This type of platform is relatively large, and the hybrid operating model can help them continuously expand the business ecosystem. B2C service platforms provide on-demand services through their own equipment, technology, and human resources. These platforms are biased towards asset-heavy businesses. Collaborative finance platform mainly refers to peer-to-peer lending platforms, crowdfunding platforms, and online knowledge-sharing platforms.

The distribution of the types of collaborative platform economy varies in different locations. In Asia, resource supply platforms (Type B) and C2C mutualized mobility platform (Type D) platforms dominate the market. Actually, these clusters comprise a large number of platforms from the transportation sector. In Europe and Oceania, the genuine C2C platforms (e.g., secondhand purchases/sales, swapping/bartering, donations) have the largest share, which is very coherent with a large amount of literature on secondhand marketplaces (secondhand purchases/sales, swapping/bartering, donations) from those two areas. In addition, the distribution of various types of platforms in America is relatively balanced. All types of platforms have been developed to a certain extent. As to the operation status of the collaborative platforms, the differences between various platforms are also more obvious. With the exception of mutualized transportation platforms (e.g., cluster D), platforms dominated by C2C exchange types (e.g., Authentic C2C platform and collaborative finance platform) have overall lower user bases, whereas hybrid platforms with a larger share of B2C exchanges (e.g., hybrid service platform, B2C service platform) have comparatively larger user bases.

THEORETICAL IMPLICATIONS

Currently, scholars in various fields have provided some extensive research regarding the collaborative platform economy from a business view (Acquier et al., 2017, 2019; Cohen and Munoz, 2016; Muñoz and Cohen, 2017; Plewnia and Guenther 2018; Sanasi et al., 2020; Schwanholz and Leipold, 2020; Gerwe and Silva, 2020; Reuschl et al., 2021). Although some typologies frameworks have already been developed for configuring the business activities of the collaborative platform economy, there are still some shortcomings that need to be overcome in this field. This study provides a comprehensive typological framework for a more systematic summary and comparison of different collaborative platform economy business practices, contributing meaningfully to the extant research on the business practice of collaborative platform economy in several ways.

First of all, the existing research on the business model of the collaborative platform economy mainly focuses on the most popular areas of the collaborative platform economy, such as transportation, accommodation, goods, and life services (Acquier et al., 2017, 2019; Cohen and Munoz, 2016; Muñoz and Cohen, 2017; Plewnia and Guenther 2018). Actually, with the rapid development and evolution of the collaborative platform economy, the business practice of collaborative platform economy has penetrated into more and more industries and business scopes, making the business model of the collaborative platform economy more complicated (Klarin and Suseno, 2021; Sánchez-Pérez et al., 2021; Zhu and Liu, 2021). The existing typological frameworks have been unable to properly and fully configure the current diversified business practices of the collaborative platform economy. This study explores a more comprehensive typology of the collaborative platform economy based on extensive actual business practices. It expands the collaborative platform economy business practice from the initial several major areas to cover the almost complete spectrum of business activities in the real world. The comprehensive and

systematic typology framework developed in this study can better capture the panorama of the business activities of the global collaborative platform economy.

In addition, although these frameworks and typologies discuss and compare the differences in business models of collaborative platform economy from different perspectives and levels, there is little research focus on the operating status of the platforms within collaborative platform economy, such as the platform size, number of active users, and funds raised in the market, which are critical to the sustainable development of the platform itself and even the entire emerging collaborative platform economy consumption market. Therefore, this study has selected several key performance indicators of the platform to conduct an in-depth discussion and analysis of the operating conditions for collaborative platform economy, which made up for the deficiencies of previous studies in this area.

Moreover, due to the difference in economy, society, and culture, the development of the collaborative platform economy in different countries and regions is also different. But the existing research often fails to take this geographical difference into account, which makes the research on the typology of collaborative platform economy business practice less systematic. The collaboration economy platforms involved in this study come from more than 60 countries on five continents. It includes developed countries in Europe and America (such as the United States, Canada, Germany, France, or the United Kingdom, for example) and developing countries in Asia and Africa (such as China, India, South Africa, and so on). Compared with previous related studies, this presents a better view of the entire business practice of collaborative platform economy in the real world.

MANAGERIAL IMPLICATIONS

This study also provides some managerial implications for authorities and the managers of the collaborative platform economy. The typological framework proposed in this study can not only help to identify and understand business models within the scope of collaborative platform economy but also provide a guide for the management decision-making of authorities and platform operators to better promote the sustainability of the collaborative platform economy. Furthermore, it can be used as an essential developing tool to conduct further relevant market research on the issue of the collaborative platform economy from a business view. For managers and investors, the findings provided in this study, such as the operational analytics of the collaborative platform economy and the typological configuration of collaborative platform economy business practice, can be used as a reference to develop sustainable business models and identify the success factors of the collaborative platform economy business practice, in order to facilitate the healthy and prosperous development of the collaborative platform economy. In addition, the development of a collaborative platform economy has mainly been affected by external factors such as economy, society, culture, technology, etc. (Aloni, 2016; Frenken and Schor, 2017; Ertz et al., 2019d; Schlagwein et al.,2020). This study also demonstrates that the development status of the collaborative platform economy in various regions and industries is unbalanced. Therefore, the authorities and managers should fully consider the specific local market conditions and the strategic objectives of the platform in the process of formulating relevant policies and developing new businesses in order to better promote the healthy and sustainable development of the platforms and the entire emerging collaborative platform economy market. Moreover, the development of the collaborative platform economy in developed countries and regions is still in a leading position, and the business practices of the collaborative platform economy are more diversified than in other regions. These diversified business models

can also provide a reference for further developing the collaborative platform economy business practice in other relatively underdeveloped countries and regions.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

There also exist some limitations in the study. Due to the lack of more relevant data support, this paper didn't conduct an in-depth analysis of the impact of policies, economy, and cultural differences between regions on the development of collaborative platform economy business practices. In addition, the development of collaborative platform economy business practices is a process full of dynamic changes, the typology proposed in this study does not reflect this kind of dynamics nature. Therefore, it is necessary to increase the time dimension to study the changes of collaborative platform economy business practices typology over time in a longer time frame. Moreover, this study did not consider the potential of platform business models for sustainable value creation, especially the economic value (i.e., profit) of the platform. Profitability is the core of enterprise operation management, which influences and determines the commercial value and development potential of an enterprise. The profitability of the platform not only directly affects the survival and growth of the platform itself but also affects the healthy and sustainable development of the entire collaborative platform economy. At present, the profitability of the platforms within the collaborative platform economy is generally poor. A large number of platforms have failed and closed down, and the profitability and overall development status of different types of platforms are also significantly different. Therefore, it is very worthwhile to explore the potential for sustainable growth and profitability of different typologies of collaborative platform economy business practices.

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KEY TERMS AND DEFINITIONS

Business Model: A set of strategic decisions which describe how an organization creates, transfers, and obtains value through internal activities and partnerships with stakeholders.

Clustering Analysis: A method of grouping a set of objects so that objects in the same group (i.e., cluster) are more similar to each other than to those in other groups (clusters), making the difference between different groups more significant.

Collaborative Consumption: A system for sharing, hiring, and commercializing goods, reducing personal costs, and increasing the utilization rate of resources.

Collaborative Platform Economy: A subset of the sharing economy and collaborative consumption, which is commonly connected to the temporary and collaborative use of goods and services mainly through the medium of digital platforms.

K-Means: A unsupervised machine learning algorithm for classification. It identifies the k number of centroids and then allocates every sample data point to the nearest cluster.

Platform Economy: Economic and social activities facilitated by platforms that are typically online matchmakers or technology frameworks.

Sharing Economy: A socioeconomic system that allows an intermediary set of exchanges of goods and services between individuals and organizations that aim to increase efficiency and optimization of underutilized resources in society.

Typology: Systematic classification of the types of something according to their common characteristics.

APPENDIX

Table 7. General statistics of cluster analysis

	Cluster A (n=91)	Cluster B (n=213)	Cluster C (n=413)	Cluster D (n=200)	Cluster E (n=85)	Cluster F (n=137)	Cluster G (n=196)	Total Sample (n=1335)	Chi-Square Tests $\chi 2$	Degree of Freedom/ Variables	P-Value	Cramer's V
Marketing												
C2C	0.07%	0.00%	30.94%	14.98%	0.00%	0.00%	14.68%	60.67%	1330.86	6	0.000	0.998***
B2C	0.00%	15.96%	0.00%	0.00%	0.00%	10.26%	0.00%	26.22%	1333.16	6	0.000	0.999***
B2C-C2C	6.74%	0.00%	0.00%	0.00%	6.37%	0.00%	0.00%	13.11%	1326.32	6	0.000	0.997***
Shared Activity Category												
Support	6.82%	0.82%	1.50%	0.67%	0.00%	2.62%	0.30%	12.73%	722.76	6	0.000	0.736***
Good	0.07%	0.00%	5.62%	0.00%	1.57%	1.35%	0.00%	8.61%	143.26	6	0.000	0.328***
Health/Learning	0.00%	0.00%	0.52%	0.00%	0.67%	1.57%	4.27%	7.04%	217.69	6	0.000	0.404***
Money	0.37%	0.00%	0.00%	0.00%	0.22%	0.30%	10.56%	11.46%	831.72	6	0.000	0.789***
Services	0.75%	0.00%	11.46%	0.00%	1.05%	2.70%	0.07%	16.03%	261.85	6	0.000	0.443***
Space	0.07%	0.00%	6.44%	0.00%	0.75%	0.52%	0.00%	7.79%	158.02	6	0.000	0.344***
Logistics	0.15%	0.00%	3.15%	0.37%	0.97%	2.47%	0.00%	7.12%	115.24	6	0.000	0.294***
Vehicle Sharing	0.37%	7.72%	3.75%	0.75%	0.67%	0.07%	0.00%	13.33%	293.04	6	0.000	0.469***
Mobility Services	1.35%	9.36%	0.00%	14.98%	1.57%	0.00%	0.00%	27.27%	922.05	6	0.000	0.831***
Municipal service/Utilities	0.37%	4.04%	1.05%	0.00%	0.52%	0.07%	0.37%	6.44%	159.46	6	0.000	0.346***

Note: *** p<0.00, ** p<0.01, * p<0.05.

Chapter 4
Motivations for Labour Provision on Digital Platforms in Europe:
Examining the Differences Between Only Gigers and Gigers and Renters

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ABSTRACT

Research on the gig economy has rarely addressed the study on the motivations for the provision of labour services on digital platforms. Through a sample of 3,619 gigers in Europe, obtained from the COLLEM research, results have been obtained for labour providers (only gigers) and for labour and capital use providers (gigers and renters). The valuation of labour, being an internal resource of the gigers, has a great set of economic foundations, working conditions, and labour relations. On the other hand, the valuation of labour and capital uses is more focused on their economic and labour relations fundamentals, notably reducing the role of working conditions. These motivations suggest different platform strategies and public employment policies for both groups. While the promotion of the general job quality would also encourage the gig-job quality, the promotion of the labour and capital uses valuation requires specific actions on the platform operations.

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INTRODUCTION

During the last decades, economic globalization and the digital revolution have been profoundly and structurally transforming employment and labor relations (Martínez-Cerdá et al., 2020). Progressively, homogeneous and routine jobs; the industrial organization of work: atomization, hierarchy, and lack of autonomy in the workplace; stable lifetime employment in the same firm or organization; separate periods of training, employment, and retirement; only fixed rewards, and a framework of labor relations, with a social contract that exchanges homogeneous hours of work and fixed wages for productivity, are running out (Díaz-Chao et al., 2016). In substitution to traditional forms of employment, new and alternative forms of work, such as part-time, on-demand, or occasional employment, are being consolidated (Katz & Krueger, 2019).

From a technological perspective and like any other wave of disruptive innovation, digital-based technologies have generated a wide range of positive and negative effects on employment (Ballestar et al., 2020). In this sense, research on the effects of technology on employment has reached two basic consensuses (Vivarelli & Pianta, 2000). An initial agreement is based on the idea that the first effect of technology on employment is a skills bias. Empirically, the thesis of *skill-biased technological change* has been extensively verified (Card & DiNardo, 2002; Moore & Ranjan, 2005). According to this approach, the process of technological innovation generated, or that can only be used, by more trained workers with better skills and flexible organizations open to change, would explain the improvements in employment.

On the other hand, technological innovation would also be linked to increases in unemployment, falls in wages or the deterioration of the working conditions of employees with less training and skills, and more rigid organizational schemes (Antonelli & Fassio, 2014). In this sense, the second consensus establishes that the workers' skills, capabilities, and competencies, the firms' strategic, organizational and productive models; managerial decisions; labor relations; cultural and institutional settings; and public policies are fundamental for explaining the results of technology on employment. The impact of technology on employment can only be understood from its complex interaction with the educational, economic, social, political, and cultural system where it is applied (Autor et al., 2003).

In recent years, and leaning with the first wave of change related to Information and Communication Technologies (ICT) and the non-interactive Internet (Internet 1.0), a new phase of disruptive technological change has been generated. This new phase of digitization began with the appearance of social networks (Web 2.0) that exponentially increased the capacity for interaction and sharing of audio-visual material between people (Caroll & Romano, 2011). More recently, it has been confirmed that we would be at the beginning of a new general-purpose technological wave (so-called the fourth industrial revolution), which reinforces and deepens the first waves of digitization (Torrent-Sellens, 2015). Robotics, artificial intelligence, machine learning, and deep learning, cloud computing, big data, 3D printing, Internet of things or social networks, and digital platforms, among others, are beginning to show signs of construction of a new interconnected technological base, a new technical-economic paradigm, that will be interrelated with social and cultural changes of unprecedented magnitude (Torrent-Sellens, 2019; Trajtenberg, 2018). This new digitization wave, which will strongly materialize in the coming years (Frey & Osborne, 2017; Pratt, 2015), has fundamental implications in explaining productivity and the structure of employment, which has garnered renewed interest from researchers in the field (Autor, 2015; Camiña et al., 2020).

Therefore, a new digital wave appeared. In the new forms of digitization, labor markets tend to polarize and relocate skills, tasks, occupations, and jobs favoring workers and the highest and lowest incomes in the employment structure. This dynamic harms workers and the average income of the oc-

cupational structure (Frey & Osborne, 2017). This general trend, which is also related to a broad set of economic (globalization), social (immigration), institutional (international political relations), and political (crisis of the welfare state) factors, has intensely accelerated in recent years. In fact, it has been found that, unlike other technological waves, the current phase of digitization would be less likely to create employment and would have a greater tendency to displace it instead (Acemoglu & Restrepo, 2018; Autor & Salomons, 2018).

New jobs can only be conceived in the current labor context, on very few occasions, as classic standard employment relationships with long-term prospects, industrial relations, and complete social security (Gregory et al., 2016). However, through intensive uses of new digital technologies (such as professional networks and workflows, machine learning algorithms, or digital platforms), firms can find themselves at the end of flexible hiring, driven by a highly unpredictable environment, and organize their workflows through temporary, external employment networks and the concentration of the primary labor force in the segments where there is no shortage of qualified workers. This means that flexibility and multiple forms of alternative work, such as temporary contracts and individualized services, freelance work, or various jobs, will evolve upwards over the next few years (Weil, 2014). Undoubtedly, this general trend fits very well with the potential of the platform economy, in the sense that highly flexible and competitive digital exchange platforms can be used by some providers (job offers) that offer their services in a work exchange network, and where firms or other people (labor demand) buy or exchange (Katz & Krueger, 2019).

Nevertheless, the platform economy does not just generate opportunities to create jobs in the simplest tasks. For example, firms also offered high-quality consulting services or highly specialized expert work tasks. Indeed, the possibility of acquiring this type of specialized work through labor services on digital platforms without hiring may imply rethinking the work organization in firms. Although this reorganization process is challenging to foresee, it will undoubtedly impact how firms organize production and workflow. As in any other process of technological change, work on platforms, understood as the evolution of temporary work performed alternatively on digital platforms, generates risks for various segments of the labor markets but, at the same time, offers a wide range of opportunities for new employment (Bearson et al., 2020). As always, the balance in terms of job distribution and generated well-being will depend on a set of personal, economic, social, institutional, cultural, and political factors (Abraham et al., 2017). Beyond the effects on labor markets, working on digital platforms also directly impacts labor relations, pensions, social security, and welfare. In particular, the literature has pointed out the growing need to build a new and international social contract and legal framework between workers, employers, and the public administration that contemplates the construction of new alternative forms of employment (Harris & Krueger, 2015; Berg et al., 2019; De Stefano & Aloisi, 2018).

Precisely, and in the context of platform employment, in this chapter, we will analyze a relatively little-studied dimension: the participants' motivations to offer labor services. Even though we have considerable evidence on the motivations towards the provision of a wide range of goods and services on digital platforms (Li & Wen, 2019; Park & Armstrong, 2019; Vicente & Gil-de-Gómez, 2021), for labor services, the available evidence is relatively scarce (Doucette & Bradford, 2019). This is because, in the field of gig employment, research has focused on knowing the structure and results of this alternative form of employment rather than their motivations for participation. This interest is linked to the important changes generated in the employment of traditional sectors, such as hotel and commercial activity or passenger transport, which has generated significant controversies and the intervention of the public administration, especially in Europe (Kaine & Josserand, 2019; Schwellnus et al., 2019). How-

ever, understanding the reasons that lead gigers to offer their labor services on digital platforms is still fundamental because these motivations can shed light upon their duality of results. The implications for development and labor policies on the gig economy cannot be the same whether gigers enroll because of the flexibility, autonomy, and career development offered by the digital platforms or whether they enroll because of difficulties finding stable jobs or working in healthy conditions. Thus, and to enrich the evidence in the field, this chapter investigates the set of motivations that lead European gigers to offer their labor services. Moreover, and taking into account the importance of the individual characteristics and the occupational status of the participants in the digital platforms (Gleim et al., 2019; Torrent-Sellens et al., 2020), we will ask about the motivational differences between the participants who only offer labor (only gigers), and the participants who provide labor and also obtain income through the provision of other capital goods and services (gigers/renters).

LITERATURE REVIEW: LABOUR IN THE GIG ECONOMY

The starting point for platform employment, also called the "gig economy," is established from the digital platform Uber's success for driving services (Berger et al., 2018). This basic operating principle has spread rapidly to other firms and sectors. It has also transformed traditional remote labor markets, such as freelance or self-employed markets, organized through these platforms (Hall & Krueger, 2018). In these markets, interested firms (also individuals) call in a multitude of providers (crowd workers or gigers), which are more or fewer professionals, and acquire their labor services so that they no longer have to use the internal human or physical resources of the firms (De Groen et al., 2017). The literature emphasizes that different forms of platforms exist in the overall gig economy or platform economy. For example, Sun et al. (2021)'s chapter presents a platform typology comprising no less than seven types of collaborative economy platforms, some involving predominantly consumer-to-consumer (C2C), business-to-consumer (B2C), or both types of marketing. More generally, research has classified employment on digital platforms into two large groups (Berg et al., 2019; Codagnone et al., 2016; Fabo et al., 2017): location-based platforms (i.e., *Uber*, *Foodora*, *Deliveroo,* or *TaskRabbit*) and web-based platforms (i.e., *Amazon Mechanical Turk, Upwork, Topcoder,* or *Crowdanalytics*). The former generally involve physical activities and services locally performed that include transportation, deliveries, or home services. In the web-based platforms, work is done online, and a digital provider located anywhere can access, complete, send and collect assigned tasks. In both groups, the digital employment platform fulfills three functions (Howcroft & Bergvall-Kåreborn, 2019). First, it matches the supply and demand for job tasks. Second, it generates a range of tools and services that allow the delivery of tasks in exchange for income or rewards. Third, it establishes rules and coordination mechanisms through agreements and terms of service (Choudary, 2018).

Located or web-based platform work means that increasingly autonomous job providers offer their labor services through digital platforms and consequently compete with traditional business models based on firms with dependent workers. In this context, there are usually jobs that do not involve a formal relationship between employer and employee, so that considerably less structured jobs are created, which are tremendously flexible and far from the usual standards (Abraham et al., 2018). At the same time, the pricing structure of these services is continually under pressure. In fact, through platform work, there is a transfer of risks from the employer to the employee. This is because digital platforms are usually not considered employers but employment intermediaries. Therefore, the workers who use these platforms

are no longer classic employees but self-employed or autonomous workers, with all associated risks or costs, such as accidents or illnesses, pensions, unemployment, or health (Aloisi, 2016; Wood et al., 2019).

The number of workers involved in the new alternative forms of employment has significantly increased over the last decade. About research for the United States, Katz and Krueger (2019) confirm that the new alternative forms of employment went from 10.1% of the total in 2005 to 15.8% in 2015. In this research, the alternative forms of employment considered are temporary help agency workers, shift or guard workers who remain on hold until they are called to work (on-call workers), project workers or service (contract workers), and independent or freelance employers (independent contractors or freelancers). In Europe, these alternative forms of work would have a lesser scope. For example, the average number of freelancers in Europe is around 7% of the workforce, and people with two or more occupations would be about 5% of the total. With very different realities by country (the Netherlands and Sweden stand out for the presence of temporary and contract workers, while a very high presence of self-employment characterizes Italy), these data have remained relatively stable over the last few years (Eichhorst et al., 2017). However, examining digital platform work and drawing on the research of population samples for 7 European countries, Huws et al. (2017) highlight a growing presence of eventual gigers, ranging from 9% in Germany and the United Kingdom to 22% in Italy. Along the same lines, more recent research places the share of gig employment in Europe at around 10% of the total employed population (Pesole et al., 2018; Urzì-Brancati et al., 2020).

Regarding platform employment results, some gigers are satisfied with digital platform employment and especially with the opportunity to work flexibly or earn an income, most of them occasionally (Barnes et al., 2015). The income from gig employment would be occasional, and in most cases, would complement other sources of income (Abraham et al., 2018; Katz & Krueger, 2019). The results for European employees who spend more than 10 hours a week and earn more than half of their wages through gig employment are much more modest, at around 2% of the employed population (Urzì-Brancati et al., 2020). The lack of employment protection also translates into downward pressure on wages for assigned tasks. Research in the field has found significant percentages of gigers with rewards below the average salary in their professional categories (Berg et al., 2018; De Stefano, 2016). Other gigers are integrated into these markets because they have no other options (involuntary platform work).

Of course, the providers and the people who obtain jobs through digital platforms, generally young and highly educated men (Urzì-Brancati et al., 2020), value their ability to provide alternative income and estimate that soon, these could become their primary source of income. Despite this possibility of completing income, gigers are generally concerned about the security of their income and their employment. The specificities of platform employment give it an interesting duality (Kässi & Lehdonvirta, 2018; Urzì-Brancati et al., 2020). On the one hand, it could represent for gigers an opportunity for autonomy and control of career advancement and the reconciliation between work and family life (Wong et al., 2021). In the same way, it offers job opportunities for specific groups of workers with access problems to physical labor markets (De Stefano, 2016). Nonetheless, on the other hand, it also carries a high risk of precariousness and higher levels of dissatisfaction (Keith et al., 2019). In this sense, the literature that attributes to gig employment, the promotion of instability, labor deregulation, and the impoverishment of working conditions is abundant (Berg et al., 2019). Due to its ability to avoid obligations related to labor legislation and employment protection, it has even been questioned whether gig employment will not put the very concept of employment at risk, giving rise to unprecedented legal uncertainty in labor markets (IOE, 2017). Although neither the expansion of atypical work, nor that of autonomous workers, nor the appearance of the so-called "precariat" (Standing, 2014), may be directly attributable to digital

labor platforms, evidence is beginning to accumulate that they are accelerating new forms of atypical work and new conceptualizations of workers, such as "people as a service" (Silberman & Irani, 2016). As most of the literature warns, the challenge is to avoid that: "these new forms of employment end up being new forms of precariousness" (Malo, 2018: 155).

In the context of the remote provision of digital labor services carried out in developing countries basically for European or United States contractors, it is highlighted that platform employment tends to amplify its positive or negative effects (Graham et al., 2017; Heeks, 2017). Regarding the positive effects, job generation, hourly and workplace flexibility, autonomy, and various tasks are perceived as highly positive in a context dominated by weak labor opportunities (De Stefano, 2016, Rani & Furrer, 2020). However, and regarding adverse effects, algorithmic and digital labor control mechanisms also result in low wages, social isolation, irregular working hours, overwork, lack of sleep, or exhaustion (Graham et al., 2017; Rani & Furrer, 2020; Wood et al., 2019). In fact, research also accumulates evidence about the negative evaluations that people make of the ways of organizing work on digital platforms in a context dominated by weak labor protection (Berg et al., 2019; Geissinger et al., 2021).

However, despite the interest and concern that gig employment arouses, there are still severe difficulties in studying it. For example, the exact number of digital labor platforms, the amount of gigers involved, or the income it generates is not available. The main reason is the general lack of official records and administrative data for their analysis (Abraham et al., 2018). As a result, researchers have resorted to different ways to alleviate this deficit, such as monitoring digital employment platforms and their gigers, web crawling, ad-hoc surveys, or approximations from existing databases. The result is a growing literature that has provided some first evidence on the size and structure of gig employment for European countries (Urzì-Brancati et al., 2020).

In this context, it has been pointed out that the individuals who provide their labor services through digital platforms present significant differences concerning the general population and the rest of the employees. In general, it has been found that there is a higher proportion of young men with a high educational level and residents of large cities (Huws et al., 2017). In a survey of 3,500 gigers from 75 countries in 2015 and 2017, Berg et al. (2018) characterized the sociodemographic and labor profile of gigers with the following features: a) although there are gigers of all ages, their average age is low and slightly over 30 years; b) there are important gender differences since women only represent a third of employment on digital platforms; c) the gigers are well educated since 57% had a university degree or master's degree; d) among the graduates there is a certain specialization towards the contents related to natural sciences and medicine, engineering and information technologies (57%) and economics and management (25%); e) volunteering or working for the community (56% of the gigers had done it for more than a year) is a good precedent for gig employment; and f) gig employment is consolidating since 29% of gigers have already worked for more than three years on a platform.

In addition, other interesting aspects are also observed, such as the fact that the participation of women has a negative relationship with the intensity of platform work. This would mean that a greater number of tasks or a greater intensity of work by tasks would be associated with a lower presence of women on the platforms (Doucette & Bradford, 2019); that within the same age group, those individuals with less work experience have a greater probability of belonging gigers group; or that, although jobs that require a low level of skills predominate (Fabo et al., 2017), gigers have a high level of education (Pesole et al., 2018), giving rise to a mismatch that we could relate to over-education and/or over-qualification. All these elements point out the need to go beyond the mere descriptive exercise and suggest the purpose

of isolating the effects that an individual's characteristics have on the probability of developing a job through a digital platform (Congregado et al., 2019).

Although the occupational status of digital platform providers' employment remains unclear, the literature finds that gig employment is usually positively associated with the most atypical forms of employment, such as self-employment, multiple employment, or temporary or part-time employee contracts. Furthermore, it is common for gigers to be found in the most atypical occupational structure sections (Huws et al., 2017; Pesole et al., 2018). Occupational status, therefore, seems to play an essential role in providing labor services in digital platforms (Urzì-Brancati et al., 2020; Torrent-Sellens et al., 2020). Therefore, and related to the individual and occupational characteristics of platform employees, we pose a first research question:

First Research Question: Are participants' individual and occupational characteristics in digital platforms that provide labour (only gigers) different from those that provide labor and other rental goods and services (gigers/renters)?

The advent of digital platforms has profoundly transformed both economic and labor exchanges (Torrent-Sellens, 2019). Within this context, field research has pointed out the collaborative nature of this new set of online resource circulation systems (Ertz et al., 2016), which enable people to both obtain and provide, temporarily or permanently, valuable resources or services through direct interaction with other people or through a mediator (Ertz et al., 2017). A platform provider is a person who provides a specific resource or service, either directly to an obtainer or indirectly through a mediator. Thus, the collaborative provision refers to re-exchange or reuse, such as reselling or secondhand purchase, subleasing, swapping, free or paid donation, and reconditioning or refurbishing (Ertz et al., 2019).

Participation in digital platforms is based on a multidimensional set of motives (Barnes & Mattsson, 2017; Hawlitschek et al., 2018; Torrent-Sellens et al., 2020). First, the technological foundations of platform exchange should be noted (Belk, 2014) and, in particular, people's ability to know about and operate within digital platforms, which includes knowledge about the existence and utilities of the platforms (Gazzola et al., 2019; Hamari et al., 2016). Secondly, research on platform exchanges has also confirmed that the antecedents of digital participation might be different depending on whether people are acting as obtainers or providers (Barbosa & Fonseca, 2019; Ertz et al., 2017). Strong support had been found for the prevalence of utilitarian motives, especially economic and practical ones, at the obtainment stage (Bucher et al., 2016; Wilhelms et al., 2017). However, a broader set of non-utilitarian and pro-social drivers, such as creating better communities through alternative non-profit exchanges, sustainability, solidarity, or helping people, also fosters provision (Li & Wen, 2019; Park & Armstrong, 2019; Vicente & Gil-de-Gómez, 2021; Ertz et al., 2021). For example, in their analysis of motivations for participation in digital platforms in Europe, Torrent-Sellens et al. (2020) find that the provision of goods and services on digital platforms is a function of previous experience as a source, convenience and utility factors, and pro-social drivers. In the same line, Ertz et al. (2021) emphasized the fact that providers are usually motivated by a broader scope of motives than mere profit in their investigation of the switchover process, which involves users switching over to the provider role within the collaborative economy. And third, research has also found a set of barriers hindering participation in collaborative exchanges (Barnes & Mattsson, 2017; Hawlitschek et al., 2018). Procedural, process, and privacy risk concerns, distrust among participants, and effort expectancies are the most common barriers identified in the literature (Edbring et al., 2016; Ter Huurne et al., 2017).

However, despite the critical evidence available for the set of motivations that support the provision of all types of goods and services on digital platforms, research on the motivations for the provision of labor services is not very abundant, incorporating theoretical postulates or analysis on specific platforms (Doucette, & Bradford, 2019; Jabagi et al., 2019). In fact, research on gig employment has focused more on studying the structure and outcomes of this alternative form of employment, characterizing gigers, or analyzing their implications for employment, industrial relations, or public employment policies. In this research, we will address the analysis of the motivations that predict the provision of labor services to cover this gap. To this end and considering the importance of platform participants' occupational status (Gleim et al., 2019; Torrent-Sellens et al., 2020), we will ask about the differential motivations between the participants that only provide employment (only gigers) and the participants that provide employment and obtain income from the exchange of other capital goods and services (gigers/renters). Therefore, our second research question is:

Second Research Question: Are the motivations of labor services provision (only gigers) in digital platforms different from those that provide labor services and other capital goods and services (gigers/renters)?

To answer our two research questions, the microdata from the COLLEEM (COLLaborative Economy and EMployment) Survey have been used (Pesole et al., 2018; Urzì-Brancati et al., 2020). The COLLEEM survey, sponsored by the Joint Research Center (JCR) of the European Union, has two waves of data corresponding to 2017 and 2018. In our research, microdata from 2017 (fieldwork was carried out during the second half of June) has been used. Specifically, it is a telephone survey of a representative sample (stratified by groups of age and gender) of 32,409 internet users aged 16-74 in 14 European countries (around 2,300 individuals per country): United Kingdom, Germany, France, Italy, Spain, Finland, the Netherlands, Sweden, Hungary, Slovakia, Romania, Croatia, Lithuania, and Portugal.

COLLEEM asks whether the respondent has ever earned income from different online sources, among which there are two corresponding to labor service platforms: "providing services via online platforms, where you and the client are matched digitally, payment is conducted digitally via the platform, and the work is location-independent, web-based" and "providing services via online platforms, where you and the client are matched digitally, and the payment is conducted digitally via the platform, but work is performed on-location." We have named the former as web-gigers and the latter as located-gigers. The sum of both classifications determines the total number of platform workers or only gigers. In total, there have been identified 3,619 European gigers. Additionally, the COLLEEM survey also obtains binary information about other income sources related to the exchange of different types of goods and services not related to the provision of labor services. These alternative forms of obtaining income through digital platforms have their origin in the sale of possessions (i.e., *Amazon*, *eBay,* or *Zalando*), rentals for accommodation (i.e., *Airbnb*, *Booking*, or *Homelidays*), product leasing (i.e., *Wallapop*, *Vibo,* or *eBay*) or money loans on platforms crowdfunding (i.e., *Verkami*, *GoFundMe* or *Teaming*). The additive indicator of these four additional ways of earning income has been called *gigers/renters*.

As in other platform exchanges, the motivation of gigers to carry out their work is of great interest for a better understanding of the phenomenon and how it may evolve in the future. In this sense, COLLEEM collects evaluative information, in the form of a Likert scale with five items (ranging from 1: "not at all important" to 5: "very important"), on a set of motivations that include working conditions and rewards (autonomy, prices, access to clients, or taxes) and labor relations and employment policies (flexibility,

partial employment, stability, and health). Despite the limitations of these data, as for example, that the motivations are collected in an aggregate way and not for each of the labor exchanges carried out by the gigers or due to the traditional response bias problems, the analysis of the marginal effects of the motivations for gig employment or gig employment and rental platform income has been considered relevant. In the first place, this is because the available evidence in this area is quite scarce. Secondly, the biases in the response and the endogeneity problems between variables have been corrected as far as possible.

The descriptive statistics for our sample of gigers can be detailed as follows (Table 1). Regarding gender, 62.8% of the sample were male. The participants' mean age was 34.5 years (SD=12.6), distributed across the following categories: men and women between 15 and 24 years old (18.4% and 10.4%, respectively), men and women between 24 and 54 years old (39.8% and 23.5%, respectively), and men and women between 55 and 74 years old (4.6% and 3.3%, respectively). Regarding household status, 35.5% of the gigers lived married and living with husband/wife, 20.5% live in a domestic partnership, and 35.2% are single (never married). Regarding children, almost half of the gigers do not have children (47.6%), while 27.1% have one child and 18.2% have two children. Regarding education, 57.5% of the gigers in the sample have some type of university education completed. Regarding the situation of gigers within the labor market, descriptive statistics indicate that: 1) the vast majority are full-time employees (60.4%) with a relative presence of part-time employees (15.4%) and self-employed (13.1%); 2) another significant part of gigers are students (14.4%) or unemployed (7.2%); 3) they mainly carry out their main jobs under conditions of job stability (76.6%), although an important part also works part-time (21.7%); and 4) years of work experience are 11.5 (SD = 10.8). The distribution of gigers across the 14 countries in the sample is uneven. Among the countries with the highest participation, those of the Mediterranean area : Portugal, Spain, and Italy (with shares exceeding 10% of the total). In comparison, the lowest percentages (less than 5% of the total) are found in Scandinavian countries (Finland and Sweden).

To contrast our two research questions, we have used an ordinary least squares (OLS) regression model that has been completed by bootstrapping based on 500 subsamples. OLS regression should be used only if some standard requirements of the data are achieved, such as normality, linearity, and homoscedasticity (Hair et al., 2010). The skewness and kurtosis values suggest that the variables can be assumed to be normally distributed (below the threshold of 2.58). Multicollinearity diagnoses have been addressed by testing tolerance and variance inflation factor (VIF) among the explanatory variables. Given that all these values were below the threshold tolerance=0.10 and VIF=10.0, multicollinearity may not be a concern in our regression models. Finally, homoscedasticity was visually examined and tested in plots of standardized residuals against the predicted value and with the Durbin-Watson test ($1.5<DW<2.5$). We performed six independent regression models. Six models were significant (p=0.000) and explained almost 60% of the variance of the output variables. The econometric analysis has been carried out with the SPSS v.23 program.

We have used three variables to estimate. First, a variable related to the existence of income sources from the exchange of labor services on digital platforms. This variable (only gigers) takes three values: 1, when the gigers have obtained income from a platform and located-based job; 2, when the gigers have obtained income from a platform and web-based job; and 3, when the gigers have obtained income from web-based and located-based digital platform jobs. Second, we have estimated effects on the combination of labor service exchange activities and income through other non-labor channels. This second variable (gigers/renters) takes five values: 0, when income is only from labor; "1" when obtaining labor income is combined with an additional source of income from exchanging goods and services of another non-labor nature; "2" income from gig employment and from 2 non-labor sources; "3" income from gig

Table 1. Participants, sociodemographic and labor valid frequencies of the sample

Sociodemographic Issues	Valid Percentage	Labor Issues	Valid Percentage
Age (years)	34.2	Labor status	
Gender		Employee or self-employed	70.5
Female	37.2	Unemployed	7.2
Male	62.8	Student	14.4
Civil status		Retired	3.7
Single, never married	35.2	Others	4.3
Domestic partnership	20.5	Work experience (years)	11.5
Married and living with a partner	35.5	Work status	
Separated or divorced	5.0	Full-time employee	60.4
Others	4.5	Part-time employee	15.4
Level of education (ISCED: 1 to 8)		Self-employed with employees	2.8
No education or primary education	8.8	Self-employed without employees	10.3
Secondary education	33.5	Others	11.1
Tertiary education	57.5		
Country of residence			
Continental Europe[1]	17.5		
Mediterranean Europe[2]	39.8		
Atlantic Europe and Scandinavia[3]	15.3		
Eastern Europe[4]	27.4		

Notes. 1: France, Germany, and the Netherlands. 2: Italy, Spain, Portugal, and Croatia. 3: United Kingdom, Sweden, Finland , and Lithuania. 4: Hungary, Romania, and Slovakia.

employment and 3 non-labor sources; and "4" income from gig employment and 4 non-labor sources. These non-labor sources of income can come from obtaining income from the sale of possessions, accommodation rentals, product leases, or money loans. Finally, the third variable to explain corresponds to the percentage of monthly income linked to gig employment. This variable takes 4 values: 1, when the percentage of gig employment over monthly income is less than 25%; 2, when they are between 26% and 50%; 3, when they are between 51% and 75%; and 4, when they are between 76 and 100% of the total monthly income. The descriptive statistics of the three variables to be explained can be detailed as follows: 1) the majority of gigers (65.2%) obtain income only through one job (web-based or located-based); 2) income completion is generally carried out through a single non-labor activity (54.0%), and 3) for more than half of the gigers (52.9%) the employment carried out on digital platforms represents a share of the monthly income of less than 25%.

Table 2 shows the results of the estimates related to the individual and sociodemographic predictors of gig employment. In line with that obtained by the literature in the field (Congregado et al., 2019), individual factors are essential in predicting gig employment. The gender coefficient determines a remarkable predictive capacity for men, while explanatory power (much lower than gender) is also found for the youngest and most educated. For their part, the two postulated predictors of labor status have also been significant. Specifically, it is found that the more atypical the giger's main job (part-time or self-employment) is, the greater the likelihood of obtaining income through digital employment. Similarly, job instability also plays an explanatory role. The more temporary or occasional the giger's main job, the more likely it is to earn income by exchanging labor services through digital platforms.

The results obtained for the individual and labor characteristics of the gigers that complement their income with digital platform exchanges of non-labor goods and services are also significant. As in the case of only gigers, youth, atypical employment, and job instability are confirmed as clear predictors of this expanded modality. However, unlike gigers, gender and education level play a more important

Table 2. Individual and sociodemographic predictors of income from labor and rental services on digital platforms: only gigers, gigers/renters, percentage of total monthly income

	Only Gigers		Gigers/Renters		Gig-Job % of Total Monthly Income	
Predictors	**Marginal Effect**	**Bootstrap 95% CI[1]**	**Marginal Effect**	**Bootstrap 95% CI[1]**	**Marginal Effect**	**Bootstrap 95% CI[1]**
Gender (0, female; 1, male)	0.232***		0.537***		0.382***	
	(0.022)		(0.056)		(0.041)	
Age (15 to 74 years old)	-0.010***		-0.009**		-0.009**	
	(0.001)	[0.191;0.277]***	(0.002)	[0.431;0.657]***	(0.002)	[0.305;0.461]***
Level of education (ISCED: 1 to 8)	0.076***	[-0.008;-0.011]**	0.135***	[-0.005;-0.013]**	0.075***	[-0.006;-0.012][1]***
	(0.005)	[0.064;0.085]***	(0.013)	[0.107;0.160]***	(0.010)	[0.057;0.095]***
Atypical employment (0, full-time; 1, part-time or self-employment)	0.245***	[0.184;0.305]***	0.238***	[0.093;0.381]***	0.367***	[0.262;0.492]***
	(0.029)	[0.095;0.197]***	(0.072)	[0.015;0.253]***	(0.053)	[0.137;0.324]***
Job instability (1, permanent; 2, temporary; 3, occasional)	0.143***		0.141***		0.230***	
	(0.026)		(0.065)		(0.048)	
Statistics						
N (observations)	2,409		2,409		2,065	
Adjusted R^2	0.863		0.644		0.770	
Estimation SE	0.541		1.367		0.922	
F value	3,040.3		873.8		1,386.9	
p-value	0.000		0.000		0.000	

Notes. OLS estimation and Bootstrapping based on 500 subsamples. Confidence intervals were evaluated by applying a two-tailed test for a Student's t-distribution (95% confidence interval). Estimated coefficients: Non-standardized coefficients. Standard errors of the non-standardized effects in brackets. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$ (bilateral significance in bootstrapping).

role in explaining the likelihood of obtaining income through employment and other digital platform exchanges. Men and individuals with higher education levels are more likely to generate income through digital platforms, complementing employment services with other non-labor income. Finally, we have also contrasted the effects of the individual and labor characteristics of the gigers in determining their participation in their total monthly income. The results obtained are very similar to those for gig activity, although the coefficients for men, atypical employment, and employment instability are clearly higher.

The results obtained confirm our assumption of differential motivation regarding the predictors of entry into gig-only and gig-and-renting activities (Table 3). As for the only gigers, the primary motivational predictors of their participation in paid job exchanges through digital platforms are related to economic conditions (fair price, freedom of choice of prices or taxes), working conditions (flexibility), and labor relations (difficulties in finding stable jobs). These main motivations are completed by another set of predictors, with clearly lower but also significant coefficients. Thus, the motivations to act and obtain income from gig employment are also linked to other employment conditions (autonomy, interesting jobs), other labor relations (preference for part-time employment or the possibility of working in conditions of illness or disability), and other economic conditions (access to more clients or consumers).

In contrast, the motivations to act and earn income as a giger and renter through digital platforms have clearly different intensities and signs than those of only gigers. First of all, it is essential to point out that economic motivations (fair price, choice of price, taxes, and access to more clients/consumers) are much more critical for gigers/renters than in the case of only gigers. Second, this circumstance also occurs for the dimension of labor relations. The coefficients of motivations related to difficulties in finding stable employment or preferences for part-time employment are clearly higher for gigers/renters than for only gigers. And, alternatively and thirdly, the motivations related to employment conditions

(flexibility, autonomy, and interesting jobs) show negative signs and low explanatory capacity, contrary to what happened with only gigers.

Finally, the predictive role of motivations to explain the percentage of monthly income represented by gig employment has also been contrasted, although with less robustness. Some motivations related to labor relations (preference for part-time employment in case of illness or disability), working conditions (attractive job offers), or economic conditions (access to more clients or consumers) have been revealed as not significant. Furthermore, autonomy in the choice of tasks has a negative coefficient, which indicates that this type of autonomy would be a brake to obtain higher percentages of income. Among the most important motivations to explain a higher relation to gig employment are those of the economic dimension (fair price, taxes, or choice of prices) and flexibility, autonomy in developing tasks, and difficulties to get a stable job.

Table 3. Motivational predictors of income from labor and rental services on digital platforms: only gigers, gigers/ renters, percentage of total monthly income

	Only Gigers		**Gigers/Renters**		**Gig-Job % of Total Monthly Income**	
Predictors	**Marginal Effect**	**Bootstrap 95% CI[1]**	**Marginal Effect**	**Bootstrap 95% CI[1]**	**Marginal Effect**	**Bootstrap 95% CI[1]**
Flexibility	0.053*** (0.009)	[0.035;0.069]***	-0.048** (0.021)	[-0.086;-0.011]**	0.124*** (0.018)	[0.089;0.156]***
Preference for part-time job	0.020** (0.007)	[0.006;0.034]**	0.072*** (0.017)	[0.038;0.102]***	0.006 (0.014)	[-0.023;0.036]
Autonomy: choice of tasks	0.023* (0.011)	[0.003;0.045]*	-0.049* (0.025)	[-0.097;-0.006]*	-0.045** (0.021)	[-0.089;-0.005]**
Autonomy: performing tasks	0.034** (0.011)		-0.041* (0.025)	[-0.089;0.000]	0.056** (0.021)	[0.015;0.098]**
Difficulties finding job stability	0.040*** (0.006)	[0.013;0.057]**	0.122*** (0.015)	[0.095;0.151]***	0.072*** (0.013)	[0.048;0.096]***
Job despite illness or disability	0.021** (0.006)	[0.029;0.051]***	0.051** (0.015)	[0.022;0.079]***	-0.001 (0.013)	[-0.027;0.024]
Interesting job offers	0.017* (0.009)	[0.009;0.035]**	-0.069** (0.021)	[-0.104; 0.032]***	-0.008 (0.018)	[-0.043;0.030]
Access to more clients/ consumers	0.019** (0.008)	[-0.003;0.033]	0.054** (0.019)	[0.016;0.087**	-0.003 (0.017)	[-0.042;0.032]
Fair pay/reward	0.048*** (0.009)	[0.001;0.024]**	0.167*** (0.021)	[0.129;0.208]***	0.142*** (0.019)	[0.104;0.179]***
Choice of price for services	0.044*** (0.008)	[0.029;0.067]***	0.135*** (0.020)	[0.096;0.173]***	0.032* (0.017)	[0.001;0.065]*
Taxes declared by the platform	0.054*** (0.007)	[0.029;0.061]***	0.155*** (0.016)	[0.126;0.186]***	0.085*** (0.014)	[0.053;0.113]***
		[0.041;0.069]***				
Statistics						
N (observations)	3,320		3,320		2,967	
Adjusted R^2	0.881		0.708		0.772	
Estimation SE	0.500		1.190		0.942	
F value	2,239.8		731.8		914.7	
p-value	0.000		0.000		0.000	

Notes. OLS estimation and Bootstrapping based on 500 subsamples. Confidence intervals were evaluated by applying a two-tailed test for a Student's t-distribution (95% confidence interval). Estimated coefficients: Non-standardized coefficients. Standard errors of the non-standardized effects in brackets. *** $p < 0.001$; ** $p < 0.01$; * $p < 0.05$ (bilateral significance in bootstrapping).

DISCUSSION AND IMPLICATIONS

Research on the gig economy has generally focused on analyzing the effects of this atypical form of employment on employees, labor markets, or public policies. This has been the case due to the evident concern about the existence of a new form of precarious and unprotected employment due to the intensive labor use of digital platforms. On the other hand, this same evidence has also highlighted some positive effects of gig employment, such as greater autonomy and flexibility, incentives for career development, or options to complete work income. However, and in contrast to research for providing other goods and services through digital platforms, the gig employment literature has rarely dealt with analyzing the motivations underlying the provision of labor services. This analysis is critical because, through the motivations of activity and income in gig employment, it is possible to infer some of its results, either favorable or unfavorable. For example, suppose the motivations of a giger are the flexibility or the autonomy provided by digital platforms. In that case, it is expected that, if fulfilled, the results of the gig employment will be perceived satisfactorily.

On the other hand, if the motivation of gigers is the difficulty in finding a stable job, then it is expected that, if their instability is confirmed, the perception of gig employment will be negative. Therefore, participation motives are important in explaining some gig employment outcomes, such as satisfaction. Besides, our intention to know the motivations of the gigers has been completed by the need to delve into the knowledge of what happens inside digital platforms. In particular, we tackled the individual and motivational differences of two different agents that exchange goods and services on digital platforms: agents that only exchange employment (only gigers) and agents that combine employment exchanges with income generation through other non-labor income (gigers/renters). Therefore, the provision of a database of 3,619 European gigers, obtained from the COLLEEM research project, has been beneficial for our purpose.

The results of our research point to several differences between only gigers and gigers/renters. Concerning individual and labor characteristics, provision on digital platforms is driven by the younger population and a more atypical work situation (part-time or self-employment) and unstable (temporary or occasional). These predictors are equally valid for both only gigers and gigers/renters. However, among gigers/renters, there is a greater likelihood that their participation is found among men and people with high education levels. Both the results of the sociodemographic and labor characterization of gigers and their predictive capacity to explain participation in digital platforms are in full harmony with the research in the field (Berg et al., 2018; Congregado et al., 2019; Huws et al., 2017). Young and educated men with temporary or occasional main jobs are much more likely to use digital platforms for gig employment.

The result also suggests a somewhat differentiated profile among platform users who only exchange labor or combine labor to obtain non-labor income. In fact, it indicates that the provision of labor on digital platforms has its main origin in the problems that young people have to get stable and full-time jobs, while the combined provision of labor and obtaining income is also related to men with higher education levels. Thus, gig employment is more related to the need to get additional labor. In contrast, gig employment and obtaining non-labor income are related to generating income associated with possessions. Therefore, only gigers value their labor resource, while gigers/renters value labor and capital resources (possessions, rooms, money).

Undoubtedly, both from the fiscal and public policies, valuation mechanisms should not be treated in the same way. In the case of only gigers, the organization of the activity and its tax treatment and social security should be considered from the perspective of the employment regime. On the other hand,

the activity on the platforms of the gigers/renters has a double perspective of job and capital valuation. Therefore, different tax and social security treatments should be developed depending on the tasks performed. However, in both cases, it is worth noting the difficulties of implementing mechanisms for organizing and protecting employment, especially in web-based gig employment without an international agreement that provides coverage (Berg et al., 2019).

In terms of motivations, only gigers and gigers/renters present a very different profile. According to the results obtained among the gigers, there are a good number of reasons related to economic conditions (fair price, choice of prices, and taxes), working conditions (flexibility and autonomy), or labor relations (difficulties in finding stable employment). On the other hand, among gigers/renters, economic motivations (fair price, choice of prices, taxes, and access to clients) and labor relations (difficulties in finding stable jobs and preference for part-time) have a much better predictive capacity. On the contrary, working conditions (flexibility or autonomy) exert negative prediction effects. These results suggest differentiated motivational profiles depending on whether the exchanges are solely labor or labor uses of capital. The only gigers, as they exchange their resources, are motivated by a comprehensive set of factors that include economic, working, and labor conditions. Gigers/renters, as they trade their resource and non-labor assets, are more interested in economic and labor relations drivers. As labor participation loses importance, it is common for motivations about working conditions to diminish in significance among gigers/renters.

These results are in line with what was obtained by the little existing motivational literature. Keith et al. (2021) find motivational disparities based on primary or secondary consideration of employment on *Amazon Mechanical Turk*. Gigers who perceive it as the main job are much less sensitive to motivational and attractive factors, such as enjoyment. In contrast, gigers who perceive it as an additional job are more sensitive to pull factors such as enjoyment and challenge. These different motivational factors are related to differentiated satisfaction perceptions. In an investigation that analyses the relationship between motivational factors and the labor results of two types of gigers (those that rely on an intermediary platform to place their services -sharers- and those that sell their products directly -direct sellers-), Gleim et al. (2019) obtain differentiated results based, among others, on economic motivational factors (perceived commerciality). Direct sales workers obtain positive evaluations of the product offered, organizational trust, and job satisfaction. Conversely, sharers present a more complicated relationship with the labor outcome variables.

Once again, these results generate implications in terms of platform management and public employment policies. The valuation of labor is motivated by a relatively balanced mix of economic, working conditions, and labor relations. Therefore, improvements in the quality of gig employment should be based on those conditioning factors related to the overall employment structure. In fact, policies or strategies aimed at improving the flexibility of the general labor markets or increasing work stability would also generate positive returns for the job quality in digital platforms since they affect the motives of gigers to enroll in these alternative forms of employment. On the other hand, improving the conditions of efficiency and competition in digital markets would be very well received by gigers/renters since these strategies or policies would directly impact the primary motivation of these digital platform agents.

LIMITATIONS AND FUTURE RESEARCH AVENUES

The research has had a significant number of limitations, which mark the future of our research claims. The main limitation of the research comes from the data used. Gigers and gigers/renters' motivations identified (drivers and barriers) are not a complete set (some motivations may be missing) which suggests that our research design must be contextualized into some behavior theory, such as the theory of planned behavior. In this sense, we intend to expand our future research in several ways: first, by expanding the dimensions and number of motivational factors that drive or weaken gigers' motivations in Europe; secondly, by extending the analysis to different types of labor services exchanges through digital platforms; and thirdly, by contextualizing our predictive model through the use of an explanatory theory of labor behavior, such as the theory of tasks provision.

CONCLUSION

In this research, we have investigated the existence of profile and motivational differences between digital platform providers that only exchange labor (only gigers) and those that exchange labor and various uses of capital (gigers/renters), such as possessions accommodations, or money. The results obtained have confirmed these differences. Although the essential characteristics of the user of digital platforms are linked to the young population and with problems of stability or security in their employment, the valuations of labor and capital in digital platforms are based on the male population and with high levels of education. Regarding motivations, the valuations only of employment and employment and the uses of capital also have different antecedents. Being an internal resource for gigers, labor valuation has a good set of economic, working conditions, and labor relations fundamentals. On the other hand, the valuations of labor and capital uses are more focused on their economic and labor relations fundamentals, greatly diminishing the importance of working conditions. These differential motivations are essential for the management of platforms or the generation of public employment policies. In the case of only gigers, actions aimed at improving the quality and security of employment in general terms will also generate returns for gig employment quality. In the case of gigers/renters, specific actions must be developed to promote the efficiency and proper functioning of digital markets to boost their activity.

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KEY TERMS AND DEFINITIONS

Alternative Work: All those unusual forms of employment. It refers especially to temporary or occasional employment.

Collaborative Economy: The set of resource circulation systems that enable consumers to both obtain and provide, temporarily or permanently, valuable resources or services through direct interaction with other consumers or through a mediator.

Digital Platform (Economics): Digital network for the connection of economic agents and for the coordination of all types of exchanges.

Digital Platform (Labour or Employment): Digital networks for the exchange and coordination of employment tasks. They fulfill three basic functions: 1) to match the supply and demand for job tasks; 2) to generate a range of tools and services that allow the delivery of tasks in exchange for income or rewards; and 3) to establish rules and coordination mechanisms through agreements and terms of service.

Digitization: Digital transformation process. It refers to the growing and massive use by individuals and firms of all digital technologies. Digitization includes both the use of first-wave digital technologies, such as ICT, Internet, or electronic commerce, as well as new-wave digital technologies, such as robotics and artificial intelligence, social networks, big data, Internet of things, or digital platforms, among others.

Gig Economy: Refers to the exchange of sporadic or temporary jobs organized by tasks. In this economy, interested firms (also individuals) call in a multitude of providers (gigers), which are more or fewer professionals, and acquire their labor services. In most cases, the hiring of tasks in the gig economy has been done in less regulated contexts, especially outside the conditions of security and employment protection that are offered within firms.

Giger: Individuals who provide labor services through digital platforms directly, to a firm or other individual, or indirectly through a mediator.

Giger/Renter: Individual who provides labor services and other non-labor goods and services through digital platforms. This provision of products, services, and jobs can be done directly, to a firm or another person, or indirectly through a mediator.

Chapter 5
Smart Contract and Collaborative Platforms: Exploring the Impacts of the Computerized Transaction Protocol on the Collaborative Economy

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ABSTRACT

The collaborative economy (CE) involves an intensification of peer-to-peer commerce either directly or through the presence of an intermediary. Collaborative online exchanges are supported by digital processes that involve increased use of new technologies. As an intrinsically connected economy, the EC is therefore inclined to integrate the most recent technological advances, in particular smart contracts. In a recent article, Ertz and Boily raised that this technology can have important impacts for the development of the CE the intensification of exchanges between peers. This chapter consists of a conceptual review analyzing how the CE connects to smart contract technology by observing in particular the motivations of users on digital sharing platforms. The chapter also presents the organizational and managerial implications associated with the implementation of smart contracts in terms of governance, transaction costs, and user trust on collaborative online platforms. A comparison with conventional contracts is also initiated.

INTRODUCTION

Over the past decades, scientific research on e-commerce and digital platforms has expanded considerably. Within the contemporary economic and technological landscape, e-commerce and collaborative economy (CE) are henceforth associated since both are performed online and relayed on digital platforms (Acquier et al., 2017; Hawlitschek et al., 2018). According to the definition given by David Baum in

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1999, ‘‘e-commerce is a dynamic set of technologies, applications, and business processes that connect between companies, consumers, and specific communities through electronic transactions, trade in goods, services and information made electronically’’ (Soeryanto Soegoto & Eliana, 2018, p. 1). As for the CE, it can be defined as an economic model generating new forms of consumption, which can be observed in various areas (e.g., food, accommodation, transport, access to goods and services). This set of resource circulation systems is based on peer-to-peer relationships (Belk, 2014; Ertz et al., 2019; Botsman and Rogers, 2010). This combination of e-commerce and the collaborative economy has given rise to the emergence of collaborative platforms defined as extensible databases or a “sociotechnical assemblage” supported by software that provides the basic functionalities (Ertz & Boily, 2019, p. 88).

While collaborative platforms have proliferated in recent years, many research avenues remain on the subject (e.g., user confidence, legal transformation, the role of smart contract applications in business growth). Previous research (i.e., Ertz & Boily, 2019) allowed us to explore the different avenues offered by combining concepts of the CE and technological advances, such as Blockchain and cryptocurrencies. The precedent study also has suggested interesting avenues for future research. One of these avenues concerns network security, which seems to have been enhanced by the emergence of smart contracts (e.g., Beck et al., 2016; Christodoulou et al., 2018; Nærland et al., 2017). The researchers suggested examining the impact of these improvements on internal corporate governance and the management of collaborative platforms. More recently, Shen et al. (2020) examined the ability of Blockchain to assess the quality of the secondhand product in a supply chain associate with an online platform. Varma et al.’s (2022) chapter in this handbook further explores the benefits and challenges of applying Blockchain frameworks for digital marketing.

This chapter focuses more specifically on the ability of a specific subset of the Blockchain, namely smart contracts, and their propensity to facilitate peer-to-peer exchanges in a global market of obtainers and providers (e.g., Alharby & van Moorsel, 2017; Ferrag et al. 2018; Nash, 2019). It also considers the possible impacts of these technological and legal developments on internal corporate governance and the management of collaborative platforms. Since the impacts of smart contract on the development of the CE remains quite unexplored, despite some relevant publications (e.g., Ertz & Boily, 2019; Ghilal & Nach, 2019; Nash, 2019), the present study seeks to fill this theoretical and practical gap in the literature on the subject.

Therefore, the main objective of this study is to enhance research combining the concepts of smart contract and CE and increase the comprehension of the possible impacts of this computerized transaction protocol on the CE. The secondary objective is to provide a better understanding of this combination to the manager of collaborative and digital platforms and the larger managerial sphere who could be interested in the research. The contributions of this exploratory study are twofold. First, the paper provides a literature review that encapsulates the concepts of smart contracts and the CE. Second, the study results in developing a theory-based research agenda to spur future research on the subject.

BACKGROUND

Lack of Innovation in Legal Contracts

Historically, the legal sector has never really entered the era of innovation (Cohen, 2018; Grady, 2017). However, the growing pressure in recent years to reduce the costs of services has prompted legal profes-

sionals to rely on technology (Nash, 2019) increasingly, hence the need among a relatively small amount of authors to raise questions about the quality of legal documents and services, and their improvement (Nash, 2019; Ribstein, 2010; Susskind, 2008). About ten years ago, Susskind (2008) identified the shift in legal practice towards the commodification of services. A few years earlier, Christensen and Raynor (2003) raised the issue that law firms were not investing sufficiently in innovation, creating barriers to improving the quality of legal services. In her study on the innovation of legal contracts linked to Blockchain technology and smart contracts, Nash (2020) draws on recent work by the renowned jurist George Triantis (i.e., Triantis, 2013) to identify barriers to innovation in the legal sector and the possible impacts of these technologies of Industry 4.0 on the practices of legal professionals.

Triantis defines innovation in the legal sector as "the creation of a new term that can be redeployed in other transactions and potentially standardized." (2013, p. 192). However, structural obstacles resulting from traditional practices and pressure from the legal environment prevent innovation. These obstacles include, but are not limited to (Nash, 2019; Triantis, 2013):

- The use of standard contractual clauses without modification;
- The lack of intellectual property protection for writers drafting new contractual terms;
- The market resistance to the adoption of new terms and conditions;
- The desire of legal entities to give more importance to customer service than to innovation.

As a rule, contracts drafted by legal professionals are not created from scratch but rather result from the integration of already existing terms and conditions stored on documents from previous transactions. There is, therefore, perpetual reuse of old contracts (Nash, 2019). This standardization is supported by what Triantis (2013) identifies as contractual modularity, i.e., the ability of the components of a contract to be separated or combined without compromising its effectiveness. Therefore, legal professionals can adjust the terms and conditions of the contractual document without compromising its understanding, thus reducing the costs associated with its drafting and interpretation. In fact, standardization and modularity have different advantages (Bettzüge & Hens, 2001; Nash, 2019; Triantis, 2013):

- Cost reduction through knowledge sharing;
- Ease of dealing with familiar terms, reducing reading time;
- A simplification of negotiations on terms between the two parties;
- Significant savings in time and costs in the three stages of the procurement process.

Despite its benefits, some authors find that standardization has the effect of restricting the ability of lawyers to develop and adopt new contractual clauses (e.g., Choi & Mitu Gulati, 2006; Korobkin, 1998; Triantis, 2013; Wickelgren, 2011):

- Standardization promotes the status quo of the industry by limiting innovation;
- The limited intellectual property protection available to writers restricts innovation because of the low probability of obtaining significant financial or other returns for writing new terms that are easily copied;
- Legal actors invest very little in research and innovation, which perpetuates the use of standardized and/or archaic terms;

- New contract terms rarely survive due to the delay between their drafting and their adoption by the industry as the ″new standard″.

However, barriers to innovation in the legal sector may be reduced with the relatively recent advent of technologies external to law firms (Nash, 2019), mainly through smart contracts.

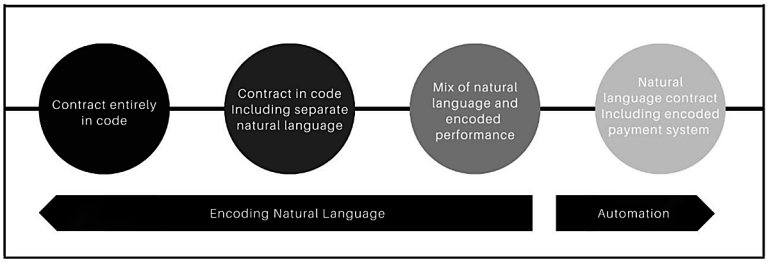
Defining Smart Contracts

In 1994, Nick Szabo, an American computer scientist, was the first to introduce the term ‘’smart contract’’ in a published article (Vigliotti, 2021). Szabo wrote:

A smart contract is a computerized transaction protocol that executes the terms of a contract. The general objectives of smart-contract design are to satisfy common contractual conditions (such as payment terms, liens, confidentiality, and even enforcement), minimise exceptions both malicious and accidental, and minimise the need for trusted intermediaries. Related economic goals include lowering fraud loss, arbitration and enforcement costs, and other transaction costs (Szabo in Vigliotti, 2021, p. 2).

Smart contracts are described by Szabo two years later as a set of digital promises. This set includes protocols that are adhered to by the parties. The specificity of these contracts lies in their self-executing nature. Szabo defined this aspect in correlation with an automatic vending machine (Nash, 2019; Smart Contracts Alliance & Deloitte, 2016), which performs the requested actions. More recently, Szabo underlined a lack of knowledge of smart contracts, which are often reduced to a single type of contract. In fact, there are several types of smart contracts (Smart Contracts Alliance & Deloitte, 2016). According to him, smart contracts are based on a spectrum shown in Figure 1.

Figure 1. Smart contract spectrum adapted from Szabo's figure
Source: Alliance and Deloitte (2016, p. 9)



The concept has evolved considerably since its introduction in the mid-1990s. Definitions have also multiplied with the evolution of technologies and expanding the literature in the digital field. Therefore, the literature is currently made up of many competing definitions (ISDA & Linklaters, 2017; Stark, 2016; Nash, 2019).

For example, in 1994, Szabo defined the smart contract as contractual clauses which can be embedded in hardwares and software. This definition mainly refers to the advancement of technology which has broadened the conventional concept of an agreement between parties. The Smart Contract is distin-

guished by acting as a distributed application that executes a logical sequence like any computer code running in a system (e.g., Blockchain). Indeed, Hang and Kim (2019) add that this logic can perform simple operations such as updating data or complex operations that require attached conditions. In fact, once the parties agree to interact under a set of conditions, and once the conditions are met, the agreement is automatically enforced.

Smart contracts are not evolving by the opposition of traditional contracts. Ante (2020) argues that these digital contracts run as software scripts, just like scripts that run on non-blockchain applications. According to this definition, a smart contract is a:

[…] script that is anchored on a blockchain or similar distributed infrastructure. As soon as it is triggered by a blockchain transaction and validated across the network, predefined actions are executed. Since the conditions of a smart contract are transparently stored on the Blockchain, it will always operate as all parties intend, which can reduce trust issues between the involved parties (p. 5)

Its simple configuration can take the form of an automated hotel room management system (Ante, 2020). For example:

- A guest checks out of the room;
- A notification is sent to the smart contract by a device connected to the room door;
- This software initiates the transaction on the Blockchain;
- Predefined processes are triggered (e.g., billing, cleaning staff assignment).

The example demonstrates the complex and straightforward nature of the mechanism underlying these digital contracts, which can be used for heavy processes such as billing or broader processes such as cleaning staff assignments. The development of technology and information systems is driving change within companies by digitizing business activities, changing the business model, and creating new opportunities (e.g., expanding revenue streams, changing the production chain, moving to digital or e-commerce) (BarNir et al., 2003; Ismanto et al., 2019). According to Ismanto et al. (2019):

Digitalization creates new ways to working, communicating, connecting, and cooperating simplify the process of transactions, collaborations, and social interaction occur in many processes such as customer servicing, approval, shipping, buying, selling and auction (p. 1).

The literature on smart contracts offers several definitions. However, "smart contracts are essentially lines of executable code accompanied by conditions; the latter are checked automatically and, if certain conditions are met, the code is executed and recorded on the blockchain" (Christodoulou et al., 2018, p. 185).

As previously stated, the idea of smart contracts was initiated by Szabo in 1994. However, the smart contract only really came into existence with the emergence of blockchain technology (Alharby & Moorsel, 2017). On a purely technical level, Blockchain can be defined as a decentralized and secure database of transactions based on decentralized nodes (i.e., miners) (Glaser, 2017; Ertz & Boily, 2019). Blockchain is characterized by (Ertz & Boily, 2019, p. 86):

- Decentralization;

Table 1. Synthesis of the elements of definition on smart contract previously cited

Authors	Smart Contract: Elements of Definition
Szabo (1994, 1996)	Computerized transaction protocol that executes the terms of a contract Set of digital promises Self-executing Includes protocols accepted by the parties Similar to an automatic vending machine Minimize the need for trusted intermediaries and risky transactions
Christodoulou et al. (2018)	Lines of executable code accompanied by conditions Recorded on the Blockchain
Hang and Kim (2019)	Contractual clauses Embedded in the hardware and software Can be used for simple or complex operations Set of conditions Automatically engaged
Ante (2020)	Software scripts Anchored on a blockchain or similar distributed infrastructure Execution of predefined actions Reduce trust issues between parties

- Persistence;
- Anonymity;
- Auditability.

Decentralization means that each transaction is subject to a validation process that does not require the mediation of a central trust agency (e.g., a central bank). Instead, the transaction is validated by a consensus algorithm that ensures data consistency in a distributed network (Zheng et al., 2017). Persistence makes it impossible to delete or cancel a transaction once it is included in the Blockchain. However, this does not prevent the discovery of invalid transactions (Ertz & Boily, 2019) nor the upgrading of contracts (Orcutt, 2019). Blockchain also ensures the anonymity of users who can interact through a generated address hiding their real identity (Kosba et al., 2016). Finally, auditability means that any transaction must refer to a previous unspent transaction (Nakamoto, 2008) which allows verification and monitoring.

Supported by a community of anonymous miners, blockchain configuration has evolved to allow several types of transactions. For this purpose, Godebarge and Rossat (2016) denote commercial or stock exchange transactions, contracts, agreements, and basic information entry or consultation operations. Research suggests that Blockchain has the capacity to reduce uncertainty, insecurity, and ambiguity in transactions by providing full transactional disclosure and by producing a single truth for all network participants (Beck et al., 2018, p. 1021). Recent studies highlight the positive effects and potentially transformational nature of Blockchain, including the reconfiguration of market exchange (e.g., Pazaitis et al., 2017; Beck et al., 2018; Ghilal & Nach, 2019) and the arising of a new business model: platform business model. Over the past decades, scientific research on e-commerce and digital platforms has expanded considerably. According to Schulze et al. (2020), the rapid development of digital platforms in the last decade has radically changed consumer interaction, resulting in the emergence of an entire platform economy. As the goods and services offered on these platforms are generally marketed through intermediaries, the introduction of blockchain technology diminishes the role of third parties by generating trust in the platform itself (Schulze et al., 2020).

Within the contemporary economic and technological landscape, digital platforms, e-commerce, and CE, also knowns as a sharing economy, collaborative economy (Botsman, 2013, 2015) or peer-to-peer sharing economy (Wirtz et al., 2019) are henceforth associated, since both are performed online and relayed on digital platforms (Acquier et al., 2017; Hawlitschek et al., 2018). However, while collaborative platforms have grown rapidly in recent years, many research avenues remain on the subject.

Defining the Collaborative Economy

The literature on the CE generally associates the topic with concepts such as the sharing economy, collaborative consumption, on-demand economy, on-demand services, group economy, independent economy, peer economy, digital economy, gig economy, and platform economy (Botsman, 2015; Ertz & Boily, 2019; Rinne, 2017). However, this study uses the term "collaborative economy" as it best fits the idea of a new socioeconomic model (Ertz et al. 2019; Tussyadiah & Pesonen, 2018) that involve the presence of peers and the use of the Internet and includes both redistribution and mutualization (Acquier et al., 2017; Ertz et al., 2019):

- Redistribution refers to exchanges involving a transfer of property;
- Mutualization refers to access to resources without transfer of ownership.

Under CE, the respective roles of consumers are transformed from purchasers to suppliers or service providers (Ertz & Boily, 2019). In other words, a particularity of the CE is to enable the transition between user and provider roles (e.g., an individual can rent a house on a platform at one time and decide to rent his own house on this platform at another time). According to Ertz et al. (2016), a consumer who provides a specific resource or service directly or indirectly through an intermediary (for example, a peer-to-peer platform such as Airbnb or Uber) is a *provider*. Conversely, a consumer seeking a resource provided directly by another consumer or indirectly by an intermediary is an *obtainer* (or a *user*). Table 1 presents the functions and actions of the user role and the provider role within the CE.

Table 2. Distinction between User and Provider in the CE

Role	User	Provider
Function	Seeks to use a resource provided either directly, by another consumer (i.e., the supplier), or indirectly through the mediation of an organization as a "facilitator intermediary" or "Intermediary mediator" (for profit or not for profit).	Provides a specific resource either directly, to a consumer (i.e., the user), or indirectly through a "facilitator" or an "intermediary mediator" (for profit or not for profit).
Action	Use - Redistribution: second purchase main (including the purchase of products refurbished or reconditioned), receipt of donation, barter; - Pooling: rental/loan/access for free or for compensation (excluding access resources from companies only).	Provision - Redistribution: sale of occasion, gift, barter (including reverse logistics or trade-in programs with an organization); - Pooling: rental/loan a free resource or for compensation.

Source: adapted from Ertz et al. (2016, 2018, 2019).

The CE involves a redistribution of goods through monetized exchanges, resale, exchange, or donation (Botsman & Rogers, 2010). Ertz et al. (2016) summarize these two dimensions by framing the collaborative consumption as: ‘‘The set of resource circulation systems which enable consumers to both obtain and provide, temporarily or permanently, valuable resources or services through direct interaction with other consumers or through a mediator” (p. 6).

The CE is primarily an economic model based on peer-to-peer relationships (Belk, 2014; Ertz et al., 2019; Botsman and Rogers, 2010), generating new forms of consumption and disrupting the retail and consumer services landscape. The phenomenon can be seen in various areas: food, lodging, transportation, and access to goods and services (Correa et al., 2019; Yeo et al., 2017). Composed of four broad subdivisions, the CE includes collaborative production, collaborative education, collaborative finance, and collaborative consumption (Botsman, 2013). It also makes room for performing practices such as trading, renting, pooling, or sharing, instead of traditional commerce (Ertz et al., 2016). Some authors (e.g., Albinsson & Perera, 2012; Arsel & Dobscha, 2011; Ertz et al., 2019) describe the CE by referring to the use of digital platforms intermediaries, such as Uber or Airbnb, as well as participation in face-to-face exchange meetings or a local exchange system (Albinsson & Perera, 2012; Arsel & Dobscha, 2011; Ertz et al., 2019). In fact, collaborative practices can be carried out both online and offline, in virtual or face-to-face networks. Recently, the online segment of CE has attracted the most attention in the academic world by supporting the emergence of innovative business models (Ertz & Boily, 2019). This is partly because the rapid development of CE relies heavily on digital technology (Acquier et al., 2017).

Table 3. Synthesis of the elements of the definition on the CE previously cited

Authors	Collaborative Economy: Elements of Definition Cited in the Chapter				
	Based on Peer-to-Peer Relationships (Face-to-Face or Online)	**Associate With Other Concepts (e.g., Sharing Economy, Collaborative Consumption)**	**Redistribution and Mutualization (e.g., Exchange, Resale, Donation, Trading, Renting, Pooling, or Sharing)**	**Economic or Financial Model**	**Relies on Digital Technology and Online Platforms**
Botsman and Rogers (2010)	✓		✓	✓	
Arsel and Dobscha (2011)	✓		✓		✓
Albinson and Perera (2012)	✓		✓		✓
Botsman (2013)		✓	✓		
Belk (2014)	✓			✓	
Botsman (2015)	✓	✓	✓		
Ertz et al. (2016)	✓	✓	✓		
Acquier et al. (2017)	✓				✓
Rinne (2017)	✓	✓			✓
Ertz et al. (2019)	✓	✓	✓	✓	✓
Ertz and Boily (2019)	✓	✓	✓	✓	✓

While collaborative platforms have grown at an unprecedented rate in recent years, many research avenues remain on the subject. In previous research, Ertz & Boily (2019, 2020) explored different possibilities offered by combining the concepts of the CE and technological advances, such as Blockchain and cryptocurrencies. The authors combined the CE and technological advances, such as Blockchain and cryptocurrencies. The precedent study also has suggested interesting avenues for future research. One of them concerns network security, which seems to have been enhanced by the emergence of smart contracts (e.g., Beck et al., 2016; Christodoulou et al., 2018; Nærland et al., 2017). The researchers suggested examining the impact of these improvements on internal corporate governance and the management of collaborative platforms. In this regard, this paper explores the ability of smart contracts to facilitate peer-to-peer exchanges in a global market of obtainers and providers (e.g., Alharby & van Moorsel, 2017; Ferrag et al., 2018; Nash, 2019). It also considers the possible impacts of these technological and legal developments on internal corporate governance and the management of collaborative platforms.

METHODOLOGY

As stated previously, the main objective of this study is to retrieve research combining the concepts of smart contract and CE and increase the comprehension of the possible impacts of this computerized transaction protocol on the CE. The secondary objective is to provide a better understanding of this combination to the manager of collaborative and digital platforms and the larger managerial sphere who could be interested in the research.

Therefore, this study adopts an exploratory, descriptive design for its ability to provide a preliminary understanding of a new and under-documented phenomenon. In addition, this design provides a framework for the formulation of new ideas and hypotheses. Finally, since studies conducted on CE and smart contracts are relatively recent, this article also aims to gather the state of the research on the use of smart contracts to understand its potential implication within collaborative practices.

This chapter follows the methodological approach undertaken by Ertz and Boily (2019). The academic databases of Scopus, Web of Science, Business Source Complete, and ABI/Inform to retrieve the articles containing the search terms “collaborative economy,” “sharing economy,” “blockchain,” and “smart contract.” the author then used the search strings “collaborative economy AND blockchain,” “collaborative economy AND smart contract” as well as “sharing economy AND blockchain,” “sharing economy AND smart contract,” “peer-to-peer AND smart contract,” “peer-to-peer AND blockchain” to retrieve relevant articles for the purpose of our study. The research outcomes were refined by retaining only publications in English, dating from 2010 onwards, as well as specific publication formats such as journal articles, books, conference proceedings, professional journal articles, and research reports.

ASSOCIATING SMART CONTRACTS AND THE COLLABORATIVE ECONOMY

Technological development seems to be at the heart of increasingly widespread collaborative practices by facilitating peer-to-peer exchanges. Peer-to-peer sharing applications are becoming an increasingly important part of the lives of consumers and providers of goods and services. For example, in 2019, the number of nights booked on the home-sharing platform, Airbnb, was reported as 326,9 million (Lock, 2021). Although collaborative practices and peer-to-peer exchange activities existed before the

emergence of digital platforms (Ertz et al., 2019), the main factors influencing the development of CE are due to technological advances, which acted as catalysts (Dervojeda et al., 2013; Demailly & Novel, 2014; Daunorienė et al., 2015; Ertz & Boily, 2019; Hamari et al., 2016; Selloni, 2017). For example, social networks, Internet 2.0 in general, georeferencing, or online payment systems are all technological advances contributing to CE development (Sun & Ertz, 2021a, 2021b).

As previously mentioned, the smart contract acts like any other type of contract but is distinguished by its programmable nature via computer code. This digital codification makes it self-executing, and this, in an automatic way, and is defined beforehand by the stakeholders (i.e., co-contractors).

Technically, the smart contract ensures that the obligations of the parties are fulfilled. An example would be the case where:

- A user ''A'' wishes to mail a package to another user ''B'';
- The two users have not met beforehand and are afraid of being victims of a fraud or a scam (i.e., that the package will not be paid for A or that it will never be delivered for B);
- For this reason, it has been agreed that user B will pay user A when the package is received by B.

With the smart contract, this last step is done automatically and securely, without any further intervention. In other words, it prevents one party to the transaction, for example, user A, having received payment from B, from unilaterally deciding not to send the package by mail and to keep it. With the smart contract, this is not possible because the program automatically does this for the users, increasing the security and efficiency of transactions. In fact, the smart contract contains a set of rules under which the parties agree to interact with each other. When the condition meets the pre-defined rules, the agreement is automatically applied by the smart contract (Hang & Kim, 2019). Behind this growing importance of Industry 4.0, the literature on the subject (Bettzüge & Hens, 2001; Ertz & Boily, 2019; Nash, 2019; Triantis, 2013) identifies several vital drivers for influencing consumers' intentions to participate in the peer-to-peer economy and, their willingness to experiment smart contract: Cost reduction, Self-execution, Security and Trust. Considering these components drawn from the literature, it seems relevant to observe in more detail the possible impacts of smart contracts and their benefits on digital platforms and peer-to-peer exchanges within the CE. The next section aims to define these drivers from the perspective of consumers participating in the collaborative platform economy to understand the CE's specific characteristics that smart contracts can support.

IDENTIFYING THE DRIVERS OF THE USERS' INTENTIONS IN THE PEER-TO-PEER ECONOMY

Trust

Several authors have widely studied the concept of trust in various disciplines (e.g., Friedman et al. 2000; Hoffman et al., 1999; Jarvenpaa et al. 1999; Pavlou & Gefen, 2002; Ratnasingham, 1998; Williamson 1993). The authors raise the following components:

- Trust is the belief that the other party's behaviors will meet expectations (Williamson, 1993) without exploiting their vulnerabilities (Pavlou & Gefen, 2002);

- Trust evolves in an environment that cannot be controlled by the parties.

With the rise of the digital economy, consumers interacting on online collaborative platforms have to deal with a large number of interactions and an intensification in the complexity of transactions that result in an increased sense of insecurity and the need to acquire trust towards the platform and its other users (Friedman et al. 2000; Jarvenpaa & Teigland, 2017; Jarvenpaa et al. 1999; Ratnasingham, 1998). Indeed, users must have a high degree of confidence in the platforms' suppliers and intermediaries. According to Hoffman et al. (1999), this component is the main reason that limits users' access to platforms for purchasing goods and services online, mainly secondhand. Also, the perception of a higher risk seems to reduce users' intention to proceed with the online purchase (Jarvenpaa & Teigland, 2017; (Jarvenpaa et al., 1999) on digital platforms and sharing networks. This centrality of trust in online secondhand marketplaces has been more explicitly articulated by Armstrong Soule and Hanson in their chapter on secondhand exchange in the context of the platform economy (Armstrong Soule & Hanson, 2022).

According to Belk (2007), sharing is a voluntary activity representing an alternative to private property. Indeed, it defines the action of sharing carried out between two or more individuals as "the act and process of distributing what is ours to others for their use as well as the act and process of receiving something from others for our use" (p.127). Sharing properties, time or tools, and more with family members, neighbors, or total strangers requires trust (Belk, 2009; Botsman, 2016). In a 2011 study, Hong and Cho conclude that consumer behavior on an online consumption platform is primarily determined by their trust in intermediaries. Therefore, it is less strongly determined by the reputation and trust in the suppliers of goods and services. This means that consumer trust in collaborative platforms and intermediaries is more important than trust in providers of goods and services. This could be explained by the fact that intermediaries govern the entire transaction process (Hong & Cho 2011, Pavlou & Gefen, 2002), giving this impression of trust among platform users. Pavlou and Gefen (2002) then refer to a form of institutional trust that makes it possible to feel at ease in an unfamiliar or new environment. Institutional trust is usually built with the help of legal measures like insurance, guarantee, legal remedies, etc. (Pavlou & Gefen, 2002). Some authors (e.g., Bardhi & Eckhardt 2012; Botsman, 2016; Hawlitschek et al., 2016; Möhlmann 2016) have identified elements that influence users' trust in the collaborative practices. A conceptual model differentiates three variants of trust (Botsman, 2012; Hawlitschek et al. 2016; Wu et al., 2010):

- Trust toward peers (e.g., both suppliers and users are able to review and rate one another and their products);
- Trust towards the platform (e.g., various measures to ensure privacy protection, transaction security, and transaction integrity);
- Trust towards the product acquired through access to shared goods or services.

According to Hawlitschek et al. (2016), a higher level of trust in a collaborative platform significantly increases the sharing intentions of users and service providers. Smart contracts, also known as self-executing contracts, remove the need for the parties involved to trust each other before joining a one-time transaction. They don't need to trust each other to be sure that the contract terms will be honored. They also do not need to hire lawyers to seek redress for breaches of conditions. In the event of a breach, smart contracts automatically trigger the settlement agreed upon by both parties. In fact, under this computerized transaction protocol, user trust in other parties is not established by economic or political institutions but,

as for the Blockchain, by the technology alone (Warburg, 2016). Warburg (2016) argues that Blockchain establishes user trust on digital platforms by reducing uncertainties, especially denial. This means that once the contract has been concluded between peers, there is no longer any possibility of renunciation, and the transaction must be completed. This transaction, previously decided between the parties, will be executed exactly as it has been codified. Therefore, the peers interacting on a collaborative platform cannot interfere or change the course of the transaction, renege on the agreement, or change their minds. The transaction has been initiated and will be completed.

Third-Party

While trust towards platforms and users has been identified in the literature as a driver of individuals' intention to perform collaborative practices online, the very nature of the smart contract can potentially mitigate this requirement. In a verbal agreement, either party to the agreement may voluntarily decide to go back on their word. As noted earlier, the parties to a smart contract are subject to numerical obligations that prevent a voluntary breach of the exchange or transaction. Indeed, the smart contract is self-executing in nature and differs from other contracts in its design. This computerized transaction protocol has been created so that the transaction executes itself when the conditions (i.e., codifications) are met (Nash, 2019).

In other words, the smart contract removes the need for a third party to intervene in the execution of the agreement. This is made possible by its self-executing nature, which allows it to enforce the law and the terms of the agreement. In fact, no breach of contract is possible since the transaction can only be executed if all the conditions written in the computer programming codes are respected. The potential ambiguity of terms present in the legal field is then reduced by the computer language and the adoption of this technology.

Thus, it is no longer necessary to develop a higher level of trust with users or a third party before completing a transaction. The automation of smart contracts ensures the proper execution of the transaction. This means that the self-executing nature of these contracts represents an important advantage for peer-to-peer exchanges (e.g., bitcoin trading) by ensuring the realization of secure transactions independent of external party intervention. According to Yu et al. (2020):

The key attractive property of smart contracts is mainly related to their ability to eliminate the need of trusted third parties in multiparty interactions, enabling parties to engage in secure peer-to-peer transactions without having to place trust in external parties (i.e., outside parties that help to fulfill the contractual obligations) (p. 1-2).

These authors also maintain that smart contracts represent one of the best applications of blockchain technology that supports many online business transactions through decentralized and tamper-proof execution. As stated previously, the smart contract ensures that the obligations of the parties are fulfilled (e.g., the transfer of a package by user A to user B) but, unlike a traditional contract, the perception of trust is ensured by the computer processes embedded in the codes, rather than by a party, such as a legal professional, who ensures the execution of the contractual clauses. About the benefits of smart contracts in the legal field, Nash (2020) argues that:

[…] the self-executing nature of a smart contract effectively eliminates the need for a third-party enforcer since no breach is ever allowed to occur in the first place. Additionally, there is also far less potential for ambiguity in computer programming code—which is the basis for smart contracts—than there is in words that comprise natural language agreements (p. 2019).

It must be said that intermediaries like Airbnb or Uber offer attractive advantages, both for buyers and for suppliers. Indeed, peer-to-peer platforms allow in particular (Edelman, 2014):

- Buyers to easily find what they are looking for;
- Buyers to be able to compare prices and products;
- Suppliers to have greater visibility (e.g., choice of marketing strategy);
- Establish standards in a market.

Nonetheless, suppliers who do not comply with the requirements or fee payments may be excluded from the platform. For example, some hosts were recently suspended for violating terms on Airbnb after collecting personal information from guests (The Australian Financial, 2021).

In principle, competition between digital and peer-to-peer platforms (Ikeda & Marshall, 2018; Gomber et al., 2018) can improve the position of providers who may decide to leave the platform for any other platform that would charge lower fees. However, it is relevant to note that some consumers buy directly from the platform because the supplier does not offer an alternative for online purchases (Edelman, 2014). For example, a restaurant owner who does not offer a personal platform but allows ordering meals to take out on an online ordering platform (e.g., Doordash, Skip the Dishes, Uber Eats). According to Ertz and Boily (2019, p. 90):

[b]y moving transactions and governance from collaborative platforms to Blockchain, it is possible to reduce costs and redistribute to users the share of value currently held by intermediaries (e.g., Amazon, eBay, Uber or Airbnb). In general, these savings are supported by the arrival of intelligent contracts relying on computing codes.

Based on the work of Baskin (2017), Nash (2020) also brings to light the ability of smart contracts to reduce transaction costs.

Costs Reduction

Ronald Coase's seminal article on The Nature of the Firms and Their Costs, published in 1937, provides a theoretical framework for understanding transaction costs. The latter refers to all costs associated with realizing an exchange (i.e., the costs of origin, negotiation conclusion, monitoring, and execution of a contract). Other researchers have subsequently studied transaction costs (e.g., Alchian & Demsetz, 1972; Williamson, 1981; Cheung, 1983; Grossman & Hart, 1986; Holmström & Milgrom, 1991) who identified key concepts: search, bargaining, and negotiation costs, and monitoring costs. To this end, Oranburg and Palagashvili (2020) claim that technological development has the ability to reduce transaction costs and that this cost reduction approach can be applied to the sharing economy (or the collaborative economy) and the distribution of goods and services. (Munger, 2018).

Through their self-executing nature and their ability to perform transactions between peers without a third party's intervention, many authors allow for a reduction in costs (e.g., Allam & Jones, 2019; Giancaspro, 2017; Romano & Schmid, 2017) agree that smart contracts. This cost reduction can be seen at two levels: time-related costs and financial costs. According to Shahab and Zaheer (2020), implementing smart contracts in an organization, as opposed to traditional contracts, considerably reduces the need for a third party to verify and ensure the security of transactions or compliance with the terms of a contract. This is because smart contracts are initially programmed to minimize human error and thus the time associated with processing the transaction (Shahab & Zaheer, 2020), as well as the monetary costs that such errors could generate. Perhaps one of the most important advantages of automated contracts is that they eliminate the need for a vast chain of intermediaries that are widely present in the sphere of the CE and digital platforms.

It was previously indicated that the codes that form smart contracts could lead to the deletion of intermediaries in the transaction (e.g., finance or legal profession). These codes make the intervention of a third party non-essential since operations are only executed when specific conditions are met (Deloitte Development LLC, 2017). Smart contracts are often associated with blockchain technology but can be combined with other distributed ledgers to allow cost reductions (Ertz & Boily 2019; Huckle & White, 2016; White, 2017; Di Gregorio & Nustad, 2017), which can benefit the CE. Indeed, these cost reductions can spread in various fields already invested by collaborative platforms, such as the sharing of IT services, the rental of apartments and workspaces, carpooling services, market platforms, decentralized or distributed social networks (Sun et al., 2016; Swan & De Filippi, 2017; Dobrovnik et al., 2018).

In terms of reducing time-related costs, smart contracts have the ability to increase efficiency while reducing transaction time (Giancaspro, 2017). One of the key requirements of smarts contracts is to validate all terms and conditions explicitly and in detail. As noted above, the margin for human error is minimized by the coding. Since transactions cannot be executed until all of the conditions that have been scheduled are met, smart contracts eliminate the need to consult a legal professional several times. This means that the consultation time associated with the services of a lawyer is diminished. Furthermore, since breaches of contract are not possible due to the self-executing nature of these digital documents, the parties do not have to worry about the fact that the rules and clauses will be respected at the time of closing the transaction. This has dramatically reduced the time prior to the exchange of goods or services without compromising the efficiency and security of the transaction. In addition, the ambiguity in the computer programming codes underlying smart contracts is greatly reduced compared to the legal terms typically found in contracts, thus minimizing the time spent interpreting traditional legal documents. Overall, the trust of the parties in the proper execution of the contract can potentially reduce hesitation and time devoted to face-to-face meetings.

By eliminating the potential hassle and contract breaches, smart contracts also reducing the need for third-party enforcement (Bacina, 2018). This has the effect of reducing, at the same time, the financial costs associated with the intervention of a legal or financial services professional. Also, the cost associated with the presence of platform intermediaries is diminished, considering that their intervention is actually required to ensure the security of transactions and whose services are generally accompanied by high fees, which is often more or less 15% (e.g., Airbnb, Foodler, GrubHub). In fact, if the consultation time is reduced, so are the associated costs. The security of the transactions also minimizes the potential costs related to possible legal action, as well as the monetary expenses associated with pre-agreement consultation fees. Negotiations between lawyers are also reduced, as are the associated fees.

While smart contracts associated with collaborative practices allow users and platform providers to make purchases and sales of goods and services directly with each other, without the intervention of an intermediary who generally reserves a portion of the profits or who does apply fees, their application supposes particular challenges. Given the drivers supporting consumers' motivations to carry out collaborative practices online, it seems that one of the main challenges for the widespread adoption of smart contracts in this sphere of economic activity lies in the programming of codes. The parties to the contract may have to rely on computer programming professionals who must capture the agreement in code form (Levi & Lipton, 2018). In a context where the elimination of intermediaries seems to represent a significant advantage, especially in terms of cost reduction, it is justified to fear adding new players in the transaction (e.g., computer programmers). Nevertheless, it seems that this obstacle can be alleviated with basic functions and text templates that can indicate the parameters for the creation of a simple function (e.g., coding of a simple function that extracts late fees from another party's wallet if payment has not been received by the agreed date) (Levi & Lipton, 2018). Overall, it is assumed that smart contracts have the potential to transform peer-to-peer exchanges while providing significant benefits in terms of efficiency, time savings, and financial cost reduction without affecting user trust.

THEORETICAL IMPLICATIONS

The present research aims to provide a conceptual analysis of the influence of smart contracts on the interactions between users of collaborative platforms. The author supports that smart contracts can potentially reduce the role, the need, and the importance of intermediaries, by providing a simplified setting to perform peer-to-peer exchanges. The study also identifies the drivers supporting user intentions to interact in the peer-to-peer economy. The drivers have been analyzed in order to highlight the benefits for users and providers to perform transactions reinforced by smart contracts. If the growth of digital platforms and e-commerce arouse the growing interest of researchers, many avenues still need to be explored. In this vein, this research has the effect of increasing knowledge around consumer behavior and peer relations in the CE. Considering that this study aims mainly to expand the literature on the CE, the conclusions drawn can potentially serve as a basis for future research, in particular empirical research which will make it possible to better understand the intentions of users to participate in collaborative exchanges and, better perceive the benefits of smart contracts for peer-to-peer interactions.

MANAGERIAL IMPLICATIONS

From a managerial viewpoint, the abovementioned theoretical implications mean that genuinely sharing platforms could tremendously benefit from the smart contract by increasing the number of successful transactions associated with time-saving costs while ensuring user confidence. As with blockchain technology, smart contracts are likely to have more positive impacts for social platforms and models of economic solidarity, without profit-seeking, rather than for economic intermediaries. In fact, Ertz and Boily (2019) posited that eventually, the highly automated, transparent, and decentralized blockchain technology might eventually make for-profit digital intermediaries redundant since their raison d'être will not be justified in the light of higher solutions offering superior performance, such as smart contracts. They concluded the same for social media platforms enabling social commerce transactions (e.g., Face-

book commerce, Instagram commerce) (Ertz & Boily, 2020). On the other hand, organizations might benefit more positively from implementing smart contracts for repetitive transactions that do not require modifying or adjusting the terms of a contract, especially in terms of trust and reduction of monetary and time costs (Levi & Lipton, 2018).

While the Internet appears to be a growth factor for e-commerce (Kampani & Jhamb, 2020), user trust and security are essential elements to consider in terms of peer-to-peer exchange in the CE. In light of what has been presented, the smart contract seems to facilitate the exchange of goods and services by increasing the perception of security and confidence. Furthermore, this sense of security identified in the literature can potentially represent a significant benefit for managers of collaborative platforms who would not have to request the intervention of a third party, sometimes expensive, without affecting users' confidence.

In terms of innovation, an increase in efficiency and effectiveness, particularly in costs and time, which is generally sought by organizations, allows to obtain a competitive advantage on the market and in terms of value creation (Ertz & Boily, 2019; Moreira et al., 2012; Chuwiruch et al., 2015). In addition, smart contracts can also support innovation in the legal field (Nash, 2019) by including benefits for clients or platform users in the form of lower prices and greater use of professional and legal services, as well as increasing access to legal practices and justice (The Practice, 2015).

LIMITATIONS AND FUTURE RESEARCH AVENUES

The present study does not claim to have covered all the avenues in the field of collaborative practices and the impacts or uses of smart contracts. However, some relevant possibilities for future researches, as well as new managerial questions, were presented.

Overall, the present study emphasizes the focus on the association between smart contracts and CE in an attempt to fill a significant void in the literature. The objective of this study was to promote researches on the impacts of smart contracts on the CE. The hypothesis that this technology has major impacts on the development of collaborative practices and on the entire ecosystem underlying these practices seems to be confirmed in several ways. Most importantly, the smart contract allows digital platform users to negotiate directly with each other and create value without the intervention of a costly intermediary.

In addition, this study suggests potentially interesting avenues for future researches. One of these avenues is the relative immaturity of the use of smart contracts in the CE, but also in the global market. Smart contracts seem to facilitate the exchange of goods and services by increasing the perception of security and confidence. Yet, no empirical research involving experimentation on users or other methodological approaches has been carried out on the subject. A significant increase of studies among users of these platforms would provide a better understanding of the impact of the perception of trust and security during transactions between peers without the presence of a third party.

As organizations are still in the early stages in the application of smart contracts, practices for implementation are still evolving. Also, the literature on the subject remains sparse and scarce. At the moment, it would therefore be wiser to conclude hybrid agreements combining textual terms and codes during transactions. However, future researches and practical applications will provide a better understanding of the possible uses of smart contracts and will improve their insertion in consumer practices, online transactions, legal services, and peer-to-peer exchanges.

CONCLUSION

It seems that collaborative platforms will be subject to transformations in terms of governance, transaction costs, and user trust in the near future. With the advent of smart contracts and Blockchain, the growth of digital platforms has allowed individuals to interact on a larger scale in terms of peer-to-peer exchanges. Digital platforms have changed the setting of transactions by supporting the secure interaction between individuals and the perception of confidence within collaborative exchanges. In fact, collaborative platforms stand out as an infrastructure for sharing or redistributing goods or services between users, as well as establishing and maintaining trust for the realization of exchanges. Overall, this study demonstrates the possible impacts of smart contracts on the CE and peer-to-peer exchanges. In particular, these contracts ensure users' trust, acquirers and suppliers, without the intervention of a third party. Therefore, the development of technologies can support peer-to-peer exchanges and increase the practices stemming from the CE by allowing two consenting parties to negotiate directly with each other without using a costly intermediary, including CE platforms or social media platforms. Essentially, technological development and the increased use of digital platforms have led to an intensification of peer-to-peer exchanges such as online product reselling, car-sharing via the web, or co-hosting. Therefore, a host of tools, processes, and systems will be needed to better equip users and providers in performing exchanges. Smart contracts, in particular, and the Blockchain, in general, will undoubtedly be part of that great transformation due to their superior performance vis à vis current systems and procedures. Therefore, both researchers and practitioners should understand the ins and outs of that technological nexus, which is yet to reveal its e-commerce and platform economy opportunities.

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KEY TERMS AND DEFINITIONS

Blockchain Technology: A decentralized and secure database of transactions based on decentralized nodes, typically miners.

Collaborative Economy: A set of resource circulation systems that enable consumers to obtain and provide, temporarily or permanently, valuable resources or services through direct interaction with other consumers or through a mediator.

Collaborative Platforms: An infrastructure for the mutualization or redistribution of goods or services between users, as well as the establishment and maintenance of trust for the realization of exchanges.

Intermediary: A third-party who facilitated the use of the collaborative platform.

Providers: Individuals offering a private resource, usually underutilized or unused, and holding the resource for provision (e.g., sale, donation, swapping, rental, or co-use).

Smart Contract: Self-executing contract with the terms of the agreement between users and providers being directly written into lines of code.

Users: Individuals seeking to obtain (e.g., secondhand purchase, reception of donations, swapping, renting, or co-use).

Section 3

Granting Products Multiple Lives Through the Platform Economy

Chapter 6
Overview, Framework, and Research Propositions of Secondhand Exchange in the Platform Economy

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ABSTRACT

This chapter describes secondhand exchange in the context of the platform economy. Consumers have long engaged in reselling and buying used items as an alternative to purchasing firsthand items, but researchers have little understanding of how these exchanges are different theoretically from traditional consumption patterns. This chapter presents a clear definition of secondhand exchange and separates it from related concepts, including lateral exchange markets, the sharing economy, access-based consumption, and collaborative consumption. It is suggested that secondhand exchange and related consumer behavior in the platform economy can be understood by considering platform differences related to 1) when and how product ownership is transferred (i.e., direct and indirect), 2) the level of platform intermediation (i.e., low, moderate, or high), and 3) buyers' knowledge of reseller identity (i.e., unknown, obscured, and known). Research propositions are presented for these dimensions for each facet of the consumption process (i.e., buying, owning, and disposal).

INTRODUCTION

Consumption is often stereotypically thought of as a linear process where a consumer makes a purchase of a new item from a traditional retailer, owns and uses the product until its useful life is over, and then disposes of it. However, secondhand exchange activities have been commonplace throughout history,

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resulting in a different pattern of acquisition, ownership, and disposal. These types of transactions wherein consumers both resell their owned items and buy used items from other consumers are often ignored in consumer literature and have been unfortunately neglected in research attention, yet prior research has hinted at its vast scale and scope (Minter, 2019). However, due to the explosion of consumer connectivity brought on by the introduction of the platform economy (Ertz et al., 2017), combined with economic pressure and environmental motives, the secondhand exchange economy is experiencing an explosion of growth and innovation as suggested in the article entitled, *The Rise of Re-commerce: Why Everything Old Is New Again* (2020) published online at Knowledge@Wharton. The authors aim to contribute to the small but burgeoning research in secondhand exchange and how this consumer behavior plays out in the platform economy.

Although consumer participation in this phenomenon is increasing steadily, consumer-to-consumer (C2C) activities in general and secondhand exchange in particular both remain understudied. More specifically, understanding of how secondhand exchange is nested within the platform economy and how platform brands, as well as traditional retail brands, can play a critical role in facilitating this type of exchange is severely lacking. Further, the technological landscape has expanded consumer connectivity in ways that alter exchanges between consumers. Given these gaps in understanding, this chapter provides a framework for interpreting secondhand exchange platforms and identifies areas of future research related to platform type in order to better understand consumer behavior in secondhand exchange.

This chapter asks, how do the secondhand exchange platform and its features impact consumer-to-consumer secondhand exchange? What features have meaningful effects on key consumer perceptions such as contagion (both physical and magical), scarcity, and trust? What consumer-level factors interact with the type of platform (i.e., online vs. offline, stand-alone vs. nested)? Our theorizing suggests that secondhand exchange platforms have unique influences on the consumer's role (i.e., buyer vs. seller) as well as the nature of ownership and ownership transfer.

The information presented and the research proposed herein are meant to assist both consumer researchers and marketing practitioners as they explore, understand, and participate in secondhand exchange within the platform economy. First, by clearly defining secondhand exchange and identifying the deviations from consumer patterns known in more traditional types of exchanges, the authors provide helpful bounds to understand this phenomenon beyond historical associations (e.g., garage sales and flea marketers), particularly as it is nested within technological advancements and digital structures. Second, as consumer-to-consumer activities such as sharing and access-based consumption flourish, differences between related concepts are clarified to more clearly guide future research. Third, by providing a framework to understand the way secondhand exchange is facilitated within the platform economy, specific secondhand exchange brands can be differentiated based on the type of intermediation and the way in which member identity is displayed. Finally, this research also has an impact on traditional retailing as not only are major brands' products the items that are being resold by consumers on these platforms—which can affect perceptions of the brand—but brands (e.g., Patagonia, Eileen Fisher) are also entering the secondhand exchange world themselves as resellers.

In this chapter, secondhand exchange is clearly defined and delineated from related consumer-to-consumer activities and other non-traditional consumer exchange behavior. The authors suggest two meaningful dimensions by which the facilitation of secondhand exchange can vary, specifically the dual role of buyer and seller that consumers may adopt and, relatedly, the transitory nature of product ownership. Next, three key features that meaningfully differentiate secondhand exchange platforms are identified and a framework for direct secondhand exchange is presented based on member identity type

and intermediation level. Three related areas of impact are suggested and research propositions related to these dimensions are put forth for each stage of the consumption process.

DEFINING SECONDHAND EXCHANGE

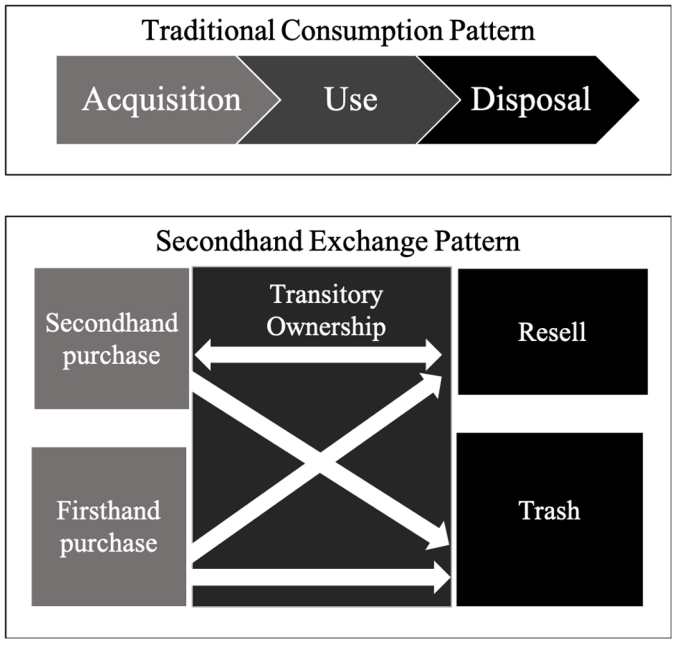
Secondhand exchange refers to transactions whereby a consumer who legally possesses an item transfers ownership of it to another consumer in exchange for money, or less often, equivalent traded item(s). Ownership of an item must be transferred, therefore secondhand exchange excludes access and sharing transactions (Belk, 2014). Secondhand exchange does not include items that were created by the consumer for the purpose of selling—those which are "new" in that they are being sold for the first time—such that art and maker/craft exchanges are excluded. The necessary condition of money or goods exchanged also excludes gifts, hand-me-downs, inheritance of heirlooms, or special items from family and friends, donation behaviors, and other giving, such as Buy Nothing online group activities (Sherry, 1983). The focus here also excludes professional resellers or retail intermediaries—people who buy for the sole purpose of reselling and/or "flipping," such as the owner of a thrift store. Secondhand exchange transactions can occur directly from consumer to consumer, such as someone purchasing a car from a Craigslist ad or selling knickknacks at a garage sale, but can also be facilitated indirectly through a third party, such as when a college student sells or buys used clothing at a store like the Buffalo Exchange, a retailer that sells pre-owned goods. To be considered secondhand exchange, money (or like-valued goods) must be exchanged for items that are not "new" (Guiot & Roux, 2010). Secondhand items may be owned for any length of time from very briefly to decades or more, and are subject to any level of usage from no use, such as a garment unworn that is "new with tags" (Armstrong Soule & Hanson, 2018) to heavy use (Chu & Liao, 2007).

In secondhand exchange markets, participants can be buyers of used goods or resellers of preowned items, and often individuals play both roles. Every reseller at one time was a buyer, and every buyer is a potential future reseller. The "switchover process" where buyer becomes a reseller (Ertz & Sarigöllü, 2021) can happen at any point during ownership. Of interest are consumer decisions to purchase used items as well as why, when, where, and how to resell owned items. Therefore, secondhand exchange processes are related to all stages of the consumption process (i.e., buying, owning, and disposal; see Figure 1).

Variants of secondhand exchange are referred to under many different names such as used, reselling/resale, buy sell trade, thrift, preloved, pre-owned, second-order market, vintage, peer-to-peer, recommerce, two-sided markets, and more. There are also many types of secondhand exchanges long in existence, such as garage sales, auctions, flea markets and swaps, classified ads, car boot sales, consignment shops as well as some industries which blend new and used items in traditional retail spaces (such as car dealerships and music shops).

More recently, with the rise of digital platforms, newer forms of secondhand exchange have been introduced (Price, 2019). Some of these transitions into the digital space are straightforward, such as classified ads moving from physical newspapers to Craigslist, auctions moving from stockyards and galleries to eBay and Alibaba, and a consignment shop introducing an online retail presence. However, there are also newer variants like the super-powered Poshmark, which in some ways is very similar to a consignment shop but different in that it allows buyers and resellers to connect directly to manage the transactions. Further, examples like Branded Buy Sell Trade (BST) groups on Facebook, where consumers buy and sell items restricted to certain brands with no transaction mediation, fees, or protection

Figure 1. Comparing traditional consumption patterns with secondhand exchange patterns
Source: The authors.



from a platform, are unique from older forms of pre-internet secondhand exchange (Armstrong Soule & Hanson, 2018).

Secondhand Exchange and Other Forms of Nontraditional Consumption

Consumer-to-consumer (C2C) exchange encompasses a vast array of interactions and marketplaces that entail exchange between individuals and offer an alternative to traditional business-to-consumer (B2C) marketplaces on which consumer research is typically focused. The C2C landscape contains interactions, conversations, and relationships as well as exchanges. Peer-to-peer is another label that is often used within the platform economy to describe these C2C marketplaces that must be intermediated by a computer/smartphone (Plouffe, 2008). These types of exchanges continue to increase and disrupt the traditional retail marketplace (Wirtz et al., 2019), and secondhand exchanges are one specific type of C2C exchange.

Secondhand exchanges are often conflated with other nontraditional or evolving market-based exchanges, particularly since the rise of the digital landscape (e.g., Belk's (2014) discussion of semantic confusion around sharing and commodity exchange). These nontraditional C2C markets have been referred to as two-sided markets, hybrid economies, multi-sided markets, and more. Notable areas that are receiving research attention are collaborative consumption (Ertz et al., 2019), the sharing economy (Belk, 2010), access-based consumption (Bardhi & Eckhardt, 2012), and lateral exchange markets (Perren & Kozinets, 2018). While there is a large degree of overlap between these concepts and little agreement around the definitions and boundaries of each, this section will describe how secondhand exchange is distinct from or fits with each of these concepts.

Collaborative consumption includes all transactions outside of the conventional selling pattern, such as sharing, bartering/trading/swapping, renting, and gifting (Botsman & Rodgers, 2010). These consumption activities are described as transactions that are "participative, peer-oriented and … informal" (Ertz et al., 2019). Often researchers in secondhand exchange consider reselling activities as fitting into this type. In fact, secondhand exchange is an example of a hybrid economy (Scaraboto, 2015), as both market and non-market elements are present in these exchanges. Ertz et al. (2019) offer an updated definition of collaborative consumption as exchanges in which consumers both receive and provide valuable resources or services, temporarily or permanently and directly or indirectly with one another. Clearly, secondhand exchange is an example of collaborative consumption, albeit only those that fit the "permanent" criteria through redistribution or the process of transferring ownership (Ertz et al., 2019). Importantly, this definition separates secondhand exchange from other transactions that can be categorized as "sharing" and access-based because neither of these models relies on permanent ownership exchange (Armstrong Soule & Hanson, 2018). Access-based markets rely on no transfer of ownership and often refer to services or intangibles (Bardhi & Eckhardt, 2012), both of which are excluded from secondhand exchange. When sharing is defined as "the act and process of redistributing what is ours to others for their use and/or the act and process of receiving or taking something from others for our use" (Belk, 2007, p. 162), secondhand exchange may be considered as a sharing practice. However, it is further professed that sharing encompasses access to as well as temporary possession of tangible goods, not only when ownership is retained by the provider/lender but also when the product's ownership is extended to mutuality. This means that it is considered owned by more than one individual at the same time, or "ours." Further, in sharing, often no money or like-valued goods are exchanged although they can be (Belk, 2010). Belk (2014) would most likely categorize secondhand exchange as "pseudo-sharing" since it is certainly related to commodity exchange rather than the item being considered "ours." Arnould and Rose (2016) bring the important critique that the "sharing" label can conceal or downplay the economic motives that individuals often have in these C2C exchanges. Therefore, secondhand exchange is clearly excluded from both these types of transactions—access and sharing.

Another important framework related to collaborative consumption and peer-to-peer networks is Perren and Kozinets' (2018) lateral exchange markets (LEM). In order to address some of the overlap and fogginess around the differences between access, giving, sharing, collaboration, etc., Perren and Kozinets (2018) present a framework organizing these technologically-mediated interactions based on consociality and platform intermediation. Consociality refers to the co-presence in time of the individuals allowing for social interaction (Hannerz, 2016). Although this framework is helpful in understanding different types of secondhand exchange providers and the similarities to other providers, it is meant to encompass and organize more types of transactions than the focus herein. Further, secondhand exchanges vary on these dimensions (both consociality and mediation) such that these exchanges can be categorized as each type of LEM depending on the platform.

This chapter presents a more nuanced framework that applies more specifically to secondhand exchange rather than covering all other types of exchanges. Therefore, this chapter complements Henninger et al.'s (2022) work in this book on online fashion rental, which is a sharing practice. This emphasis on secondhand exchange, more specifically, is important because the exclusion of exchanges where ownership is not transferred allows a deeper understanding of secondhand exchange. Because ownership transfer is so fundamental to secondhand exchange, the framework presented herein focuses on mediation and identity rather than consociality, as these dimensions are predicted to have meaningful implications for consumer behavior. Recent research in swapping (e.g., Philip et al., 2019) is relevant to secondhand exchange as

defined herein but covers a specific type of secondhand exchange as the acquisition and disposal are more tightly connected. Armstrong Soule & Hanson (2018) suggest that the volume of trading, specifically in Branded BST groups, is extremely small compared to the total volume of secondhand exchange. Now that secondhand exchange is clearly defined as transactions where used products are exchanged between consumers, it is important to explore the elements that make these exchanges different than traditional ones and worthy of study related to consumer behavior.

Unique Elements of Secondhand Exchange

Dual Roles

In traditional consumption, the consumer plays a clear role at each stage. In acquisition, s/he considers options, decides, makes a purchase from a retailer, and gains ownership of the item. At some time in the future, the consumer decides how to dispose of the item once its useful life has ended. However, when considering C2C transactions, the consumer also adopts the role of the seller (or reseller in the case of secondhand exchange), so the consumer additionally makes the choices that a marketer would in the traditional pattern (where, when, how, how much to charge for the item). It is possible that these roles switch on and off at the appropriate time, meaning when one is considering buying a used item, s/he is a consumer, and then later at disposal, they become a reseller. As described by Ertz et al. (2019), collaborative consumption involves a switch from the traditional roles of consumer and retailer to a single individual, at times playing the role of receiver and at other times being the provider. Ertz et al. (2016) describe these roles between obtainer and provider to be fluid, referring to the "two-sided" nature, not only of the market but of the individual.

However, it is suggested that the nature of the blended role is more complex than an on/off switch, where consumers are buyers at time 1 and resellers at time 2. Armstrong Soule and Hanson (in press) suggest that for secondhand exchange participants, the very participation in secondhand exchanges and even knowledge of these markets' existence can alter roles resulting in a blended identity as buyer/reseller at all stages of consumption.

Transitory Ownership

Traditionally, most consumer research focuses on the strong attachments that consumers form with their owned possessions (Belk, 1988). Yet, consumers experience a more complex relationship with their owned items beyond just legal ownership and physical possession.

Researchers have typically conceptualized possession as rooted in legal ownership, long-lasting, and related to physical, tangible goods. Liquid consumption refers to exchanges where items and ownership are less permanent, connected to intangibles, and rooted in access rather than ownership (Bardhi & Eckhardt, 2017). Most relevant to secondhand exchange is the ephemeral nature of ownership. Based on Bardhi and Eckhardt's (2017) continuum, secondhand exchange is a blend of traditional "solid" and newer liquid consumption patterns. Because ownership of physical goods is transferred, in this way, secondhand exchange acts like solid consumption. However, the very possibility of reselling items will likely result in ownership, that is, while not as "liquid" as products that are only accessed, perhaps more transitory than permanent or stable (Bardhi et al., 2012). In the luxury secondhand context, Turunen and Pöyry (2019) report evidence that participants in buy sell trade view their relationships to their own

possessions as temporary and see themselves as just one of the owners the item will have. The authors of this chapter expect that ephemerality will affect the relationship that consumers have with their possessions even during ownership, thus extending the concept of liquidity.

Psychological ownership is described as the *feeling* associated with the possession of the item, that it "is mine" (Furby, 1991); it has been demonstrated to have positive outcomes for consumers (Belk, 1988). There is mounting evidence that as consumption becomes more liquid, the tendency to experience psychological ownership is altered (Small & Morewedge, 2021). In fact, as the nature of consumption shifts to more access versus ownership and more possessions become digital versus physical, it is likely that the strength of experienced psychological ownership may be decreased (Morewedge et al., 2021). However, as explained above, secondhand exchange, although often lumped together with access-based and sharing models, is not likely to see this reduction. In considering the framework presented by Morewedge et al. (2021), it is clear that secondhand exchange items (e.g., clothes, cars, luggage, shoes, collectibles) reside firmly in the material (vs. experiential) and ownership (vs. access) quadrant, similar to traditional possessions. What is different is that a secondhand exchange member may at any time chose to transfer ownership to another. However, it is expected that participation in secondhand exchange still does alter ownership in a unique manner.

Even more connected to the current context, there is evidence that consumers who engage in secondhand exchanges may experience a feeling of temporariness, or fleeting ownership, called transitory ownership (Armstrong Soule & Hanson, in press). Exploring the impact of this shift in consumption meaning and outcomes related to both dual roles and its resulting space of transitory ownership is critical in understanding how secondhand exchange differs from our established, pre-existing ideas about consumers, products, and the nature of consumption in general.

Secondhand Exchange and the Platform Economy

Just as the digital landscape has dramatically altered traditional firsthand retail, so too has it affected the secondhand exchange economy. The blending and transition to digital spaces have in some ways mirrored the patterns observed in traditional retailing as well as resulted in some more complex effects on the secondhand segment of retail. Most notably, the implications for secondhand exchange—related to access/geographic boundaries and sociality/interaction—are briefly explored here when comparing online and offline modalities. Next, to understand the platform space in relation to secondhand exchange, it is crucial to understand the difference between operations that occur in stand-alone/website or app-based interfaces compared to those embedded within social media platforms (i.e., nested).

Online/Offline Secondhand Exchange

One of the most dramatic shifts related to consumption and retail stems from the most obvious change, which is the opening of geographic markets. When commerce moved online, retailers had access to consumers spanning the globe, and consumers were able to shop, compare, and ultimately make purchases from an exponentially larger market as physical proximity to the retailer was no longer a limitation. The Long Tail (Anderson, 2006) means that providers can offer more specific items to smaller markets profitably since the consumers no longer need to be geographically concentrated. This trend is, of course, reflected in the secondhand exchange space as well; a consignment shop is no longer limited to buyers and resellers in its local area but has access to a vastly greater pool of consumers and items. This change

can be both an advantage and disadvantage for a retailer, as the expanded market not only results in more consumers but in more competition for those buyers. Following the pattern of traditional e-commerce, geographic barriers in secondhand exchange have been removed in the online space, resulting in both positive and negative retailer and intermediary impacts. From the consumer perspective, the transition to online has made secondhand options more accessible. This is perhaps even more meaningful in driving secondhand consumption as compared with firsthand. Secondhand exchange is, by definition, more limited, as the exchange is often a singular item (i.e., one color, one size). Therefore, increased visibility and access between providers and obtainers should result in better matching and more sales, with greater satisfaction for obtainers and providers.

Perhaps more interesting is the opposite effect of increased connectivity related to geographic proximity in the secondhand space—the hyper-localism that is able to stem from the prevalence of the technology and the ubiquity of its usage. Because smartphone and social media usage is so high in the United States, it has resulted in thousands of local (sometimes down to the neighborhood) Buy Sell Trade (BST) groups. At the same time that retail has begun to globalize and spread its geographic reach, secondhand exchange has also gotten "small." While online shoppers can browse used goods from resellers based anywhere in the world using Amazon's Seller Marketplace or eBay, they also have at their fingertips the ability to use Facebook Marketplace to see what is for sale based on proximity to location, down to a one-mile radius. In addition to Marketplace, there are thousands of local, geographically-based reselling, or BST groups (Friedlander, 2018). These groups are often organized by town or even neighborhood.

Another important e-commerce result is the move away from social interaction or human disintermediation. A key element that has changed as retail moves into the digital space is the lack of co-presence in the physical space of other consumers and salespeople. This disintermediation results in limitations, such as customer service issues and decreased arousal and satisfaction (e.g., Wang et al., 2007), but also it can be seen as a benefit for some consumers who prefer not to engage in social interaction. Interestingly, online platforms are attempting to "add back" these human elements with better chat boxes, photos, and reviews from real people. Secondhand exchange in some platforms mirrors this pattern, such that rather than going into an auction house and being seated with other bidders and experiencing interaction in a physical space with an auctioneer, eBay intermediates all these processes from behind the screen.

However, and similar to the geographic constraints in secondhand exchange, some social elements are highlighted and enhanced depending on the host of the platform. For example, BST groups hosted on Facebook are a secondhand exchange format that does not have a counterpart in traditional in-person retail (Armstrong Soule & Hanson, 2018). While consumers can mingle and interact at a flea market, the level and continuity of the socialization network within BSTs are unprecedented in secondhand exchange. As these networks are self-mediated and administered, they are connected with real, observable identities and locations, are open 24-hours a day, and don't end or move after a certain time period. Most allow or even encourage OT (or "off topic," in this case buying and selling) conversations. As the online landscape continues to evolve, it is likely that new platforms will continue to increase social elements rather than result in the textbook reduction of interpersonal interaction that is often associated with the online retail experience.

Secondhand Exchange Online Platforms: Stand-Alone vs. Nested

This chapter makes an important distinction between two types of online platforms that host secondhand exchange. The first is stand-alone: either a website or app-based platform that exists for the main purpose

of reselling. The other is nested: the secondhand exchange network is embedded within a platform that is not primarily market-based in nature.

Within stand-alone secondhand exchange platforms, it becomes increasingly less important whether these reselling networks or intermediaries are in apps or websites, as these distinctions begin to blend in our mobile world. These platforms, such as eBay, Amazon, Depop, thredUP, TheRealReal, and countless others, are destinations similar to other firsthand retail sites. These platforms vary on specialty, category, payment structure (i.e., bidding vs. buying), and other mechanisms, but they are similar in that they are accessed for the main purpose of consumption and buying/selling.

The other platform type is secondhand exchange that is nested inside a network that exists for other purposes, most notably social media platforms. An example of this type is commonly found on Facebook, specifically its own Marketplace, as well as on consumer-initiated local and brand-specific reselling groups. Instagram and other social media also facilitate secondhand selling and are expected to continue to evolve in manners that allow for more of such transactions to occur, similar to the evolution of secondhand reselling within the Facebook platform. Marketplace is nested within the greater ecosystem of Facebook, and users have no choice regarding whether or not Marketplace is integrated into their experience on the platform. Although members have control over settings like notifications, some selling posts appear in the timeline and discussion streams alongside typical postings from friends and family.

The distinction between stand-alone and nested secondhand exchange platforms is important because it has implications for consumption patterns. The biggest factor is the nature of exposure to secondhand exchange activities. When the platform is stand-alone, a consumer must voluntarily and actively choose to seek out these platforms. For example, in order to bid on something on eBay, a consumer must open the app for such purposes as browsing or buying. However, when secondhand exchange is nested within media or content such as with BST groups, the exposure to these actions can be incidental. The nature and manner of exposure (i.e., voluntary or incidental) may impact normalization, consumerism, impulsivity, and compulsivity. Research propositions related to the platform, as well as the critical dimensions described below, will be outlined later in the chapter.

CRITICAL DIMENSIONS OF SECONDHAND EXCHANGE IN THE PLATFORM ECONOMY

This section will outline three critical dimensions related to secondhand exchange in the platform economy. First, the impact of the point of ownership transfer is discussed. Next, a framework is presented for platforms in which ownership is directly exchanged between buyers and resellers. Finally, differences in platform mediation and exchange member identity are explored.

Ownership Transfer

The importance of understanding possession and ownership has long been a focus of many fields, such as consumer behavior, marketing, economics, psychology, anthropology, geography, philosophy, and more (Pierce & Peck, 2018). The concept of ownership is fundamental to consumer behavior, and even as new perspectives on marketing evolve, the transaction of goods and services resulting in ownership is still present (Vargo & Lusch, 2004). Because secondhand exchange revolves around the physical possession of tangible goods, the manner in which ownership and physical possession are transferred

between actors is highly relevant in this context. In the platform economy, there are two distinct means of secondhand exchange ownership transfer: direct and indirect.

Indirect transfer refers to secondhand exchange that is fully mediated by a third party who takes ownership of the items, making these transactions a C2B2C (rather than a direct C2C transaction). On some platforms, the owner resells the item to an intermediary that takes possession. The third party then resells the used item to a new buyer. Ownership is transferred from consumer to consumer indirectly, and the platform or intermediary takes ownership and physical possession of the items in between. There are two types of third parties that fully mediate secondhand transactions: consigners and traditional retailers.

Consigners are platforms, applications, and/or websites that exist for the primary function of selling used goods. For example, Swoondle is a swapping platform that buys used children's items that are sent in, evaluated, and exchanged for trade credits on their platform. Resellers are removed from the downstream actions where this third party cleans, photographs, prices, and lists these items. Many popular reselling platforms exist in this category, such as thredUP and TheRealReal, and are similar to in-person consignment shops.

Alternatively, many traditional "firsthand" retailers are getting involved with the secondhand exchange economy. Consider REI, the outdoor gear retailer. For many years, REI has hosted "garage sales" at certain points in the year where returned items are resold at discounted rates. Over the years, consumers have tended to line up for hours to access the "deals" at these special events. More recently, a section of the floor space of REI's physical retail locations has been dedicated to showcasing these items, with tags explaining why the items were returned. Even more relevant to the platform landscape, in 2019, REI launched its "Good & Used" initiative, which takes back used gear in exchange for REI credit. The items are then posted to the brand's online retail website alongside new merchandise.

Interestingly, thredUP and other secondhand exchange mediators like Trove and Reflaunt are involved in collaborations with hundreds of traditional retailers to assist in integrating used items into their product portfolios. Brands as varied as Walmart, Nordstrom, Patagonia, Levi's, Eileen Fischer, Balenciaga, Gucci, and GAP are beginning to incorporate used products into their online retail platforms. Because these traditional brands are taking ownership of the items, it can be considered a fully mediated, indirect transfer. It is expected that when brands (either traditional or consigners) mediate secondhand transactions, the identity of the owners (past and future) are unknown to each other, and all exchange elements occur through the third-party's control.

Alternatively, direct ownership refers to a transaction where the product ownership moves from the original owner/reseller to the new owner/buyer. These direct exchanges are still intermediated to different extents depending on the platform, but ownership is retained until the C2C transaction has occurred. When ownership is directly exchanged from reseller to buyer, it is critical to explore how the dimensions of the level of intermediation interact with exchange member identity, which will be detailed below (see Figure 2).

Platform Intermediation

One of the most notable elements related to secondhand exchange type and platform choice is the manner and level in which the platform manages transactions between buyers and resellers. In fact, one of the main benefits in the transition from offline to a platform-based model is increased intermediation, as well as choice in the type of mediation through a proliferation of options. Intermediation refers to the presence of a third party that plays a "middle man" role in these exchanges. Perren and Kozinets (2018)

Figure 2. Framework for direct secondhand exchanges and examples

		Platform Intermediation		
		Low		**High**
Exchange Member Identity	**Unknown**	Craigslist	GOAT	StockX
	Obscured	Instagram selling	Offer Up	eBay Poshmark Depop
	Known	Facebook BBSTs	Facebook Marketplace	

define intermediation as the utilization of technology to manage and coordinate transactions. Similar to the LEMs typology, this framework focuses on the level rather than the nature of the intermediation, extending Perren and Kozinets' work herein. By definition, all transactions in the platform economy are intermediated on a continuum ranging from low to full. It should also be noted that some platforms allow and facilitate more traditional B2C exchanges concurrently with secondhand transactions (Ertz, 2020), from pure collaboration (i.e., platform enabling almost exclusively C2C exchanges) to pseudo collaboration (i.e., a platform enabling almost exclusively B2C transactions, but positioned as a collaborative facilitator, e.g., eBay). Rather, this paper focuses on secondhand exchange of used items between consumers. Still, the practices of platforms that host blends of B2C and C2C exchange could add further nuance to understanding.

There are many ways in which platforms intermediate secondhand exchanges. Early conceptualizations of digital intermediaries are described as playing four functions: aggregating supply and demand, matching buyers and sellers, facilitating transactions, and establishing trust (Bailey & Bakos, 1997). In the secondhand exchange context, the emphasis is on how the platform facilitates transactions, which includes matching and aggregating. Platforms facilitate transactions in various ways, such as providing the digital space and functionality for buyers and resellers to connect, providing and enforcing exchange standardization, rules, guidelines, and procedures, and managing payments, inventory, shipping, etc. In secondhand exchange, trust is a critical dimension that influences consumer decision–making, and platform intermediation can affect trust by both the buyer and seller.

Full Mediation

As described above, some popular secondhand exchanges are fully mediated, meaning that, from the consumer perspective, the two sides of the transaction are completely separated by a third party. When ownership is transferred to a mediator (a traditional or consigner brand), this is considered full mediation. For example, TheRealReal manages purchasing used luxury goods directly from individuals, verifies the authenticity of the item, cleans, photographs, sets the price, and ships to the buyer who becomes the product's next owner.

High Intermediation

Short of taking ownership of products, some intermediaries have a high level of control over the exchange process. For example, luxury secondhand exchange platform Vestiaire Collective consults with resellers to coach them on how to photograph, list, and price their products. Re/Done's Re/Sell platform only allows reselling of items that are verified as originally purchased within that retailer, reviews and edits postings, creates shipping labels, and waits to pay the reseller until the new buyer has verified the arrival, authenticity, and accuracy of the listed condition of the product. Other ways in which mediators arbitrate transactions are linking payment platforms and setting formats. For example, Facebook Marketplace provides a mechanism to make offers and send automated inquires to resellers ("Is this still available?"), and collects and disseminates ratings on sellers' histories related to "what they do well," such as fair pricing, communication, friendliness, accurate descriptions, and punctuality.

Low Intermediation

In other cases, platform intermediation is very low. Normally, the minimal function of the platform is as host, or aggregator, of buyers and sellers. For example, Facebook BST groups involve individual members who serve as administrators and set group norms and rules, which include the types of posts that are allowed, the types of items that can be sold, how an item is described and claimed by a buyer, etc. These rules are often posted in a document that members must review upon joining. However, the buyer and reseller are left to have direct conversations about how and when the payment is exchanged and how and when the product is delivered. Likewise, Craigslist strictly establishes a digital "place" for buyers and resellers to connect but does not regulate or facilitate any of the secondhand exchange past the initial connection.

Exchange Member Identity

Communicating identity elements about the exchange member—buyer and seller—is important in the context of secondhand exchange for several reasons. First, information about the reseller's identity can convey trust to the buyer and minimize risk perceptions (Dellarocas, 2003; Resnick & Zeckhauser, 2002; Resnick et al., 2000), particularly in the absence of high platform mediation. For example, resellers on Facebook Marketplace must utilize their public Facebook profile to post items for exchange, therefore sharing their verified first and last name, profile photo, and other location-specific information (CBC News, 2015). Likewise, the buyer's information is also transparent, likely minimizing risk on the seller's side. Platforms may aim to generate trust in alternative ways, such as providing detailed ratings and/or

reviews of seller transactions. Second, identity information can establish human-like qualities in what is primarily an exchange effort or convey information about the reseller's identity, personality, or lifestyle more implicitly through language. Product descriptions can be tailored to the personality of the community, from utilitarian (i.e., conveying product size and attributes) to hedonic (e.g., sharing stories of the product's use or owner; Huang et al., 2017). For example, a Poshmark reseller of a used handbag says, "Please be mindful that this piece has led a previous life and may tell its story through minor imperfection." Third, identity information facilitates social interactions within secondhand exchange platforms more easily—social interactions that have shown to provide important communal value for the exchange member (Armstrong Soule & Hanson, 2018).

Identity features in secondhand exchange platforms include but are not limited to: the seller's name (i.e., from verified real first and last names to a creative @ handle), profile image (i.e., from the member's real face to an avatar or a symbolic image), reputation signals (e.g., ratings, number of sales). Identity features exist along a continuum from unknown to obscured to known, which is likely to have an impact on key variables such as trust, risk reduction, liking and perceived similarity, willingness to pay and willingness to buy, physical and magical contagion, and others.

Unknown Identity

In the case where the transfer of ownership is indirect and passed to the platform owner (e.g., thredUP), seller information is most likely completely unknown. Details about the prior owner and the history of the product are wiped from future secondhand product listings, likely minimizing secondhand aversion due to contagion (O'Reilly et al., 1984) with the goal of increasing willingness to pay. Therefore, one could assume that platform elements, such as detailed product quality descriptions and product images, become more important. Trust in the platform itself can instead be built via branding efforts (Barnes & Hinton, 2007), longevity, and word-of-mouth within the secondhand exchange community.

Identity elements are also unknown in cases where anonymity and privacy are valued. For example, secondhand sellers on Craigslist utilize masked email contact information (Lingel, 2020). Norms of the platform suggest that sellers provide no personal, identifying information until the sale is finalized and ownership is transferred face-to-face. Often, even after the transactions, identities are still unknown when items are exchanged in "contactless" drop-offs. Reputation signals, such as ratings or number of prior sales, are also absent. Here, buyers must vet prospective exchange partners through other means or rely on platform intermediation to establish trust.

Obscured Identity

An example of obscured identity occurrence is in seller shops. On eBay and similar app-based platforms, sellers may avoid personalizing their reselling efforts and establish the profile as a shop instead of presenting as an individual. In this case, the individual's name and photo are replaced with details of a "third-party" shop, similar to a physical consignment store, in an effort to establish credibility while also minimizing personal details. In fact, recent research has shown that simple (vs. complex) shop names enhance trust in resellers (Silva et al., 2017). Users may also adopt an avatar to maintain distance from personal information. Such identity signals simultaneously reduce uncertainty and transmit a sense of personal vulnerability that can be appealing to prospective buyers (Bente et al., 2014: Nowak & Rauh, 2005). More simply, many resellers opt for handles that are made up and not indicative of their true identities,

and this practice is allowed and at times encouraged. For example, a registered handle or user account name for eBay can be @Cat_Armstrong_Soule, @CatsCloset, @bluegreencat19, or @areah8y[sp8gh.

Known Identity

As mentioned earlier, identity elements are abundant in a platform that intermediates secondhand exchange, such as Facebook. Both Facebook Marketplace exchanges and buyer-seller efforts within Buy Sell Trade groups within Facebook take place with highly personal information available to both parties. As the exchange is nested within a social platform, details about the seller's name, location, photo, relationships with others, hobbies, and more are at the buyer's fingertips, and vice versa. Prior research has shown that seller photos enhance trust (Bente et al., 2012), but research on other identity features and their impact on secondhand exchange outcomes is lacking. Additionally, age, gender, and attractiveness may factor into a buyer's decisions to engage with a seller, as ownership transfer can induce magical contagion (e.g., buying a luxury item imbues greater social status; Turunen et al., 2020).

In addition to individual identity features such as name and photo, one of the most important known identity elements in online secondhand exchange platforms are reputation signals. For example, on a platform like eBay, where personal information is often obscured, signals that indicate the seller's trustworthiness and history of selling become more salient (Dellarocas, 2003; Resnick & Zeckhauser, 2002). Detailed views of prior transactions, reviews by past buyers, and other historical information convey a sense of confidence to the buyer in absence of individual identity details (Verhagen et al., 2006), along with the reputation of the platform itself (Pavlou & Gefen, 2004). In sum, identity features of buyers and sellers on secondhand exchange platforms are critical in enhancing trust perceptions and minimizing risky outcomes, but scant research has yet to explore how identity and mediation interact across each stage of the secondhand exchange cycle.

RESEARCH AGENDA AND FUTURE DIRECTIONS

Understanding the interactions between secondhand exchange buyers and resellers related to acquisition, ownership, and disposal is important for many reasons. The manner and degree to which the platform intermediates and allows for identity disclosure or signals are often under the control of a third party or a brand. Based on their goals and needs, participants—individuals and mediators—in the secondhand exchange economy can utilize intermediation and identity tools in order to be more effective in their choice of platform. Within the secondhand economy, there are several elements that become more salient as compared with traditional, such as contagion, scarcity, and trust. These concepts affect consumer decision-making and are also likely to be directly related to the elements of identity sharing and intermediation.

Contagion

Contagion, sometimes referred to as contamination, is the idea that the properties of objects can transfer to each other when they have come into contact (Nemeroff & Rozin, 1994). It also refers to something transferred from a person to an object based on physical contact (O'Reilly et al., 1984) and can involve physical, tangible elements, such as dirt or germs, and most likely perceived negatively. Another type of contagion is "magical," where the essence or aura of the owner can be passed on to an object, which

can be positive, as in the case of an attractive person (Argo et al., 2008) or celebrity (Newman et al., 2011), or negative, for example, a sweater worn by Hitler (Nemeroff & Rozin, 1994). Because contagion travels through touch (Ackerman & Hu, 2017) and secondhand objects are not only touched briefly but owned and possessed by others, this dimension is critical to exploring the positive and negative effects that may be moderated by identity disclosures and platform intermediation in secondhand exchange. Research normally focuses on ways to reduce the perceptions of negative contagion (e.g., Bezançon et al., 2019), but there may be opportunities to leverage positive and/or similar identities of buyers and resellers that result in positive outcomes.

Scarcity

Product scarcity is the consumer's perception of an inability to fulfill needs and desires due to a lack of access to goods (Grier & Davis, 2013). The impact of limited quantities of products is well known in the persuasion literature, such that consumers want the same item more when there is less of it (Cialdini, 1993). Marketing tactics that either limit supply or manipulate the perception of limited access are known to stimulate desire and motivate purchases and are often used in promotional messages as well as in luxury contexts (Hamilton et al., 2019). Limited quantities send heuristic signals to consumers that the item is worth having/is valuable (Cialdini, 1993). More relevant to the secondhand exchange context, scarcity also suggests that the option to possess the item may not last and that one's freedom to obtain the item will be gone; therefore, through psychological reactance (Brehm & Brehm, 2013), it becomes more desirable. This area has not been explored empirically in the context of secondhand exchange and consumption patterns such as impulsive (Rook & Fisher, 1995) and compulsive (O'Guinn & Faber, 1989) purchases. Scarcity is highly relevant as most consumer-to-consumer secondhand exchanges are focused on an inventory size of one. As the "used" condition of an item makes it less desirable as compared to a new counterpart (Ackerman & Hu, 2017), it is possible that scarcity could counteract negative effects, such as disgust, in some cases. Further, as platforms evolve and traditional retailing brands begin to become active in the space, used items may be "stocked" more fully, and scarcity perceptions could be altered. Understanding how platform intermediation as well as participant identity interact with scarcity could further unpack consumer decision-making in secondhand exchanges.

Trust

In all marketplace exchanges, consumer trust is an important factor in decision-making. In an exchange context, trust refers to the generally positive, affective attitude of goodwill in that both parties will fulfill their obligations as promised (Schurr & Ozanne, 1985). Well-established and known brands often provide assurance to consumers, which belies trust in traditional retail contexts, resulting in increased brand equity (Delgado-Ballester & Munuera-Alemán, 2005). Trust may be "the most important attribute" a brand can possess (Delgado-Ballester et al., 2003). Although the third-party platform can be viewed as a brand (for example, thredUP), trust is multifaceted as both trust in the platform and trust in the other exchange participant are at play (from both buyer and reseller perspectives). In other C2C and peer-to-peer transaction contexts, researchers have found that trust plays a critical role and mostly focuses on how reputation-based mechanisms can enhance buyer trust (e.g., Möhlmann, 2016; Ter Huurne et al., 2017; Xiong & Liu, 2004; Ye et al., 2019). The current framework suggests continued nuance to explore in this area.

As buyers increasingly engage in the platform economy, the opportunity to research such actions is extremely rich. Below, areas for future study are proposed and organized within the theoretical themes of mediation and identity and along the stages of the secondhand exchange cycle: secondhand buyer, owner, and secondhand reseller (see Table 1).

Impact of Intermediation and Identity on the Buyer

In the buyer stage, questions exist regarding how buyers perceive platform intermediation. While mediation provides a structure for the secondhand exchange (Bailey & Bakos, 1997), the unknown is how buyers evaluate platforms at varying levels of intermediation. For example, how do buyers evaluate high (vs. low) intermediated secondhand exchange platforms differently? Certainly, highly intermediated environments where the platform owner provides the buyer with guarantees of product quality would likely be perceived positively and reduce uncertainty and risk. However, do some buyers value more unstructured exchange scenarios in which group norms, rather than platform mediation, drive the code of conduct? Relatedly, in secondhand exchange platforms that facilitate member interactions (i.e., develop relationships between members, conversation occurs alongside transactions), how does the social and communal nature of the platform reduce uncertainty and enhance trust, if at all? If so, does social interaction then reduce the need for platform intermediation? Intersecting issues on impulsive and compulsive buying also exist in regard to nested platforms, wherein secondhand exchange transactions occur alongside the primary, social purpose of the platform (Armstrong Soule & Hanson, 2018). Are some types of intermediation more valuable to buyers? Normally, a constellation of processes is mediated by the third-party platform, but are there some mechanisms that are more important drivers that reduce negative contagion, affect scarcity, and/or increase trust?

In regard to identity, research is needed to understand how reseller information is perceived by the buyer. While prior research suggests beneficial effects of reputation signals, photos, and avatars (Bente et al., 2012; Bente et al., 2014), the findings are specific to a single platform and do not consider cross-platform effects. Additionally, how do identity elements influence perceptions of similarity and downstream trust? Work, specific to the secondhand market for luxury products, suggests a positive contagion effect such that status is transferred from reseller to buyer, but similarity more generally has yet to be studied. As discussed earlier, online e-commerce has simultaneously allowed for broader geographic markets and more siloed interest-based and location-based groups. Using location information as an identity feature, one would assume that closer physical proximity generates trust, but this assumption has yet to be tested.

Impact of Intermediation and Identity on the Product Owner

As consumers make firsthand purchases, does the prospective platform for a product that will be later sold secondhand play a role in the purchase? Quite interesting questions exist around product attachment and mediation. For example, if mediation is high and the reseller transfers ownership to a third-party, does this facilitate a transfer of ownership similar to disposal? If so, perhaps highly intermediated platforms are more appropriate for highly attached items that owners need to disassociate from and divest (Huang et al., 2017; Lastovicka & Fernandez, 2005). In addition, if a product owner is a user of a platform that is nested within social media, does this exposure to resale make the prospect of secondhand exchange more salient and hence result in a lower level of attachment to owned items? If so, this may make the reselling

activity more frequent and lower the barriers, which are known to be high in "dispossession" of owned items. Such questions around the interplay between platform mediation and ownership are outstanding.

Related to attachment, identity features of the platform may also impact ownership. In the case that one expects to resell later via a platform with known identity elements, does the owner's treatment of the product change given that prospective buyers may associate the product's condition (and contagion) with the identity of the individual consumer? How might attachment differ when the platform is nested—and highly identifiable—versus stand-alone? It is possible that when considering a platform where identity is known (or even obscured), one might treat possessions more carefully in order to enhance the possibility of resale in the future.

Table 1. Research questions and future directions along the buyer-owner-reseller exchange pattern, motivated by intermediation and identity

Exchange Stage	Theme	Sample Research Questions
Buyer	Intermediation	How does knowledge of platform mediation impact firsthand purchases?
		Do nested platforms increase buyer impulsivity and compulsivity of secondhand products?
		Does buyer-seller interaction and socializing reduce uncertainty within the platform? Does direct interaction reduce the need for some types of intermediation?
	Identity	How does reseller identity information (e.g., real vs. avatar, presence or absence of reputation signals) impact buyer trust and purchase intentions?
		How do location information and proximity between buyers and resellers moderate buyer trust?
		How does perceived similarity to the reseller impact buyer trust? What identity features influence perceived similarity?
Owner	Intermediation	If the owner is highly attached to a product, does mediation moderate willingness to sell?
		If a product is destined for high mediation resale, is ownership transfer similar to disposal (and which type)?
		Are product owners more likely to consider items as products for future sale if the platform is nested (vs. a stand-alone, intermediated platform)?
		Do nested platforms change owners' attachment when compared to other types of secondhand exchange platforms?
	Identity	How does one's experience of ownership change when identity information will be present in a later secondhand exchange? Does this vary by product or in a gestalt manner? Does it matter if the item is firsthand or secondhand?
		Do product owners minimize product attachment and maximize care if they will later be meant for resale and identity will be known?
Reseller	Intermediation	How do resellers evaluate platforms? What factors influence platform selection?
		What elements of platform mediation influence seller evaluations and decisions (e.g., payment collection, shipping)?
		What platform characteristics increase resale earnings?
		Beyond dollars, what platform-related characteristics motivate resellers (e.g., reputation)?
	Identity	How does prior experience as a buyer influence reseller platform decisions?
		How do resellers perceive buyer identity features? How important is buyer trust to secondhand resellers? Are there negative aspects of identity disclosure of the buyer to the reseller?

Impact of Mediation and Identity on the Reseller

Specific to the reseller are questions around platform choice and evaluation. How do resellers evaluate prospective platforms and compare the costs (e.g., fees and hassle), and what mediation features are important? Of course, the importance of mediation may be category-specific, such that TheRealReal may be perceived as a superior option for selling luxury products given the platform's expertise authentication. Still, such category differences or desired platform features (e.g., shipping policies, payment processing, reputation signals) have yet to be uncovered. Beyond the choice of platform is how platform characteristics influence reseller earnings. For example, does increased mediation, which often corresponds to a greater commission on the side of the platform host and therefore a cut into the reseller's gain, result in greater overall earnings?

Lastly, understanding how resellers evaluate buyers and the relative importance of buyer identity features is an area of uncertainty. While certainly buyers value identity elements that communicate a reputable reseller, do resellers have similarly high expectations? If so, what identity features are most important in generating trust and, therefore, willingness to sell? Are there negative effects on the seller side of known identity sharing? For example, one might hesitate to sell items in their local community groups when their identity is known for fear of being perceived as under financial duress. Also, is it awkward to resell to personally-known buyers? Would the possibility that people with whom relationships have developed (offline in the case of local groups or online in communal BST groups) change how much the items are priced?

CONCLUSION

One of the most critical but under-researched areas related to the rise of the platform economy is the manner in which it super-charges secondhand exchange, the increased scale, scope, and variations of which have the potential to fundamentally change consumption. Not only does the platform increase and support secondhand exchange activities, but it also presents a rival to the traditional retail economy. The consumers in secondhand exchange are not only interacting with one another, but also with the platform in ways that do not reflect typical retail patterns.

Many unanswered questions remain about how platform intermediation and identity elements interact in secondhand exchange. Indeed, the topic of secondhand exchange is only growing, and new platforms emerge and transform regularly. Gaining a better understanding of how platforms support secondhand exchange and, in particular, of how buyers, owners, and sellers respond to identity and intermediation efforts by platforms is critical for consumers, marketing practitioners, and researchers.

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KEY TERMS AND DEFINITIONS

Consigner: A third-party mediator that takes ownership of secondhand items for resale between original buyers/resellers and subsequent buyers.

"Firsthand" Retailer: Traditional retailers that primarily sell new products directly to consumers.

Magical Contagion: Something that is metaphorically transferred psychologically from a person to an item, such as essence or aura.

Nested Platforms: Secondhand exchanges that exist inside a host platform that functions for purposes other than marketplace exchange.

Ownership: The experience of legal, physical, and perceived possession of something.

Physical Contagion: Something that is physically transferred from person to item or item to item when they are in physical contact, such as dirt or germs.

Platform Intermediation: The manner and level to which a third-party platform manages and facilitates transactions between buyers and resellers.

Secondhand Exchange: Transactions whereby a consumer who legally possess an item transfers ownership of it to another consumer in exchange for money, or less often, equivalent traded item(s).

Stand-Alone Platforms: Digital secondhand exchange platforms that exist for the primary purpose of exchanging secondhand products and can be hosted on websites or application-based interfaces.

Chapter 7
My Wardrobe in the Cloud: An International Comparison of Fashion Rental

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ABSTRACT

In response to the 2008 global financial crisis, a range of disruptive business model innovations emerged. The fashion industry saw the introduction of fashion rental platforms, aimed at appealing to price-conscious consumers still hungry for the latest styles. While these new business models filled a gap in the market and saw, in some cases, profit in the millions, the phenomenon remained rather niche. The recent pandemic, alongside other isomorphic pressures, have put further constraints on these fashion rental businesses and their entrepreneurs, leaving them struggling in the current economic climate. This chapter explores the entrepreneurial motivations behind rental platforms, the different platform models in operation, and the challenges these businesses face in the 21st century, including increased technological developments, environmental sustainability, and external pressures, such as the most recent pandemic, which saw economies shutting down. Empirically, the authors draw upon a novel dataset comprising six international case studies.

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INTRODUCTION

The 21st century is shaped not only by new technological interventions but also by various events that have had dramatic impacts on people and their livelihoods. These have had a particular impact on the fashion industry and how people consume. Examples of such transformative events prior to the COVID-19 pandemic include the 2008 global financial crisis (Davidson et al., 2018; Brydges et al., 2020), which saw the emergence of disruptive business model innovations such as renting and swapping (Mukendi & Henninger, 2020; Brydges et al., 2020). With consumers being left with less disposable income to spend on luxury and/or unnecessary items, yet still keen on taming their fashion appetite, fashion entrepreneurs have developed disruptive innovations, such as swap parties and rental services for every day, casual, and business wear, in order to fill this gap in the market (Armstrong et al., 2015; Henninger et al., 2019). These innovations are an extension of a market that primarily focused on occasion and/or bridal wear (Conlon, 2020). In line with technological transformations, we have seen a shift from bricks-and-mortar stores towards e-commerce in the first instance, which has since developed into mobile and social commerce with the development of Web 2.0. (Mobile-commerce emerged as part of the development of technologies, including mobile devices, whilst social commerce is linked to social platforms that allow sharing of information and now also shopping). Consumers, especially those part of Generations Y (born between 1981 and 1996) and Z (born between 1997 and 2012), are technology savvy, self-confident, and show a positive attitude towards sustainability (Rogers, 2013; Valentine & Powers, 2013). Moreover, Generation Z consumers are so-called digital natives, as opposed to nomads, seeing as they have grown up with the internet, and therefore are not only comfortable in navigating online platforms but also feel at ease in the cyber world (Francis & Hoefel, 2018). Combined Generations Y and Z make up approximately 40% of all consumers globally and, as such, have the power to enforce change (Amed et al., 2019). They have been described as 'woke' consumers, who easily identify injustices and are not afraid to act upon these and as such are likely to engage in new modes of consumption, including renting of fashion garments, if these are seen to fit with their worldview and values of being more sustainable than their counterparts (Amed et al., 2019).

Similarly, one of the biggest and most dramatic factory accidents (Rana Plaza), in which thousands lost their lives (Parveen, 2014), as well as the most recent COVID-19 pandemic (McIntosch, 2020; McKinsey, 2020), have shifted consumer attitudes towards more 'sustainable' modes of acquisition. With these events and more, consumers are increasingly aware of the impact their purchase decisions have on the natural and social environment (WRAP, 2020 a, b; Brydges & Hanlon, 2020). While this could lead to the assumption that disruptive business model innovations are on the rise again (Brydges et al., 2020b), unlike in the financial crisis in 2008, the COVID-19 pandemic has left these fashion entrepreneurs struggling, with some platforms having to close their business for good. Yet, there is hope, seeing as the UN has established the UN Alliance for sustainable fashion as well as developed the SDG (Sustainable Development Goal) for better fashion, both of which emphasize the need for change (UN, 2020, 2021). With sustainability being a top global priority and the reduction of fashion waste, as well as the increased use of garments becoming focal points in the industry, we may see another uprise of fashion rental platforms in the near future.

The purpose of this chapter is to explore how entrepreneurs that have set up these fashion rental platforms deal with the challenges they face in the 21st century, focusing on increased technological developments and external pressures (e.g., COVID-19). Thus, this chapter seeks to address the following research questions:

1. Why are some online fashion rental platforms struggling whilst others are accelerating?
2. Are fashion rentals more sustainable alternatives?
3. How could rental platform entrepreneurs better communicate their unique selling points (USP)?

There is a need to investigate disruptive business model innovations and, more specifically, rental platforms from an interdisciplinary perspective, thereby understanding what these unique selling points (USPs) are and how they can be communicated to the rental platforms' target audiences, as well as understanding the challenges that are faced by these rental platform entrepreneurs. This chapter addresses this gap through an international comparison by drawing on empirical evidence from qualitative interviews and quantitative analysis based on life cycle assessments (LCA).

BACKGROUND

Disruptive Business Model Innovations and the Fashion Industry

As aforementioned, the 21st century has seen the emergence of disruptive business model innovations (Mukendi & Henninger, 2020; Brydges et al., 2020), including online fashion rental platforms, which are the focus of this chapter. While on the one hand, disruptive innovations are often seen to be inferior compared to their mainstream counterparts (e.g., lower quality, locations away from tourist hotspots) (Christensen et al., 2015), they also often provide alternative benefits that can attract consumers (e.g., Markides, 2006), such as cheaper price points, more convenient locations (e.g., in local areas), and/or access to products and/or services that would otherwise be unattainable (e.g., luxury goods). Generally, disruptive innovations capitalize on utilizing products and/or services that are otherwise seen as idle, and thus they have the potential to maximize their practical service life (Zamani et al., 2017; Amasawa et al., 2020).

Whereas the tourism and transportation sectors have brought forward the most prominent examples associated with the sharing economy, with Airbnb and Zipcar, respectively, in recent years, disruptive innovations have entered the fashion industry in the form of collaborative (e.g., swapping, sharing) and access-based consumption business models (e.g., renting) (Armstrong et al., 2015; Becker-Leifhold & Iran, 2018; Henninger et al., 2019; Iran et al., 2019; Brydges et al., 2020; Mukendi and Henninger, 2020). Although there are many different definitions and interpretations of business models for the sharing economy, we utilize the sharing economy as an umbrella term that encompasses consumer participation and thus, act as either providers of a service or obtainers (Fitzsimmons, 1985; Ertz et al., 2016, 2019), product-service systems (PSS) (Mont, 2002), collaborative consumption (Botsman & Rogers, 2010), and access-based consumption (ABC) (defined as the temporary access to a good being granted at a set fee and for a specified period of time) (Bardhi & Eckhardt, 2012) and their subsequent practices, including, but not limited to renting, borrowing, lending, swapping, secondhand shopping, exchanging, or gifting (Dreyer et al., 2017).

In this research, we are particularly interested in fashion rental platforms. Breaking the rules of the dominating mainstream business practices which follow a model of 'take-make-use-dispose' (exemplified by disposable or fast fashion), fashion rental platforms aim to increase clothing utilization by providing on-demand access to a range of garments, from workwear to party dresses, with potentially positive environmental impacts (Iran & Schrader, 2017). As indicated, the renting model has gained

popularity since 2008, with millions of users engaging with these types of services, thereby 'disrupting' the conventional way of consuming garments (Botsman & Rodgers, 2010). Thus, rather than purchasing garments firsthand, consumers are making use of idle capacities, which can have societal, economic, and environmental implications. To explain, utilizing garments more often and for longer, which could be assumed if garments are rented, can reduce the carbon footprint they have over a lifetime (WRAP, 2020a, b), especially if the garments are worn more than one time before laundering them. Moreover, being able to access garments implies that consumers can show a sense of belonging and thus may impact their well-being (e.g., McNeil & Venter, 2019; Alevizou et al., 2021), whilst renting is also often perceived to be a cheaper alternative to purchasing, at least in the short run, and at the same time, it can reduce risks of ownership (Hu et al., 2018). Some of the positive and negative impacts of fashion rental on the social, natural, and economic environment are listed in Table 1. These impacts have predominantly been established through research conducted in the tourism and transportation industry. Thus, there is not only a lack of investigating this further within the fashion rental context, but it is also questionable whether all aspects apply to the fashion rental context (e.g., Schor & Attwood-Charles, 2017; Henninger et al., 2019; Brydges et al., 2020).

Table 1. Summary of key positive and negative impacts of fashion rental on the social, natural, and economic environment

Environment	Positive	Negative	References
Social	• Access to otherwise unattainable garments • Enhanced well-being, as rented garments may allow access to social groupings • Perceived inclusivity • Creation of communities	• Labour law issues, e.g., gig economy, lack of pay • Exclusion due to stigma • Perceived health risk (e.g., hygiene)	Schor & Attwood-Charles, 2017, Henninger et al., 2019
Natural	• Incentivize platforms to increase utilization of garments and extend service lifetime • Less raw materials used if products are circulated and used longer	• Reliance on dry cleaning implies increased use of chemicals • Reduced material longevity due to aftercare • Increased CO2 emissions due to transportation and laundry	Henninger et al., 2019; Brydges et al., 2020
Economic	• Creation of new jobs • Ability for individuals to earn money on idle capacities	• Tax aversions by larger companies (researched in tourism and transportation industry) • Loss of jobs along the supply chain	Schor & Attwood-Charles, 2017

Source: (authors' own)

What becomes apparent here is that rental businesses, including fashion rentals, have been enabled through the development of Web 2.0 and, more specifically, e-commerce, which have enhanced the accessibility and creation of these web platforms to facilitate access to idle capacities on a wider scale (Armstrong et al., 2016; Becker-Leifhold & Iran, 2018; McNeil & Venter, 2019). Thus, it may not be surprising that more recent definitions of the sharing economy and, more specifically, access-based consumption incorporate an online angle, even though not all rental businesses are pure-play online retailers (Binninger et al., 2015; Petersen & Riisberg, 2017; Camacho-Otero et al., 2019; Norup et al., 2019). Although the terminological debate on whether or not the definition should be focused on only

online or incorporate both an online and offline angle is beyond the scope of this chapter, it is vital to raise this point when investigating why some rental platform entrepreneurs are struggling to survive in the 21st century, whilst others are striving.

Within the renting remit, we distinguish between two different types of operations (e.g., Armstrong et al., 2016; Becker-Leifhold & Iran, 2018; McNeil & Venter, 2019). The first option is business-to-consumer (B2C), which exists both within an offline context, meaning a physical store (e.g., MossBros UK) or via online platforms, for example, Rent The Runway (USA), Girl Meets Dress (UK), or GlamCorner (Australia) (Amed et al., 2019; Lieber, 2020). This is also often referred to as 'pseudo collaboration,' as although the garment's useful life is extended, it is not necessarily an idle capacity that is rented out (e.g., Ertz, 2020). Whether offline or online, this business model offers either short-term rentals or longer-term leasing. In either instance, consumers pay a set fee for their rental/subscription, which allows them access to a set amount of items over a certain amount of time (e.g., Hu et al., 2018; Mukendi & Henninger, 2020; Brydges et al., 2020). In case of consumers being unsatisfied with the garments received, these organizations allow for exchanges or refunds to happen, based on their company policy.

Girl Meets Dress (UK), for example, facilitates refunds "if none of them (clothing items) are suitable and you require a full refund you have 24 hours to post the box back to us from your local Post Office" (GirlMeetsDress, n.d.). Rent The Runway has previously offered an 'Unlimited Swaps' option, highlighting that consumers can "style, wear, and hold onto your items for as long as you'd like. Whenever you're done wearing something, send it back and open up a spot for something new" (RentTheRunway, n.d.). It has to be noted that this option will be retiring soon, according to the official website. A potential explanation here could be the feasibility of not only facilitating these continuous swaps in terms of the infrastructure but also in economic and environmental terms, as continuous dry cleaning can not only be costly for the organization but also negatively impact the garment's durability and thus, ability to rent it out over longer periods of time. Moreover, if there is no actual time limit on how long people can keep hold of these items, there may be an issue in terms of overall availability, as other consumers may feel they miss out on the opportunity to rent this item. From a consumer perspective, a key advantage of the B2C rental model is the fact that one organization is responsible for the garments and, thus, for the cleaning and maintenance as well as the logistics of delivering the items and gaining them back. As such, they could be seen as 'one-stop-shops' that follow rules and regulations clearly stated on the company websites.

Peer-to-Peer (P2P) is the second type of operation, which is facilitated through online platforms by third-party providers. Similarly to the B2C context, consumers can access garments and accessories, yet rather than being provided by an organization, fellow customers become 'providers' and thus, can rent out their personal idle capacities (e.g., Philip et al., 2015; 2019; Henninger et al., 2019) and make money at the same time. An example here would be the New York City-based StyleLend platform or My Wardrobe HQ in the UK. Similar to the B2C rentals, the P2P rentals also have a return policy that indicates "if an item that you have ordered doesn't fit, you have 24 hours to get in touch with our customer services (…) and return your item to us. We will be happy to refund the rental fee/purchase price of any unworn items as long as the security tags are still attached" (MyWardrobeHQ, 2021). Although returns policies, aftercare cleaning guarantees, and rental insurances are offered on these P2P rental websites, consumers have previously indicated that they may trust a company (B2C) more when it comes to concerns relating to hygiene (e.g., Hu et al., 2018). This is noteworthy, as from looking at the websites, there does not seem to be a difference between B2C and P2P, as both cover returns, aftercare, and 'what if' questions, yet it

seems that simply the association of a garment belonging to an individual rather than an entity can have key implications for the service provided, which we will return to later on in this chapter.

One of the reasons why the sharing economy and specifically rental platforms may have gained popularity up until 2019 is the fact that consumers become increasingly environmentally conscious (Henninger et al., 2016; Drew, 2019) and are aware of the impact their fashion consumption practices have on the natural and social environment. This has been amplified with the emergence of social media, in that consumers now have access to information not only 24/7 but also instantaneously, which implies that companies can no longer hide, and mistakes are uncovered and broadcasted to a wide audience, spreading almost like a wildfire. The COVID-19 pandemic has further enhanced the environmental consciousness of people and also led to decluttering actions, in that people have started to part from their clothing possessions (WRAP, 2020a, b; Deloitte, 2021). A McKinsey survey found that 20% of customers want to reduce their closing consumption post-pandemic, and furthermore, 71% of customers are interested in participating in fashion business models that offer rental, resale, and refurbishment (EMF, 2020). Secondhand resale platforms seem to start booming, with people selling their 'clutter' online, whilst rental platforms, including Rent The Runway, Le Tote, and Gwynnie Bee, are struggling to keep afloat, thereby furloughing people and/or, in a worst-case scenario having to close down their operations (e.g., Armarium, Le Tote) (Brydges et al., 2020; Chua, 2020; Dua, 2020). Moreover, there are health concerns as to whether it remains safe to continue renting (Murray, 2021), even though rental companies try to reassure their community that they are taking all measures they can to protect their clients. For example, GlamCorner (2020) states, "we have worked closely with our team to ensure we are upholding the highest safety and hygiene standards across our operation while fulfilling your orders." They indicate that they are providing hand sanitizers and facemasks to their workforce whilst at the same time ensure that their garments are disinfected. Although there are voices of concern raised, especially in terms of hygiene, Conlon (2020) reports the opposite, in that especially P2P renting seems to see an increased uptake during the 2020 pandemic. My Wardrobe UK, for example, "saw a 50% increase in stock listed by brands and private lenders" (Conlon, 2020). Perhaps an explanation that can be given here is the fact that P2P platforms are a way for people to capitalize on their idle capacities, in that they gain a certain percentage of the rental/leasing fee and/or have the opportunity to sell these if an offer is made. These P2P platforms advertise themselves as being "determined to transform the way we consume fashion, By Rotation empowers you to do good for your wardrobe, your wallet and planet at the same time" (By-Rotation, 2021), thereby making themselves attractive not only to those, who want to earn money, but also conscious consumers that are increasingly on the rise, especially since the COVID-19 pandemic.

We want to take a moment to reflect on this contradiction, which is seemingly an oxymoron: fashion rental platforms have emerged and mushroomed out of nowhere since the 2008 credit crisis, as such, they are a crisis phenomenon, and should theoretically speaking, be equipped to deal with uncertainties in the market environment, such as is currently seen in the COVID-19 pandemic. Yet, this does not seem to be the case, but rather they seem to be struggling to keep afloat especially B2C platforms. An explanation could be that people have fewer occasions to go out and dress up, seeing as curfews and social distancing regulations prohibit social gatherings and events. Similarly, new fashion trends, such as the 'slob style' imply that people no longer look for skirts or smart pants (Ferrier, 2020), but rather focus more on shirts, blouses, and accessories, as only the upper part of the body can be seen in our now Zoom and Teams society. A further noteworthy observation is the fact that resale platforms such as eBay, Depop, or TreadUp are booming, as well as those rental platforms that have a P2P focus. So why not B2C rentals? Is the answer as simple as to say – finances? In that B2C are dependent on a regular income, whilst

P2P rentals are just providing an extra bit of cash for private individuals? This, however, would pose the argument that P2P rental platform providers are also business entities, thus there may not necessarily be a big difference between B2C and P2P. We will address this further throughout the chapter.

DATA BACKGROUND

As indicated in the introduction section, this chapter seeks to address three key questions, in that it focuses on why some online rental platforms are struggling, whilst others accelerate; whether (or not) these fashion rentals are actually sustainable alternatives; and how these rental platform entrepreneurs can communicate their unique selling points more. Seeing as the fashion industry has been scrutinized for its unsustainable practices and there is an increased priority on sustainability (UN, 2020, 2021), this chapter provides insights into a phenomenon that has gained increased attention in recent years (Brydges et al., 2020; Mukendi & Henninger, 2020). Thus, this chapter contributes to knowledge by providing insights into the three questions posed, which will further practically contribute by providing recommendations that practitioners can take forward in order to compete in a highly volatile market.

These insights are provided and addressed through a unique approach in that we are able to draw on data collected from a variety of projects conducted in Australia, Canada, Japan, Sweden, and the UK. Although the focus of each project differed slightly, there were overlaps, which address the three research questions posed in this chapter. Thus, we are able to draw on data from over 100 semi-structured in-depth interviews conducted in Australia, Canada, Japan, and the UK, contextual analysis of secondary materials (e.g., company websites, news articles, trade publications), as well as results from environmental life cycle assessment (LCA) in Japan, Sweden, and Germany.

Interviews for the various research projects were conducted by the individual authors with entrepreneurs of rental platform owners, as well as current and potential users, in order to gain a more holistic understanding as to what the challenges are and how these could be overcome in the future. Entrepreneurs interviewed were selected purposefully after creating databases of fashion rental platforms available in each country. It may not be surprising that although a relatively large number of entrepreneurs were contacted to participate in the individual studies, the response rate was relatively low in that we had an average of 20 interviews per country. A reason that can be provided here is the fact that these entrepreneurs are dedicated to their business. Due to the size of their organizations, which is often classified as micro (fewer than 10 employees) or small (fewer than 50 employees), these individuals only have limited or no time to spare. Nevertheless, the interviews conducted satisfied data saturation, which implies that no new information was found, with the last 2-3 interviews providing no new insights into the topics at hand. Participants were based in either key metropolises in the individual countries or in cities that have a strong connection to the fashion industry (e.g., Australia – Sydney, Melbourne; Canada – Toronto; Japan – Tokyo; the UK – London, Manchester).

The qualitative data set was analyzed using a grounded approach (Easterby-Smith et al., 2018), allowing patterns to emerge organically. Easterby-Smith et al. (2018) suggest a seven-step guide to interview analysis, following familiarisation with the data set, by carefully reading the transcripts and exploring verbal and, where available non-verbal cues. This is followed by reflection and posing the 'so what' question, which seeks to understand the implications that emerge from the raw data set. The next stage is conceptualization, which is the first stage of crystalizing out seemingly important themes, which are then cataloged and translated into focused and axial codes, thereby making the emerging themes easier to

manage and reduce the initial codes. After discussing emerging themes in each of the data sets, a coding framework was established, which ensured consistency and allowed for discussions of any discrepancies, which were reviewed and recorded. After the coding framework was finalized, data sets were re-coded, implying that each author looked back over the analyzed data to ensure all themes were captured and/or parts re-looked at. Next, the step was linking, whereby an analytical framework is established, the final findings are presented. The final stage is re-evaluation, whereby feedback is gained, and improvements are made to the analytical framework. In this case, feedback was thought of within the interdisciplinary team, as some authors of the chapter are more qualitative-focused, whilst others are specialists in LCA, which allowed for careful evaluation and a rigorous approach to data analysis.

LCAs conducted by the authors and past literature were further reflected upon, as LCA studies seek to provide quantitative insight into the life cycle environmental impacts of clothing rentals. LCA studies are often conducted based on the functional unit of how often a single item of clothing is worn over its lifetime when rented versus owned. As such, it is vital to understand how much different garments are weighing in terms of the fabric used, what material compositions these items are made out of, what distances they may travel (e.g., from and to consumers, throughout the supply chain), as well as the aftercare (e.g., laundering, dry cleaning).

Within the following section, we will provide summaries of our findings and critically evaluate the implications these may have for fashion rental entrepreneurs in addressing the questions posed in this chapter.

KEY FINDINGS

The Winners and Losers of Online Fashion Rental Platforms

This part of the findings section is concerned with addressing the first research question posed for this chapter: why some online fashion rental platforms are struggling whilst others are accelerating? As previously alluded to, there seems to be a contradiction within the current literature and what is reported in media and business reports, in that consumers are seen to favour B2C over P2P for reasons of trust (e.g., Hu et al., 2018), yet P2P rental platforms, such as By Rotation, or My Wardrobe HQ seem to be striving in this current climate (e.g., Chan, 2020; Leach, 2020). Having said that, however, there are also examples of B2C platforms, for example, YCloset in China, that had a slowdown of rentals at the beginning of the year 2020 yet have since recovered and record increased engagement (Chan, 2020). Thus, the question remains – why?

From our research, we found that one reason as to why certain entrepreneurial rental models are struggling may be associated with the market segment they are operating in as well as the type of model that they have developed. Table 2 provides an overview of a select few rental organizations operating globally, this is by all means not exhaustive but provides a good indication as to what is happening in the market. What becomes apparent here is that those businesses that are B2C and focused on luxury rentals seem to have suffered more than others. As alluded to in an earlier part, this could be due to the fact that in our newfound 'slob chic' lifestyle trend, there are fewer occasions to actually wear these luxury outfits. Similarly, with individuals having been hit by the COVID-19 crisis, many have lost their jobs and thus are unable to justify spending any money on luxuries, whilst others save their disposable income, in case they too are hit by furlough schemes and/or redundancies (e.g., Brydges et al., 2020;

JPMorgan, 2020; Seares, 2020; Drapers, 2021), which was also reflected in our dataset. The success of airCloset, the largest fashion rental platform in Japan, can also be explained in the same way. airCloset targets working women as their customers and offers monthly subscriptions of three pieces of stylist-picked business casual to casual wear. When the COVID-19 crisis encouraged people to work from home, airCloset offered a new service that only contained tops, when it used to be a combination of a top, a bottom (e.g., skirts and pants), and a dress. As a result, they successfully gained new customers wanting to wear different clothing for video conferences. The fact that airCloset's offering of business wear was not severely affected by the COVID-19 crisis and their innovative service offering have contributed to the continuing growth of the business (Shimbun, 2020).

In a similar vein, we also see some rental organizations moving away from 'unlimited' rentals and/or swapping options. This could indicate that these options were costly and impractical for the rental companies and/or implied a loss made (e.g., Rent The Runway). The longer individuals keep garments and wear them, the less this item can be rented out to others, and as such, it is no longer a 'cash cow.' Thus, companies seem to be moving towards either short-term rentals or limit the number of garments that can be rented before an exchange needs to occur, thereby posing limitations on how many garments can be rented within each subscription, with additional fees being charged for extras.

We see a stronger uptake of P2P rental models, which could be explained in that these often are linked to online communities. By Rotation, for example, not only offers customer reviews, but rather they have a community space on their website and provide style guides on how to wear garments (ByRotation, 2021b). During the lockdown, they have further taken the initiative to engage with their consumers and provide Instagram Live sessions and other gimmicks, thus it may not be surprising to see a 50% increase in listings on their website and an overall 600% increase in rentals (Banks-Walker & Graddon, 2020). Thus "By Rotation's success highlights the ways that the fashion rental market is shifting — and suggests that, for those in lockdown who have no need to dress up, a new friend might be the month's most desired accessory" (Leach, 2020). This outlines further that the rental market may need to shift from being solely a business model to becoming a social entity with a personality and character and thus, moves beyond being solely commercial.

Although consumers have indicated that renting can reduce risk (Hu et al., 2018) in that they can try out new things without having to pay the full price, during the pandemic, it becomes apparent that the once-lucrative subscription model is simply too expensive and seen as not affordable especially for generation Z (Leach, 2020). This has led to former highflyer Rent The Runway having to freeze their subscription models and also making changes to their overall strategies, for example removing the Unlimited Swaps option. Throughout our data collection, we have noticed that companies have moved away from a 'swap' option to a 'refund option' that is linked to various conditions, such as needs to be done within 24 hours, security tags cannot be removed, and more, thereby trying to avoid consumers continuously swapping items that might fit but may not be 100% to their taste. This provides rental platforms with more financial freedom, as they have less hidden costs associated with swaps and more control.

Disruptive business model innovations, especially in the tourism and transportation industries, are lucrative due to their price points, as they are usually cheaper than their mainstream counterparts. Within the fashion industry, this may not necessarily be the case, although, in the short-term, there may be financial benefits, in the long-term, fashion rentals may get more expensive. This can be an issue, seeing as there are a lot more 'discounters' and 'online outlet' platforms emerging, with whom rentals now have to compete. For example, the luxury fashion rental Armarium had to cease its operations in March 2020 due to being unable to cover the costs of their business model, as they were competing with

Table 2. Overview of fashion rental businesses globally

Name	Country	Est. in	Garment Type	Changes Since COVID	Still in Business	B2C// P2P	Reference
YCloset	CN	2015	Casual wear	Added resale	Yes	B2C	Reuters, 2019; Chan, 2020
Rent The Runway	USA	2009	Designer clothing	Furlough staff, cut wage, froze subscriptions	Yes	B2C	Dua, 2020; Leach, 2020
Armarium	USA	2016	Luxury clothing & accessories	Struggle with high cost of rental business; ceased operations	No	B2C	Leach, 2020
Hurr Collective	UK	2017	Luxury clothing & accessories	Decrease in consumer base; Plan to collaborate with Selfridges	Yes	P2P	Chan, 2020
Girl Meets Dress	UK	2009	Luxury clothing & accessories	Struggle to create market share	Yes	B2C	Rose, 2020
My Wardrobe HQ	UK	2019	Luxury clothing & accessories	30% rental increase		P2P	Banks-Walker & Graddon, 2020; Conlon, 2020
By Rotation	UK	2019	Luxury clothing & accessories	50% increase in listings Mix between social platform and commerce 600% rental increase	Yes	P2P	Banks-Walker & Graddon, 2020; Leach, 2020
Relanda	DE	2018	Children's wear, casual wear	Closed down in Autumn 2020; Operated different platforms (e.g., Kilenda, stay awhile, Tchibo share)	No	B2C	Martin, 2020; Tchibo, 2020
Räubersache	DE	2015	Children's wear	Children's clothing unaffected	Yes	B2C	Martin, 2020
Circos	NL	2019	Children's wear	Partnering up with H&M - even though kids wear not seen to be future proof	Yes	B2C	Deeley, 2021
Vigga	DK	2014	Children's wear	Provides through Circos	Partially	B2C	Circos, 2021
airCloset	JP	2015	Business casual and casual wears	307% increase in membership from the year before	Yes	B2C	airCloset, 2020

Source: (authors' own)

pure-play retailers such as Net-A-Porter, who offer discounted luxury garments and may in the long-term be cheaper than the rental option that was offered by Armarium (Adegeest, 2020). Thus, e-commerce platforms, and especially pure-play retailers, have caught onto the trend of providing similar products often cheaper, or even if not, the emergence of platforms such as DePop or Vinted make it easier to sell secondhand items that are no longer wanted. Even though these rental platforms emerged after the

economic crisis and offer, at times, a cheaper alternative to ownership models, there are perceived risks and mistrust that underpin consumer willingness to engage. It remains to be seen if rental platforms will be able to regain their momentum prior to the pandemic.

Availability and keeping up with trends are further key challenges that these rental platforms are faced with. No matter whether we focus on B2C or P2P, availability of different sizes and styles can be an issue and often also an exclusion criterion, as a lack of availability will discourage some consumers from considering these disruptive innovations as alternative forms of fashion consumption.

With respect to consumers, initial findings indicate that the country context and, thus, the cultural background of consumers may play an important role in terms of uptake of rental platforms. Here our findings are in line with Iran et al. (2019), and Henninger et al. (2019) further outline that there may also be a cultural angle associated with reusing garments, as some countries may have a stigma attached to secondhand garments. Although the research context slightly differed, as the focus was on swap shops, rental platforms, in general, are not popular in Germany, as "people aren't going to rent very basic clothes. Maybe if it's something special like a coat or winter ski outfits, but it's not really possible to rent the whole range of clothes" (Pinnock, 2019). This indicated that there may be cultural differences that impact rental services and offerings. For example, in Germany, rental providers focusing on children's wear or sporting accessories (e.g., ski) seem to be more popular than those focusing on everyday and casual wear. The platform Tchibo Share provides a statement on their website where they highlight "fail fast. Fail forward", which implies that although their sharing platform had to cease business after only 2.5 years, Tchibo sees this as an opportunity to build on their knowledge and develop other sustainable business models in the future, as such it is seen as a means rather than an end (Tchibo, 2020). Whilst in the UK, conscious consumers, seem to be increasingly turning towards rental models, these seem to remain fragmented in the market, which could be due to a lack of infrastructure (Pinnock, 2019). A reason could be that, unlike in other countries, no major fast-fashion retailers have incorporated fashion rentals as an alternative in the UK. Swedish brand H&M and Danish company Ganni have added new business strands as part of a loyalty scheme to attract more consumers to buy into the brand (Nazir, 2020), whilst Dutch company MUD has always been based on leasing model.

Moreover, B2C businesses that are operating both online and offline are now also struggling during COVID-19. Retail spaces remain closed, which implies that these physical premises become a cost burden and thus, have an impact on the financial situation of these businesses. With COVID-19 presenting an unprecedented case, it is tough for these operations to make a call on whether to 'ditch' the physical space and focus solely online or hoping to re-open sooner rather than later and encouraging people to come back. A decision that is tough and can mean the survival of a business.

Table 3 provides a summary of the points raised by outlining key challenges these fashion rental platforms face. Although some of the aspects highlighted are specific to either P2P or B2C fashion rentals, a majority of points raised are applicable to both.

To conclude, there is no one reason as to why some of these entrepreneurial ventures may be struggling, but there are multiple ones that can occur in any combination. Whether it is simply a 'tough luck' situation that has been fostered by COVID-19 and the fact that social occasions have stopped, and thus the need for certain fashion rentals, or the fact that some fashion rentals have evolved from being commercial to becoming social entities with a personality and character that are seen to be different. What can be said for sure is that there is no right way of dealing with the struggle, as no one will ever be able to please all audiences, but we may see a shift in the future of rentals, similar to the tourism industry, where there is a move away from a simple holiday to an experience.

Table 3. Summary of SWOT analysis for P2P and B2C fashion rental platforms

Strength	Weakness
P2P - Less financial pressure on business as individuals rent out idle capacities; B2C - Perceived consumer trust when it comes to aftercare P2P & B2C - Flexibility to adapt modes (e.g., no Unlimited swaps; stylist picks to only include tops, not bottoms) - In short-term relatively cheap - Allows consumers to try new styles without ownership commitment	P2P - Lack of consumer trust when it comes to aftercare B2C - Financial pressure on business as owning idle capacities and reliant on revenue stream P2P & B2C - Rental in long-term expensive - May not always be able to follow trends - Availability of garments
Opportunity	**Threat**
P2P - Online communities that facilitate belonging - Easy facilitation of renting out idle capacities – making it lucrative for individuals P2P & B2C - Collaborations with mainstream businesses (e.g., pop-up events) - Increased environmental consciousness of consumers - Certifications that outline environmental benefits	B2C - Online and offline operations due to high rents may not be financially viable P2P & B2C - Pure-play retailers offering garments at discounted prices (e.g., YOOX, Net-A-Porter) - Re-sale apps (e.g., Vinted, Depop) - Mainstream retailers incorporating rentals as part of their business model (e.g., H&M, Gianni) - COVID-19 and hygiene concerns - Infrastructure set up to deliver rentals, cleaning services, etc.

Source: (authors' own)

Sustainable Solution or Sustainable Illusion

The year 2020 has had and is still having a significant impact on fashion rental platforms, prior to 2020, fashion rentals have been proclaimed to be "the future of fashion" by Bloomberg (Leach, 2020). It was highlighted that "rental can be fun. It's a one-night stand. But you can look good with the virtue factor of knowing you haven't done any damage to the environment" (Little, 2019). Thus, fashion rental companies were and still are portrayed as more sustainable alternatives to the dominating 'take-make-use-dispose' or fast fashion paradigm. Yet, whether or not this is a reality is questionable and lacks research (Retamal, 2017). Piontek et al. (2020) note that their results based on casual wear rental services in Japan and Germany highlight the environmental benefits are very much dependent on the type of garment and how often these are worn when they are rented. A white T-shirt, for example, may not make a lot of sense to rent because the number of wear-time is less likely to increase even when rented, compared to garments that are only worn occasionally when owned, such as dresses. Similar arguments have been made by Tukker (2015) and Johnson (2020), thereby indicating that some of the environmental benefits may be dressed up, perhaps to create a hype or to encourage people to rethink their current consumption habits. Based not only on data from our projects but also by conducting secondary research, we also found that there may not be an actual representation of what is currently rented, as the majority of papers and studies published and/or undertaken focus either on common items (e.g., dress, jeans, t-shirt), or those that may be rented as one-offs (e.g., overcoats, jackets, jumpsuits) (Zamani et al., 2017; Piontek et al., 2019). Although acknowledged in these studies, neither study takes into account that a dress is not necessarily a dress, as there are differences in terms of style (e.g., colour and/or print), which could have an impact

on the actual greenhouse gas emissions. One reason here is that LCA is a data-driven analysis method, where inventory data to compute the environmental effects of garments are largely lacking. Zamani et al. (2017) further state that increased use of fashion rentals can also be a risk. As transportation and cleaning of these garments increase, the more they are utilized, which could potentially counteract the initial environmental benefits that are being portrayed.

As illustrated, there are more questions that can be asked than answered when reflecting on whether fashion rentals are more sustainable alternatives or not. Following in line with Piontek et al. (2020), it is apparent that there are environmental benefits, yet these are more significant for formal wear or items that are worn on occasions. Similarly, the actual rental services provided may have an impact on this, as those companies allowing for swaps to happen may create more environmental impact than those that do not, seeing as garments are not only transported to and from the consumer but also may need to be cleaned without having been worn. This could also, perhaps, be a reason as to why Rent The Runway is stopping its 'Unlimited Swaps' option (RentTheRunway, n.d.). Although fashion rentals have taken up in the 21st century, and some companies having exceeded expectations, especially prior to COVID-19 (e.g., Rent The Runway, Girl Meets Dress), these disruptive innovations are not mainstream, and thus may overall not have a big impact on reducing greenhouse gas emissions. Even though companies such as H&M and Urban Outfitters have trialled rentals in 2019, and Hurr Collection and My Wardrobe HQ have had pop-up stands in well-known department stores, they remain niche (e.g., Little, 2019; Chan, 2020; Leach, 2020).

In reflecting on our research question on whether fashion rentals are a more sustainable option, the answer is – it depends. Fashion rentals do have the potential to make an impact, yet it also depends on consumer attitudes and willingness to change their consumption practices, as rentals should not be seen as yet another option of 'shopping,' but rather a more conscious way to consume and overall reduce fashion consumption. Yet, with it being rather a niche and not available everywhere, meaning that rental companies and or platforms are predominantly facilitated in urban areas with a well-suited infrastructure, their overall impact may be limited. Similarly, there may be a need to provide more education on fashion rentals, as currently claims being made of rentals being the 'guilt-free one-night stand' may be misleading, as depending on the item rented, there may be a bigger impact or almost none.

What to Say and What Not to Say

This last section focuses on the third question posed and thus contemplates what rental platform entrepreneurs could communicate or how they could communicate better what they see as their unique selling points.

With the rise of environmental consciousness, partially enhanced through the current COVID-19 pandemic (WRAP, 2020a, b; Brydges & Hanlon, 2020), entrepreneurs could showcase their sustainable credentials. This does not mean making claims about being more sustainable alternatives to, for example, purchasing first hand, but rather to showcase their third-party accreditations. Table 4 indicates that there are some rental platforms that have third-party accreditations featured on their website, such as Certified B Corporation, the Positive Luxury Butterfly mark, the Eco-Age Brand Mark, or they committed to the Ecologi pledge. All of these accreditations featured on their websites are indications that these rental companies are going the extra mile and actively seek to be more 'sustainable' solutions. Interestingly, when researching these companies, it is not always straightforward to see these credentials, in some instances, they are at the bottom of the page and require individuals to scroll all the way to the

footer, or they are almost hidden in a sustainability section, which requires the consumer to have an active interest in either the sustainability section and/or the credential showcased. It could be suggested that these marks, however, are a unique selling point, which may become even more important in the future. For example, Certified B Corporation implies that these rental platforms "are businesses that meet the highest standards of verified social and environmental performance, public transparency, and legal accountability to balance profit and purpose" (BCorporation, 2021) and are thus, leading the way to a more sustainable future. Similarly, the Positive Luxury Butterfly mark is a trusted mark that showcases a brand's dedication to sustainability (Langley, 2020), whilst the Eco-Age brand is only awarded to businesses that have a commitment to sustainability, by reducing their environmental impact, by being transparent, and by showcasing (eco) innovation. Seeing as sustainability was and remains a buzzword in the industry, highlighting the efforts being made to comply with sustainability-related issues can be vital and set these companies apart, not only in the rental market but also when it comes to, for example, competing for collaborations with brands such as H&M, Gianni, Selfridges and/or Urban Outfitters.

Table 4. Examples of rental platforms that have a sustainability-related certification

Name	Country	Established in	Certification
GlamCorner	Australia	2012	Certified B Corporation
My Wardrobe HQ	UK	2019	Positive Luxury Butterfly Eco-Age Brand Mark
By Rotation	UK	2019	Eco-Age Brand Mark Ones to Watch – Drapers Sustainability Award 2020
Rotaro	UK		Ecologi climate positive workforce
Hurr Collective	UK	2017	Ecologi climate positive workforce

Source: (authors' own)

Seeing as P2P rental platforms seem to have taken a leading position, it may be beneficial to learn from their success. As was indicated, By Rotation has moved away from being solely a commercial entity to strongly emphasize the social aspect. Building a community and making sure that consumers are not only seen as 'cash cows' but as individuals that are part of the renting lifestyle can enhance engagement and buy-in and, thus, lead to increased uptake. As alluded to earlier, we have moved away from simply being a material society to an experience society, therefore it will become even more important in the future to be part of this new trend and ensure that these experiences can be delivered.

In this unprecedented environment, it is further important to communicate with customers and ensure that they are feeling safe to rent garments not only now but also in the future. Highlighting how a crisis is managed can be a crucial selling point, as people will remember how businesses have treated not only their staff but also their customers. Dore et al. (2020) point out that "during the COVID-19 pandemic, companies that lead with empathy and genuinely address customer needs can strengthen relationships".

FUTURE RESEARCH DIRECTIONS

From the insights provided in this chapter, it becomes apparent that although there are similarities and differences between B2C and P2P rentals, these have not been explored in detail. Although there are a variety of publications that have focused on rental platforms (Mukendi & Henninger, 2020; Brydges et al., 2020), these have not made clear distinctions on whether the focus is on P2P (pure collaborations), P2P, and B2C as 'intermittent collaborations' or B2C as 'pseudo collaborations' or whether there may be a difference between them. However, this could be of significance, given that our chapter indicated that some of the pseudo collaboration platforms, especially those focusing on luxury fashion (e.g., Armarium), have ceased operations. An explanation here could be the emergence of e-commerce platforms, such as YOOX or Net-A-Porter, which offer luxury garments at a discount price. Pure collaborations seem to see an increase in utilization, as they have managed to build a strong community by not only offering to rent out idle capacities but also provide individuals with a sense of belonging. Similarly, intermittent P2P and B2C platforms seem to have seen an increase in their consumer base, with individuals increasingly deciding to also become providers. In contrast to pseudo-sharing platforms, the financial responsibility shifts from the business to individuals. As indicated in the introduction, fashion rental platforms have been a crisis phenomenon. Some of these platforms have taken a hit during the COVID-19 pandemic. Although we have provided some explanations as to why this could be, future research should undertake research with both consumers and platform entrepreneurs to gain an insight into their motivations and attitudes towards their behavioral change.

Although fashion rental platforms are seen to be more sustainable, this is largely untested (Brydges et al., 2020). If we believe that fashion rentals are the future, we need to provide more convincing data that our 'wardrobe' in the cloud can have the desired impact and that the benefits outweigh the drawbacks of these models. We currently know that rental garments, especially for online renting platforms, are transported back and to the company, and as such, there is an additional CO2 emission that needs to be calculated. Garments need to be cleaned once they have been with the consumer in order to adhere to hygiene standards, which might either mean the use of chemicals for dry cleaning purposes or water for wet laundering. Increased wear of garments could further test the durability of the material, and even though it was intended to be worn more often could end up being discarded if consumers are not taking care of items. What has also not been considered as of yet is the fact that fashion rentals, similarly to fast fashion, could increase consumers' fashion appetite in that they may want to access more and more clothes at a fast speed, which would pose the question of what might be the lesser of both evils? Thus, we suggest that future research could conduct a wardrobe study in which different options are carefully evaluated, and the actual impact of different modes of 'shopping' and use of garments are evaluated.

As indicated, there are cultural barriers toward secondhand consumption, which by nature also impacts rentals. In order to be able to assess this impact, more studies need to be conducted in different cultural contexts, not only within the Global North but also in the Global South, which remains under-researched (e.g., Iran & Schrader, 2018).

CONCLUSION

This chapter was set out to provide an overview of opportunities and challenges rental platforms, and more specifically rental platform entrepreneurs, but also their consumers face in the 21st century that is

not only coined by technological innovations that provide the opportunity to facilitate these online platform businesses, but also by sustainability activities and the COVID-19 pandemic. As such, we posed questions that seek to understand why some of these fashion rental platforms are struggling to survive whilst others are striving. We further posed the question of whether these rental models are truly more sustainable alternatives and how these fashion rental entrepreneurs could communicate their unique selling points better, thereby attracting more consumers to engage in these alternative forms of fashion consumption.

What becomes apparent after reading this chapter is that there are more questions raised than answers provided, which highlights that there are opportunities for future research. For example, we saw rental platforms mushrooming out of nowhere after the credit crisis in 2008 – what we do not know however, is what the motivations were of these fashion rental entrepreneurs. To explain, there may have been different motivational drivers to set up these businesses: such as being opportunistic and thus, being able to capitalize on what seemed to be a crisis situation (referring to the credit crisis in 2008) and turning it around to make it into a business opportunity. Another driver could have been a passion for sustainability and leading change, with media and industry reports highlighting that changes need to be implemented as the current take-make-use-dispose model is not sustainable. Technology also will have played a vital role, as, without it, these fashion rental entrepreneurs may not have been able to set up their platforms and communicate with their target audience and/or build a community of peers that actively engage in the access-based consumption process. Nor would they have been able to facilitate their business idea if the infrastructure would not have been available (e.g., only payments, delivery services, cleaning services).

Similarly, from a consumer side, we can currently only assume what motivated fashion rental entrepreneurs and also individual consumers at the time they engaged with access-based consumption models (here rental platforms) and what motivates them now to take part and facilitate these fashion rental platforms. May it have simply been the thrill of something new and exciting? A genuine interest in reducing their carbon emission footprint? Or simple risk aversion, in that they can 'try before they buy'? These are questions that currently remain unanswered. In the same vein, we do not know whether motivations will change post-COVID-19. All these questions posed provide further avenues for future research.

As was demonstrated, there are different types of business models available: B2C and P2P, both of which come with their own set of advantages and disadvantages. We indicated that P2P platforms may have flourished, especially since the COVID-19 pandemic, as they are often associated with more social structures, including, but not limited to being able to 'talk' to fellow consumers, creating a community around fashion styling and lifestyle, and potentially also sharing stories. Nevertheless, we have also seen success stories on the B2C side, whereby Ycloset in China and aircloset in Japan recorded profits after switching around their business subscription models to cater to the newly emerged 'slob chic' trend. Whether or not we will see a change in how platforms are run and/or different services provided (e.g., buying option) will be seen in the future.

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KEY TERMS AND DEFINITIONS

Disruptive Business Model Innovations: A niche business model that is seen as inferior yet may outperform traditional business models on aspects such as location, price, or style.

Entrepreneur: An individual, who sets up, here a fashion rental business, thereby often taking financial risks in the hope to make large profits in the future.

Fashion Rental Platforms: An online platform allows individuals to hire garments from either an organization or peers.

Intermittent Collaboration: This refers to peer-to-peer renting platforms that are facilitated by an organization, and thus, they act as an intermediary between two individual people.

Pseudo Collaboration: Individuals can rent garments from an organization, and although they may use garments collaboratively, the rental item may not be an idle capacity and is owned by the company.

Pure Collaboration: This refers to individuals being able to rent garments from a peer directly without any intermediary.

Section 4

Pathways to Success for E-Commerce Platforms

Chapter 8
Customer Satisfaction Towards Online Shopping by Empirical Validation of Self-Determination Theory

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ABSTRACT

The chapter aims at understanding the predictors of customer satisfaction with online shopping in India by using self-determination theory. This research validates perceived enjoyment, social influence, social media interactions, reverse logistics, and pay-on-delivery (POD) mode of payment as new predictors of customer satisfaction in online shopping. Data was collected through a self-administered and structured questionnaire targeting online shoppers in North Indian states. A sample of 424 online shoppers was considered in this research. Structural equation modelling (SEM) was used to evaluate the constructs. CFA was applied to calculate validity and composite reliability. To examine the hypothesized relationships, path analysis was carried out. The findings of the chapter revealed that social influence, reverse logistics, and POD mode of payment had a significant positive impact on customer satisfaction. Perceived enjoyment emerged as the strongest predictor of online shopping satisfaction. In contrast, social media interactions emerged as non-significant.

INTRODUCTION

Online shopping has expanded its horizons over the last few decades due to higher Internet penetration rates, time convenience, swift availability of product-related statistics, reviews about the experience

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with the product, and social media interactions. As a result, the Indian e-commerce market is projected to cross a figure of US$ 200 billion by 2026 (IBEF, 2020). A significant part of this penetration and development could be attributed to technological advances such as 4G networks and the adoption of smartphones. Furthermore, in an endeavor to encourage online retail, the present government has permitted 100 percent foreign direct investment (FDI) since 2016 (IBEF, 2016). Consequently, until August 2020, a significant upsurge in the number of internet connections was observed.

Additionally, driven by the "Digital India" initiative, the number of internet connections significantly reached 760 million in 2020, where 61% of connections were in urban areas, of which 97% of connections were wireless (IBEF, 2020). This has resulted in profound fluctuations in consumer behavior. At present, India's e-commerce sector includes only 3.4 percent of the overall retail market, with 100-110 million users and an online gross merchandise value (GMV) of about $30 billion (Salman, 2020). In addition to financial technology (fintech) constraints, e-retailers also counter poor infrastructural problems and connectivity with scattered areas comprising 6000 small cities and 0.6 million villages (Nielsen, 2017). In sum, although there has been a sharp upsurge in Internet penetration, this growth has not rendered into more e-shopping numbers.

India also lags behind its neighboring country China in e-Commerce adoption and penetration, which had a 14% online retail penetration at the end of 2019. In contrast, in a developed economy such as the USA, there are slightly more than 284 million internet users in 2020, around 87 percent of the total population (Statista, 2020). But alone in 2020, there were 227.5 million online shoppers, which is approximately 88 percent of the adult population (Salman, 2020). With the upsurge in online shopping due to the COVID-19 outbreak, this number is anticipated to reach 230.5 million in 2021 (Statista, 2020).

Additionally, US e-commerce sales reported 11 percent of all retail sales in the United States, and the figure is anticipated to increase to more than 15 percent in 2021. While there are apparent population and size differences between the USA and India, developing and developed nations also differ very much in their e-commerce development. Developing nations are symbolized by low e-commerce penetration. It is thus of utmost importance to understand the variables that improve the online customer base and retain the existing online customers (Vijay, 2020). Therefore, there is an indispensable requirement to investigate the variables that facilitate e-retailers acquiring additional consumers in an emerging economy context like the Indian one. The Indian setting is similar to a variety of other emerging economies.

Several studies have investigated the online shopping phenomenon in the emerging Indian economy context, yet several issues may arise in extant research. First, most past studies have analyzed e-commerce adoption with limited sample sizes (Sharma and Rehman, 2012; Kumar and Kashyap, 2018). This is problematic from a statistical perspective but also an ecological validity viewpoint. Samples should represent the population under study. Such small samples cannot appropriately reflect either the volume or the diversity of such a large nation as the Indian one. In fact, and related to the previous point, most studies have been restricted to specific geographical areas (e.g., Kandulapati and Bellamkonda, 2014; Kumar and Kashyap, 2018; Merugu and Mohan 2020; Kripesh *et al.,* 2020).

Second, most studies focused on purchase or repurchase intentions (e.g., Kwahk and Kim, 2017; Safia *et al.,* 2019; Oumayma, 2019). Intentions are important, but they may not necessarily translate into behaviour due to the intention-behavior gap. Studying behaviour frequency, on the other hand, informs about behavioural loyalty (repeated visits, repurchases) but not about emotional loyalty (positive attitudes, favourable recommendations) that are more important to spur stable and sustainable e-commerce growth (Chaffey and Ellis-Chadwick, 2019; Kingsnorth, 2019). Greater emphasis should thus be put on exploring satisfaction as an essential component of emotional loyalty.

Third, from a more theoretical and fundamental perspective, it is a well-known fact that consumers evaluate product feedback from significant others (e.g., family, friends). These social interactions impact their purchase and repurchase intentions (Mourali *et al.,* 2005; Dwivedi et al., 2018; Zhou et al., 2013; Constantinides, 2014). Social influence has been validated as a significant factor leading to online purchases (Tamilmani *et al*., 2018; Tandon *et al.,* 2017; Khristianto *et al.,* 2012). Yet, social influence is compounded by social media interactions, especially in the form of online consumer evaluations. Online product reviews and ratings, information, and persuasion are significantly and positively associated with consumers' purchase intention and customer satisfaction (Casaló *et al.,* 2008; Zhang *et al.,* 2014; Ashman *et al.,* 2015). Yet research about the impact of broader social media interactions (e.g., online discussions, posts on social networks) on online shopping behaviour is still in a nascent stage (Kwahk and Kim, 2017; Dwivedi et al., 2018; Oumayma, 2019). It needs further investigations in this regard.

Fourth, reverse logistics (which indicates the entire process linked with the return and repair of the product) has diminished the perceived risk of receiving sub-standard items through online shopping. Fair and moderate return policies positively impact online purchasing behavior (Bower and Maxham, 2012; Pei et al., 2014; Oghazi *et al.,* 2018). Most anxious online shoppers consider reverse logistics as a safety net to go ahead. That option will play an essential role in an emerging economy such as India, where the GDP per capita is comparatively lower, and consumers need to make every money count.

Therefore, the present research investigates the impact of a diverse set of factors beyond those validated by previously reported models, such as perceived enjoyment (Brown and Venkatesh, 2005), on customer satisfaction with e-commerce, in a developing economy research setting. Furthermore, due to differences in economic and regulatory aspects, established and validated models in developed countries need to be deepened or modified in developing countries for broader acceptance.

Therefore, the foremost objective of this research is to validate the impact of Perceived enjoyment, Social norms, Social media interactions, Pay-on-Delivery (POD), and Reverse Logistics as antecedents of customer satisfaction. We posit several predictive constructs that have been studied separately concerning customer satisfaction and have not been validated together in a single study in an online shopping context. To fill this gap, this study uses the self-determination theory (SDT) (Deci and Ryan, 1985) as an integrative framework to encompass the influence of different constructs holistically. In this study, a model is developed to answer the following questions:

1. What is the effect of perceived enjoyment on consumers' satisfaction with e-commerce?
2. What is the influence of social norms on consumers' satisfaction with e-commerce?
3. To what extent do social media interactions spur consumers' satisfaction with e-commerce?
4. To what extent is implementing the Pay-on-Delivery (POD) mode of payment optimal for an online retailer to increase consumers' satisfaction?
5. What is the propensity that implementation of reverse logistics improves consumers' satisfaction with e-commerce?

This study has numerous theoretical and practical contributions. First, it validates constructs like POD, social media interactions, social influence, perceived enjoyment, and reverse logistics in the context of online shopping in a developing country. These have been investigated independently across the literature and are now integrated collectively in a holistic model. Second, this study extends the self-determination theory (SDT) (Deci and Ryan, 1985) by incorporating new variables, including the under-explored POD mode of payment and the emerging concept of social media interactions not been covered concerning

customers' satisfaction towards e-commerce. Third, drawing on White (2015), this research deepens the knowledge of customer satisfaction using SDT theory.

THEORETICAL BACKGROUND

Self-Determination Theory

"Self-determination theory (SDT) (Deci and Ryan, 1985) is particularly unique as it accentuates the diverse categories and sources of motivation influencing quality and dynamics of behavior. SDT explains how humans build a complete sense of self by regulating their psychological needs for well-being and satisfaction (Sheldon *et al.,* 2001; Gagné and Deci, 2005u; Hwang, 2010). SDT posits that intrinsic motivation (perceived enjoyment) and extrinsic motivation (social norms) are behavioural instincts in overall general behavior (Hwang, 2010). This theory has been validated extensively by researchers in social psychology but has been under-explored so far in the field of e-commerce (Hwang, 2010; White, 2015; Gao *et al.,* 2018; Hew and Kadir, 2017). This is surprising since the investigation of website satisfaction is crucial to predict emotional loyalty, the latter being more important than behavioural loyalty since it signals intrinsic drive rather than a possibly extrinsic one (Chaffey and Ellis-Chadwick, 2019; Kingsnorth, 2019). Online vendors provide notably countless signals and features to create enjoyable shopping experiences and cultivate consumers' satisfaction. In line with past research (Martin and Hill 2012; Kim and Drumwright 2016), this study attempts to explore which factors, as perceived by consumers, contribute to customer satisfaction in an e-shopping context."

The study extends Hwang's (2010) model where intrinsic and extrinsic motivation has impacted intentions to adopt e-commerce. Extrinsic motivation refers to "the performance of an activity because it is perceived to be instrumental in achieving valued outcomes that are distinct from the activity itself" (Davis et al., 1992, p. 1112). A noteworthy characteristic of extrinsic motivation is instrumentality, where an individual performs some activity for a specific reason. Some external mechanisms control this behavior. For example, individuals can be extrinsically motivated through some prizes and rewards (Ryan and Deci, 2000). This reinforcement helps them understand the significance of the phenomenon and inspires them to adopt and participate in the events with confidence and sensations. The individuals comprehend the importance of the event, absorb the technicalities associated with it, and acknowledge being engaged with it.

In contrast, intrinsic motivation refers to ''the performance of an activity for no apparent reinforcement other than the process of performing the activity per se" (Davis et al., 1992, p. 1112). In other words, intrinsic motivation ascends when people find fascination and delight in a phenomenon. This concept leads to cognitive and social development and, in turn, generates enjoyment throughout life (Deci and Ryan, 2000). Venkatesh and Davis (2000) identified perceived enjoyment as intrinsic motivation, and so this study treats perceived enjoyment as an inherent motive. In contrast, social influence may be considered as an extrinsic motive to e-commerce satisfaction. Both the diffusion of innovation theory (Rogers, 1995) and the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) (Venkatesh et al., 2012) predict that social influence impacts technology adoption and online shopping intentions, respectively. Moreover, the effect on purchase intentions have been supported with ample evidence in past research (Limayem et al., 2000; Venkatesh et al., 2003; Hwang, 2010; Leischnig et al., 2011).

Social influence on e-commerce intentions and adoption is prescriptive, thus acting possibly as an extrinsic motive. Yet, its effect on satisfaction is somewhat different. To explain that difference, it is essential to return to psychological needs, a vital construct about motivation (Deci and Ryan, 1985). Psychological needs refer to "those needs when satisðed (or thwarted) are generally beneðcial (or detrimental) to one's ongoing psychological growth, development and well-being" (Deci and Ryan 2000, p. 71). Therefore, individuals perform activities that lead to self-esteem and self-enhancement. If significant others such as family, peers, and friends convey positive word-of-mouth about online shopping, they not only fulfill the consumer's psychological need for sociality but they make e-commerce appear as something enjoyable (Tandon, 2021). If these interactions occur online, the connection with electronic commerce becomes salient since the technology may fulfill the psychological need of social belongingness. E-commerce, in particular, may thus benefit from a sense of extended satisfaction towards technology, in general, due to the positive echo e-commerce receives from significant others and due to the tremendous potential of technology for fulfilling basic social needs.

Other key e-commerce features may refer more straightforwardly to extrinsic features as conceptualized in SDT (Deci and Ryan, 1985) while contributing to secure critical psychological needs. POD mode of payment (Tandon *et al.,* 2017), inverse logistics (i.e., return policies) (Oghazi *et al.,* 2018), and social media interactions may, indeed, be instrumental in achieving valued outcomes that are distinct from the e-shopping activity itself. First, the POD mode of payment attenuates the perceived financial risk of losing money through unsafe online interactions. It also suppresses the negative feeling related to the incapacity to pay online without a credit card or virtual money. Second, return policies also mitigate financial risk because consumers may ship back inappropriate or unwanted deliveries and partially or recover their purchase price. Finally, this risk attenuation effect is amplified through social media interactions such as peer feedback, product ratings/reviews, online discussions (e.g., chatrooms, chatbots, forums, social networks, instant messaging), free product browsing that are increasingly built-in or connected to commercial websites. While these social interactions fulfill an individual's basic psychological needs for safety and belongingness, they may simultaneously trigger satisfaction *with* technology in general, including e-commerce (Van den Broeck *et al.,* 2016; Gao *et al.,* 2018).

Overall, these online shopping policies motivate consumers to shop online and bring about positive outcomes leading to satisfaction. Thus, these options fulfill psychological needs by increasing perceived benefits and decreasing perceived risks, contributing to individual growth, development, and well-being. Their effect on satisfaction should therefore be highly positive. The following section elaborates more precisely on the notion of customer satisfaction.

Customer Satisfaction

Customer satisfaction is a widely studied dependent variable in online shopping (Chu and Liao, 2007). It is defined as a consumer's fulfillment response: "it is a judgment that a product or service feature, or the product of service itself, provided (or is providing) a pleasurable level of consumption-related fulfillment, including levels of under- or over-fulfillment…" (Oliver, 1993). Customer satisfaction plays a crucial role in online shopping as it influences customers' decisions whether to continue to shop online or not. Customer satisfaction has been extensively studied as a dependent variable by researchers in online shopping (Casaló *et al.,* 2008; Alam and Yasin, 2010; Guo *et al.,* 2012; Crisafulli and Singh, 2017; Pandey and Chawla, 2018; Pham and Ahammad, 2017). However, most of the previous research findings emphasized the impact of individual and psychological behaviours leading to significant implications

on customer satisfaction (Anderson and Srinivasan, 2003; Crisafulli and Singh, 2017). Therefore, it is essential to understand the variables influencing customer satisfaction. From the perspective of SDT theory, motivation is a continuum, and it varies from behaviours controlled by external contingencies and tasks accomplished for enjoyment (Deci and Ryan, 2000; White, 2015). White (2015) applied SDT and confirmed motivation as a critical determinant of satisfaction. To deepen the understanding of customer satisfaction by using the concepts from SDT, this study extends the theoretical framework of Hwang (2010), where perceived enjoyment and social influence have been validated as key motivators. Furthermore, the study extends the model to social media interactions, POD mode of payment, and reverse logistics as key extrinsic motivators leading to customer satisfaction.

LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Perceived Enjoyment

Perceived enjoyment can be defined as "the fun or pleasure derived from using a technology, and it has been shown to play a dominant role in determining technology acceptance and use" (Brown and Venkatesh, 2005 p. 406). Previous studies (Childers *et al.,* 2001; van der Heijden 2004; Thong *et al.,* 2006; Venkatesh *et al.,* 2012) have conceptualized perceived enjoyment as a key factor motivating consumers to shop online. Perceived enjoyment is intrinsic motivation that signifies the degree to which enjoyment results from IT (Park *et al.,* 2007; Chang and Chen, 2015). Rouibah et al. (2016) hypothesized a significant positive association between perceived enjoyment and trust, finally leading to a positive online shopping attitude. Thong *et al. (*2006) demonstrated that perceived enjoyment has a significant positive impact on online shopping. The study by Hwang (2010), while comparing the attitude of men and women online shoppers, confirmed that perceived enjoyment has a more substantial impact on male online shoppers.

Similarly, previous research by Childers et al. (2001) also established perceived enjoyment as a significant determinant of purchase intention. Chang and Chen (2015) also suggested online retailers focus on perceived enjoyment to improve repurchase intention. Past studies (Tandon et al., 2021) indicate that gamified elements improve perceived enjoyment and consider perceived enjoyment a strong predictor of purchase intention. Most of the aforementioned studies speak about attitude and intention to purchase, but the relationship between perceived enjoyment and customer satisfaction is yet to be explored. Therefore, to understand the impact of perceived enjoyment on customer satisfaction, the following hypothesis is posited:

H1: There is a significant positive association between perceived enjoyment and customer satisfaction.

Pay-on-Delivery (POD) Mode of Payment

In India, customers are supposed to provide particulars of credit/debit cards for ordering online. The Indian customers being cautious of making payments online, have held a defiant attitude towards e-shopping. Besides, the limited use of credit and debit card throughout the country led online retailers to comprehend these psychological barriers and develop a substitute consisting of a non-electronic payment approach, known as "cash-on-delivery" (COD) mode of payment. COD created trust among Indian customers and reduced the apprehension of unsafe financial transactions or faulty products because customers pay

only after receiving the product. The demonetization policy enacted, in November 2016, by the Modi government further accelerated the shift towards digitization. The Indian economy is cash-driven, and such changes in cultural patterns and habits require time and resources. POD nudged e-retailers into timely product delivery, thereby improving services to increase customer satisfaction.

Further, a few Indian studies like Tandon *et al.* (2017) have recommended a COD mode of payment as a preferred medium for online shopping. Still, the construct is not well established in the literature as of yet. In extant research, Chiejina and Olamide's (2014) study on Nigerian customers highlighted 'pay-on-delivery' as a significant trust builder between customers and e-retailers. Moreover, POD encourages case-sensitive non-digital buyers to shop online (Tandon et al., 2021; Gallup, 2012; Hussain et al., 2007). Yet, although suggested and considered in several studies, POD has not been empirically validated as a construct in its own right. Much less has it been related to other key constructs of interest in the field of e-commerce.

Further, the role of POD in enhancing customer satisfaction has not received much attention. The above mentioned stimulated us to test the impact of the POD on customer satisfaction. Thus, to fill this gap, POD mode of payment has been investigated in the present study." Understanding the significance of POD and taking support from the literature, the following hypothesis has been proposed:

H2: There is a significant positive association between POD mode of payment and customer satisfaction.

Social Media Interactions

Social Media (SM) are web-based services. Their most popular subset is "Social Networking Sites," which indicate networks of relations and connections among diverse users (groups or individuals) (Chaffey and Ellis-Chadwick, 2019). Social media interactions also influence consumer behavior from information attainment about the product to post-purchase performance of a product from their peers (Mangold and Faulds, 2009; Duffett, 2015; Hajli, 2014). A positive message spread through social media interactions improves the sale of the product. Therefore, social media interactions have been analyzed as antecedents of customer satisfaction in this study. Muda *et al.* (2016) explored Gen Y's e-shopping behavior in Malaysia and confirmed that Gen Y makes frequent use of Facebook and Instagram to purchase products online. Consumers use social media interactions as a medium to express their beliefs and to access information about products (Elisabeta and Ivona, 2008; Duffett, 2015). This may be explicable because as part of more collectivistic cultures, Asians such as the Chinese and Indians tend to perceive more social value through social media participation. In contrast, individualistically-oriented cultures like the US perceive rather content value (Jiao et al., 2018). Further, online product reviews generated by different users and that flourished through social media interactions significantly impact marketing (Hennig-T *et al.,* 2004; Trusov *et al.,* 2010). Several studies have recommended that WOM through social media interactions significantly affects purchase intentions (Tamilmani et al., 2018; Park *et al.,* 2007; Sheikh *et al.,* 2019). An online retailer's inability to address the issue harms customer satisfaction (Tandon, 2021), thereby decreasing repurchase intention and positive word-of-mouth (Crisafulli and Singh, 2017).

Furthermore, customer satisfaction is the prerequisite for any online purchase because customers are apprehensive of repeat purchases if they are unsatisfied with the product or services delivered online by an online retailer (Tandon et al., 2017; Ramanathan et al., 2017). However, studies on social media interactions leading to customer satisfaction in online purchases are limited. Therefore, in light of the abovementioned discussion, the following hypothesis has been proposed:

H3: There is a significant positive association between social media interactions and customer satisfaction.

Social Influence

Social influence has been defined as "the extent to which consumers perceive that important others (e.g., family and friends) believe they should use a particular technology" (Venkatesh *et al.,* 2012, p.159). Previous studies have confirmed a significant positive association of social influence on online shopping purchase behaviour (Hwang, 2010; Tandon and Sakshi, 2020). Zhu and Chen (2016) found that social influence is significantly associated with actual online shopping applications, particularly among in-situ urbanized rural residents in China. Doan (2020) also confirmed the positive influence of social influence in making online purchase decisions among Vietnam's online shoppers. The impact of family, peers, and social networks has also been validated by previously reported research studies (Van Slyke et al., 2010; Lee et al., 2011; Alalwan et al., 2016). On the other hand, the study of Dharmawirya and Smith (2012) confirmed the non-significant social influence on Indonesian consumers.

Therefore, it can be substantiated that there is no consistency in the findings. However, to settle the current inconsistency in the literature, the following hypothesis is proposed:

H4: There is a significant positive association between social influence and customer satisfaction.

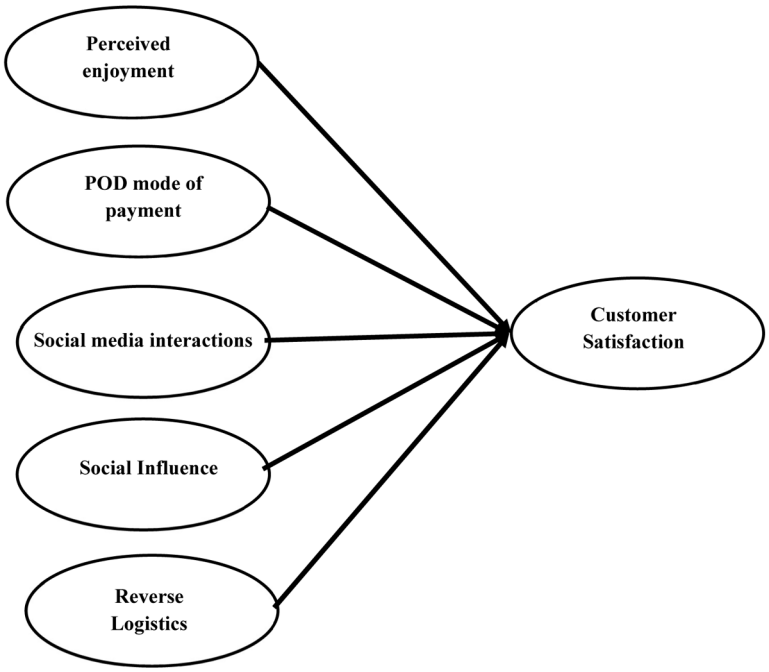
Reverse Logistics

To cultivate customer satisfaction, allowing customers to return defective or faulty products to the merchant effectively is almost as important as effective delivery. Dissanayake and Singh (2007) highlighted that simple and straightforward return policies of e-retailers strengthen customer relations and sustain value by reallocating returned products. Mahendru *et al.* (2018) established that Information Systems (IS) competence for logistics, value accumulation, and partnership quality help attain reverse logistics strategic benefits. Harris and Martin (2014) found that reverse logistics inculcated self-confidence among customers leading to frequent purchases. This study also emphasized the importance of the efficient use of third-party systems. Therefore, while they were initially considered a competitive advantage, liberal return policies have become a critical success factor in remaining competitive in e-commerce (Mollenkopf *et al.,* 2007; Li *et al.,* 2013; Altug and Aydinliyim, 2016). Simplified return procedures reduce apprehensions about sub-standard and faulty product delivery (Padmanabhan and Png, 1997; Pei *et al.,* 2014; Janakiraman *et al.,* 2016). Liberal return policies adopted by online retailers communicate about service quality (Kandulapati and Bellamkonda, 2014), thereby increasing sales (Mukhopadhyay and Setaputra, 2004). Preceding research studies confirmed that return policies lead to customer satisfaction and improve online retailers' profit (Mukhopadhyay and Setaputra, 2007; Pei *et al.,* 2014; Janakiraman *et al.,* 2016; Griffis *et al.,* 2012). Oghazi *et al.* (2018) demonstrated the significant positive impact of lenient return policies on purchase intention. Pham and Ahammad 's (2017) study highlighted the significance of ease of return in attaining customer satisfaction. To understand customer shopping experiences, it is preferable to understand the factors covering total shopping experiences, including the post-purchase return of the product if found faulty. Previous studies also considered that when customers perceive high service recovery participation, any firm's negative feelings are moderated (Oliver, 1997). Hence, the hypothesis proposed based on the above discussion is:

H5: There is a significant and positive association between reverse logistics and customer satisfaction. **-**

The proposed model (Figure 1), based on the literature review, includes the latent variables or constructs and the hypothesized paths (arrows).

Figure 1. Conceptual model



RESEARCH METHODOLOGY

Survey Instrument

"The target population in this research consisted of online shoppers in India. This study was conducted in the North Indian states of Jammu and Kashmir, Himachal Pradesh, Punjab, Haryana, Delhi, and Uttar Pradesh. Measurement items suggested by Venkatesh et al. (2012) were used to validate perceived enjoyment and social influence. Measurement items suggested by Tandon et al. (2021) were used to measure POD. Items for social media interactions were adopted from Duffett (2015). An ad-hoc scale of measurement was developed to measure the items of reverse logistics. "An ad hoc questionnaire model linked consumers' experiences regarding the product" (Masuda and Hara, 2017, p. 183). To develop an ad hoc questionnaire, a three-step approach was trailed. First, interviews were conducted with a group of 25 respondents based on a convenience sampling technique. Second, the reverse logistics scale items were framed according to consumers' experiences regarding online retailers' return policy before making an online purchase, using the product, and returning it when found faulty. Third, a reliability test was conducted on these items, and after attaining applicable findings, the scale was administered to the

average population and other constructs. Furthermore, customer satisfaction was measured using a scale adapted from Guo *et al.* (2012). The scale items were tailored to fit in the context of online shopping.

Data Collection Procedures

"To enhance the accuracy of the survey questionnaire, a preliminary version of the questionnaire was circulated among a pilot group of Ph.D. students and faculty members. This group validated each item and proposed minor alterations in the sequence of items to augment precision and conciseness. Their suggestions were considered, where relevant, throughout the questionnaire. Some items were added, others edited, and a few items were deleted due to reiteration in the wording. After the pilot test, the questionnaire was submitted to a total sample of 700 students, businessmen, and employees in Northern Indian states using face-to-face interviews as data collection. Mixed method sampling in social science research increases the survey response rate and reduces bias caused by adopting single method sampling (Teddlie and Yu, 2007). Both convenience and snowball sampling methods have been used as non-probability sampling techniques to contact the respondents. The sample included respondents from urban and rural areas of both genders, diverse professions, and different education levels to reach the highest number of respondents. This further ensured a representative sample. Several revisits were undertaken in urban and rural areas to increase the participation of people in this survey. A total of 650 questionnaires were returned, but after careful examination for missing variables and errors, only 424 of them were included in the final sample for further analysis. This survey was carried out from August 2019 to March 2020.

Armstrong and Overton (1977) suggested a comparison was made between early and late respondents to address the non-response bias. However, as shown in Table 1, no significant differences were found between early and late respondents, suggesting that non-response bias is not an issue (see Table 1). Therefore, the concluding sample of 424 can be considered as representative of the entire population under study.

In compliance with Richardson *et al.* (2009), we also tested for common method bias. Richardson *et al.* (2009) defined common method bias as "systematic error variance shared among measured variables caused by the function of the same method or source." Harman's one-factor test was applicable in addressing common method bias (Podsakoff *et al.,* 2003). An exploratory factor analysis (EFA) was carried out with -Varimax rotation. Four diverse factors emerged from EFA, with eigenvalues exceeding 1.000 and accounting for more than 62 percent of the cumulative variance. Further, no single factor accounted for more than 50 percent of the total cumulative variance. Therefore, common method bias has been ruled out in this research.

Table 1. Non-Response Bias

Constructs		Customer Satisfaction	POD Mode of Payment	Social Media Interactions	Perceived Enjoyment	Social Influence	Reverse Logistics
Early respondents	**Mean**	4.04	3.82	3.64	3.87	4.11	3.93
N=303	**S.D**	0.94	0.88	1.13	0.91	0.92	0.99
Late Respondents	**Mean**	4.01	3.80	3.64	3.82	4.09	3.86
N=121	**S.D**	0.93	0.86	1.15	0.80	0.88	0.98

Demographic Profile and Characteristics of Respondents

Table 2 delineates the basic characteristics of the customers surveyed. In India, there were approximately 108 million online shoppers in 2017 (Assocham Resurgent study, 2018), and 40 percent are female (Majumdar, 2018). The sample reflects this reality since females represent 40 percent of the total sample. Furthermore, 52 percent of the respondents are between 18 and 30 years old, thereby further improving the representativeness of the sample, as Indians aged 18 to 34 years old are the most active online shoppers (IBEF Report, 2018). Besides, a considerable number are well educated since more than three-quarters of the respondents were graduates or have a postgraduate degree. Table 3 further shows that the preferred mode of payment is by far POD (66.4%), followed by debit card (21%), while credit card (12.6%) was the least preferred mode of payment. These payment preferences differ clearly from developed countries, where credit cards remain the most popular option. This apparent inclination for the POD mode of payment comforts the insertion of this variable as one of the online shopping drivers.

Table 2. Frequency Distribution for Respondents' Demographics

Demographic Characteristic N=424	Frequency	Percentage
Gender		
Male	254	60
Female	170	40
Education Qualification		
Undergraduates	60	14.16
Graduates	149	35.14
Masters	205	48.35
Doctorate and others	10	2.35
Age		
18-30	221	52
31-45	118	28
Above 45	85	20
Profession		
Student	56	13.2
Self-employed	75	17.7
Private sector employees	183	43.16
Public sector employees	110	25.94

Table 3. Internet Usage and Online Shopping Habits

Online Shopping Habits	Frequency	Percentage
Number of hours spent on the Internet on a weekly basis		
Less than 10 hours	45	10.6
11-20 hours	139	32.8
More than 20 hours	240	56.6
Hours spend on online shopping on a monthly basis		
5 hours	212	42.4
6-10 hours	227	45.4
More than 11 hours	61	12.2
Number of products purchased over the last 3 months		
Less than 5	94	18.8
6-10	215	43.0
More than 10	191	38.2
Number of years of online shopping		
Less than 3 years	54	12.7
4-6 years	69	16.3
More than 6 years	301	71
Preferred mode of payment Pay-on-delivery	332	66.4
Credit card	63	12.6
Debit card	105	21

DATA ANALYSIS

Reliability and Validity

To assess the reliability and validity of the proposed measurement model, a confirmatory factor analysis (CFA) was carried out with items about customer satisfaction, social media interactions, perceived enjoyment, social influence, reverse logistics, and mode of payment. A few items such as POD2 (Pay-on-delivery mode of payment), SOM1, and SOM2 of Social Media interactions were discarded due to poorly standardized loadings. The CFA (see Table 4) indicated that the standardized loadings of all the included variables are significant. The constructs further demonstrate evidence of reliability (values convergent > 0.80 on all occasions), validity (significant and high standardized loadings as well as average variance extracted > 0.50 on all occasions), composite reliability (values > 0.70 on all occasions), and discriminant validity (AVE estimate of each construct is larger than the squared correlations of this construct to any other construct (Fornell and Larcker, 1981) (see Table 5)."

Table 4. Measurement model

Variables	Items	Standardized Estimate	Standard Error	Critical Ratio	Average Variance Extracted	Composite Reliability
REL (Reverse Logistics)	REL1*	0.841			0.647	0.846
	REL2	0.830	0.056	17.376		
	REL3	0.739	0.054	15.727		
SOM (Social Media)	SOM3	0.701	0.047	15.467	0.662	0.853
	SOM4*	0.841				
	SOM5	0.887	0.05	19.629		
PEJ (Perceived Enjoyment)	PEJ1*	0.745			0.581	0.806
	PEJ2	0.714	0.125	12.818		
	PEJ3	0.824	0.108	13.192		
SOI (Social Influence)	SOI1*	0.903			0.819	0.932
	SOI2	0.929	0.035	29.233		
	SOI3	0.883	0.039	26.739		
POD (Pay-on-delivery)	POD1*	0.686			0.537	0.822
	POD3	0.784	0.107	13.127		
	POD4	0.769	0.107	12.983		
	POD5	0.686	0.08	13.837		
CUS (Customer Satisfaction)	CUS1*	0.797			0.644	0.844
	CUS2	0.800	0.063	16.534		
	CUS3	0.810	0.059	16.719		

*indicates that as the regression weight was fixed at 1, therefore, Std. error, critical ratio, and p-value are missing

Table 5. Correlation Matrix of variables

	CUS	POD	SOM	PEJ	SOI	REV
CUS	***.802***					
POD	.524**	***.732***				
SOM	.571**	.527**	***.813***			
PEJ	.370**	.447**	.415**	***.762***		
SOI	.276**	.371**	.255**	.478**	***.904***	
REV	.502**	.438**	.414**	.409**	.358**	***.804***

**. Correlation is significant at the 0.01 level (2-tailed). Items in italics represent the square root of AVE

CUS: Customer Satisfaction, POD: Pay on delivery mode of payment, SOM: Social Media interactions, PEJ: Perceived Enjoyment, SOI: Social Influence, REV: Reverse Logistics

Structural Model

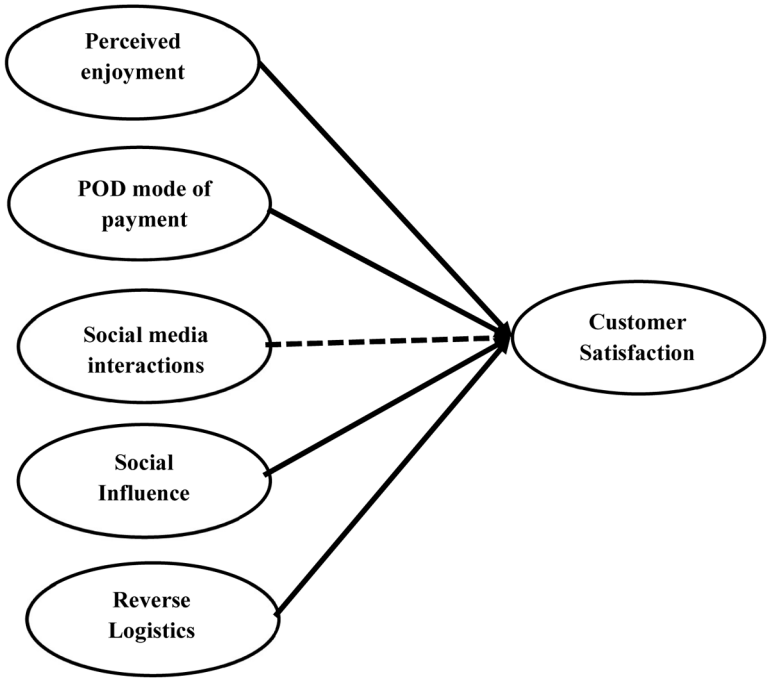
After attaining the acceptable results from the measurement model, the theorized model was then assessed with all the independent and the dependent variables (see Table 6 and Figure 2). The fit indices exhibited an appropriate fit. These findings recommend that the theorized model is a logical depiction of the structure indicating the observed data. Perceived enjoyment had the maximum loadings (β=0.387, $p < 0.001$) and emerged as the strongest predictor of customer satisfaction in online shopping, thereby confirming H1. Perceived enjoyment was followed *ex-aequo* by POD mode of payment (β=0.311, $p < 0.001$) and social influence (β=0.376, $p < 0.001$), thereby providing support to H2 and H4, respectively. Although less impactful, reverse logistics was significantly related to customer satisfaction (β=0.198,

Table 6. Structural Model of Drivers of Online Shopping

			Std. Loadings	Std. Error	Critical Ratio	*p*-Value
Perceived Enjoyment	→	Customer Satisfaction	0.387	0.048	8.656	***
Pay-on-Delivery	→	Customer Satisfaction	0.311	0.047	6.920	***
Social Influence	→	Customer Satisfaction	0.376	0.028	9.208	***
Reverse Logistics	→	Customer Satisfaction	0.198	0.038	4.712	***
Social media interactions	→	Customer Satisfaction	0.137	0.092	1.139	0.073

Goodness of fit statistics CMIN/df=4.503, GFI=0.898, NFI=0.891, RFI=0.901, TLI=0.911, CFI=0.906, RMSEA= 0.076, *** p-value significant at the 0.001 probability level, **significant at the 0.01 probability level

Figure 2. Path Relationships showing the relationship of variables
*[***significant at 0.001 probability level] Significant path Insignificant path*



$p < 0.001$), supporting H5. Unexpectedly, social media interactions only marginally predict customer satisfaction (β=0.137, p=0.073), thereby rejecting H3, which stipulates a positive relationship between social media interactions and customer satisfaction.

DISCUSSIONS OF THE RESULTS

The research model validated the impact of perceived enjoyment, POD, social media interactions, social influence, and reverse logistics on customer satisfaction in the context of online shopping. Perceived enjoyment emerged as the strongest predictor of customer satisfaction, which is in sync with preceding studies and theoretical frameworks such as UTAUT2 (Hwang 2010; Leisching *et al.,* 2011; Venkatesh *et al.,*2012). This significant relationship indicates that consumer satisfaction will increase under heightened consumers' enjoyment from their online shopping experience.

Moving further, this study shows that the POD mode of payment is another significant contributor to online shopping satisfaction. This finding provides a more extensive and empirically grounded indication for the presumed significance of the POD construct in customer satisfaction formation, as suggested in past research (Chiejina and Olamide 2014; Tandon *et al.,* 2021). Since the POD has a substantial impact on consumer satisfaction in developing markets (like India), this option should not be dismissed by domestic retailers or foreign operators seeking to expand the Indian market.

The social influence exerted a relatively equal impact on customer satisfaction as compared to the POD mode of payment, which is in collaboration with most of the previous studies (Foon and Fah, 2011; Venkatesh *et al.,* 2012; Tandon and Kiran, 2020), while contradicting only Baptista and Oliveira (2015). A significant impact of social influence is more interesting to observe in a country such as India, with both collectivistic and individualistic traits (Hofstede Insights, 2020). The significant impact of social influence on online shopping satisfaction further reveals this duality. Although being an individual activity, online shopping is nonetheless significantly influenced by the opinion of the "consumer's family, extended family, neighbors, workgroups and other wider social networks that the consumer has some affiliation toward" (Hofstede Insights, 2020).

Reverse logistics also appeared as the least impactful variable among the significant effects. This finding collaborates with results documented in preceding studies (Mukhopadhyay and Setoputro 2004; Yu and Wang 2008; Altug and Aydinliyim, 2016). Thus, although reverse logistics emerged as the weakest of all the significant variables, a dedicated focus on reverse logistics and hassle-free returns may generate confidence and overcome hesitations among Indians concerning e-shopping.

Surprisingly, social media interactions emerged insignificantly. This finding is inconsistent with the previously reported research studies (Elisabeta and Ivona, 2008; Muda *et al.,* 2011; Hajli, 2014). A possible explanation of this could be that the surveyed respondents may not be active users of social media platforms. Alternatively, the measure of social media interactions focuses on Facebook interactions, which may be too specific. Although Facebook is the most predominant social media, the construct does not capture the broader variety of existing social media interactions, hence failing to reflect the impact of that breadth of social media channels on satisfaction. Besides, as mentioned earlier, India shares almost equally both the collectivistic and the individualistic cultural orientation (Hofstede Insights, 2020). Therefore, in contrast to the Chinese, who are more collectivistic than Indians[1]and thus perceive higher social value in social media interactions (Jiao et al., 2018), this may not be so for Indians. Hence, the lack of effect of social media interactions on customer satisfaction with online shopping.

IMPLICATIONS OF THE STUDY

Theoretical Implications

The central theoretical contribution of this study is the validating of specific predictors for online shopping satisfaction at the consumer level and in a developing economy context. More specifically, the research validates the impact of intrinsic motivations such as perceived enjoyment and social influence and extrinsic ones such as reverse logistics, POD, and social media interactions, on consumer satisfaction. Due to limited research on payment modes, the contribution by POD is considered as a satisfaction-builder between e-shoppers and e-retailers. Further, reverse logistics, a critical success factor in the realm of e-shopping, has been formally validated with customer satisfaction. A depraved product return experience reduces repurchase intention. Comfortable and easy return policies determine customer expectations and improve the shopping experience (Bonifield *et al.,* 2010; Li *et al.,* 2013). Therefore, the importance of setting an effective reverse logistics process becomes apparent.

A noteworthy implication of this study is the validation of perceived enjoyment, POD, social influence, and reverse logistics in a single model as significant antecedents of customer satisfaction. Thus, this research further validates and extends SDT theory by incorporating POD and reverse logistics as substantial contributors to customer satisfaction.

Further, despite previous research on online shopping (Foon and Fah, 2011; Crisafulli and Singh, 2017; Pandey and Chawla, 2018), only a limited set of studies have validated predictors of e-shopping using SDT theory (Hwang, 2010; White, 2015; Gao *et al.,* 2018). This study clarifies the impact of POD and reverse logistics as significant motivators, thereby confirming that SDT can be a dynamic theory for exploring factors leading to customer satisfaction in an online shopping context. All the four constructs, namely, perceived enjoyment, social influence, POD mode of payment, and reverse logistics, had a positive relationship with customer satisfaction from the perspective of SDT, thereby extending the model by Hwang (2010) by introducing POD mode of payment and reverse logistics as two additional psychological needs. However, the research also suggests that social media interactions may not fit this extended model, at least for Indians, and this finding needs further replication.

Practical implications

This research delivers significant implications for e-retailers also. Managers need to focus preferably, and by order of importance, on perceived enjoyment, POD, social influence, and reverse logistics to encourage online shopping. The variables that emerged significantly are vital for India and developed nations also. Since the perceived enjoyment emerged as the strongest predictor, online retailers should focus on improving the overall shopping experience and online service quality. Benchmarks on how to build improved consumer experiences can be found in online service quality scales such as E-S-QUAL (Parasuraman et al., 2005), E-TailSQ (Rolland and Freeman, 2010), or the refined WEBQUAL 4.0 (Ahmad and Khan, 2017). A fruitful avenue to consumer experience is related to the provision of POD. Online retailers can reduce perceived risk and tackle other issues such as loss of delivered products, distribution of defective goods *ex-ante* at the consumer door instead of *ex-post* via lengthy and costly reverse logistics mechanisms. A committed effort is obligatory from e-retailers to broaden the geographical coverage of the POD option.

Furthermore, the excitement and experiences reported by consumers' peers and other social influences about online shopping are as important as the mode of payment. However, social influence is a vast construct comprising family, extended family, colleagues, neighbors, and other social circles. Therefore, online retailers should identify the specific sources of influence of their segments more precisely by asking short questions to consumers such as "Who recommended this site to you?" or "How did you hear about us?". Additionally, retailers might promote sources of influence that could work in their best interest. For example, e-retailers may identify regular e-shoppers who may become opinion leaders and motivate their peers to shop online. Finally, POD may decrease the recourse to reverse logistics by handling delivery issues when delivery occurs, explaining the comparatively lower importance of reverse logistics. Yet, product return mechanisms remain an essential factor in online shopping satisfaction. Therefore, online retailers need to select appropriate third-party logistics (3PL) providers to implement an effective reverse logistics system. A three-step process comprises formulating a substantial and fair return policy, recognizing costs included with product returns, and recruiting a 3PL dealing exclusively with returns (Tandon and Kiran, 2020).

LIMITATIONS AND FUTURE RESEARCH AVENUES

While contributing to the existing marketing theory and literature, the research poses a few limitations that may be considered future research directions. First, an important limitation of this research is the absence of generalizability of findings. As the study respondents were from the North Indian States, the outcomes may be more pertinent to India's northern states. However, this research may be validated in the rest of India as the experience with technical know-how and the logistical infrastructures vary in other parts of the country. To assess the rationality of the findings, this study may be validated in developing nations also. Yet, the study of POD might also be investigated in developed economies where POD could be compared to credit card payment on satisfaction, intentions, and actual shopping behavior. Second, relevant variables like perceived risk, website quality, gamification, and government policy could be included as independent variables, and repurchase intention or customer loyalty, as dependent ones. Future research studies may also consider moderators such as age and gender. Finally, future research might seek to further investigate the impact of social media interactions on customer satisfaction by focusing on constructs reflecting overall social media versus social network- or brand-specific constructs (e.g., Duffett, 2015) of social media interactions.

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KEY TERMS AND DEFINITIONS

Customer Satisfaction: It may be explained as consumption-related fulfillment, including levels of under- or over-fulfillment in any purchase.

Online Shopping: Any activity involving purchase through internet.

Perceived Enjoyment: It may be explained as the fun, excitement, or pleasure derived from using a particular product, service, or technology.

POD Mode of Payment: It is a mode of payment where consumers pay after receiving their item ordered online.

Reverse Logistics: It specifies the complete process linked with return and repair of the item found faulty post-delivery.

Self-Determination Theory: SDT theorizes that intrinsic motivation and extrinsic motivation as behavioral instincts in predicting overall general behavior with regard to any phenomenon.

Social Influence: It is the extent to which consumers perceive that their family and friends believe they should adopt a particular technology.

Social Media Interactions: Social media (SM) are web-based services that indicate networks of relations and connections among diverse groups or individuals.

ENDNOTE

[1] Hofstede Insights (2020). China and India. Available at: https://www.hofstede-insights.com/country-comparison/china,india/ (accessed on 03-07-2020).

APPENDIX

Table 7. Scale items and their source

Reverse Logistics	
I can return the defective product without any hassle.	REV1
Liberal Return Policy boosts my confidence for repeated online purchase	REV2
The e- retailer provides detailed information about Reverse Logistics process.	REV3
Perceived Enjoyment (Venkatesh *et al.,* 2012)	
Shopping online is an exciting experience for me.	PEJ1
Shopping online is fun for me.	PEJ2
I feel shopping online is enjoyable.	PEJ3
POD mode of payment (Tandon, 2021)	
I think POD is a reliable mode for payment	POD1
I plan to pay through POD mode of payment. (Item removed)	POD2
I prefer to buy through pay on delivery(POD) mode of payment	POD3
POD mode of payment facilitates the easy return of defected products	POD4
POD give me confidence for the future repurchase of products	POD5
Social Media Interactions (Duffett, 2015)	
The product images posted on Facebook help me to purchase the product..(Item removed)	SOM1
I desire to buy the products which appear on Facebook page. (Item removed)	SOM2
The postings that appear on the Facebook page describe functions of the featured product.	SOM3
I will visit the brand's online store to purchase the product which appears on Facebook page.	SOM4
Advertisements on Facebook have a positive influence on my purchase decision.	SOM5
Social Influence (Venkatesh *et al.,* 2012)	
People who are important to me think that I should adopt online shopping	SOI1
People who influence my behavior think that I should adopt online shopping	SOI2
People whose opinions that I value prefer that I use online shopping	SOI3
Customer Satisfaction I am satisfied with my purchase.	CUS1
I am satisfied with POD mode of payment	CUS2
I am satisfied with the quality of product received through online purchase	CUS3

Chapter 9
Merchants Competing on E-Commerce Platforms:
Influencing Factors on Buying Behavior

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ABSTRACT

The importance of marketplaces in e-commerce has increased. More and more merchants are trying to use e-commerce platforms as a distribution channel. With the increasing competition, merchants are faced with the challenge of continuing to sell their products to consumers through marketplaces at a profit. This is especially true if the consumer has already chosen a certain product and now only decides from which merchant to buy the product. This chapter therefore examines for different customer segments which merchant-related factors — also and in particular apart from the price — influence the purchase decision. After reviewing relevant literature, various factors are identified through structured interviews. An online survey is then used to simulate a total of 3,485 purchase decisions with different factor characteristics. In addition to the price, the ratings of a merchant and the delivery time are identified as central factors influencing the purchase decision.

INTRODUCTION

For many years now, Internet-supported retail, including online trade or e-commerce, has been growing worldwide and at a disproportionately high rate compared to stationary retail (HDE & IfH Cologne, 2020; U.S. Department of Commerce, 2020). In the U.S., for example, e-commerce accounted for about 15.1 percent of total retail sales in the second quarter of 2020 (U.S. Department of Commerce, 2020).

In line with the growth of e-commerce in general, the importance of online marketplaces as e-commerce platforms, in particular, is growing. These marketplaces act as intermediaries between supply and demand. Thus, they offer a platform for business transactions to traders who either do not want to or cannot operate their own online store. In Switzerland, for example, 35 percent of all retailers already

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sell via these e-commerce platforms, and another 20 percent plan to do so in the future (Swiss Post & ZHAW, 2020).

The online marketplace Amazon plays a decisive role in this context. Amazon dominates the market in the western world and profits in a double sense from a network effect. For consumers, the attractiveness of the platform increases with the range of goods available. As a result, the attractiveness of the marketplace for other, additional merchants increases with every transaction. In Germany, for example, Amazon has a market share of around 38 percent in e-commerce. With a turnover of 22.23 billion euros in 2019, more than every third euro in Germany was spent on the e-commerce platform in 2019 (Amazon, 2020; HDE & IfH Cologne, 2020).

While some merchants use the marketplace primarily as an additional business to their own online store, other merchants use the marketplace to supplement their traditional stationery business. Digitization, in particular, is putting increasing pressure on the stationary retail sector. As a result, retailers are increasingly looking for opportunities to take advantage of digitization (Wohllebe, Dirrler, & Podruzsik, 2020). Retailers also seem to be focusing more and more on one or just a few marketplaces as a distribution channel. Marketplaces are also becoming increasingly relevant in the business-to-business sector: Around two-thirds of all German dealers in the B2B sector state that they also want to link their ordering systems to a marketplace or have already done so (ECC Köln & IfH Köln, 2014).

The overall increase in the number of dealers in marketplaces is also increasingly intensifying competition. Driven by high price transparency, consumers can thus benefit from low prices. Therefore, retailers who sell on e-commerce platforms face a business challenge that is particularly serious due to price transparency. On the one hand, costs must be covered and profits generated. But, on the other hand, price is a very important factor in the consumer's buying decision process. For retailers, this raises the pressing question of how to differentiate themselves from the competition in order to be able to generate sales even if they cannot offer the most favorable price. This question is particularly relevant if the (potential) customer has already made the selection for a certain product and is now only looking for the right retailer in a marketplace for the purchase decision.

Background

To answer the question of differentiation of merchants in online marketplaces, it is first necessary to understand the purchasing behavior of consumers in this context. The purchasing behavior of consumers in e-commerce, in general, has been the subject of research for many years.

Various findings also exist concerning purchasing decisions on online marketplaces, although these usually consider the product and merchant together (Bart, Shankar, Sultan, & Urban, 2005; Smith & Brynjolfsson, 2001; Teo & Yeong, 2003). Given the publication date of these works, it is doubtful whether these findings are still fully valid today, sometimes almost 20 years later. However, individual research results that explicitly refer to the selection of merchants on online marketplaces do not provide any insights against the background of different socio-demographic characteristics of consumers (Adler & Wohllebe, 2020).

Before looking at the existing literature with regard to this book chapter, the concept in the sense of an online marketplace will first be examined. Marketplaces in general, are understood as platforms for and mediators between supply and demand. Electronic or online marketplaces, in particular, use the Internet as a trading space.

Marketplace operators, demanders, and traders are in a strategic market triangle with each other. The marketplace operator provides a platform for the customer to purchase goods or services, if necessary, by paying a usage fee. The marketplace operator provides the suppliers with a space to trade and receives a commission from the suppliers for this. Thus, suppliers and consumers exchange market services with each other; in haptic goods trade, usually money and goods (Kollmann, 2000).

The mediating process between supply and demand can be divided into the phases of the information phase, the agreement phase, and the settlement phase. The information phase is of particular relevance for this book chapter. In the information phase, users of a marketplace weigh up which services or products they want to buy (Kollmann, 2000; Schmid & Zbornik, 1992).

The transparency of offers and prices in online marketplaces means increased competition: On the one hand, online marketplaces offer the potential of worldwide sales markets, but also lead to global competition due to the local independent availability of the platform (Landwehr, Voigt, & Zech, 2003). This quantitative increase in the range of products on offer is at the same time offset by increased transparency in electronic marketplaces. On online marketplaces, consumers can quickly identify the cheapest available offer for a product. From the supplier's point of view, this possibility entails a risk: in extreme cases, complete transparency results in the symmetry of information, which means that no profits can be made in the long term (Merz, 2001).

Interestingly, the considerations on online marketplaces listed assume, at least implicitly, that consumers choose between different providers of different products. The case assumed in this book chapter that several providers offer the same product is not taken into account.

Main Focus of the Chapter

This book chapter is intended to provide answers to the question of how traders in marketplaces can differentiate themselves from the competition. This question is left largely open by both the theoretical considerations on online marketplaces outlined above and the literature to date. In particular, the business challenge of differentiation based on price is to be taken into account, as differentiation is only possible for each merchant up to a certain individual limit. Therefore, the focus of the elaboration is exclusively on purchase decisions in the business-to-consumer environment, i.e., those from which end consumers purchase goods for private use. Furthermore, the empirical research will be based exclusively on scenarios covering the consumer electronics sector. In this area, products can be identified by concrete model designations and are therefore particularly suitable for grouping several offering retailers under one specific product.

The question of differentiation in marketplaces becomes a challenge for traders in marketplaces, especially when the different traders offering the same product are presented in a summarized form. This specific presentation is especially found on Amazon, the leading marketplace in the western world. This is where the customer first decides on a specific product. Then, if this product is offered by several merchants, he can choose between different merchants. This scenario of a buying process does not allow retailers any product-related differentiation possibilities. Since the customer has practically already decided on a certain product, the dealer is only selected based on dealer-specific attributes.

From the facts described, two questions arise that are highly relevant for the business practice of merchants who sell on online marketplaces: On the one hand, it is necessary to find out which dealer-specific influencing factors exist at all and have an effect on a consumer's decision for or against a particular dealer in a marketplace.

On the other hand, the factors must be weighed against each other, and their influence must be quantified in the consumer's purchase decision. This gives retailers who sell via marketplaces a better opportunity for prioritization in improving the retailer-specific influencing factors. In particular, it is important to find factors apart from the price that also influence the purchase decision to a relevant extent and contributes to differentiation from the competition. Therefore, this book chapter proceeds in three steps.

First of all, the theoretical foundations of purchase decisions in e-commerce in general and in online marketplaces, in particular, are presented. In addition, existing findings from relevant literature will be discussed. Finally, the basics for the later applied methods of qualitative and quantitative research will also be taught.

In the second step, potentially relevant influencing factors are developed regarding the merchant offering a product in the marketplace. For this purpose, several interviews are conducted, individual consumer statements are quoted, and finally, the potentially relevant influencing factors are summarized.

In the third step, a simulation of purchase decisions in different scenarios is carried out. The previously identified influencing factors for each purchase decision are modified within a defined framework. Finally, the influencing factors are quantified on this basis. The results, broken down by socio-demographic data, are presented, discussed, and translated into practical recommendations for action.

RELATED LITERATURE AND EXISTING FINDINGS

In the following, related literature will be considered first. First, the determinants of online shopping behavior, in general, are considered. The next step is to understand how consumers choose a particular online store. In addition, the existing literature on purchase decisions in this context will be examined in particular.

Determinants of Online Shopping Behavior

The analysis of the factors influencing online shopping behavior is divided into three sections: On the one hand, the question arises as to which factors motivate consumers to shop online instead of in traditional (offline) retail. On the other hand, for the elaboration, such factors are from interest, which leads beyond that to a renewed purchase on the Internet, which binds the customer thus accordingly to the channel as such. In addition, the role of customer ratings in online purchasing behavior is shown.

In the literature, the purchasing process as a model of online purchasing behavior is usually divided into a multi-stage process from the consumer's perspective, in this case the end-user. The buying process in B2C e-commerce is often highly standardized and, in contrast to B2B commerce, much less flexible, for example, concerning negotiations or adjustments. A comparatively low transaction volume is also considered characteristic (Merz, 2001).

In the subdivision of the purchasing process, the designation and number of steps in the literature differ depending on the context and authors: In some cases, a three-part division into the information, negotiation, and processing phases is used (Merz, 2001). On the other hand, Akbar and James (2014) speak of five steps: Identification of needs, information search, option evaluation, the search for the best price, and the final purchase decision, taking various factors into account. The symmetry of product information as a consequence of the transparency of the electronic market is of central importance. In this respect, price, in particular, is to be accorded central importance (Merz, 2001).

Two other factors determine the extent to which consumers are open to online shopping in addition to price - refund and convenience. The variable price means the possibility to save money by shopping on the Internet through lower prices. Refund refers to free returns and a right of withdrawal. Convenience means, in particular, that shopping is as simple as possible and saves time (Akbar & James, 2014). The relevance of price and convenience is repeatedly confirmed in the literature (Khalil, 2014).

A study based on a survey of 1,089 consumers examines the perceived benefits of the Internet when buying food. Product quality, usability of the store, product freshness, time savings, existing experience with the online retailer, and service quality are identified as potential influencing factors. Apart from service quality, a significantly positive correlation with the perceived benefit of the online channel can be found for all variables. A central influencing factor was the perceived time saving, which positively affects convenience (Boyer & Hult, 2005).

Security and trust continue to be important factors influencing online shopping behavior in general (Merz, 2001). However, a study for Saudi Arabia suggests that these two factors can be considered in a more differentiated way: While security and privacy can discourage people who have not yet bought online from making their first online purchase, trust primarily promotes repeat purchases on the Internet, with ratings and recommendations increasing trust (Khalil, 2014). This also results in increased added value for the user, which can lead to increased sales (Chen, Dhanasobhon, & Smith, 2008; Mudambi & Schuff, 2010).

Overall, it is clear that finding a great price, a fast and easy shopping experience, and confidence in security and privacy are key issues for people considering shopping online.

Consumer Selection of an Online Shop

Before this, we discussed which factors influence the decision for the online channel and online purchasing behavior in general. Now we want to gain an understanding of the factors that influence customers to choose a particular merchant in e-commerce.

In their account of the buying process, Akbar and James (2014) assume that the decision to buy a certain product is followed by the search for the best price and the final decision to buy a certain product from a certain retailer. They thus reduce the selection criteria to the price. In contrast to this, there is the idea of the "law of the only price," according to which, in the extreme case of transparency in electronic markets, only a single price can exist in the market, and consequently, the price cannot be considered, at least as the only selection criterion (Merz, 2001). It seems obvious that other factors can also be considered by consumers, such as the factors of security and trust already mentioned.

For example, seven factors were identified for the Chinese market that influence consumers when choosing an online store. The price is identified as the dominant influencing factor. In addition, reputation and trust, ratings and reviews, order fulfillment performance, web quality, sales volume, and stickiness factors were identified (Li, 2014). The quality of service and fulfillment is also considered an important driver of customer loyalty in other areas (Ahrholdt, Gudergan, & Ringle, 2017).

The work of Li (2014) confirms the hypothesis of Merz (2001), according to which price plays the most important role in choosing an online store in e-commerce. The importance of trust is also confirmed, although this can be increased by the third factor, existing customer ratings and evaluations. Fulfillment performance, especially delivery time and returns policy, also plays an important role for many online users.

Satisfaction, trust, and the flow experience can be identified as the main drivers for customer loyalty to an online store. All three factors positively affect customer loyalty and thus also increase the probability of repeat purchases. Satisfaction clearly dominates, while flow and trust have an approximately equal effect (Carlson, Ahrholdt, Sridharan, & Simatupang, 2013).

In summary, the price can be identified as the most important factor for the selection of an online store. At the same time, other factors also influence the decision of consumers. These include reputation and trust, order fulfillment performance, ratings, and reviews. In the long term, satisfaction based on previous experience is the main driver of long-term customer loyalty.

Buying Behavior on E-Commerce Platforms

The theoretical considerations on online marketplaces or e-commerce platforms do not explicitly consider the case that several providers offer the same product. Nevertheless, a lot known about the purchasing behavior of consumers on online marketplaces exists. The consumer decision process can be modeled in five steps (Teo & Yeong, 2003):

Step 1: Requirement identification
Step 2: Search for information
Step 3: Evaluation of alternatives
Step 4: Purchase decision
Step 5: Purchase evaluation

In particular, the authors state that a positive evaluation of a certain offer by consumers has a significant positive influence on the will to buy. Additionally important is the perceived benefit of the information search, while the perceived risk by the customer should be as low as possible.

In this context, the creation of trust, which has already been emphasized many times in the literature, is central (Hong & Cho, 2011; Khalil, 2014; Li, 2014; Merz, 2001). In particular, the large-scale study by Bart et al. (2005) provides findings on "e-tailers," which also include online marketplaces such as amazon.com and ebay.com. The study concludes that for e-tailers, three factors, in particular, have a significant positive influence on consumer confidence in these websites. This applies to the factors navigation and presentation, advice, and order fulfillment. On the other hand, privacy, security, brand strength, and community features have no clearly positive influence. In the following, the factors with a positive influence on trust are briefly explained in the sense of the study.

Navigation and presentation describe the appearance, design and layout, and contents of the website under investigation. The authors point out that elements of this factor can additionally lead to an experienced flow (Bart et al., 2005).

The factor advice means all elements of a website that help the user to find an appropriate solution for his individual needs or problems. The advice factor plays a particularly important role for e-commerce websites, where users often have a high search effort and a long information process (Bart et al., 2005).

The order fulfillment factor refers to the delivery of products and services purchased by consumers when they place an order. Especially for higher-priced products and services, the study attributes great importance to order fulfillment (Bart et al., 2005).

A further study examines the factors influencing the purchasing behavior of users of store offers (Smith & Brynjolfsson, 2001). Shopbots are product search engines that provide users with information

about retailers, products, and prices at a glance. In this respect, the paper corresponds to this paper in terms of its focus on comparing merchants. The authors investigate which factors are useful for a retailer on aggregation portals in terms of the users' willingness to buy. They collect the click data of 20,268 users from 33 different merchants for 69 days and analyze them against the background of the question as to which specific offer they would choose (Smith & Brynjolfsson, 2001).

The study concludes that despite homogeneous products, the dealer's brand itself plays an important role: Consumers use the dealer's brand awareness to infer reliability in terms of delivery. It should be noted that the strength of a retailer's brand weighs more heavily than the price in the case of this study: Although users of store offers are considered particularly price-sensitive, they tend to opt for the offer of the retailer with the stronger brand in their view. In connection with shipping and product price, it is also shown that consumers do not only pay attention to the total price but also the composition of the price consisting of the product price and shipping costs. Therefore, the shipping costs and the total price of the offer are emphasized as having less influence compared with the product price (Smith & Brynjolfsson, 2001). On the other hand, other studies see the total price as a significant influencing factor (Adler & Wohllebe, 2020).

Also described as important for users when deciding on a particular retailer is the role of delivery time, i.e., how long it takes a retailer to deliver the desired product to the consumer from the time the order is placed (Smith & Brynjolfsson, 2001). However, the role of shipping time may vary depending on the product or the circumstances of the individual purchase decision (Wohllebe, 2020). According to Smith & Brynjolfsson (2001), the central factor is also the order in which the dealers are sorted in the overview of offers.

METHODOLOGY

In the following section, the methodology used in the rest of the chapter will be presented to create a uniform understanding in this respect. In each section, the methodology itself is first presented and then how the methodology is to be applied in the elaboration.

Consumer Research Through Interviews

In the quantitative and qualitative research work, consumer surveys are used in two places: On the one hand, in the form of interviews to identify potential factors on purchasing behavior, on the other hand, in the form of an online, written survey to quantify the influence of the previously identified factors on the purchasing behavior of consumers.

In the following, the methodology of the oral survey (interview) is presented first, followed by the methodology of the written survey (survey).

Surveys are the most widely used method for recording knowledge, opinions, and attitudes in the context of empirical social research. However, a fundamental distinction must be made between oral surveys in the sense of an interview, written surveys, and telephone interviews. In addition, there is the Internet survey, which can also be understood as a written survey (Schnell, Hill, & Esser, 2011).

Oral questioning (in the sense of this paper also called "interview") is an instrument of empirical social research in which, with a scientific aim, a person interviewed is persuaded by an interviewer to communicate certain information using several orally asked, targeted questions (Grüttner, Egle, & Urich, 2006).

Regarding the degree of structuring of the interview situation, a distinction is made between little, semi-structured, and structured interviews. If an interview takes place without a previously developed questionnaire, it is referred to as a less structured interview. The interviewer has thereby the possibility of placing questions completely freely in the context of a rather informal discussion. This is particularly useful in a very early phase of the investigation to prepare more standardized methods. On the other hand, an interview is highly structured. It is based on a standardized questionnaire, which precisely defines the sequence and formulation of the individual questions. Usually, the answer options are also fixed within closed questions and different scales.

The semi-structured interview is considered a hybrid form regarding the degree of structuring: questions are already predefined, but the interviewer can easily modify the sequence or exact formulation of the questions. Especially in combination with open questions, the semi-structured interview offers the disadvantage that the answers are usually only available in a standardized form after further processing. On the other hand, the semi-structured interview also makes it possible to gain specific interviewee experiences due to the permitted questions to be able to record these freely. This form of interview is often referred to as a guided interview (Grüttner et al., 2006; Schnell et al., 2011).

We speak of a problem-centered interview when the questionnaire or interview guide is based on a theoretical construct. Characteristic is a short questionnaire or guideline whereby the interviewee answers narratively, i.e., from his own experience and freely in his formulation. At the same time, the interviewer picks up the answers and thus has the opportunity to ask appropriate questions for better understanding (Witzel, 2000). The survey phase should be prepared, for example, by illuminating existing knowledge and building up corresponding theoretical understanding to be able to best question and record the concrete experiences of the interviewees on an isolated problem (Grüttner et al., 2006).

Within the scope of the elaboration, the oral survey is used to identify potential influencing factors in the selection of dealers on B2C online marketplaces.

Since there are already scientific findings adjacent to the research question, from which a first theoretical construct can be derived, the oral questioning is designed in the sense of a problem-centered interview. With regard to the course of the conversation, due to the possible range of answers employing a semi-structured interview, the aim is to achieve a course of the conversation that is as free as possible but controlled, which enables the interviewer to broadly fathom the experiences of the interviewee on the one hand, and on the other hand to specify them more precisely through further questions.

Online Surveys

The online survey (also called "survey" in the sense of this paper) is a survey in which respondents receive a questionnaire in digital form on a computer, tablet, or smartphone to fill it out independently and then return it to the initiator of the online survey using the Internet (Schlegl, 2010). The online survey is thus similar to the written survey in its procedure (Barth, 1998). The online survey is often regarded as a special case of the written survey and as a contemporary interpretation of traditional methods of questioning (Diekmann, 2007; Pannewitz, 2002; Schlegl, 2010).

The geographical spread of the participants and the higher quality of the answers are seen as advantages of written and online surveys (Barth, 1998). Among the (exclusive) advantages of online surveys are the significantly shorter response times and the possibilities of computer-aided recording and evaluation of the answers (Schlegl, 2010).

Within the scope of the elaboration, the online survey is used to generate data on the relevance of the previously identified and limited influencing factors in the selection of merchants on B2C online marketplaces. The generated data will then be used to quantify the influence of the factors to discuss their respective role in the purchase decision from the consumer's perspective.

The use of the online survey methodology is intended to ensure a high degree of heterogeneity regarding the socio-demographic data of the respondents to be able to carry out differentiated evaluations. In addition, the online survey is also used because of the assumed low costs for the acquisition of participants. The acquisition of participants is mainly made via digital channels, especially social networks and e-mail.

Logistic Regression

Binary logistic regression as a multivariate analysis method is used in questions where the influence of one or more independent variables on a dependent variable is investigated. Characteristic for this method, especially when differentiating it from linear regression analysis, is that the dependent variable is nominally scaled and dichotomous, i.e., it can assume exactly two values (e.g., 0 / 1, yes / no, right / wrong, buyer / non-buyer). Furthermore, in contrast to linear regression, a non-linear relationship between the dependent and independent variables is assumed as the model premise (Backhaus, Erichson, Plinke, & Weiber, 2016).

A five-step procedure is proposed for the application of binary logistic regression. The application of the method starts accordingly with the model formulation and continues with the estimation of the logistic regression function. Subsequently, the individual regression coefficients are interpreted, followed by the examination of the overall model. Finally, the procedure concludes with testing the characteristic variables (Backhaus et al., 2016).

In the third step, Backhaus et al. interpret the regression coefficients. This step is considered problematic because the relationship between the individual independent variables (influencing factors) and the probabilities determined by the logistic function in the model is not linear: The influence of the independent variables on the dependent variable is, on the one hand, indirect and on the other hand non-linear. Central to this is the finding that these circumstances lead to the fact that the individual regression coefficients cannot be compared with each other for their influence, and the meaningfulness of the regression coefficients over the width of the expressions of the independent variables is to be regarded as not constant. Thus, only the direction of the influence can be directly derived, i.e., a positive or negative influence of the change of an independent variable on the dependent variable. The calculation of the chance to get $y=1$ instead of $y=0$ for the dependent variable assists in the interpretation of the regression coefficients. This chance is called odds. A logarithmizing of the odds leads afterward to the logits, which reflect the aggregated influence strength of a variable and can be set up as a linear combination of the independent variables. This allows a subsequent interpretation of the odds as effect coefficients analogous to the linear regression analysis (Backhaus et al., 2016). Table 1 shows how the coefficients of the regression analysis affect the probability that the dependent variable changes from 0 to 1.

During the subsequent examination of the overall model, it is to be examined to what extent the estimates of the parameters represent the defined regression model and whether there are outliers in the database that make a change of the regression model necessary. The core of this step of the execution of the binary logistic regression is the quality measures for the regression theorem. Especially the pseudo-

R-square measures are suitable for this. Table 2 shows the quality measures for evaluating the regression model based on the pseudo-R-square statistics (Backhaus et al., 2016).

Table 1. Influence of coefficients on probability of y=1

b	exp(b)	logit(z)	Odds [P(y=1)/P(y=0)]	P(y=1)
b > 0	exp(b) > 1	increases by b	increases by exp(b)	increases
b < 0	exp(b) > 1	decreases by b	decreases by exp(b)	decreases

Source: (Backhaus et al., 2016)

Table 2. Evaluation of regression model based on pseudo-R^2 measures

Pseudo-R^2	Description	Evaluation	Remarks
McFadden-R^2	Separating force of independent variables	Acceptable: > 0.2 Good: > 0.4	1.0 practically impossible to achieve
Cox & Snell-R^2	Comparison of likelihood values taking into account the sample size	Acceptable: > 0.2 Good: > 0.4	1.0 not achievable
Nail notch-R^2	Proportion of explanation of variance of dependent variables by the independent variables	Acceptable: > 0.2 Good: > 0.4 Very Good: > 0.5	1.0 can be achieved

Source: (Backhaus et al., 2016)

Although both the R^2 from Cox & Snell and the McFaddens-R^2 practically do not reach the maximum value of 1, both methods are suitable for assessing the quality of the entire model, whereby Nagelkerke-R^2 is preferred since the maximum value of 1 is attainable, but all values above 0.5 can be considered very good (Backhaus et al., 2016).

During the elaboration process, binary logistic regression is used to check and quantify the influence of the potential factors to be elaborated on the decision for or against the offer of a particular trader. The potential influencing factors are the independent variables that affect the purchase / non-purchase of an offer as a dependent variable.

QUALITATIVE IDENTIFICATION OF INFLUENCING FACTORS

The identification of potential influencing factors takes place in three steps. First, potential influencing factors are generated from the analysis of the interface of an online marketplace. In addition, further influencing factors are developed through interviews with consumers. Finally, these influencing factors are then merged, taking into account the previously considered literature.

The Interface of an E-Commerce Platform

Due to its strong relevance for the western world, the online marketplace Amazon is used as the basis for generating potential influencing factors. Taking into account only those offers where items are offered

in the state "new," the appropriate view is chosen to give potential buyers an overview of the different providers of a particular item. The view can be reconstructed by visiting the online marketplace by calling up an article that several merchants offer.

The structuring of the interface suggests a division of the potential influencing factors into three groups, whereby the state, since the elaboration refers exclusively to new products, is not considered:

- Price and shipping
- Seller information
- Delivery

For the category Price + Shipping, the following potential influencing factors are extracted:

- Product price
- Shipping costs
- Total price

It should be noted that although amazon.de, as an online marketplace, provides the user with information on product price and shipping costs, it does not automatically calculate the total price.

The following potential influencing factors are extracted for the Seller Information category:

- Name of the dealer
- Logo of the dealer
- Number of ratings
- Ratings in stars

For the category delivery, the following potential influencing factors are extracted:

- Delivery speed
- Place of dispatch

A total of nine different factors are extracted from three categories, which potentially influence the purchase decision of a user.

Conducting Consumer Interviews

To identify further potential influencing factors that cannot be extracted directly from the interface of the online marketplace, a total of twelve consumer interviews are conducted. First, the structure of the interview is described. This is followed by a detailed description of how the interviews are conducted. Finally, the results generated from the interviews are presented.

The interview conducted is problem-centered, poorly structured, and not standardized. The structure of the interview is divided into four blocks:

- Explanation of the problem
- Collection of demographic data

- Assisted narration of the respondent using the amazon.de interface
- Free narration of the interviewee regarding the question of influencing factors

In the first block of the interview (Phase 1), the present problem is first explained, making it clear to the interviewee that they should assume that certain decisions have already been made:

1. The interviewee knows which product he wants to buy.
2. The interviewee has already decided to make the purchase online.
3. The interviewee has already decided to purchase via the marketplace.

This setup ensures that the interviewee is sensitized to the relevant problem in the context of this elaboration and that no other influencing factors, in particular those that do not relate to the retailer itself, but to the product, for example, need to be discussed by the interviewee. Thus, the interview is problem-centered in this respect (Witzel, 2000). At this point, it is also checked to what extent the interviewee is familiar with online shopping. If there is no experience here, the interview is discarded to focus on the problem at hand.

In the second block (phase 1), basic socio-demographic data is collected, as will be collected later in the survey to determine the influence of the factors quantitatively.

In the third block (phase 2), the interviewee is presented with a screenshot of the Amazon e-commerce platform. The screenshot shows a typical merchant overview: Several merchants offer a product, whereby the individual offers and merchants differ in various points. By presenting the screenshot, the interviewee is also introduced to the situation according to the interview guidelines. This phase aims to answer the question of which of the information shown is relevant for the interviewee to decide to buy from a particular retailer. The interviewee is free in the way they answer the question; the question is asked as an open question. The essential statements of the interviewee on the individual aspects are collected as a transcript, whereby some answers are taken up, and corresponding questions are asked for understanding. In this respect, the interview is problem-oriented and semi-structured (Grüttner et al., 2006; Witzel, 2000).

In the final, fourth block (Phase 3), the interviewee is asked to go beyond the amazon.de interface and freely tell us which criteria may be relevant to them when choosing a particular retailer in the case of a purchase on (any) online marketplace. As in phase 2, the interviewer is also allowed to ask questions on the subject, provided that this is conducive to the interviewer's understanding of the facts. In this phase, too, the interview is problem-centered, semi-structured, and, moreover, continues to be non-standardized due to the open questions for exploring the facts with the possibility of asking questions (Bortz & Döring, 2006; Grüttner et al., 2006; Witzel, 2000).

The execution of the interviews takes place with twelve consumers altogether, whereby a heterogeneous target group of the interviewed ones is aimed at. The interview is conducted orally. The interviewer documents parallel in writing essential core statements about individual influencing factors. Subsequently, the factors and their relevance for the individual interviewee are extracted from the respective statements. A distinction is made between unimportant, important, decisive, and hygiene factors.

The results of the interview evaluation largely confirm the results of the previous analysis of the interface as well as the previous research results. A total of eight factors can be identified, whereby two of the factors are combined from several for further processing. The interviewees name the following factors:

- Total price
- Shipping costs
- Price composition
- Evaluation
- Awareness and experience (summarized)
- Warranty and returns(summarized)
- Delivery speed
- Delivery origin

The evaluation of the statements of the interviewees on the individual factors leads to the following table, which shows how often interviewees mentioned a certain influencing factor as rather unimportant, important, decisive, or hygiene factor. Grey deposited thereby such factors of influence are, which are described in the following more deeply.

Table 3. Interview evaluation regarding influencing factors

Factor	Unimportant	Important	Decisive	Hygiene
Total Price		4	8	
delivery costs	1			
Price Composition	1			
Ratings	1	5	2	4
Family & Experience	1	1		2
Warranty & Return Policy		2		
Delivery Speed	1	5		1
Delivery Origin	1	1		

It is noticeable that the (total) price is at least important for all respondents. In two-thirds of all cases, it is mentioned as the most or at least one of the most decisive factors influencing the decision for a certain dealer. Respondents state, among other things, that they "pay particular attention to the price" and also describe it as "decisive for the time being."

In addition to the price, each respondent's ratings of a dealer are also given: For only one interviewee, these do not play a role, as long as the seller is a commercial dealer. For the majority of respondents, on the other hand, ratings are important, with many respondents seeing the ratings as a confidence-building date: "I need to know who I'm dealing with. The experiences of others are a good help.

When asked, a person explains that particularly positive ratings of a merchant also increased their willingness to pay: "If a merchant is rated better, I'm also willing to spend more money. But the ratio must be right.

Likewise, frequently evaluations play according to a statement many asked ones however also only then a role if they fail badly. A particularly good evaluation of a dealer does not have a positive effect, but a bad evaluation has a negative effect on the respondent's decision to buy. Ratings would not influence the purchase decision as long as they "did not turn out negative."

Some of the interviewees also assigned a similar role to the familiarity of a merchant or their previous experience with a merchant: two persons stated that previous experiences with a merchant in the context of an online marketplace would only contribute to the purchase decision if "this time [a] negative experience had been made."

The speed of delivery is also mentioned by many respondents and is often rated as important. According to the interviews, it seems that speed of delivery, together with price and ratings, plays a central role among the factors influencing dealer selection in online marketplaces. For example, delivery speed is described as "very important" because the "item should be received as quickly as possible." It is also mentioned, among other things, that the delivery time may well influence the willingness to pay as long as "the price is within a similar range."

Consolidation of Potential Influencing Factors

The analysis of the amazon.de interface and the conduct of the interviews revealed several potentially influencing factors. Based on the information provided by the consumers interviewed during the interviews, these influencing factors are narrowed down to the factors listed below. The limiting factors are examined in the following chapter regarding their quantitative influence on the purchase decision.

The following influencing factors are to be reviewed based on the findings to date:

- Product price
- Delivery costs
- Number of ratings
- Average rating
- Delivery speed
- Image of merchant

From the product price and the shipping costs, the calculated total price is used for later evaluation. In addition, the influence of the sorting of the different retailers, which has not been conclusively clarified in the literature, is taken into account (Smith & Brynjolfsson, 2001; Wohllebe, 2020).

QUANTIFICATION OF THE INFLUENCE OF THE FACTORS

To quantitatively determine the influence of the influencing factors identified and limited in the previous chapter, a corresponding online survey is set up and evaluated with the help of a binary logistic regression.

Survey Design and Data Collection

On the basis of the influencing factors developed (product price, shipping costs, total price, number and average of ratings, delivery speed, retailer image, and the position of the offer), a survey is created, which forms the basis for quantifying the influencing factors developed accordingly.

In total, three steps are planned for the core of the survey, the actual collection of the relevant data:

1. Survey of the merchant's image

2. Making a purchase decision
3. Demographic data

In the first step, the user is asked to rate a selection of dealers. If a dealer is unknown or the user has no opinion about this dealer, "Neutral / No opinion" can be selected. A scale from 1 (negative) to 5 (positive) is used to collect the data.

In the second step, the user is shown one of nine different products randomly. With the call, the user sees five different offers from different dealers. The individual offers now vary randomly, whereby a value is randomly selected for each offer from value sets for product price and shipping costs. The total price is calculated from this.

The average rating, the number of ratings, and the delivery speed are also randomly selected from predefined value sets. Concerning the average rating, all values between 3.5 and 5.0 are possible at intervals of 0.25 points, and with regard to the delivery speed, the values "1-2 days", "3-4 days," and "5-6 days" are possible. The number of ratings is randomly given in the interval from 50.000 to 2.500.000. After entering a decision, the user can choose whether to make another decision or to be forwarded to the next step of the survey.

For the later segmented analysis of the survey data, the last step is to collect basic demographic data of the user, where the gender, age group, and monthly net income of the household are queried.

Descriptive Statistics

A total of 363 people took part in the survey, who together gave 697 answers about which product they would choose. On average, each user makes 1.92 decisions.

Regarding the provision of socio-demographic data, there is a high willingness to provide gender and age. The willingness to indicate the income group is significantly lower. The following tables show the distribution of answers regarding socio-demographic data.

Table 4. Answers by gender

Gender	Percent
Times	44.48
Females	45.48
Not answered	10.04

The answers by gender are distributed nearly equally. About ten percent refuse to provide information regarding their gender. For the later analysis by gender, those will be excluded.

The table of answers per age group shows that especially data from the younger age group was collected. Therefore, those respondents not providing information regarding their age group will be excluded from the analysis by age group. As there may not be enough observations for every age group, age groups will later be summarized into two major groups.

Table 5. Answers by age group

Age Group	Percent
18-25	62.12
26-35	19.51
36-45	5.60
46-55	2.30
56-65	0.43
65+	0.00
Not answered	10.04

Table 6. Answers by income group

Income Group (€)	Percent
< 1,000	24.53
1,000 – 1,500	6.46
1,500 – 2,000	10.76
2,000 – 2,500	7.89
2,500 – 3,000	4.88
3,000 – 3,500	7.32
3,500 – 4,000	1.87
> 4,000	9.33
Not answered	26.97

The number of answers per income group somehow reflects the distribution of age groups as both are correlated due to the level of education associated with both. The binary logistic regression will later be conducted for three income groups: below 2,000, between 2,000 and 3,500, and higher than 3,500.

Results by Gender

Binary logistic regression is used for the following and all subsequent quantifications. In all cases, the influence of the independent variables total price, product price, flat shipping rate, delivery time, position, user's seller rating, average rating in stars, and the number of ratings is measured. All independent variables are expressed as a ranking, whereby the ranking is determined by how well a quote was compared to the others with which it was simultaneously displayed. The purchase or non-purchase (1 or 0) of an offer is used as the dependent variable.

First, a binary logistic regression is performed for male respondents, then for female respondents. Then the results are compared with each other.

The dimensions of the pseudo-R^2s indicate an acceptable overall model.

The dimensions of the pseudo-R^2s indicate an acceptable overall model. In comparison, it is noticeable that the ranks of the offer in terms of the product price, delivery costs, position, and the count of ratings have only a small but significant influence on the purchase decision of male respondents. Likewise, the influence of female respondents is not significant. In comparison, however, the influence of the total price and the rating in stars on the purchase decision is more pronounced for female respondents than for male respondents.

Results by Age Group

When viewing the survey results by age group, the data set of respondents is divided into two different age groups: On the one hand, the 18 to 35-year-olds. On the other hand, all respondents were aged 36 and older.

Table 7. Results by gender - male

Number of observations	1550		
Goodness of fit			
Likelihood Ratio Test	Chi^2	413	
	Significance	2.548e-84	
Pseudo-R^2s			
McFadden-R^2	0.267		
Nail notch-R^2	0.371		
Coefficients			
	B	**Significance**	**Exp(B)**
(Intercept)	5.666	***	288.969
Rank Total Price	-0.639	***	0.527
Rank Product Price	-0.246	**	0.782
Rank Delivery Costs	-0.316	***	0.728
Rank Delivery Time	-0.306	***	0.736
Rank Position	-0.112	*	0.894
Rank Merchant Rating	-0.316	***	0.728
Rank Star Rating	-0.384	***	0.681
Rank Count Rating	-0.129	*	0.879

Table 8. Results by gender - female

Number of observations	1585		
Goodness of fit			
Likelihood Ratio Test	Chi^2 value	451	
	Significance	1.838e-92	
Pseudo-R^2s			
McFadden-R^2	0.285		
Nail notch-R^2	0.393		
Coefficients			
	B	**Significance**	**Exp(B)**
(Intercept)	5.034	***	152.644
Rank Total Price	-0.821	***	0.440
Rank Product Price	-0.212		0.809
Rank Delivery Costs	-0.192		0.825
Rank Delivery Time	-0.241	***	0.786
Rank Position	-0.066		0.936
Rank Merchant Rating	-0.249	***	0.780
Rank Star Rating	-0.453	***	0.636
Rank Count Rating	-0.038		0.962

Table 9. Results by age group - 18-35yrs

Number of observations	2845		
Goodness of fit			
Likelihood Ratio Test	Chi^2 value	803	
	Significance	3.980e-168	
Pseudo-R^2s			
McFadden-R^2	0.283		
Nail notch-R^2	0.390		
Coefficients			
	B	**Significance**	**Exp(B)**
(Intercept)	5.533	***	253.073
Rank Total Price	-0.769	***	0.463
Rank Product Price	-0.198	**	0.820
Rank Delivery Costs	-0.252	***	0.777
Rank Delivery Time	-0.280	***	0.756
Rank Position	-0.089	*	0.915
Rank Merchant Rating	-0.301	***	0.740
Rank Star Rating	-0.429	***	0.651
Rank Count Rating	-0.109	**	0.897

With regard to pseudo-R^2s, the measurements used indicate an acceptable level. All coefficients have a significant influence on the purchase decision. After the total price, the ranking of the offer according to ratings in stars is the parameter with the greatest influence on the purchase decision.

For the age group of the asked ones starting from 36 upward, a result which can be interpreted only with difficulty shows up. Although the overall model is in the acceptable quality range, only three coefficients are significant (apart from the intercept): the product price, the delivery time, and the rating in stars. It is important to note, especially compared to the younger target group, that instead of looking at the total price, the product price seems more important, but the delivery time also plays a role.

Although not significant, it should also be noted that the ranking of an offer according to the number of ratings could have an effect contrary to expectations: With an increasing number of ratings, the chance for the purchase of a particular offer decreases.

Results by Income

Considering the results of the BLR differentiated according to income groups, the data set of all respondents who have indicated an income is divided into three groups. First, a distinction is made between respondents' decisions with a monthly net household income of less than 2,000 euros, between 2,000 and 3,500 euros, and more than 3,500 euros.

Overall, the model shows an acceptable quality. The rank of the total price is to be regarded as the decisive factor influencing the purchase decision. With an Exp(B) of at least 0.7, the other potential factors show only a relatively low influence. However, all factors are significant.

Table 10. Results by age group - >35yrs

Number of observations	290		
Goodness of fit			
Likelihood Ratio Test	Chi^2 value	67	
	Significance	1.325e-11	
Pseudo-R^2s			
McFadden-R^2	0.234		
Nail notch-R^2	0.330		
Coefficients			
	B	**Significance**	**Exp(B)**
(Intercept)	3.617	***	37.246
Rank Total Price	-0.402		0.669
Rank Product Price	-0.491	*	0.612
Rank Delivery Costs	-0.294		0.745
Rank Delivery Time	-0.249	.	0.780
Rank Position	-0.130		0.878
Rank Merchant Rating	-0.068		0.934
Rank Star Rating	-0.281	*	0.755
Rank Count Rating	0.162		1.176

Table 11. Results by income group - <2,000 Euro

Number of observations	1455		
Goodness of fit			
Likelihood Ratio Test	Chi^2 value	406	
	Significance	7.958e-83	
Pseudo-R^2s			
McFadden-R^2	0.280		
Nail notch-R^2	0.386		
Coefficients			
	B	**Significance**	**Exp(B)**
(Intercept)	5.340	***	221.340
Rank Total Price	-0.749	***	0.473
Rank Product Price	-0.293	***	0.746
Rank Delivery Costs	-0.238	*	0.788
Rank Delivery Time	-0.217	***	0.805
Rank Position	-0.170	**	0.843
Rank Merchant Rating	-0.280	***	0.755
Rank Star Rating	-0.344	***	0.709
Rank Count Rating	-0.107	.	0.898

Table 12. Results by income group - 2,000 - 3,500 Euro

Number of observations	700		
Goodness of fit			
Likelihood Ratio Test	Chi^2 value	273	
	Significance	2.240e-54	
Pseudo-R^2s			
McFadden-R^2	0.390		
Nail notch-R^2	0.511		
Coefficients			
	B	**Significance**	**Exp(B)**
(Intercept)	7.065	***	1170.320
Rank Total Price	-1.056	***	0.348
Rank Product Price	-0.148		0.862
Rank Delivery Costs	-0.135		0.873
Rank Delivery Time	-0.642	***	0.526
Rank Position	-0.052		0.949
Rank Merchant Rating	-0.219	*	0.803
Rank Star Rating	-0.874	***	0.417
Rank Count Rating	0.100		1.106

In decisions by respondents with an income between 2,000 and 3,500 euros, McFadden-R^2 and Nagelkerke-R^2 indicate good or very good pseudo-R^2s. Significant coefficients are (besides the intercept) only the total price, delivery time, seller rating, and other users' ratings. While the rank of the seller rating with Exp(B) = 0.803 plays only a minor role in influencing the change of the chance towards the purchase, the other three variables play a much stronger role in the purchase decision.

Results in the upper-income group are not used for interpretation due to the low Chi^2 value for the Likelihood Ratio test and an unacceptable pseudo-R^2 based on McFadden-R^2.

DISCUSSION OF RESULTS

In summary, the total price and the average rating of an offer expressed in stars are the two most important levers. For both male and female respondents, these two variables can be identified as the main influencing factors. The rank of an offer after the total price seems to play a more important role for female respondents than for male respondents. The analysis of the age groups shows that for younger target groups, the total price of an offer has a more relevant effect on the purchase decision than for the older target group, for which no meaningful results can be worked out in this respect. In the low-income class up to 2,000 euros income, the total price of an offer is clearly the dominant factor. With an income of 2,000 to 3,500 euros, the decisive influencing factors besides the total price are the ratings (in stars) and the delivery time. Despite the non-interpretable results for higher-income groups, the delivery time seems to become more relevant.

Table 13. Results by income group - > 3,500 Euro

Number of observations	390		
Goodness of fit			
Likelihood Ratio Test	Chi^2 value	73	
	Significance	9.081e-13	
Pseudo-R^2s			
McFadden-R^2	0.190		
Nail notch-R^2	0.273		
Coefficients			
	B	**Significance**	**Exp(B)**
(Intercept)	3.426	***	30.758
Rank Total Price	-0.403	.	0.668
Rank Product Price	-0.270	.	0.764
Rank Delivery Costs	-0.324	.	0.723
Rank Delivery Time	-0.139		0.870
Rank Position	-0.040		0.961
Rank Merchant Rating	-0.335	**	0.715
Rank Star Rating	-0.012		0.988
Rank Count Rating	-0.146		0.864

Overall, the quantitative analysis shows across practically all groups that, apart from the clearly dominant total price, the ratings of other users (in stars), delivery time, and the image of a retailer, a number of factors seem to play no or only a minor role, contrary to the assumed model. For the position of an offer, it is to be stated comprehensively that this seems to play only a very small role as an influencing factor on the purchase decision: Whether a dealer with its offer is thus in first or fifth place, might have only a small influence on the purchase probability. However, it should be noted that marketplaces often sort their offers according to the total price in ascending order, i.e., the cheapest offer is automatically placed at the top. In contrast, the number of ratings a merchant has received from other users seems to play practically no role.

THEORETICAL IMPLICATIONS

On a theoretical level, the book chapter shows that, despite the high practical relevance of online marketplaces, some of the previous models for purchasing decisions in e-commerce have gaps. In particular, the discussed combination of product and merchant decisions in the models and in empirical research may not fully do justice to the scenario outlined in this chapter, where decisions for a product and for a specific merchant are made separately. An example is the work of Teo & Yeong (2003). In the Consumer Decision Process model and the model for digital marketplaces based on it, the term "alternative evaluation" and "purchase decision" is used generically. For example, for the scenario outlined in this book chapter, a product-related alternative evaluation could be carried out first, followed by a dealer-related

alternative evaluation before a purchase decision is made. Such a model, especially with regard to the time schedule, would rather have to be set up and then checked.

Furthermore, the results largely confirm the previous findings of related studies. In all scenarios considered, price is the decisive factor, as Merz (2001) already derived on a theoretical basis. Thus, the results align with previous studies such as those by Khalil (2014) and Li (2014). Also, the empirical importance of trust expressed by ratings shown in this book chapter is in line with previous findings by Khalil (2014) and Li (2014). Regarding whether the total price or the composition of the price is decisive, the results show that the total price seems to be more critical. Thus, the results confirm Adler & Wohllebe (2020) study and contradict the significantly older findings of Smith & Brynjolfsson (2001).

What is unexpected is the lower relevance of delivery time in many of the cases considered. In only a few instances does delivery time plays a significant role. These results are notably different from the findings of Boyer & Hult (2005). It should be noted, however, that the authors examine grocery shopping in their study. In this respect, the differently assessed influence of delivery speed or time savings can be related to the assortment.

MANAGERIAL IMPLICATIONS

Overall, the evaluation shows a high relevance of the total price from a practical point of view. This is because this represents the essential influencing factor for the purchase decision. Nevertheless, managerial implications can also be derived for merchants with regard to other factors. For example, suppose merchants cannot or do not want to offer the lowest total price for a product. In that case, the evaluation shows perspectives on which other factors can be considered to differentiate themselves. In summary, the following recommendations result for merchants on B2C online marketplaces:

- In all analyzed perspectives, traders should focus on the total price.
- In addition, the star rating of a dealer plays an important role across the board.
- Anyone who predominantly addresses female customers is particularly strongly confronted with total price as a major influencing variable, while this is also, but not quite as strongly, dominant among male respondents.
- Younger target groups also pay particular attention to a low total price, especially as there's a correlation between age in income.
- In line with this correlation, buying decisions from people with lower income are mainly influenced by the total price.
- For people with a medium income, delivery speed is also of decisive importance in addition to the total price and the evaluation of a merchant by other consumers.

For merchants, it is important to know their own customers in this respect with regard to the socio-demographic view of the results. This can be a challenge in online marketplaces, as they are usually not interested in passing on more customer data than is necessary for order processing. Merchants should therefore try to either determine socio-demographic data implicitly or extrapolate it based on their own customer base.

FUTURE RESEARCH DIRECTIONS

The area of purchase decisions in e-commerce and online marketplaces can generally be considered as already being researched in many ways. Nevertheless, the research results presented in this book chapter give rise to various subsequent research projects. On a theoretical level, as already mentioned, a more differentiated consideration of purchasing behavior seems to make sense. The proposed distinction between product-related and merchant-related purchase decisions would have to be verified accordingly.

On a practical level, the research results can be further deepened in various directions. For example, the relevance of individual factors can vary not only across socio-demographic groups. It is also conceivable that there may be differences by product group or by country or culture. For example, suppose a customer needs a particular product particularly quickly. In that case, the relevance of the delivery time could increase significantly and, to a certain extent, even be more important than the lowest total price. It is also conceivable that the price sensitivities of consumers differ according to country or culture. To this extent, the relevance of price could differ depending on the origin of the respondents.

CONCLUSION

Background of the elaboration is the question of influencing factors, which influence users on B2C online marketplaces in their purchase decisions. At the core of the work is the elaboration of these factors against the background that a potential buyer has already decided on a product, but the choice of the provider is still open. Based on the theoretical findings of purchasing behavior research on the Internet in general, in online stores, and finally, in the specific case of online marketplaces, various models and studies are considered. As potential factors in the sense of the goal of the elaboration, among other things, the influencing factors price, security, confidence, supply, and completion as well as the arrangement of the offers are worked out. Against the background of these factors, the interface of amazon.de is analyzed, whereby various concretely possible influencing variables with regard to price and shipping, seller information, and delivery result. Several interviews with potential users are conducted to narrow down these possible influencing variables for subsequent quantitative analysis. A subsequent survey will determine the influence of a total of eight potential influencing variables: Total price, consisting of the item price and shipping costs, amount and number of ratings, delivery speed, brand image of a retailer to the respondent based on previous experience, and the position of an offer. Furthermore, basic demographic data are considered in the data collection. The analysis of the collected data is segmented over the different demographic data. A binary logistic regression is applied. The analysis is performed by gender, age group, and income group. In most cases, the individually collected groups are further summarized in order to obtain sufficiently high case numbers.

Overall, the evaluation shows that the total price is the clearly dominant influencing factor across all considerations. As the second most important factor, the ratings of a dealer by other users can be identified. In addition, the delivery time and the image of a retailer with the respective respondent occasionally play an important role in some segments of the data set, but this does not go beyond that of the total price or the ratings of a retailer by other users. The position of an offer and the number of ratings can be regarded as practically irrelevant. The results of the elaboration thus confirm to a large extent the previous models and studies, which have, however, been mainly in online shopping in general.

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KEY TERMS AND DEFINITIONS

Buying Behavior: Buying behavior is the cognitive process that a consumer - or, more broadly, a company - goes through to decide to make a purchase.

Consumer Decision Process: The consumer decision process describes consumers' decision-making process, typically in terms of purchasing decisions and weighing several alternatives. The consumer decision process is very close to the buying behavior of consumers or the buying process of consumers and can often be used synonymously in the context of this book chapter.

Delivery Speed: The delivery speed or delivery time is the time that elapses in e-commerce between ordering a (physical) product and delivery to the customer. Unless explicitly stated otherwise, the term "customer" in this document refers to the consumer.

E-Commerce: E-commerce is the term used to describe the initiation, negotiation, and processing of transactions via the Internet. In the context of this book chapter, this includes, unless otherwise stated, especially transactions between companies and consumers (business-to-consumer/B2C).

Logistic Regression: A logistic regression describes a regression analysis in which the dependent variable is discrete. In the logistic regressions performed in this book chapter, the dependent variable is scaled binary - purchase or non-purchase.

Marketplace: A marketplace is an electronic platform that mediates between supply and demand. Supply is made available by merchants, while - in the sense of this book chapter - demand is generated by consumers (B2C).

Merchant: A merchant in the narrower sense is a company whose business model consists of trading goods, in particular physical goods. For this book chapter, the term "merchant" refers to all types of companies that offer their products in a marketplace.

Platform: A platform is a non-physical digital place that provides several companies with the technological infrastructure to offer or provide their products and services.

Ratings: Ratings—here on a marketplace—are the evaluations that a merchant receives from consumers on a marketplace, often following a completed transaction.

Chapter 10
Shipment Tracking, Delivery Speed, and Product Presentation as Antecedents of Repurchase Intention: Predictors of Online Shopping Repurchase Intention

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ABSTRACT

The chapter aims at understanding the predictors of attitude and repurchase intention with online shopping in India by using signaling theory. This research validates shipment tracking, delivery speed, and product presentation as new predictors influencing attitude towards online purchase. It also validates trust as a mediator between attitude and repurchase intention. Data was collected through a self-administered and structured questionnaire targeting online shoppers in North Indian states. A sample of 519 online shoppers was considered in this research. Structural equation modelling (SEM) was used to evaluate the interrelationships among constructs. To examine the hypothesized relationships, path analysis was carried out. The findings of the chapter revealed that delivery speed and product presentation had a significant positive impact on attitude towards online shopping. In contrast, shipment tracking emerged as non-significant antecedent of attitude. The study further empirically provides the evidence that trust mediates the relationship between attitude and repurchase intention.

INTRODUCTION

The pervasive and unlimited internet utilization has led to the advent of novel technologies, which have provided a distinct advantage for online retailing. “There has been an intense modification in shopping

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habits all over the world due to the power of the platform-a new business model which uses technology to connect people, organizations and resources in an interactive ecosystem" (Parker et al., 2016, p.1). This, in turn, has drifted the focal point to achieving excellence in logistics capabilities also. Transformations in the lifestyle have led consumers to practice e-shopping for simplifying their repetitive shopping events (Shareef et al., 2018; Tandon et al., 2021). But despite this massive intensification, the powerlessness to "touch, try and feel products" and timely delivery remain a preeminent obstruction in purchasing products online (Tandon, 2021).

To overcome these hurdles and apprehensions, online retailers introduced novel activities such as liberal and hassle-free timely delivery, shipment tracking and delivery speed, product presentation (Pei, 2014; Riley & Klein, 2019). Researchers have validated these constructs discretely, but an extensive model covering all these constructs composed in a single study is missing in the literature. This gap in literature encouraged the researcher to empirically validate these policies where the consequence of every policy given by online retailer is conceptualized and compared so that the online retailers can concentrate on those policies which lead to retention of consumers.

Most of the online retailers in India have come up with advanced distribution systems that assist consumers and retailers by providing timely delivery and order tracking. Consumers can track their orders, and retailers can provide delivery at a specific time, thereby reducing the logistic delays (Fairchild, 2016).

In order to stimulate e-commerce in India, 100 percent Foreign Direct Investment (FDI) in retail has been allowed since 2016 (IBEF, 2019). Further, by 2026, the Indian e-commerce market is projected to attain a figure of 200 billion (IBEF, 2020). The Indian e-Commerce market is further projected to exceed the U.S. and may become the second largest e-commerce market by 2034(IBEF,2021). This may be credited to 4G networks and penetration of smartphones. The Government of India has initiated a Digital India campaign with a target to create a trillion-dollar online economy by 2025. A steering committee was created to look into developing an e-commerce platform initiated by the Government of India. This committee aims to set up an infrastructure for developing online delivery of products to improve logistics infrastructure in villages and rural areas. Despite these efforts by the Government of India, among 560 million internet users (Internet World Stats, 2019), only 20 million are active online shoppers (Vijay, 2020).

Forrester Research (2020) estimated a steep increase in e-commerce sales by 7 to 8 percent in 2020, but this rise is unable to convert into respectable shopping numbers. This raises a concern to improve online customer base and a need to identify and understand the factors which help to retain the consumers. Further, India also lags behind its neighboring country China in e-Commerce adoption and penetration, which had a 14% online retail penetration at the end of 2019. As per U.N. trade and development experts, the e-commerce sector saw a "dramatic" rise in its share of all retail sales, from 16 percent to 19 percent in 2020 (UNCTAD, 2020). The U.K. also saw a spike in online transactions over the same period, from 15.8 to 23.3 percent; so too did China (from 20.7 to 24.9 percent), the U.S. (11 to 14 percent), Australia (6.3 to 9.4 percent), Singapore (5.9 to 11.7 percent) and Canada (3.6 to 6.2 percent) (UNCTAD, 2020). On the other hand, India's e-commerce sector includes only 3.4 percent of the overall retail market, with 100-110 million users and an online gross merchandise value (GMV) of around 30 million (Salman, 2020). Thus, developing and developed nations differ in their socio-economic and regulatory aspects. Therefore, an indispensable requirement is to investigate the variables that facilitate e-retailers acquiring additional consumers in an emerging economy context like the Indian one.

Online shopping, no doubt, has been explored in the Indian scenario, but most studies are restricted to a specific geographic location with a limited sample size (Jain & Kulhar, 2019; Sharma & Rehman,

2012). The variables like product presentation technology (e.g., 3D rotation, video, virtual try-on, etc.), shipment tracking, and delivery speed are still unexplored in the Indian literature. Further, prominent research studies in the Indian context focus on the adoption of e-commerce followed by barriers and drivers, thereby providing limited knowledge about the significance of logistical capabilities (Jain & Kulhar, 2019; Merugu & Mohan 2020; Kripesh et al.,2020). Answering these questions and in order to understand the impact of logistical capabilities like shipment tracking and delivery speed, a theoretical model has been proposed and validated in the study.

To the best of the authors' understanding, vital variables like shipment tracking, product presentation, and delivery speed have not been empirically examined in the Indian context. Therefore, this research tries to validate these variables collectively in a model to understand their comparative impact in improving an online purchase in the Indian context. Attractive product presentation of products like apparel lessens the risk associated with lack of touch and feel factor, thereby creating a positive attitude towards the online purchase (Li et al., 2016; Jai et al., 2021). Similarly, apprehensions about the quality and size of the product received from an online purchase are still a major deterrent while making an online purchase. 3d presentation of the product may reduce this apprehension, provide a virtual experience of moving, rotating the product by fitting it live with augmented reality, thereby stimulating several customers to start online purchase (Tandon et al., 2021). Additional emphasis on shipment tracking where consumers can track their orders and expect the date of delivery is another initiative by e-retailers (Mosquera 2017; Riley & Klein, 2019). Yet, the research about the impact of shipment tracking and product presentation is in the emerging stage in India and thus requires further empirical validation. Similarly, appropriate and on-time delivery, as well as accuracy in the order delivery, lead to a positive attitude (Blut, 2016), increase trust, and improve repurchase intention. Thus, the objective of the study is to empirically validate the capability of each construct so that e-retailers can design appropriate policies. The mediating role of trust as a specific construct is of great significance in the platform economy. Further, as De Reuver et al. (2018) suggested, analyzing the mediating impacts of different constructs helps to understand consumers' perception of any digital ecosystem. A comprehensive model covering all the above-discussed constructs is missing in the literature. It is yet not clear which of these constructs is the strongest predictor of attitude so that e-retailers, by focusing on the right direction and gain competitive advantage.

The study will provide significant insights for both academicians as well as online retailers. The results will provide a deep understanding of the intricated relationships which inculcate trust and stimulate online shopping. Online retailers in both developing, as well as developed countries should consider these factors like product presentation technology, shipment tracking, and delivery speed in actual practice to imbue a positive attitude towards online shopping and penetrate deep into the markets. Del Mar Alonso-Almeida et al. (2020) emphasized that consumers provide apt feedback and contribute by sharing their experiences that are useful to build strategies to achieve competitive advantage. In order to understand this, the signaling theory by Spence (1973) has been considered as the theoretical base.

The rest of the chapter is organized as follows: Section 2 covers theoretical background and hypotheses development. Section 3 explains research methodology and data collection techniques, followed by section 4, which covers results. Section 5 and section 6 are the concluding sections covering the implications and limitations of the research.

THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

Signaling Theory

Signaling theory advocated by (Spence 1973) describes various signals incorporated by online retailers in their websites to attain new customers and encourage existing customers to go for repeat purchases. These pricey signals impart useful information about online shopping procedures and apprise consumers of the quality of the product. This, in turn, kindles trust and enhances repurchase intentions. This research attempts to understand which signals reduce the apprehension of the quality of products purchased online and integrates signaling theory to understand the significance of attitude in generating confidence and repurchase intention.

A signal may be defined as "an action taken by a learned group of people handling asymmetric information, in order to transfer this information and characteristics to less knowledgeable groups of individuals" (Spence, 1973, p. 357). The effectiveness of a signal can be measured by its tendency to resolve problems related to consumers (Boulding and Kirmani,1993). According to a study conducted by Rahman et al. (2018, p. 117), "signals reduce the gap between what stakeholders know and what they want to know." Consequently, it becomes vital to recognize those signals that impact the minds of consumers and alter the decision regarding online purchases (Bergh et al., 2014). Signaling theory stresses the information exchange among buyers and sellers. The signaling theory has been validated to understand consumers' perception and how they comprehend the signals, i.e., the information regarding the quality and performance of the products (Mavlanova et al., 2012). Cheung et al. (2014) found social information cues as vital signals influencing the purchase decision. Mitra & Fay (2010) confirmed the role of price to manage consumers' expectations and confirmed price as an important signal in improving the service levels. Tandon et al. (2021) extended the signaling theory to virtual-try-on technology and pay-on-delivery as important signals creating trust in people's minds, thereby influencing repurchase. Li et al. (2009) analyzed signaling and auction theories to identify and confirm various indicators which influenced customers' bidding decisions. Results of the study emphasized the Internet auction features, which improve upon the quality indicators, thereby reducing uncertainty.

In this research, it is submitted that online retailers bank upon various strategies which could be considered as signals like focussing on presentation of products, tracking the orders once placed, making the product delivered before time, and many others. Previous reported research studies have also emphasized incorporating these signals in their websites (Rahman et al., 2018; Lee et al., 2010). These signals remove apprehensions regarding the performance of products and reduce risk factors related to the online purchase of a product. Focusing on appropriate signals may build a positive attitude among the consumers regarding online purchases, thus increasing trust for online purchases (Connelly et al., 2011). Though validated in diverse fields, signaling theory has not been validated extensively to understand the pricey signals on which e-retailers need to focus. E-retailers depend upon various pricey signals to stimulate online purchases, which in turn kindles trust. In the marketing literature, signals such as brand awareness, (extended) warrantees, and (convenient) return policies are critical success factors for online retailers to promote on their websites in order to instill trust, generate leads, and convert them into buyers (Tandon et al., 2017; Kozinets et al., 2017).

It is thus submitted that Shipment tracking, delivery speed, product presentation may constitute key signaling elements for online retailers. Retailers use various logistical tools such as Shipment tracking and delivery speed (Riley & Klein, 2019) and product presentation (Li et al., 2016; Jai et al., 2021) in

order to motivate consumers to shop online. These signals reduce the uncertainty about the quality of the product and risk, thereby improving repurchase intentions. Therefore, this research imbeds the Signaling theory to understand the impact of these policies and dimensions of trust. The signaling theory will be conceptualized in this study as a theoretical mechanism that encourages people to shop online. Product presentation technology (Jai et al., 2021) and shipment tracking and delivery speed (Riley & Klein, 2019) are expensive signals and have been used by e-retailers to reduce risk and motivate consumers to shop more. Further, in sync with the literature, we propose that Product presentation technology may signal an online retailer's quality. Consumers can try a product online, see a 3D overview of the product, and reduce the absence of the "touch and feel factor" in online shopping. Though expensive, investing in these signals may compensate for their cost through increased returns on future purchases.

Product Presentation Technologies

Product presentation technologies include providing textual and visual information to explain the characteristics of the product (Li et al., 2016). Product presentation technologies (i.e., 3D pictures, videos, virtual-try-on) play a significant role in building a positive attitude (Orús et al., 2017). Videos of products and 3D pictures coupled with VTO stimulate online purchase because people tend to remember the visual presentation of the product (Algharabat & Abu-ElSamen, 2013; Wu et al., 2016; Li et al., 2016; Jai et al., 2021). Jiang & Benbasat (2007) reflected that the product videos (both with description and without description) improve customer experience, leading to increased online purchases. Kim and Forsythe (2009) confirmed that 3D system quality by focusing on usefulness and ease of use of the presented products helps build a positive attitude towards e-shopping. Product presentation improves interactivity, and the consumers are able to comprehend the information about the dimensions, color, and operations of the product (Algharabat et al., 2017). Algharabat (2016) found a positive impact of product presentation on attitude towards e-shopping. Taking the studies to the next level, Algharabat et al. (2017) suggested that 3D presentation of the product regulates attitude not only towards product but also towards the website. This positive attitude builds trust regarding online purchases. The study further established the moderating role of virtual product experience between attitude towards product and customer satisfaction. Perren & Kozinets (2018) suggested that interactions with software require careful handling and management to synchronize the entire operation. Tandon et al. (2021) concluded that Virtual-try-on plays a significant role in diminishing the touch and feel dilemmas, thereby encouraging shoppers to repurchase. Thus, following hypothesis has been proposed:

H1: Product presentation technologies will positively affect attitude towards online purchase.

Shipment Tracking

Online tracking of orders by consumers is an indispensable tool offered by online retailers. A study by Mosquera et al. (2017) highlighted that tracking capabilities offered significantly impact consumers' attitudes. This also helps to reduce the apprehension related to the "touch and feel" dilemma. Riley & Klein (2019) confirmed a significant and positive association between shipment tracking and online shopping attitude. Consumers who are aware of the availability of shipment tracking develop a positive attitude towards online shopping. Previous studies by Becerril-Arreola et al. (2013) and Cheung & Thadani (2012) suggested that shipping policies, including shipment tracking facility for the order,

once placed, influence the trustworthiness of the e-store and help in building a positive attitude towards online purchase. Blut et al. (2015) further confirmed shipment tracking, product and system availability as significant factors leading to online purchase. Dewi (2019) suggested mentioning location features also along with the tracking items for placed orders. Alnaseri et al. (2021) also emphasized the facility of shipment tracking, leading to trust and a positive attitude towards online shopping. Therefore, the related hypothesis is:

H2: Shipment tracking offered will positively affect attitude towards online purchase.

Delivery Speed

Online consumers also evaluate the delivery speed as an important value-added service provides by online retailers. Previous research (Riley & Klein, 2019; Momani et al., 2017) highlights the significance of delivery speed while making an online purchase. While making an online purchase, consumers frame an opinion about retailers' capability to complete an online transaction and deliver the product at appropriate times. Timely delivery and precision in order delivery form important parts of fulfillment, leading to a positive attitude (Blut, 2016; Tiwari, 2021). Liao & Keng (2013) argued that post-payment dissonance could be observed in e-shopping as the consumer is unable to feel and see the product. Therefore, e-retailers must ensure timely delivery with the desired product to improve their service quality. Zhong et al. (2021) conducted a longitudinal study for a period of five years ranging from 2015-2019 in the U.K. They confirmed the positive role of delivery reliability on consumers' purchase intention, but delivery speed emerged insignificantly. Thus, to understand the role of delivery speed in developing attitude towards online shopping, following hypothesis is framed:

H3: Delivery speed capabilities offered will positively affect attitude towards online purchase

Attitude and Online Repurchase Intention

Attitudes of individuals, either positive or negative, help in intention to perform the desired action. Attitude may be defined as "a learned predisposition to respond in a consistently favorable or unfavorable manner to an object, event or stimulus" (Fishbein & Ajzen, 1976). This indicates that attitude towards a phenomenon progresses over time once people gather knowledge and experience about the product from multiple sources. This practice leads to the formation of attitude which may be positive or negative. Fishbein & Ajzen (1976) considered attitude a multidimensional construct predicted by cognitive, affective, and behavioral components. The cognitive component mentions the knowledge about a particular service or product, e.g., knowledge about placing orders in online shopping. The affective component indicates the liking or disliking of a product, while the behavioral component applies to behavioral intention, i.e., actions taken by a person regarding a particular product or service, e.g., making an online purchase. The intricated relationships among these three, i.e., knowledge (cognition), liking (outcome), have an impact on behavioral attitude towards the object (Hasan, 2010; Ahn et al., 2007; Tandon et al., 2017). Previous studies have confirmed the positive association of attitude with e-shopping (Hasan, 2010; Rao et al., 2011; Prashar et al., 2015). In case of any service failure (Pham & Ahammad, 2017), positive and negative outcomes lead to satisfaction or dissatisfaction, which may refrain consumers from performing a desirable action. Riley & Klein (2019) confirmed that online purchase attitude leads

to repurchase intention. A study by Tandon et al. (2018) also confirmed the significant positive impact of attitude towards online shopping in generating online purchase intention. Individuals form a positive attitude regarding a particular behavior and are likely to engage in said behaviors (Riley & Klein, 2019). Thus, following hypothesis is framed based on above literature:

H4: Online purchase attitude will positively affect repurchase intention

Trust as a Mediator

Several studies have considered the relationship between trust and repurchase intention and indicate that trust has a significant positive association with repurchase intention (Hong and Cha, 2013; Hsiao et al., 2010; Lee et al., 2011; Six et al., 2010). The study by Tandon et al. (2021) emphasized trust as a dominating factor leading to repurchase intentions. Hsu et al. (2013) indicated that trust plays a major role in both offline as well as e-shopping. Mukerjee & Nath (2007), in their study, concluded trust as a dominating factor influencing online repurchase. Akroush & Al-Debei (2015) suggested trust as a major predictor of online purchase intention. The study by Hong & Cha (2013) suggested that consumers, while purchasing fashion products look for consistency between the image shown and the product. If the product is mi

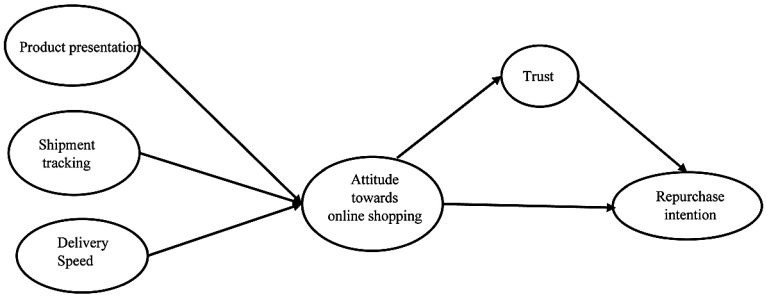
sfit, it leads to distrust and will avoid buying clothing through online mode. Weisberg et al. (2011) and Giantari et al. (2013) concluded that trust mediates the relationship between repurchase intention and attitude towards online shopping. Taking support from the literature, following hypothesis has been proposed:

H5: Trust mediates the relationship between online purchase attitude and repurchase intention.

Conceptual Model

Based on the literature review, the following model (Figure 1) has been proposed:

Figure 1. Proposed model



PROPOSED RESEARCH METHODOLOGY

Measurement Development

The variables in this study were examined by using scale items adapted from the previous academic research. The scale items of Attitude (4 items), Shipment tracking (3 items), and delivery speed (3 items) were measured with the scale of Riley & Klein (2019). Scale items of product presentation (4 items) were measured with the items from Orús et al. (2017). Items of trust (3 items) and repurchase intention (3 items) were adopted from the previous studies of Gefen et al. (2003) and Lin et al. (2003). These items were altered to fit the online shopping context. A five-point Likert scale (from 1 "Strongly disagree" to 5 "Strongly agree") was used to measure all the items (Appendix 1).

Data Collection Procedure

Before initiating the final data collection, the preliminary questionnaire was discussed with academicians and researchers of a University. The scale items were also addressed with three online retailers. The two criteria followed while selecting the experts were their years of experience and area of expertise. Only those academicians with a minimum of five years of teaching and research experience and senior management employees of online retailers were contacted for validation of the questionnaire. Based on the feedback received from the online retailers and the academia, the language of scale items was improved and then used for final data collection. Mix method approach was followed for data collection as this reduces bias, saves time, and progresses the survey response rate. Therefore, both field, as well as online surveys, were conducted at the same time. A total of 700 questionnaires were distributed among students, business people, government employees, and private professionals residing in North Indian states. Several revisits were undertaken in urban and rural areas to increase the participation of people in this survey. The same survey was conducted through the online mode as well. An online link was generated and furthered to several social media groups on Facebook, LinkedIn, etc. Both the surveys (online and offline) were able to generate a total of 750 responses. Online mode generated a total of 356 responses, while a total of 394 responses were collected through field visits. After careful screening, 519 responses were carried forward for further analysis. A few incomplete forms with redundant values, e.g., age more than 100, were rejected from further analysis. Some other incomplete questionnaires with missing answers were also discarded. Further, those questionnaires answering with one number consistently were also rejected. .

In order to address the social desirability bias, the respondents were made implicit that the information provided by them will be kept confidential and utilized for academic purposes only. The purpose was to motivate the respondents and provide genuine information. Consequently, in order to address non-response bias, a comparison was made between early and late respondents. As shown in Table 1, no significant differences were found between early and late respondents, suggesting that non-response bias is not an issue (see Table 1). Thus, the final sample of 519 can be considered as representative of the entire population under study.

Table 1. Non- response bias

		Shipment Tracking	Product Presentation	Delivery Speed	Attitude	Trust	Repurchase Intention
Early respondents	**Mean**	4.012	3.802	3.630	4.114	4.005	3.939
	Std. Dev	0.928	0.877	1.108	0.905	0.969	1.004
Late respondents	**Mean**	3.827	3.803	2.421	4.053	3.737	3.940
	Std. Dev	0.886	0.940	0.961	0.927	0.764	0.703

Table 2. Demographic profile of respondents

Demographic and Characteristics of Respondents N=519	Response	Percentage
Gender		
Male	286	55
Female	233	45
Age		
18-29	234	45.11
30-45	178	34.21
Above 45	107	20.68
Education Qualification		
Undergraduates	73	14
Graduates	160	31
Masters and others	286	55
Occupation		
Student	101	19.54
Self-employed	92	17.6
Employee	326	62.86
Online Shopping Experience		
Less than 3 years	109	21
4-5 years	296	57
More than 5 years	114	22
Preferred mode of payment		
Pay-on-delivery	368	70.906
Credit card	33	6.358
Debit card”	118	22.736

DATA ANALYSIS

Structured Equation Modelling Analysis

Structural Equation Modelling (SEM) using AMOS 20 was used to analyze the data. SEM was preferred over other techniques since the SEM software integrates many standard methods such as correlation, multiple regression, factor analysis under one umbrella (Lowry & Gaskin, 2014). Further, the comparison of data is feasible using SEM. This comparison results in the goodness of fit-statistics assessing the matching of model and data (Lowry & Gaskin, 2014).

Reliability and Validity

To assess the reliability and validity of the proposed measurement model, confirmatory factor analysis (CFA) was carried out on dependent and independent variables. One item of Shipment tracking (ST4) was removed due to low standardized loadings. The CFA results (Table 3) indicated that standardized loadings of all the variables included are significant. The instrument demonstrates evidence of convergent validity (average variance extracted > 0.50 on all occasions), composite reliability (values > 0.70 on all occasions), and discriminant validity (AVE estimate of each construct is larger than the squared correlations of this construct to any other construct (Table 4) (Fornell & Larcker, 1981).

Structural Model

The hypothesized model was estimated separately on all independent variables and one dependent variable, i.e., customer satisfaction (Table 5, Figure 2). Product presentation had the highest loadings ($\beta = 0.279$, $p < 0.001$) and emerged as the strongest predictor of customer satisfaction in online shopping, thereby accepting H1, which states that product presentation will positively affect attitude towards online purchase. This was followed by delivery speed ($\beta = 0.279$, $p < 0.001$), thereby accepting hypothesis H3. This finding reveals the significant impact of timely and fast delivery in building attitudes towards online shopping. Surprisingly, hypothesis H2 was rejected, indicating that Shipment tracking had a negative and insignificant relationship with attitude towards the online purchase ($\beta = -0.047$, $p = 0.432$). Attitude also had a significant positive association with Repurchase intention ($\beta = 0.170$, $p < 0.001$) thereby accepting H5. All the fit indices indicated an acceptable fit (Table 5). This specifies that the hypothesized model is a logical presentation of the structures covering the observed data.

Mediation Effect

Hypothesis H6 assumed that trust mediated the relationship between attitude towards online shopping and repurchase intention in the context of online shopping (ATT→TRU→R.I.). Table 6 shows the mediating effect of trust. The parameter estimates of the relationship between attitude towards online shopping and repurchase intention after adding trust as mediating variable were reduced and became insignificant ($\beta = 0.059$, $p = 0.145$), thereby indicating full mediation. To confirm the mediation, the Sobel test was performed (Mac Kinnon et al., 2012). The value of the Sobel test statistic with trust as a mediator was 2.368 and was significant at $p < 0.001$. These results imply that trust depicts the full mediating effect on

Table 3. Measurement model

Variables	Items	Std. Estimate	Std. Error	Critical Ratio	Average Variance Extracted	Composite Reliability
SHT (Shipment Tracking)	SHT1*	0.787			0.662	0.855
	SHT2	0.838	0.054	19.067		
	SHT3	0.816	0.058	18.686		
PRP (Product Presentation)	PRP1*	0.684			0.567	0.839
	PRP 2	0.788	0.075	15.357		
	PRP 3	0.743	0.088	14.647		
	PRP 4	0.793	0.087	15.42		
DSP (Delivery Speed)	DSP1*	0.823			0.504	0.801
	DSP2	0.632	0.056	12.441		
	DSP3	0.713	0.063	13.738		
	DSP4	0.656	0.113	12.285		
TRU (Trust)	TRU1*	0.846			0.601	0.816
	TRU2	0.828	0.055	18.017		
	TRU3	0.633	0.051	14.291		
REP (Repurchase Intention)	REP1*	0.594			0.726	0.884
	REP2	0.945	0.095	15.716		
	REP3	0.966	0.099	15.565		
ATT (Attitude towards Online purchase)	ATT1*	0.924			0.761	0.926
	ATT2	0.941	0.026	38.847		
	ATT3	0.918	0.028	36.106		
	ATT4	0.681	0.036	19.16		

"*" indicates as the regression weight was fixed at 1, therefore, Std. error, critical ratio and p-value are missing

Table 4. Correlation Matrix of variables

	Shipment Tracking	Product Presentation	Delivery Speed	Attitude	Trust	Repurchase Intention
Shipment tracking	**.813**					
Product presentation	.515**	**0.752**				
Delivery Speed	.500**	.475**	**0.709**			
Attitude	.280**	.357**	.236**	**0.872**		
Trust	.345**	.249**	.330**	.254**	**0.775**	
Repurchase Intention	.095*	.129**	.077	.100*	.391**	**0.852**

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Note: Diagonal values in bold represent the square root of the average variance extracted (AVE), while off-diagonal values represent the raw inter-construct correlations.

the relationship between attitude towards the online purchase and repurchase intention. The structural model with standardized weights is given in table 6, Figure 2.

Table 5. Structural model of drivers of online shopping

			β	Std. Error	Critical Ratio	P-Value	Empirical Evidence
Shipment Tracking	→	Attitude	-0.047	0.065	0.786	0.432	Not-Supported
Product Presentation	→	Attitude	0.279	0.083	4.175	0.000***	Supported
Delivery Speed	→	Attitude	0.229	0.061	3.138	0.002**	Supported
Attitude	→	Repurchase Intention	0.170	0.045	3.937	0.000***	Supported

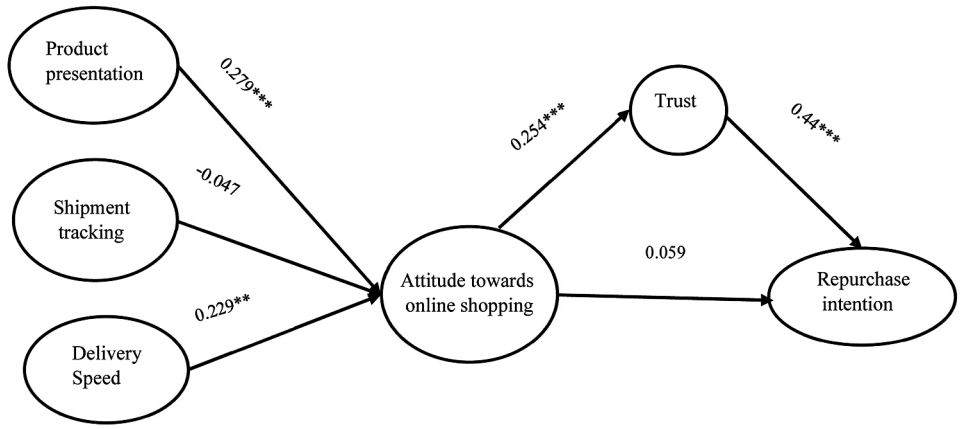
Goodness of fit statistics CMIN/df=4.977, GFI=0.898, NFI=0.894, RFI=0.901, IFI=0.888, TLI=0.899, CFI=0.906, RMSEA= 0.08, *** significant at 0.001 probability level, **significant at 0.01 probability level

Table 6. Path analysis after applying mediation

			Std. Estimates	Std. Error	Critical Ration	P
Attitude	→	Trust	0.254	0.044	5.968	***
Attitude	→	Repurchase Intention	0.059	0.042	1.458	0.145
Trust	→	Repurchase Intention	0.44	0.041	10.899	***

Goodness of fit statistics CMIN/df=1.718, GFI=0.980, NFI=0.986, RFI=0.979, IFI=0.888, TLI=0.991, CFI=0.994, RMSEA= 0.037, *** significant at 0.001 probability level, **significant at 0.01 probability level

Figure 2. Model with path relationships
(indicate p < 0.05, ** p < 0.01, *** p < 0.001)*



DISCUSSION

The research model analyzed the impact of Product presentation, Shipment tracking, and Delivery speed in inculcating attitude towards technology in the context of online shopping in India. Product presentation emerged as a significant and strongest predictor of attitude towards technology, consistent with the previously reported studies ($\beta = 0.279$, $p < 0.001$). This could be because textual descriptions and still images provide information about the looks and characteristics of the products. This, in turn, builds a positive attitude among online shoppers. Videos of products, product information using words, numbers, images, pictures, and graphs provide information that effectively shapes positive attitudes towards technology. This finding corroborates with signaling theory and highlights that the ultimate aim of incorporating 3-dimensional pictures in their websites by online retailers is to enhance information and make online shoppers satisfied. If one feels satisfied and finds relevant information while browsing the websites during shopping will make him repurchase.

Moving ahead, delivery speed had a significant relationship with attitude towards the online purchase ($\beta = 0.229$, $p = 0.002$). This finding supports the previous studies of Riley and Klein (2019) and Momani et al. (2017). This indicates that delivery speed is important and plays an important role in generating an attitude towards online shopping. Surprisingly, shipment tracking emerged as an insignificant variable, thereby contradicting the findings of the previous study by Riley & Klein (2019). A possible explanation of this could be that the surveyed group considered product presentation and quick delivery as the most important variables and are not apprehensive about shipment tracking.

The present study also hypothesized that trust mediates the relationship between attitude towards online shopping and repurchase intention. Attitude had a significant relationship with repurchase intention ($\beta = 0.10$). But statistical results after adding trust as a mediator indicate that trust has a full mediating as the direct relationship became insignificant. Complete mediation specifies the significance of trust in increasing the repurchase intention. This finding corroborates with the previous studies. This finding supports the previous studies (Weisberg et al., 2011; Kim and Park, 2013; Giantari et al., 2013).

THEORETICAL IMPLICATIONS

The study provides several implications for researchers and academicians. The most significant theoretical contribution of this study lies in empirically validating specific predictors of online shopping at the customer level and in a developing economy context. More explicitly, the study clarifies the impact of product presentation techniques and delivery speed as a significant motivating factor, confirming them as pricey signals.

A remarkable implication of the study is the empirical analysis of product presentation, delivery speed and shipment tracking in a single model as antecedents of attitude towards online shopping where shipment tracking emerged insignificant indicating that product presentation technology and delivery spped help in inculcating positive attitude towards online shopping. Thus, this research further extends Signaling theory by incorporating product presentation and delivery speed as substantial contributors generating confidence and positive attitude towards online shopping.

Further, despite previous research on online shopping (Merugu & Mohan 2020; Kripesh et al., 2020; Prashar et al., 2015), only a limited set of studies have validated predictors of attitude building towards online shopping using Signaling theory (Mavlanova et al., 2012; Bergh et al., 2014). This research,

thus clarifies that Signaling theory is a dynamic theory for understanding factors that infuse a positive attitude in an e-shopping context. Product presentation and delivery speed had a positive relationship with attitude from the perspective of Signaling theory thereby extending the theory. To conclude, product presentation and delivery speed are thus the signals which mjst be incorporated by online retailers in their websites to attain new customers and encourage existing customers to go for repeat purchases.

The study further confirms that trust is a mediator between attitude and repurchase intention from the Signaling theory perspective. Therefore, online retailers must focus on the signals which generate trust in online shopping thereby improving repurchase intention. The research also makes us comprehend that shipment tracking may not fit this extended model, at least for Indians, and this finding needs further replication.

MANAGERIAL IMPLICATIONS

This research has certain implications for e-retailers as product presentation, and delivery speed are positively associated with attitude, thus leading to repurchase intention. Adequate emphasis needs to be given to virtual-try-on technology as well as videos of the product. E-retailers must provide dimensions of the product so the shoppers may retrieve adequate knowledge about the product. Timely and quick delivery improves sales as well as builds a positive attitude. Online retailers need to actively engage 3PL (3rd Party Logistics companies) to deliver the shipments at the maximum number of areas to obtain quick delivery.

LIMITATIONS OF THE STUDY

While contributing to the existing marketing theory and literature, the study has few limitations which were recognized as future research avenues. An important limitation of this research is the lack of generalizability of its findings. Since the data was collected from the North Indian States, the findings thus may be appropriate for northern states of India. This research may be extended to Eastern, Western and Southern, parts of India as not only the exposure to technology but also the logistical infrastructures are diverse. The second limitation is that relevant variables like hedonic pleasure, personal innovativeness, perceived risk, website quality, and government policy could be included. This study may also be replicated in other developing countries to investigate the precision of its findings and relevance of the constructs in diverse cultural perspectives. Future studies can validate other dependent variables such as customer satisfaction and customer loyalty. Future research may also incorporate other drivers like return policies, augmented reality, vendor-specific guarantees, and social media to increase the relatable use of signals provided by e-retailers to adopt a wide range of technologies. The study also leaves enough room for researchers to validate the moderating impact of categorical variables like age and gender.

CONCLUSION

In this research, an attempt has been made to understand the impact of product presentation, delivery speed, and shipment tracking as antecedents to attitude. The study also validates trust as a mediator

between attitude and online repurchase intention. The study was conducted on online shoppers in Indian settings by validating the Signaling theory. The study verified the mediating effect of trust also in addition to empirical validation of product presentation, delivery speed, and shipment tracking. Both product presentation and delivery speed significantly positively associated with attitude towards online shopping, but shipment tracking emerged insignificant in the study. The results also indicated that trust fully mediates the relationship between attitude and repurchase intention. This highlights that apart from a positive attitude, trust is of utmost significance in online environments. Any attitude may not directly impact intention unless high levels of trust weigh in. Further, only information presented on the websites of online retailers may not generate repurchase intention until consumers have trust in the e-retailer. Shopping through the Internet represents an altogether different environment as compared to traditional retail. Therefore, trust plays a significant role in stimulating an online purchase. The study presents significant implications for researchers and practitioners. The central contribution of this study is the validating of specific predictors for online shopping repurchase intention at the consumer level and in a developing economy context. The significant impact of variables like delivery speed and product presentation confirmed that the Signaling theory is a dynamic theory related to exploring factors leading to online repurchase intention. E-retailers need to focus preferably on novel product presentation techniques and delivery of the right product at the right time, which may increase trust in online retailers, leading to repeat visits on the e-retailers' site. Adequate focus on the significant factors in this research may inculcate confidence among Indians for repeat online purchases.

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KEY TERMS AND DEFINITIONS

Delivery Speed: Delivery speed is a value-added service that denotes the time period between the placement of an item and actual delivery at the customer's location. Generally, logistics carriers consider the number of days to deliver the order placed as delivery speed.

Online Shopping: Any activity involving purchase through internet.

Product Presentation: Product presentation includes the display of textual as well as visual information provided by the online retailers on their websites.

Repurchase Intention: Online repurchase intentions refer to consumers' attitude to accomplish a specific behavior by engaging themselves in repetitive purchases with the e-retailer.

Shipment Tracking: Shipment tracking refers to the capacity to trace or monitor the movement of products from e-retailer to final consumer. E-retailers, in collaboration with logistics service providers, handle tracking information by posting data through the internet and email.

Trust: Trust indicates the temperament of individuals to have faith and confidence in others consistently and across a gamut of situations.

Visual Information: Visual product information includes information about the product by using images, graphs, pictures, and so on.

APPENDIX

Table 7. Scale items

I can track my shipments without any hassle.
I can track my packages from shipment to delivery
Tracking my packages is important for me.
Delivery Speed
Delivery Speed is the most important factor while shopping online
When ordering online, I want my shipments to arrive as early as possible
I feel excited when the order arrives before time provided
When it comes to ordering online, the faster the delivery, the better
Product Presentation
3-dimensional picture of the product helps me to purchase the product.
Visual information makes me knowledgeable about the product.
Textual information provides me knowledge about the product.
Product presentation give me confidence for future repurchase of products
Attitude towards online shopping
The idea of shopping online is appealing
I like the idea of buying a product from an online retailer
Using an online retailing website to buy a product would be a good idea
Trust
I believe online retailers are honest
I believe that online retailers keep their promises and commitments
I trust the information provided by online retailers
Repurchase Intention
I would like to re-buy products from online retailers continuously
It is likely that I will continue purchasing online
I expect to repurchase from online retailers in near future.

Chapter 11
Digitization of Information Sharing to Minimize the Impact of COVID-19 in the Food Supply Chain

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ABSTRACT

In this COVID-19 pandemic, the production, distribution, and demand fulfillment of perishable food products emerged as a foremost challenge for the supply chain due to the unavailability of timely and accurate information sharing. This study aims to test the relationships between the different types of information sharing, cost-saving performance, and supply chain relationships. In doing so, a survey study was carried out involving food supply chain practitioners, and proposed research claims were tested using a structural equation modeling approach. The results confirmed the positive impact of day-to-day information and periodic information on cost-saving performance and supply chain relationships. However, the impact of day-to-day information was significantly higher on cost-saving performance and supply chain relationships than the impact of periodic information. The study findings may support supply chain practitioners in understanding the different types of information that need to be shared in networks and their related impact on the overall profitability of the supply chain.

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INTRODUCTION

In today's digitally globalized world, where the firms face fierce competition, the accurate, timely, and complete information flow, are of utmost importance to attain a sustainable competitive edge over opponents (Ertz et al., 2018; Avinadav et al., 2019; Mehrjerdi and Shafiee, 2021). Consequently, effective information collection and sharing in the supply chain (SC) has become a subject of debate in all industries (Baah et al., 2020; Baah et al., 2021). Even this issue is more sensitive in context to farm products food SC due to their perishable nature. Therefore, the SC partners require a variety of information to preserve the quality and value of such products. In this line, many digital technologies (e.g., blockchain, internet-of-things, radio-frequency-technologies) enable firms in the consistent flow of information within the SC networks to facilitate the flow of the operation (Ertz and Boily, 2019, Shashi et al., 2020; Nandi et al., 2021).

More recently, the COVID-19 pandemic has challenged the integrity of food SC firms were unable to distribute perishable food products to end consumers (Barman et al., 2021). The poor information flow between the SC networks, inaccurate demand forecasting, and the bullwhip effect (distortion of information from one point to another) were mainly blamed for this failure (Ali et al., 2021; Coluccia et al., 2021). This has arisen the need to build resilience capacity through fostering the information flow and sharing using digital technologies to mitigate the effects of SC disruptions. As the farm product SC system incorporates various intermediates (e.g., farmers, suppliers, processors, distributors, retailers, and customers), the SC profitability depends upon how the partners utilize the available and shared information (Lusiantoro et al., 2018). Meanwhile, lack of information hinders food firms' efforts to grab the market opportunities through exact arrangements of inventories and fast adaptation to customer's demand. Herein, the greater challenges are the absence of coordination, trust, understanding, and seriousness among partners, which trim the whole SC performance (Beamon, 1999; Chen, 2003; Partanen et al., 2020). Besides, companies mainly focus on sharing operational information using traditional channels and ignore integrated information-sharing systems (Pham et al., 2019). Likewise, technical capability, security risks, trust, and rules and policies are crucial factors impacting information sharing practices. The literature shows that accurate and timely information can cut down the SC cycle time, cost, bullwhip effect as well as improve profitability (Tran et al., 2016).

Due to the imperative role of information sharing, both practices and theories have been developed to enrich the state of the art by conducting qualitative and quantitative studies. For example, Partanen et al. (2020) validated that strategic flow of information can strengthen the relationship between SC ambidexterity (an ability to simultaneously develop exploitation of their current knowledge competencies and exploration of new knowledge opportunities) and performance. Research further found the significant positive impact of big data analytics capability on both internal and external SC integration (Wu et al., 2020). Besides, the information's value is subject to contextual SC parameters and changes as per the information's distinctiveness (e.g., accurateness, timeliness, and completeness) (Viet et al., 2018). Therefore, the SCs should deliver information using Electronic Data Interchange (EDI) and the Internet in general (Pedroso and Nakano, 2009). Furthermore, Ben Saad and Choura (2022) emphasized that interactivity and virtual agents/discussion forums can improve transactions and exchange on digital platforms. Ignorance of this will be consequent as poor decision making and SC outcomes (Wijewickrama et al., 2020).

Further, operational factors impact information sharing; thus, information structures should be cautiously designed to attain paramount performance (Dominguez et al., 2018). Collaborative networks are

required to improve information sharing through information, communications, and technology-based initiatives (Wijewickrama et al., 2020). Further, researchers clarified the role of multiple sourcing and information sharing in the development of resilient and sustainable SC (Mehrjerdi and Shafiee, 2021). Further, Shashi et al. (2020a) advocated promoting the integration among SC partners to successfully achieve a common goal and foster the performance of the SC network. Avinadav et al. (2019) reported the critical impact of information superiority, and Zhao et al. (2019) emphasized that downstream competition and types of collusion modify the ways of information sharing. Shashi et al. (2020b) advocated the focus on network integration for the attainment of flexibility.

These studies have made noteworthy contributions to the development of a body of knowledge. Nevertheless, the literature lacks an examination covering the relationships between the day-to-day information flow, periodic-information-flow, SC relationships, and cost performance of perishable food SCs. Therefore, this study aims to bridge the gap mentioned above by investigating to what extent day-to-day information flow and periodic-information-flow will impact both SC relationships and cost performance. In this line, the critical contribution of this study would be it provide a detailed understanding of different sets (day-to-day and periodic) of information to industrial practitioners, researchers, and academicians and will offer deep insight into how and to what extent these information sets will improve the cost-saving and SC relationships.

BACKGROUND

Literature related to information flow and SC was reviewed. At this juncture, we developed a conceptual framework for the study.

In the developed countries' SC system, information flow has become the fourth most crucial factor after land, manpower, and money (Zhang and Chen, 2013). Clark and Hammond (1997) highlighted the case of Campbell Soup Company and its retailers, who saved inventory holding costs with a continuous vendor-managed inventory and replenishment program. In the SC, digital initiatives have taken an important place due to the competency to collect and short the real-time information from a variety of sources to attain SC efficiency. According to Annosi et al. (2021), digital platforms facilitate the information flow among firms and mediate transactions of products and services. In this line, Stranieri et al. (2021) claimed that the use of blockchain technology positively influences the SCs profits and enhances information availability, accessibility, and distribution. Besides, researchers claimed that big data could assist in attaining timely and accurate demand information (Liu et al., 2020). Blockchain technology improves information flow and enhances digitalization (Varma et al., 2022). This can further enhance the operational competencies of SC. Doetzer and Pflaum (2021) reported that digitalized information flow promotes flexibility in demand-oriented distribution circuits and enhances the worth of shared information.

However, the academic scientific literature mainly covered vertical information flow from suppliers to retailers (not between the same group as a supplier to supplier as in horizontal information flow) and investigates firms' information-sharing strategies. For instance, researchers uncovered the retailers' intentions to share information with supplying firms and concluded that they avoid sharing information (Li, 2002; Zhang, 2002). Huong et al. (2016) also confirmed that partners perceive various risks while sharing information and employ diverse strategies to manage them, such as reducing lead-time in information sharing, removing non-value-adding information, and introducing information sharing incen-

tives. This information security culture adversely influences the quality of information and operational efficiency (Wong et al., 2020). Huang et al. (2003) and Ha et al. (2017) showed that a firm's intention to reduce the production cost promotes information sharing based on building on transaction cost economics, organizational information processing theory, and contingency theory, a theoretical framework was proposed to guide future researchers to understand the association between information sharing and SC performance of perishable products. The study concluded that the association between information sharing and perishable products' SC performance is yet unclear (Lusiantoro et al., 2018). Boily (2022) highlighted the importance of smart contracts and computerized transaction protocols for collaborative economy platforms in order to automate transaction efficiency on platforms, thereby reducing human error, time, professional third-party services, and costs.

This means that SC partners can enjoy the benefits of reduced inventory and cost-saving (Yu et al., 2001). However, the dyadic partnerships increase the information sharing but disaggregated, inaccurate, or incomplete data hinders the value of shared information (Kembro and Selviaridis, 2015). In this context, mutual trust, information readiness, and secure information flow enhance the SC collaboration (Zhou et al., 2017; Panahifar et al., 2018).

In the SC, incorrect and outdated data has no worth for decision-making. The flow of such information can cause various problems for upstream SC, namely inefficient processes, high production and distribution cost, high wastage, and so on (Kembro et al., 2017). Costantino et al. (2015) asserted that information variability increases during its flow from downstream to upstream. The empirical evidence presented that trust between focal firms and suppliers positively influences SC performance (Susanty et al., 2018). Besides, researchers underlined the direct positive impact of lead time on suppliers' reverse factoring adoption (Huang et al., 2020). Rehncrona (2022) stressed the digitalization of payments. Li et al. (2006) claimed that information exchange increases SC agility, stability, and performance. Fernando et al. (2020) highlighted that improved information technology competencies mediate a positive association between inventory sharing and efficiency. Singh and Teng (2016) recommended that information technology influences transaction costs and overall outcomes. Likewise, strategic SC partnership and demand information exchange can confine the defective inventory rate and SC risks (Tao et al., 2014), enabling the network to gain mutual benefits (Ha et al., 2017).

Day to Day Information, SC Relationship, and Cost-Saving

The SC information flows through a number of channels. Thus, selecting channels and timing of information sharing are two essential prerequisites (Mukaddes et al., 2010). Day-to-day information refers to the data pertaining to daily practices such as per day demand, production plan, daily sale, and customers' complaints per day and their types, etc. Accurate and timely information facilitates intelligent trade decision-making. Though, many enterprises do not pay attention to update their internal and external environment intelligence (Ramanathan et al., 2014). While information flow significantly contributed to profitability. Ferreira et al. (2016) claimed that the exchange of daily demand information efficiently manages inventory level, production process, and distribution processes, ultimately saving the costs associated with inventory holding and waste rate. According to Papakiriakopoulos and Pramatari (2010), the ordering decision needs a variety of daily data names, point-of-sale data, store assortment, promotion activities, and so on. Internet and web technologies can facilitate these types of information sharing. Likewise, this can facilitate in detecting products missing or theft. Besides, the data sharing regarding daily activities such as warehousing, transportation, order status, production capacity, changes

in delivery schedules, and lead time information will build strong SC collaboration and strengthen the firm's economic performance (Zhou et al., 2007). It enhances the knowledge of SC members about the customer requirements and helps develop a product that has worth for customers (Alon et al., 2001). Based on this, we proposed as follows:

H1: Day-to-day information is positively related to cost-saving.

Likewise, Zhao et al. (2011) argue that external integration with customers and suppliers is concurrently subjective by internal integration and relationship commitment to customers and suppliers. Hence, the voluntary exchange of daily demand data builds trust among the SC partners, improving SC relationships (Zhou et al., 2017; Panahifar et al., 2018). Meanwhile, the daily demand reports with conflicting content can hamper the overall decision-making (Kaipia and Hartiala, 2006). The successful handling of customers' queries and finding appropriate solutions to customers' complaints can build strong SC relationships (Kampani and Jhamb, 2020b). Hsu et al. (2008) reported a positive association between the level of day-to-day information sharing and buyer-supplier relationships. Based on the above, we proposed the following:

H2: Day-to-day information is positively related to the SC relationship.

Periodic Information, SC Relationship, and Cost-Saving

To attain SC efficiencies, firms require sharing planning and operational data in high quantity, ranging between annual contracts and periodic progress reports (Kelle andAkbulut, 2005). Periodic information refers to episodic information in terms of seasonal demand data, market research reports, and seasonal inventory, etc. The majority of perishable projects are subject to seasonal demand, and analysis of seasonal demand patterns is of utmost importance to reduce overproduction and other associated costs (Yee, 2005). The downstream partners place inventory replenishment orders at the starting of the period (Chandra et al., 2007). The focal firms utilize the order quantity of the current period to predict the order quantity for the subsequent periods for each product family (Byrne and Heavey, 2006) and try to manage the resources accordingly (Byrne and Heavey, 2006). Hence, timely and accurate periodic data facilitates appropriate demand forecasting, product ordering, shipping, and performance measurement (Zhang and Zhang, 2007; Zhu et al., 2009). Besides, increased inventory variance leads to increased holding and backlog costs, resource re-allocation, as well as inflated average inventory cost each year (Disney and Lambrecht, 2008; Cannella et al., 2015). Cannella (2014) utilized diverse equations to examine the role of information sharing in a periodic review order-up-to inventory policy and concluded that order smoothing in a collaborative SC would be profitable for all the echelons.

Similarly, the standardization of SC partners is essential (Chandra et al., 2007). Many enterprises failed to save hidden business costs due to a lack of information flow (Mukaddes et al., 2010). This lack of information flow has confined the rate of their business profit. Cost reduction, inventory reduction, sales growth, product quality, non-value-added cost reduction, bullwhip effects, return on investment, fewer shipping errors, service quality, customer relationships, flexibility, and cycle time are important SC profitability prerequisites (Lee and Whang, 2000; Gunasekaran et al*.,* 2004; Christopher,1994; Kursan and Mihic, 2010; Ali et al., 2012; Chen and Lee,2012). Based on this, we claimed as follows:

H3: Periodic information is positively related to cost-saving.

According to Min et al. (2005), information sharing may occur in the form of periodic reviews between SC partners. These periodic reviews may facilitate collaboration agreement within the SC. Simatupang and Sridharan (2008) reported that the level of periodic information flow among SC partners jointly determines specific collaborative objectives and progress towards attainments of these objectives, which ultimately strengthen the SC relationship. Furthermore, the inventory monitoring of retailers by supplier periodic replenishment decisions regarding quantity and frequency further facilitates the exchange of related information on customers' demand and preference (Wong et al., 2009). This will further a win-win situation for all partners and thereby improve the SC relationships. Researches further quantified the value of sharing and forecasting customer demand, considering that all the SC partners can have access to the same information that will build trust among SC partners (Costantino et al., 2014). Based on this, we proposed as follows:

H4: Periodic information is positively related to the SC relationship.

RESEARCH METHODS

Measurement

In order to collect the data to analyze the proposed research claims: a questionnaire was designed on a 7-point Likert scale ranging from "Strongly disagree" (1) to "Strongly agree" (7). The original questionnaire was drafted in English and translated into the Hindi language with the help of language translators, as the majority of respondents better understand Hindi than English. For this, through literature review and detailed discussions with relevant SC practitioners were performed. Afterward, a panel of seven members comprising four SC practitioners and three food SC researchers was established. The draft questionnaire was sent to panel members to evaluate its relevancy and content validity. After the four revisions, the questionnaire was approved by a panel member. Shashi et al. (2016) claimed that it is imperative to include all SC practitioners in the survey due to their deep understanding of the partners' practices and performance. Subsequently, a pilot study was conducted involving 30 SC practitioners to assess whether all the questions were adequately understandable. After the satisfactory outcomes of the pilot group survey, the large-scale survey was conducted with a reliable instrument.

Data Collection

For data collection, 527 questionnaires were distributed to farm food SC practitioners in Himachal Pradesh, Punjab, and Chandigarh using a mixed-methods approach, including field and online methods. Only 287 were returned (54.45% response rate). Out of returned questionnaires, 15 survey questionnaires were removed due to low standard deviation and missing values. Further, 13 respondent ids were eliminated due to their outlier nature. Hence, 259valid survey responses were used for final analysis (response rate is 49.14%). In social science literature, researchers reported that the response rate should be at least 35.8% (Baruch and Holtom, 2008). Hence, a 49.19% response rate can be considered enough for conducting further analysis.

Differences Between Late and Early Responses

Further, attempts were made to assess the differences between late and early received responses, as late responses are generally considered as non-respondents (Armstrong and Overton, 1977). Data were classified into two groups, and a *t*-test was applied to capture the dissimilarities (Prahinski and Benton, 2004). The analysis did not confirm any statistically proved dissimilarity between late and early response groups.

Common Method Bias

As a next step, common method bias (CMB) was assessed (Podsakoffet al., 2003; Podsakoff et al., 2012), employing Harman's one-factor, and all measurement items were together subject to exploratory factor analysis (EFA) (Herman, 1976). EFA extracted four unique factors which jointly explain variance above 50%. Likewise, the variance explained by the first extracted factor was not the majority of the total variance. This confirms the absence of common method bias, and data was found suitable for further analysis (Podsakoff and Organ, 1986).

Reliability and Validity of the Measurement Model

It is pertinent to mention that we eliminated two items, business records, and shipment schedules, from SC information due to their low communality values. Similarly, we eliminated three items in the SC profitability construct (i.e., capacity utilization, sustainability, and customer retention) due to low communality values.

Two separate EFA were conducted for both SC information and SC profitability. First, the principal component method with varimax rotation was employed to extract the factors (Hair et al., 2010). In this line, researchers recommended that communality values be above 0.5 (Jadhav et al., 2019). In addition, inter-item correlations should be greater than 0.3 (Cronbach, 1990), KMO should be above 0.7, and Eigenvalue should be above 1. Likewise, the item loading should be above 0.6(Hair et al., 2010).

For the SC information flow, analysis recorded Bartlett's Test of Sphericity ($\chi 2$) = 3165.479, degree of freedom (DF) = 45 and p = 0.000. Likewise, the KMO value was 0.928, which is meeting the minimum threshold of 0.7 (Hair et al., 2010). Further, results affirmed a minimum value of inter-item correlation as 0.502. As a part of it, the analysis obtained the item-to-item correlation above 0.774. Likewise, communality values were significantly ranging between 0.658 and 0.845. Hence, it is pertinent to mention that the obtained inter-item correlation, item-to-item, and communality values were significant. This value was statistically significant in social science research (Hair et al., 2010). As for the descriptive information, mean values were ranging between 5.90 and 6.22. Besides, standard deviations were ranging between 0.964 and 1.375 (Table 1).

Subsequently, EFA extracted two unique factors for the SC information with an Eigenvalue higher than 1. After the in-depth evaluation of the measurement items representing each factor, factors were named as day-to-day information and periodic information. Both factors cumulatively recorded for 76.15% variance.

More specifically, the day-to-day information factor comprises seven items: *shipping notification, purchase order, sale data, customer entrance, production plans, complaint letters, and invoice*. The Eigenvalue of this factor was 6.014, with an Alpha value of 0.941. Herein, the loading range significantly lies between 0.740 and 0.896. Besides, the periodic information factor consists of three items: *government*

Table 1. Scale statistic for SC Information

Items	Mean	Standard Deviation	Communality	
			Initial	Final
Complaint letter	6.10	1.129	1.00	.745
Purchase order	6.03	1 .204	1.00	.773
Govt. reports	6.05	1.186	1.00	.803
Customer entrance	5.99	.997	1.00	.845
Sale data	6.07	1.224	1.00	.795
Demand data	6.22	1.375	1.00	.824
Production plans	5.98	.966	1.00	.658
Invoice	6.09	1.108	1.00	.823
Market research	5.90	.964	1.00	.810
Shipping notifications	6.12	1.127	1.00	.754

Variable = 10,Mean = 60.55, Variance = 92.89, Std. Dev = 9.603, Alpha value = 0.924, Minimum = 5.90, Maximum = 6.22
Kaiser-Meyer-Olkin Measure of Sampling Adequacy(KMO) = 0.929
Bartlett's Test of Sphericity (χ2=3165.479; DF=45; P= 0.000)

reports, market research, and demand data. The Eigenvalue for this factor was 1.601, with an Alpha value of 0.867. Therefore, the loadings range for this factor was between 0.803 and 0.887 (Table 2).

Table 2. Factor analysis for SC information

Items	Day-to-day Information (f1)	Periodic Information (f2)
Shipping notification	.896	
Purchase order	.890	
Sale data	.881	
Customer entrance	.867	
Production plan	.859	
Complaint letter	.754	
Invoice	.740	
Government report		.887
Market research		.886
Demand data		.803
Alpha value	.941	.867
Eigenvalue	6.014	1.601
% of Variance	60.138	16.015
Cumulative % of Variance	60.138	76.153

Further, the items representing SC profitability were subject to EFA. The results obtained are: Bartlett's Test of Sphericity ($\chi 2$) = 4123.107, degree of freedom (DF) = 66 and p = 0.000 (Table 3). Likewise, the KMO value was 0.946, which is meeting the minimum threshold of 0.7. (Hair et al., 2010; Ghosh and Jhamb, 2021). The analysis recorded significant communality values above 0.5, ranging between0.757 and 0.854. Likewise, the inter-item correlation was 0.412, and the item-to-item correlation was 0.703. Meanwhile, the alpha value was 0.912 (Table 3), which is statistically significant above 0.7 (Hair et al., 2009). Mean scores were between 5.78 and 6.15, while standard deviations were between 0.815 and 1.236 (Table 3).

Table 3: Scale statistic for SC profitability

Items	Mean	Standard Deviation	Communality	
			Initial	Final
Flexibility	5.99	1.234	1.00	.788
Non-value-added cost reduction	6.14	1.176	1.00	.796
Bullwhip effect	6.10	.943	1.00	.775
Sale growth	5.78	1.009	1.00	.803
Cycle time	5.93	.996	1.00	.787
Product quality	6.07	1.237	1.00	.777
ROI	6.15	.968	1.00	.812
Service quality	6.08	1.143	1.00	.839
Less shipping error	5.83	1.215	1.00	.854
Cost reduction	5.86	1.080	1.00	.757
Customer relationship	5.96	1.196	1.00	.796
Inventory reduction	6.13	.815	1.00	.776

Variable = 12,Mean = 72.02, Variance = 97.43,Std variance =8.65,Alpha value = 0.912, Means: Mean= 5.91, Minimum = 5.78, Maximum = 6.15.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) = 0.946.

Bartlett's Test of Sphericity ($\chi 2$=4123.1734; DF=66; P= 0.000)

The EFA extracted two factors for SC profitability which were further named as cost-saving and SC relationship with Eigen score higher than 1. Factors together explained 76.84% of the variance. Cost-saving is the most crucial factor and comprises seven items: *cost reduction, non-value-added cost reduction (NVDCR), fewer errors, return on investment, inventory reduction, cycle time, and sales growth*. Factor obtained the Eigenvalue of 6.986 with an alpha value of 0.932. Item loadings were found significant as ranging between 0.749 and 0.865. On the other hand, the SC relationship factor consists of five items: *service quality, customer relationship, flexibility, product quality, and the bullwhip effect*. The Eigenvalue for this factor is 2.235 with an Alpha value of 0.944. Similarly, items were significantly loaded between 0.733 and 0.845 (Table 4).

Table 4. Factor analysis of SC profitability

Items	Cost-saving (f1)	SC Relationship (f2)
Cost reduction	.865	
Non-value added cost reduction (NVDCR)	.859	
Fewer errors	.852	
ROI	.848	
Inventory reduction	.841	
Cycle time	.836	
Sale growth	.749	
Service quality		.883
Customer relationship		.878
Flexibility		.849
Product quality		.842
Bullwhip effect		.839
Alpha value	0.932	0.944
Eigenvalue	6.986	2.235
% of Variance	58.220	18.636
Cumulative % of Variance	58.626	76.846

Further, the composite reliability (CR) and average variances extracted (AVE) were examined and reported in Table 5. Researchers claimed that in social science research, CR value should be above 0.7, and AVE should be above 0.5 for all study constructs (Hair et al., 2010; Sakshi et al., 2020; Tandon et al., 2021). Table 5 shows that AVEs are above 5 and CR values are above 0.7, highlighting no composite reliability and average variances extracted.

Table 5. Composite reliability, average variances extracted, and Cronbach's Alphas[1]

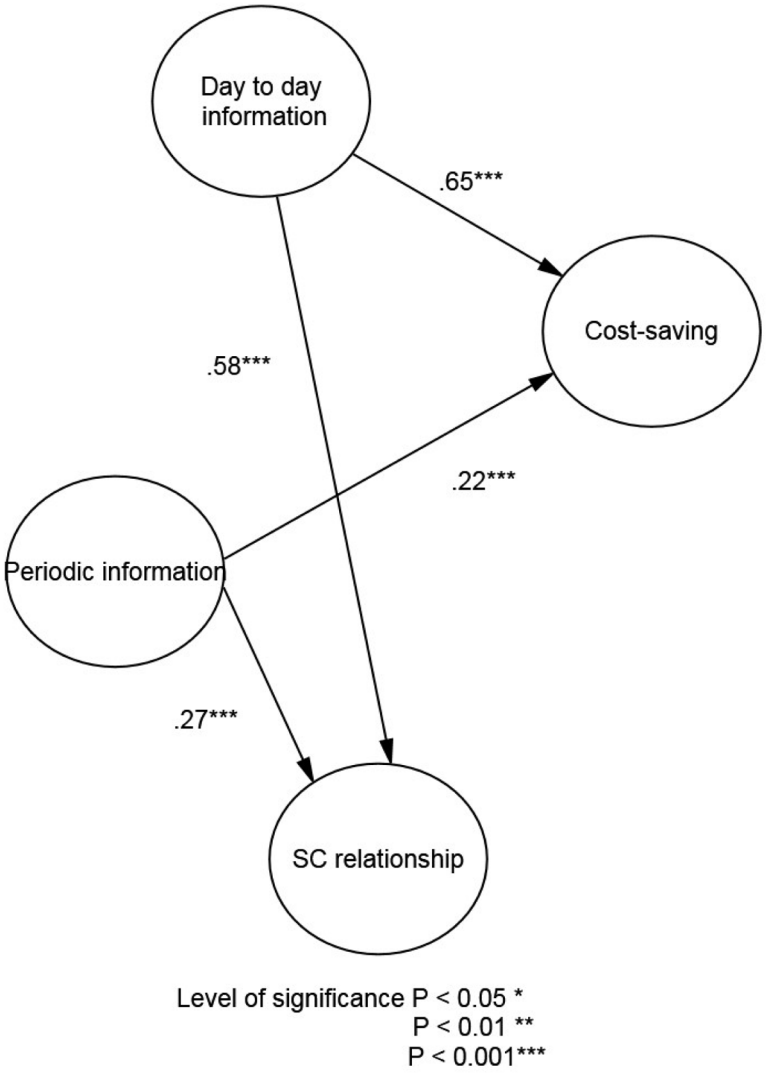
Construct	AVE	CR	Cronbach's Alphas
Day to day information	0.710	0.944	0.941
Periodic information	0.736	0.894	0.867
Cost-saving	0.700	0.942	0.932
SC relationship	0.737	0.933	0.944

ANALYSIS AND RESULTS

Testing of Proposed Research Hypotheses

After the extraction of the factors, the proposed research hypotheses were tested employing the structural equation modeling (SEM) approach using AMOS version 21 software. Under this approach, the maximum likelihood was used. Ding et al. (1994) stressed that for using the approach, the sample size should be at least between 100 and150. Hence, 259 valid responses are meeting the requirement for the consideration of the above-reported approach. Figure 1 reports the hypotheses and model, whereas Table 6 represents the hypotheses testing results.

Figure 1. Structure equation model



All the representative model variables achieved significant path loading ranges above 0.6. Besides, the model obtained a CMIN/DF value of 1.427. This value is less than 3, which is statistically significant (Hair et al., 2010). Moreover, obtained value of goodness-of-fit index (GFI), normed fit index (NFI), comparative fit index (CFI), root mean square error of approximation (RMSEA), and PCLOSE are 0.890, 0.889, 0.964, 0.045 and 0.758, respectively (Table 5). All these values fulfill the minimum requirements of model fit (Kampani and Jhamb, 2020b; Rajesh, 2020).

The hypotheses testing results offered support for accepting the hypothesis, which claimed the positive impact of day-to-day information on cost-saving. Hence, it is pertinent to mention that day-to-day information has a positive effect on cost-saving ($\beta = 0.650$, $p < 0.001$). Hypothesis 2, which proposed that day-to-day information positively impacts the SC relationship, was affirmed ($\beta = 0.58$, $p < 0.001$). Likewise, hypothesis 3, which supported that periodic information has a positive impact on cost-saving ($\beta = 0.22$, $p < 0.001$). Lastly, results provided support for hypothesis 4, which claimed the positive impact of periodic information on the SC relationship ($\beta = 0.27$, $p < 0.001$).

Table 6. Structure equation model's results

No.	Hypothesis	Effect	Sig.	Result
H1	Day-to-day information positively related to cost-saving	0.65	.000	H1 is supported
H2	Day-day-day information is positively related to SC relationship	0.58	.000	H2 is supported
H3	Periodic information is positively related to cost-saving	0.22	.000	H3 is supported
H4	Periodic information is positively related to SC relationship	0.27	.000	H4 is supported

DISCUSSION

Information exchange and SC profitability are achieving widespread consideration among the SC stakeholders due to their imperative role in surviving and thriving in a digitally globalized marketplace. In this context, the conceptualized model was empirically validated by collecting data from food SC practitioners. The results highlighted the leading role of day-to-day information and periodic information sharing to attain cost-saving and improve SC profitability. The study confirmed the highest positive impact of day-to-day information on cost-saving than SC relationship development. Similarly, the results confirmed the comparatively high impact of periodic information on SC relationship than cost-saving, even though the effects of periodic information on cost-saving cannot be neglected. Besides, the impact of day-to-day information was significantly higher on cost-saving performance and supply chain relationships than periodic information.

IMPLICATIONS

These results significantly contribute to the body of knowledge as these relationships were, at the best of our knowledge, not previously captured by other studies. Previous studies published on the role of information sharing are unable to clearly demonstrate the part of day-to-day information and periodic-

information on cost-saving and SC relationship (e.g., Narasimhan and Nair, 2005; Zhou et al., 2007; Ren et al., 2010; Lotfi et al., 2013; Huo et al., 2021). Narasimhan and Nair (2005) evaluated the role of operational concerns pertained with strategic alliance formation and on SC performance. Zhou et al. (2007) examined the integration of information sharing and SC practice. Ren et al. (2010) investigated the practice of forecast sharing and SC coordination with a game-theoretical model. Lotfi et al. (2013) provided an overview of the effectiveness of information in SC management to foster organizational performance. Huo et al. (2021) studied the influence of information sharing on SC learning and flexibility performance. In this line, the present study extends the literature and improves the related understanding.

Besides, the study findings will help SC practitioners understand and explore the hidden value of shared data. The nodal point here is to maximize the profitability share of each SC member. The regular discussion with upstream and downstream members shall help in answering the following questions: (1) which type of information is required? (2) how much information is required (abundance of information affects its flow speed)? And (3) which channel would be appropriate to share information? Moreover, firms should analyze the information in ways to explore hidden knowledge. Herein, the strong SC relationships can enable understanding the information and resource-related need of both upstream and downstream players. The focal firms need not merely evaluate the partners' performance related to cost and inventory, but they also need to give equal importance to their competency and willingness to develop the knowledge and share the same within the SC network. Accordingly, the information-sharing ability should be taken as an essential criterion for SC partners' selection.

LIMITATIONS AND FUTURE RESEARCH DIRECTIONS

Although this study significantly contributes to the SC information and profitability domain, it suffers from few limitations which can be overcome in future research. This study is conducted in three Indian states. Therefore, study findings cannot be generalized in other states or contexts. Subsequently, the study does not cover the factors affecting the information sharing rate among SC partners. Likewise, the interaction effect between the two independent and the dependents constructs of the study can be explored in future research. As for future research directions, the addition of this aspect within the proposed model can provide deep insights. In the future, a bibliometric and network analysis can be carried out to summarize the body of knowledge and propose future research avenues.

CONCLUSION

This study has provided noteworthy insights into information-sharing viewpoints and their imperativeness in relation to cost-saving and SC relationship in perishable food SC through empirically testing the proposed research hypotheses. Despite many prior contributions that explored the diverse perspectives of information sharing, and firm's performance, this study empirically validated the impact of day-to-day information and periodic information sharing in perishable food SC, and this study highlighted that information sharing is essential for achieving paramount performance and attain a competitive edge over competitors. From the present investigation, it emerges that SC partners need not hide the information and use digital platforms to share the information in the SC network to tackle the pressure of today's globalized marketplace.

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KEY TERMS AND DEFINITIONS

Cost Performance: Reduction of the cost involved in various activities of the supply chain.
Digital Technologies: Blockchain, internet-of-things, and radio-frequency-technologies, and so on.
Food Wastage: Food that is discarded at different stages of the supply chain.
Perishable Foods: Food that requires appropriate temperature conditions to retain its shelf-life.
Supply Chain Information Flow: The sharing of vital information among the supply chain partners.
Supply Chain Performance: Final outputs of supply chain activities.
Supply Chain Relationship: The better connectivity, trust, and coordination among supply chain partners.

ENDNOTE

[1] The correlation matrix is available upon request.

Section 5

Technology and Innovation for the Platform Economy

Chapter 12
Blockchain for Transformation in Digital Marketing

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ABSTRACT

Today, an increasing number of firms are embracing blockchain as part of their efforts to achieve operational efficiency and improve performance, thereby acting as a catalyst to bring about digital transformation. Gartner listed blockchain as the most promising technology in digital marketing in the year 2019. Blockchain is driving digital transformation by forcing organizations to rethink how they operate, in terms of identifying ineffectiveness of traditional approaches to doing business, to address their business needs, promote innovation, and through establishment of standard frameworks. Blockchain shows massive disruption potential in the area of customer relationship management and enhancing consumer experience, besides improving trust, security, and privacy. Therefore, this chapter focuses on providing an enlightenment on how blockchain can specifically address the areas of transformation in digital marketing, prominent frameworks in use, and listing the benefits and challenges of implementing this technology.

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INTRODUCTION

Blockchain is among the technologies that are rapidly gaining traction worldwide. Today, an increasing number of firms are embracing Blockchain as part of their efforts to achieve operational efficiency and improve performance (Kim & Shin, 2019; Mahyuni et al., 2020). In addition to enabling firms to streamline their supply chain processes and allowing them to keep their costs down (Shashi et al., 2020a), Blockchain has also been credited with improving governance, promoting transparency, and making it possible for firms to generate greater value for their stakeholders (Aristidou & Marcou, 2019; Bauer et al., 2020; Gaur & Gaiha, 2020). However, perhaps the most important impact that Blockchain is having is catalyzing digital transformation.

Blockchain is defined as "An expanding list of cryptographically signed, irrevocable transactional records shared by all participants in a network. Each record contains a timestamp and reference links to previous transactions. With this information, anyone with access rights can trace back a transactional event, at any point in its history, belonging to any participant" (Kandaswamy & Furlonger, 2018, p. 3). The reason behind the popularity of this concept is that it is a highly effective and secure mechanism for transacting in a network because for two reasons: One, it does not need a third party to verify or authorize communication between two entities over the Internet and second, intruders find it immensely difficult to change network configurations as any new link added in the network appear as a fundamental block in the list of networks (Al-Jaroodi & Mohamed, 2019).

Four main features enable the functioning of Blockchains: Digital Identities, Distributed Security, Smart Contracts (Boily, 2022), and Micro-Controls. In addition, Blockchain can be used for (Underwood, 2016; Nofer et al., 2017):

- Digital identities - Creation of digital identities, that is, a compilation of complete information about an entity that exists in the digital form;
- Distributed Security – Refers to the data shared through blockchain network in a compartmentalized manner to ensure the protection of data, also termed as digital approach;
- Smart Contracts - Trackable and unalterable, credible contracts which can be exchanged using this technology over any public network without the involvement of a third party;
- Micro Controls - Implies the micro measurements and dynamic controlling at a granular level at unprecedented fine detail, enabled by Blockchain.

The evolution of this technology lies in open-source communities and dates back to the development of Bitcoin (Al-Jaroodi & Mohamed, 2019). The largest online open-source platform for technology developers 'Github' has 772 different communities on Blockchain. Based on the outcomes of a report on insights from the Github platform (Trujilio, Fromhart, & Srinivas, 2017), the core code which forms the basis for Bitcoin was first published in April 2009, and statistics suggest that each year more than 8600 new projects on Blockchain are added by open-source communities. Therefore, the largest enabler for developing this concept is the Internet, which is also a major reason for the presence of a large number of codes on Internet-based Blockchain network development compared to Intranet-based development. In addition, there is a devoted decentralized platform for the development of Blockchain-based smart contracts known as the Ethereum project, initiated in the year 2013. This project provides a blockchain protocol on top of which the developers can add any new functionality or application. Private and permissioned project 'Hyperledger' initiated in 2015 is also a platform for Blockchain-based applica-

tion development that runs in collaboration with IBM, and access to this network is restricted, unlike Ethereum (Iredale, 2021).

Among the ways that Blockchain is driving digital transformation is by forcing the organizations to rethink how they operate (Vermeulen et al., 2018). Essentially, as Blockchain is becoming more popular, firms recognize that traditional approaches are ineffective and should, therefore, embrace digital technology (Al-Ruithe et al., 2018; Jahankhani & Kendzierskyj, 2019). For example, using traditional systems, it would suffice hackers to gain control over the central server to access entire network information, whereas, in Blockchain, at least 50% of the network must be hacked before the hacker can gain complete control (Coinnounce, 2018). Similarly, while most traditional models involve a third party for payment-related transactions, Blockchain deploys smart contracts that enable direct transactions between two parties without the involvement of any third party. Further, the digital advertising space controlled traditionally by giants like Facebook and Google will also be completely transformed through Blockchain(Ahmed, 2018). Therefore, as the firms witness such benefits of Blockchain, they are encouraged to move away from the traditional approaches toward Blockchain-based interventions (Akter et al., 2020; Newman, 2017).

Generally prone to risk aversion, firms have concerns regarding the adverse impact of any new technology. However, Blockchain is enabling digital transformation by effectively addressing such concerns. For example, Blockchain has been demonstrated to facilitate safe and efficient business operations (Dutta et al., 2020; Mendling et al., 2018; Weking et al., 2019). Among the frustrating factors, the adoption of digital technology is anxiety over the cost and security threats to which firms will be exposed (Hughes et al., 2017; Martin et al., 2019). However, demonstrating that technology is indeed safe and can deliver cost benefits, Blockchain has essentially bolstered trust and confidence in digital technology, thereby promoting adoption (Botsman, 2017).

In addition to the issues discussed above, Blockchain is also powering digital transformation by facilitating the development of solutions that address organizational needs. Thanks to Blockchain, firms are now able to harness the power of digital technology to address some of the most pressing financial and operational challenges that they face (McKinsey & Company, 2020). For example, according to Warner and Wager (2019), owing to Blockchain, it is now possible for a business to use digital technologies to deliver exceptional customer experiences and eliminate the problems that frustrate business operations. Thus, Blockchain is essentially a vital resource for any firm that wishes to build sustainable competitive advantages by eliminating hurdles and implementing digital technology.

Blockchain is also accelerating the digital transformation through the establishment of standard frameworks. The fragmentation of the digital space is among the numerous challenges that discourage firms from embracing digital technology (Aly et al., 2018; Cihon et al., 2020). Blockchain address this problem by establishing new standards and guidelines. Blockchain allows firms to harness digital technology using the systems, processes, and resources they already have in place (Charles et al., 2019). Basically, with Blockchain, firms are now able to exploit digital technology in a stable and properly structured environment. Today, Blockchain is among the technologies that provide firms with new avenues for engaging with their customers. The present situation stands in sharp contrast to previous years when firms were forced to rely on traditional and largely inefficient technologies and strategies to deliver customer satisfaction (Anthes, 2018; Rejeb et al., 2020). For example, technology empowers the creation of online intermediaries. Though these intermediaries support the businesses by enabling individualized targeting of the customer, they can turn into proprietorships. Similarly, digital advertisements foster better reach to consumers and enhance their satisfaction since the product is just one click

away. However, click frauds impede the impact of these ads, lower customer satisfaction, and threaten customer data security. Lack of quality of technological infrastructure also impacts the level of trust among consumers, which Blockchain can strengthen. Blockchain empowers organizations to devise highly effective marketing solutions that allow them to respond to the needs of customers.

Taking into account all these points, the purpose of this chapter is to investigate the research question: How Blockchain can enable transformation in digital marketing? The chapter, therefore, highlights some of the outcomes that Blockchain has generated in the field of marketing. The chapter also examines the benefits that Blockchain continues to deliver, the difficulties that companies are grappling with in their attempts to embrace Blockchain, and some of the frameworks that underlie the incorporation of Blockchain into marketing operations. The remaining chapter is organized in the following sections in the given order: Research methodology followed in writing the chapter; How Blockchain is transforming Digital Marketing (subdivided into three sections viz. Areas of transformation, Blockchain disruption, Blockchain-based Frameworks); Benefits of implementation; Challenges of implementation; Implications; Limitations and Future Scope in the area of Marketing, followed by a Conclusion.

RESEARCH METHODOLOGY

The whole chapter would be based on discussions around how Blockchain is disrupting marketing, the frameworks developed to incorporate Blockchain, the benefits and challenges of implementation of this technology, and the implications of the same for practitioners, researchers, developers, and marketers. For this purpose, the search string containing keywords - "Blockchain," "Digital Marketing," "Transformation" was applied on different databases like Google Scholar, Scopus, K-Hub, Springerlink, and Web of Science. The search string used was ("Blockchain" AND "Digital marketing" AND "Transformation") OR ("Blockchain" AND "Marketing" AND "Transformation"). Since the inception of this technology is very recent, the timeline was removed. The articles extracted from these databases were filtered after application of inclusion and exclusion criteria (Kampani & Jhamb, 2020):

- The inclusion criteria were articles published in peer-reviewed journals, edited books and conference proceedings (both scientific and non-scientific), articles or blogs published in reputed periodicals like Harvard Business Review, IBM blogs, and websites like Gartner Research and Forbes, and so on. In addition, the articles that were based on the concept and development of Blockchain technology and pertained to its applications in marketing and Digital transformation were chosen for this study.
- The criteria for exclusion were articles that were not peer-reviewed and articles in areas other than marketing or on digital transformation in marketing not based on Blockchain.

After application of these criteria, a total of 43 articles, primarily from journals, books, and conference proceedings (Appendix 1), became the source of the main reference (Vashishth & Jhamb, 2020; Shashi et al. 2020b), useful for concluding role of Blockchain in transforming digital marketing. In addition, other websites and blogs were also referred to in order to gain additional clarity about this relatively naïve concept of Blockchain.

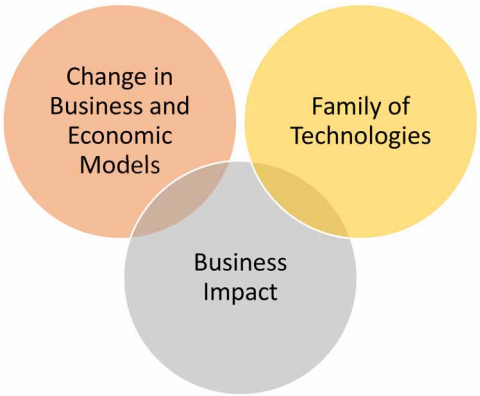
HOW IS BLOCKCHAIN TRANSFORMING DIGITAL MARKETING?

The Hype cycle of digital marketing and advertising published by Gartner Group in the year 2019 (Gartner, 2019) listed Blockchain as one of the most promising technologies for digital marketing. Marketing technology companies already leveraging the benefits of Blockchain technology have reported significant profits in their businesses (Single_Grain_Team, 2020). For example, BitClave, which is a digital marketing firm dealing in smart contracts, uses Blockchain to eliminate intermediaries, thereby saving on the charges to be paid to them. Similarly, OrionCoin is a blockchain-based loyalty points company with tie-ups with many firms and uses Blockchain networks to verify and disburse loyalty points. In addition, brave Browser allows blocking intrusive ads through the Basic Attention Token framework of Blockchain technology. All these firms sum up the potential of Blockchain in the field of digital marketing. However, experts believe that the primary benefit from the adoption of this technology will be the customer (Newman, 2019). Today, digitalization has led firms to collect many consumers' personal data, which often gets hacked or misused. Blockchain has the power to prevent such fraudulent misuse and benefit the customer through the establishment of direct relationships and the removal of intermediaries.

Areas of Blockchain-Based Transformation in Companies

A special report by Gartner (Kandaswamy & Furlonger, 2018) lists three major areas to implement blockchain-based transformation in firms (Figure 1).

Figure 1. Areas of Blockchain-Based Transformation
(Kandaswamy & Furlonger, 2018, p. 5)



Experts from Gartner predict that implementing Blockchain will lead to the development of new business and economic models as they have the potential to bring about disruptive changes to existing mechanisms of value exchange, asset representation, and implementation of trust mechanisms. Since Blockchain will lead to a transformation of core models in any functional area of a business, its huge risk leads the firms to adopt a tardy response to this technology which is why experts predict that Blockchain will at least take a decade to become significant (Kandaswamy & Furlonger, 2018)However, the technology has high potential to be implemented in the area of consumer trust, transparency,

and strengthening cross-business ecosystems. Further, by enhancing control handed over to customers in financial transactions, this technology aims to sharpen digital transformation by this psychological impact on the consumer.

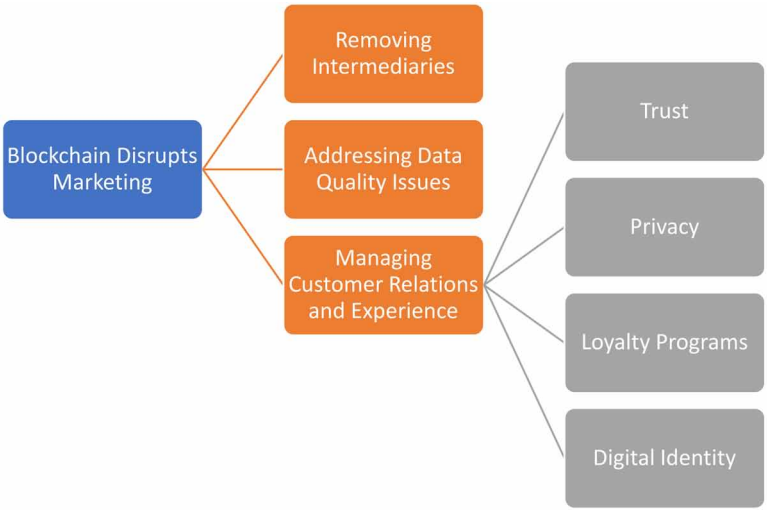
The second area of transformation addressed in the report is the impact of this technology on business. Initially aimed as a mechanism to conduct stable and reliable financial transactions, the impact of blockchain implementation is seen across industries. Supply chain officers are attempting to unveil the potential of Blockchain in supply chains. Industry alliances are being formed to develop standards for blockchain implementation. Besides this, the retail industry is also exploring this technology as an alternative mode of payment to decentralize the payments and lower the control from banks. Life sciences are using it to track and trace globally, while healthcare is looking at ways in which this technology can be used for short- and long-term planning. Coming back to marketing, digital advertisers are also leveraging Blockchain to prevent ad frauds and maintain online consumer data privacy. Further, Blockchain has shown significant business impact by enhancing the overall consumer experience and long-term customer relationship management (CRM). Since Blockchain enhances trust and is decentralized in nature, it provides an alternative means of establishing digital trust.

The third area of transformation is Technologies – as Blockchain encompasses a family of technologies working in conjunction with each other to add value, asset representation, and building mechanisms of trust. There are still technological limitations that need to be addressed before fully believing in the potential of Blockchain. For example, its performance, scalability, and security are some of the main areas where research is ongoing and has not completely matured. One core way Blockchain empowers individual users is by providing control in their hands by creating decentralized digital identities. However, security and scalability are still key concerns in these areas. Additionally, being a technology in its nascent stage, standards and regulations are still fragmented, leading to a lack of a single platform to coalesce and develop. This poses a significant trust issue in the adoption of this technology. Finally, Blockchain has massive potential in the field of IoT (Internet of Things) and ERP (Enterprise Resource Planning), and both of these areas are still underexplored.

Blockchain Disruption in Marketing

In the functional area of marketing, specifically digital marketing, the Internet and digitalization have led to the creation of a large number of intermediaries such as ones for advertising, searching, trust enhancement, payment, and so on. Marketing firms often have to depend on these intermediaries to attract customers, but blockchain technology will allow direct contact with customers, thereby eliminating these intermediaries. In addition to this, direct contacts will lead to building stronger relationships and enhance responsiveness to customers while also saving on intermediary costs. Blockchain can enable the creation of an open and collaborative environment where all network members can trust each other. This feature will be specifically useful in click fraud, which creates numerous problems for ad companies. These frauds not only tarnish the reputation of the firm but also misleads the consumers leading to loss of revenue generation as well. The traceability of the customers (Alvarenga et al., 2018) can also be increased by developing unique profiles on Blockchain for each customer, which would also benefit the marketing firms to ensure that visits are genuine or fraudulent. Through the networking of all marketing channel members like loyalty program operators, marketers, consumers, sales channels, and so on. Using Blockchain, loyalty programs can be better designed and disbursed among consumers. This will lead to better customer retention.

Figure 2. Blockchain disruption in marketing
(Rejeb et al. (2020), p.3)



Blockchain Frameworks for Marketing Operations

Table 1 highlights the different frameworks and their constituent components as well as the outcomes that they seek to deliver.

Among the resources that are promoting the integration of Blockchain into marketing are the various frameworks available today. Essentially, these frameworks define how Blockchain functions in marketing while also stipulating its relationship to other components of digital marketing programs. For example, Hyper Ledger is one of the most popular frameworks that are revolutionizing how companies convey their marketing messages using digital platforms. According to Casey (2021), the Hyper Ledger model is designed with collaboration in mind and is intended to enhance digital marketing outcomes. This model essentially serves as a platform for firms and individuals in different countries to join forces in devising marketing solutions that bolster customer trust and boost transparency. It achieves these outcomes by securing data in shared networks while creating spaces for marketers and their customers to jointly access and manipulate data (Casey, 2020). Therefore, Hyper Ledger is well-suited for companies looking for a solution that balances cost-effectiveness and privacy protection.

Basic Attention Token (BAT) is another blockchain framework that is revolutionizing digital marketing. Embedded into web browsers, BAT makes it possible for the firms to control their digital adverts and to streamline the process of distributing ad revenue among publishers, users, and marketers (Saurel, 2016). Furthermore, as is the case with Hyper Ledger, BAT also places immense emphasis on privacy and security. Additionally, according to Saurel (2016), what makes BAT particularly impactful is that it enables firms to move away from volume-focused advertising to strategies that give greater attention to the quality of advertising initiatives. Furthermore, as noted in a previous discussion, one of the hardships that firms face today is the difficulty of ensuring that their marketing messages are received by real users and not bots or fake accounts. As Saurel (2016) reports, BAT allows organizations to address this challenge by detecting inauthentic activity on digital platforms. Saurel (2016) notes further that BAT bolsters user privacy by protecting them against trackers. The many features and advantages of this framework

Table 1. Blockchain frameworks

Framework	Outcomes/Goals
Hyper Ledger	Cross-country collaboration Achieving customer trust Enhancing marketing transparency
Basic Attention Token	Privacy and security Boosting quality of advertising Eliminating fraud
Service Platform Technology (Ejiri, Ikeda and Sasaki, 2018; Boukis, 2019)	Co-creation with customers
Fabric Private Chaincode (Linton & Lieber, 2020; Ma et al., 2008)	Availability and integrity of data Accountability Customer confidentiality
"adChain" platform (Rejeb et. al. 2020)	Prevention of fraudulent ad clicks
Ubex advertising platform	Eliminates irrelevant ads Generated precise media marketing data
Asymmetric encryption, digital signatures, and access control	Empower security in digital marketing Storage, transmission, and retrieval of enormous consumer information Ensuring synchronization of marketing information for all members across the network
Keybase.io	Validate social media users Identify malicious rollbacks

explain why it remains one of the most popular and widely adopted blockchain models. While BAT emphasizes advertising-related aspects of marketing, the hyper ledger is the most basic enterprise-level framework for securing data and developing other applications within the blockchain network.

Progress in the development of frameworks that govern how Blockchain is used for digital marketing has been slow. As a result, only a few adequately formulated frameworks are available. However, thanks to the work of researchers, new models are emerging. For example, in his article, Boukis (2019) proposes a framework that fosters the relationships and interactions between customers and marketers. The service technology platform has been developed by Fujitsu based on Blockchain technology which provides closed co-creation space such that only members of consortium or blockchain network can join (Ejiri, Ikeda, & Sasaki, 2018). By adding customers as members of this network, the framework also allows sharing of individual ledgers with other network members. When companies and customers share their rare and valuable data due to mutual trust and transparency in the Blockchain network, it will foster innovative idea generation. This way, the framework envisions companies regarding customers as co-creators in the marketing process (Boukis, 2019). Therefore, instead of simply conveying marketing messages, invite customers to participate in the creating function.

Fabric Private Chaincode is one of the many blockchain-based frameworks developed by IBM to enhance security and confidentiality across the network, especially for situations where some sort of transaction is present (Linton & Lieber, 2020). Digital marketing solutions that Blockchain underlies will specifically benefit from such frameworks as it not only ensures that confidentiality of information exchange is maintained but also ensures that the encryption of messages is not tampered with. Any security model identifies four key goals that firms should strive to accomplish: information availability, information integrity, confidentiality, and accountability. Ma et al. (2008) suggest that any marketing

intervention that is based on the Blockchain must ensure that data is secured, the confidentiality of users is guaranteed, and that appropriate accountability measures to limit data corruption and security breaches are in place.

The use of digital ledger in advertising eliminates double-spending by assigning ad units to only one buyer visible to all network members. This also prevents ad fraud. Besides, advertisements can be placed better by identifying influencers rapidly on a uniform platform and ensuring parallel placement of ads on multiple entities in the network. Advertising tech startups are leveraging Blockchain to build advertising inventory, reducing the expenses for small advertisers by eliminating intermediaries and direct transactions. Blockchain can also be used for video advertising by applying the technology for content discovery and keeping the viewer hooked with relevant material.

Digital advertisers are charged in CPM or cost per mille (Kenton, 2020). It implies that to advertise on a webpage, the website owner will charge the advertiser per thousand views of the ad, also called digital impressions. Human activity on the Internet can be easily mimicked by bots today, and webpages often trick advertisers and falsely create digital impressions of the ad on their webpage. To mitigate this fraudulent activity, the 'adChain' framework based on Blockchain (Goldin, Soleimani, & Young, 2017), is used to create adRegistry, a safelist of legitimate and reputable ad publishers. Using smart contract on Ethereum blockchain, the advertisers registered on the network vote for a publisher as fraudulent or otherwise and accordingly decided to add them to this registry. This way, the advertisers can curb the attempts of false impression generators.

Ubex is an advertising platform (Ubex, 2019) that uses AI and Blockchain to provide granular level detailed data about customers useful for marketers, advertisers, and target consumers. While AI, such as deep learning models, learns about customer habits precisely, Blockchain enables the Ubex platform to remove irrelevant ads, thereby making the management of customer impressions much better. By leveraging on Blockchain for making the platform reliable, Ubex can assist with ad campaigns at a much lower price, better quality, managing mass volumes, real-time assistance, among other benefits. Based on similar features, another platform, 'Keybase.io,' ensures security in digital marketing (Keybase, 2019). This platform is specifically developed to categorize the signature chains posted on social media as malicious or genuine. In addition, Keybase provides storage features for standardized public signatures. Signatures posted on social media can serve as identity proofs, proof of following someone on social media, proof of revocation of a social media post. In this manner, Keybase leverages robust security features of Blockchain to authenticate such posts and verify malicious revocations.

Asymmetric encryption has long been in use and added to Blockchain for ensuring the encrypted transmission of data (Mehta, 2020). These are often utilized in digital signatures. For example, the document which is signed by the sender digitally is encrypted using his private key while the receiver decrypts it using the sender's public key. This access control is ensured for the transmission of data and signatures. Besides this, Blockchain enables distributed access; therefore, the majority of the frameworks developed on Blockchain for providing access control use Blockchain's compartmentalization feature as an access manager (Chethana, Yunpeng, & Liang, 2018). This way, users can control their privacy, and simultaneously centralized handling can also be done.

BENEFITS OF BLOCKCHAIN IN DIGITAL MARKETING

The following Table 2 summarizes the positive impacts of Blockchain on digital marketing:

Table 2. Benefits of Blockchain in digital marketing

Benefits	Mechanisms of Action
Customer satisfaction	Providing data on customer needs Informing the design of customer-centered products and services
Revenue generation	Creating new revenue streams Offering new payment methods
Improved efficiency	Driving operational costs down Reducing overhead and transaction costs
Focus on sustainability and worker rights	Generating customer trust Enhancing transparency
Empowering SMEs	Democratizing digital marketing
Evaluating impact of digital marketing	Collection of customer data Examining impressions of marketing initiatives on customers

The benefits of Blockchain in digital marketing are numerous and varied. The following subsections provide a summary of each benefit listed in Table 2.

Customer Satisfaction

Among the advantages that firms that incorporate Blockchain into their marketing activities experience is improved customer satisfaction. As Harvey et al. (2018) determined, Blockchain drives customer satisfaction by offering firms access to data to better understand and address their clients' needs. This data particularly enables organizations to create services and products that are aligned with customer expectations and preferences, thereby enhancing satisfaction (Rejeb et al., 2018). Therefore, given that customer satisfaction is among the essential competitive advantages in the coming years, it can be expected that an increasing number of firms will embrace Blockchain.

Revenue Generation

Another benefit that Blockchain offers when embedded into digital marketing is boosting sales. There is evidence that firms with blockchain-driven marketing initiatives outperform their rivals that continue to use traditional marketing approaches (Carson et al., 2018). Blockchain enables firms to increase revenue through many mechanisms. According to Mukherjee (2018), Blockchain generates sales revenues by creating new payment methods such as cryptocurrency (Ertz and Boily, 2019) and enabling businesses to venture into new areas of operations. Moreover, when properly integrated into digital marketing solutions, Blockchain creates revenue by making it possible for firms to harness and trade in customer data (Ismail, 2018; Ertz and Boily, 2020). The data is crucial because it provides firms with the insights needed to better understand the direction of the market and develop products that are aligned with customer needs. For firms that are keen on enhancing their competitiveness and boosting their revenues, Blockchain could serve as a vital resource that secures their future.

Improved Efficiency

The benefits of Blockchain extend beyond delivering customer satisfaction and driving sales growth. This technology has also been shown to reduce firms' costs in their digital marketing operations (IBM, n.d.). For example, Blockchain creates opportunities for organizations to streamline such marketing and sales processes as inventory management, invoicing, and billing (IBM, n.d.). Furthermore, Blockchain helps firms keep costs down by minimizing overhead expenditures and reducing the expenses incurred while processing transactions (Heitner, 2018). These benefits position blockchain to overtake traditional marketing approaches, which tend to be costly and grossly inefficient. In the future, as the efficiency benefits of Blockchain become clearer, more firms will certainly abandon outdated solutions in favor of blockchain-fueled digital marketing.

Empowering firms to tackle such drawbacks of traditional marketing as fraud is yet another benefit that Blockchain delivers. Citing a report on the transformative impact of Blockchain on governance and the insurance industry, Gregorio (2017) noted that through decentralization, Blockchain eliminates the risk of fraud in digital marketing and other organizational operations. According to Gregorio (2017), the decentralized ledgers that constitute blockchain technology allow for transparency and the verification of all transactions. Furthermore, Blockchain secures these transactions against tampering. Therefore, when Blockchain forms part of a firm's digital marketing approach, the organization is assured that its marketing interventions shall remain insulated against problems like fraud.

Focus on Sustainability and Worker Rights

In the recent past, technology firms like Google and Facebook have come under pressure for their excessive and often unauthorized user data collection. In fact, in such markets as the European Union, government authorities have imposed penalties against these firms (Satariano, 2019; Schulze, 2019). Blockchain promises to end the privacy violations that these organizations perpetrate by empowering customers to take charge of how their data is collected and used (Newman, 2018). Essentially, Blockchain is a useful tool that firms can harness in their quest to guarantee data privacy and user confidentiality. Today, customers are paying greater attention to their digital privacy and are avoiding companies and platforms that fail to honor their commitments to safeguard privacy. When it constitutes marketing and sales activities, Blockchain can therefore serve as an important instrument for firms that wish to earn the trust and confidence of their customers. For example, firms can use Blockchain to prevent the collection of personal details and invite their customers to become involved in influencing how companies use the data. In its report on the role that Blockchain can play in marketing today, PricewaterhouseCoopers (PwC) expressly identified Blockchain as a resource for restoring customer trust and transparency in digital advertising (PwC, n.d.). This report is essentially an endorsement of Blockchain as a revolutionary technology that is forcing firms to build trust-based relationships with customers and spare no expense in guaranteeing privacy.

Another marketing challenge that Blockchain is helping companies resolve resides in ensuring that targeted advertising reaches the right audience. Over the last few years, it has emerged that on numerous social media platforms, there are millions of fake accounts (Mohammadrezaei et al., 2018). Since these accounts are not associated with real users, they undermine the impact and effectiveness of digital marketing efforts. For example, when they advertise on such platforms as Facebook, the charges that companies pay are often based on the number of users at whom marketing messages are targeted. It,

therefore, follows that when a significant portion of the users is fake accounts, the effect of the marketing campaign is severely compromised. Blockchain has emerged as a highly effective solution to this challenge (Cai & Zhu, 2016; Torky et al., 2019). Essentially, harnessing the power of Blockchain allows social media networks and companies to eliminate fake accounts, thereby bolstering the reach and impact of marketing interventions.

Enabling businesses to incorporate messages on issues like climate change and worker rights into their digital marketing approaches is another benefit that Blockchain delivers. Earlier, it was pointed out that Blockchain enhances transparency and creates an atmosphere for firms to build trust with their customers. These outcomes are tremendously important for companies that seek to assure customers that they are dedicated to protecting the rights of employees and shielding the environment against damage by adopting sustainable and eco-friendly solutions. Among the key features of Blockchain is that it exposes the operations of organizations, thereby allowing customers and other stakeholders to scrutinize them (Silver, 2020). Therefore, customers can verify companies' claims about their commitment to corporate social responsibility thanks to Blockchain.

Empowering SMEs

Most firms that adopt Blockchain are indeed able to experience the benefits outlined above. However, it should be noted that small businesses are particularly well-positioned to enjoy these advantages. In many cases, small and medium-sized enterprises (SMEs) lack the financial and technical resources needed to develop sophisticated marketing programs. Consequently, these firms are unable to compete effectively against better endowed large organizations. Blockchain is helping to even the competitive field by providing SMEs with the tools and insights needed to match the operations and success of more established rivals (Kuznetsov, 2018). Blockchain is democratizing digital marketing by empowering smaller firms to take full advantage of the wide variety of online marketing solutions available today. As more SMEs recognize the benefits they stand to gain in the coming years, Blockchain will undoubtedly play a more visible and significant role in digital marketing.

Evaluating Impact of Digital Marketing

Another benefit of Blockchain is that it allows firms to monitor and evaluate the impact and outcomes of their digital marketing programs in real-time. As pointed out in a previous section, Blockchain eases the process of collecting and managing huge amounts of data. The number and profile of users who engage with a firm's digital marketing initiatives are among the various data types. It would be nearly impossible for a firm using manual and traditional solutions to sift through huge data volumes. On the other hand, as Rathnakar (2019) established, firms can gain clear and deep insights into whether marketing messages are resonating with the target customers thanks to Blockchain. For instance, suppose that in measuring the effectiveness of a Twitter campaign, a firm considers the number of likes and retweets to assess the impression that the initiative is having on customers. The organization can leverage the power of Blockchain to automate the process of assessing the outcomes of this program. This example demonstrates that when digital marketing solutions are established upon Blockchain, companies gain a better understanding of whether they are accomplishing their marketing goals. If they determine that the objectives are being missed, the firms can institute appropriate corrective action to enhance the impact of the marketing solutions.

FACTORS HINDERING BLOCKCHAIN IMPLEMENTATION

The discussion above has shed light on the numerous benefits of Blockchain. Given the many advantages of this technology, one would expect that firms would be rushing to adopt Blockchain. However, Woodside et al. (2017) observed, many organizations are reluctant to implement Blockchain into their marketing and other operations. These firms are probably discouraged by the numerous limitations of Blockchain. Summarized in the following Table 3 are the challenges that discourage firms from implementing Blockchain into digital marketing.

Table 3. Challenges of blockchain adoption

Challenges	Impacts
Poor reputation of Blockchain	Association with illegal and questionable activity
Talent shortage	Difficult to build the required infrastructure. Implementing and maintaining Blockchain is nearly impossible
Interoperability	The high cost of upgrading systems. Difficult to keep vital legacy systems.
Cost of adoption	Implementation prohibitively costly Benefits in the short-term do not justify costs in resource-poor settings
Privacy and security	Discourages privacy and security-conscious companies

Poor Reputation

One of the shortcomings of this technology is that it has a reputation problem. De Oliveira et al. (2020) determined that among the factors that hamper the implementation of Blockchain is that many firms lack trust in Blockchain as they associate it with such nefarious and illegal activity as hacking and cryptocurrency. Therefore, for Blockchain to gain mainstream status, it must first establish itself as a legitimate solution that promises to unlock the full potential of firms.

Talent Shortage

The limited supply of talent with the competencies that Blockchain requires is another challenge that frustrates this technology's adoption. Blockchain is still a fairly new development, and institutions such as schools have not had enough time to provide students with the insights and competencies they need to understand how blockchain functions (Vilner, 2018). Without adequate personnel, firms can't move away from traditional and outdated techniques and toward Blockchain. However, in the recent past, Blockchain has been gaining traction (Vigna, 2020). With this technology becoming more popular, there is no question that firms will join forces with educational organizations to train personnel. Higher education is among the areas that are witnessing some of the transformative and revolutionary effects of the Blockchain (Hope, 2019). Therefore, it is reasonable to suppose that these institutions will help organizations bridge the talent and skills gap.

Interoperability

The fact that Blockchain is not necessarily compatible with the legacy and traditional marketing systems that firms already have in place is another problem undermining its implementation. Williams (2019) is among the experts who have determined that despite understanding the benefits of Blockchain, many firms are yet to embrace it because they are concerned about the cost of updating existing systems and processes. For instance, a firm that has historically relied on television and print advertising would certainly struggle to modernize its approaches in preparation for the introduction of a blockchain-driven digital marketing program. Moreover, according to Browne (2018), today, there are multiple distinct blockchain protocols and guidelines. A universal standard that connects these protocols is yet to be developed (Williams, 2019). Therefore, it is difficult for organizations to abandon traditional methods that have proven reliable in favor of a new solution for which the necessary standards are lacking.

In addition to the problems discussed above, the slow adoption of Blockchain in digital marketing is also caused by the fact that being a rather young technology, Blockchain is slow and inefficient. Browne (2018) notes that a majority of the legacy systems that firms use for such operations as marketing are far quicker in processing data. The superiority of these systems stems from their established status, whereas Blockchain is still in the initial phases of development. If Blockchain is to overtake traditional technologies, vast improvements in its technical capabilities are needed. Given that individuals and organizations are committing tremendous effort to refine and bolstering the capacity of Blockchain, it is only a question of time before this technology replaces well-developed legacy tools.

Cost of Adoption

Earlier, SMEs were identified as among the entities that stand to witness the greatest benefit when they implement Blockchain. However, as Eze et al. (2020) found out, even these firms are grappling with challenges as they attempt to embrace this technology. According to Eze et al. (2020), the high cost of adoption is among the key hurdles that SMEs are facing. Eze et al. (2020) examined the rate of implementation of Blockchain in resource-constrained markets such as Nigeria. Among the observations that these scholars made, progress in making this technology part of marketing has been slow due to inadequate finances and other essential resources. The huge expenses that firms incur can be blamed mostly on the fact that Blockchain is still a young technology whose availability is limited. As Blockchain acquires mainstream status, its cost is expected to come down, and as a result, firms, SMEs in particular, will be better positioned to replace traditional marketing with new solutions that Blockchain powers.

Privacy and Security

The fact that Blockchain is still riddled with privacy and security problems is another issue to blame for the reluctance of firms to incorporate it into their digital marketing. In a previous section, Blockchain was depicted as an instrument that allows firms to guarantee privacy and ensure the security of data that they collect. Ironically, it has emerged that this technology is plagued by the same problems that it seeks to address (Joshi et al., 2018). A security and privacy-conscious firm would certainly stay clear of this technology until these issues are resolved. The very design of the Blockchain means that it is extremely difficult to guarantee security. As Joshi et al. (2018) report, the fact that Blockchain is decentralized means that the different nodes have access to sensitive data. If a node is compromised, the

security of the entire system could be undermined, and a firm's marketing efforts would suffer serious failure. Therefore, it is not surprising that many firms prefer safer traditional techniques as opposed to the Blockchain, whose stability and reliability are in question.

IMPLICATIONS

In marketing, Blockchain has demonstrated the creation of many new ways of building consumer trust and enhancing transparency. Through mechanisms that enable secure digital identities and highly robust networks for exchanging data, the consumer will experience a complete shift in ownership and way of receiving goods and services. These features have multiple implications for marketers who seek to sustain their business by adopting novel innovations like Blockchain. In addition, Blockchain will provide a level ground for entrepreneurs who don't have substantial funds to invest in technologies. However, Blockchain's frameworks being open access can be leveraged easily by startups as well. Specifically for advertisers, many blockchain-based frameworks listed in the chapter can enhance security, prevent fraudulent charging, ensure customer identity authentication, and remove misleading ads. Further, the blockchain network guarantees that only verified users are added to the network through access control. Through this mechanism of validating customer authenticity, precise and genuine customer data can be collected, which can be used for segmentation and targeting with high accuracy. Blockchain also allows for real-time and dynamic storage and management of data. Since Blockchain ensures customer traceability, the expenses of marketers on fraudulent customers can be saved. Further, by networking with all stakeholders through the same platform, marketing programs can reach unprecedented heights like loyalty programs – the points of which can be shared among network members for customer redemption. Creation and verification of digital signatures posted anywhere on social media by a Blockchain listed user can be easily authenticated. This feature can be used for the retrieval of customer data. In a nutshell, Blockchain can create new revenue streams for the business, increase customer satisfaction, generate newer ways of customer experience, and collect marketing data at a higher level of accuracy and finer level of detail. The only factors which they need to overcome are to justify implementation cost in the short run as Blockchain's benefits are visible only in the longer run. Besides this, infrastructure also needs to be revamped. Marketers can consider all these points for implementing their existing business models to leverage this new technology and ensure higher competitive advantage and sustainability.

LIMITATIONS AND FUTURE RESEARCH AVENUES

The chapter specifically focuses on the implementation of Blockchain to bring about transformation in marketing. In this, it addresses core areas of marketing but fails to account for the value chain linkage of marketing. That is, the stakeholders involved in the marketing value chain, like supply chain partners, industry partners, logistics, finance, and so on, have not been included in the discussion to identify how Blockchain can transform these stakeholder relationships with marketers. In addition, the methods using which Blockchain can be implemented in the area of marketing are also not under the purview of this chapter. To revamp a business, like huge conglomerates, they would need to implement Blockchain in all functional areas of business and not just marketing. This discussion is also beyond the scope of this chapter. Implementation of Blockchain in other functional areas and how it would affect the relation-

ship with marketing can also be included as the future scope of this article. Some other areas where future articles can shed light are in light of Industry 4.0 and thereby Marketing 4.0 (Kotler, Kartajaya, & Setiawan, 2016), how Blockchain would enable sustaining marketing companies and marketing as a business function. Besides this, in an enterprise, how would Blockchain redefine ways of data exchange. Also, as discussed in the chapter, new techniques of enhancing security and privacy in blockchain-based networks, ways to address scalability issues, and how marketing firms can embrace these advancements can be discussed. Since the technology is in a very nascent stage, authors opine that a complete chapter can be devoted to each aspect of Blockchain.

CONCLUSION

In closing, there is no doubt that the future of digital marketing lies in Blockchain. As firms adopt this technology, they can expect to experience a wide range of benefits that include higher revenues, improved customer satisfaction, and enhanced operational efficiencies. The main advantage of Blockchain lies in the fact that a large community of open source developers is building blockchain-based frameworks for different areas of application. Not just in marketing, in any functional area of business, different frameworks are available for implementing the key tasks of that functional area. Although at this stage, standardization of protocols and framework is difficult, since the technology is in its nascent stage, times are not afar when Blockchain will become the way of doing business. As demonstrated in the chapter, numerous frameworks are available in the area of marketing itself, for advertisers, customer loyalty, customer identity creation, payment, and so on. The numerous benefits offered by this technology are only visible in the long run, so marketers should build the temperament to bear the short-term costs of the technology since the benefits are unprecedented. However, organizations need to recognize that some challenges could undermine the adoption of Blockchain. Some of the most pressing problems are talent shortage, the high cost of implementing Blockchain, and the difficulty of aligning this technology with existing systems and techniques. Fortunately, there are various frameworks that companies can harness in addressing these issues. Hyper Ledger and Basic Attention Token are some of the most popular models. Ethereum, an open-source blockchain project, and Hyper Ledger, a private and permissioned blockchain project, are competing adamantly and yielding newer and better blockchain frameworks for ready adoption in different functional business areas. As these communities continue to proliferate, the technology seems promising as each day, thousands of new blockchain projects are added by developers indicating that many new avenues based on Blockchain are still unexplored. As research continues to explore the technology, its benefits even at this stage of adoption guarantee its proliferation in the coming times.

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ADDITIONAL READING

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KEY TERMS AND DEFINITIONS

Basic Attention Token (BAT): A blockchain framework embedded into web browsers, making it possible for firms to control their digital adverts and to streamline the process of distributing ad revenue among publishers, users, and marketers.

Blockchain: An expanding list of cryptographically signed, irrevocable, time-stamped transactional records shared by all participants in a network, containing reference links to previous transactions useful for tracing transactions.

Cost Per Mille (CPM): A metric used to charge digital advertisers. It implies that to advertise on a webpage, the website owner will charge the advertiser per thousand views of the ad, also called digital impressions.

Digital Identity: A compilation of complete information about an entity that exists in the digital form.

Distributed Security: The compartmentalization of the data shared through the blockchain network, or structured into blocks, such that each block contains a transaction or bundle of transactions to ensure the protection of data termed as the digital approach. This feature ensures that there is no single point of failure, and a single user cannot change the record of transactions.

Hyper Ledger: An open-source project from Linux Foundation, used to develop blockchain platforms for usage in the enterprise. Using plug-and-play components, this project accommodates a multiplicity of applications for different use cases across industries.

Micro Controls: Micro measurements and dynamic controlling at a granular level at an unprecedented fine detail in Blockchain.

Smart Contracts: Trackable and unalterable, credible contracts which can be exchanged using Blockchain technology over any public network without the involvement of a third party. They are typically used to automate agreement execution between parties transacting over blockchain networks or triggering process workflows.

APPENDIX 1

Table 4. Summary of papers used for writing the book chapter

S.No.	Author(s)	Year	Title	Journal
1	Abderahman, R., John, K., & Horst, T.	2020	How Blockchain Technology Can Benefit Marketing: Six Pending Research Areas	*Frontiers in Blockchain*
2	Akter, S., Michael, K., Uddin, M. R., & McCarthy, G.	2020	Transforming business using digital innovations: the application of AI, Blockchain, cloud, and data analytics.	*Annals of Operations Research*
3	Al-Jaroodi, J., & Mohamed, N.	2019	Blockchain in Industries: A Survey.	*IEEE Access*
4	Al-Ruithe, M., Benkhelifa, E., & Hameed, K.	2018	Key issues for embracing the cloud computing to adopt a digital transformation: a study of Saudi public sector.	*Procedia Computer Science*
5	Aly, M., Guéhéneuc, Y., Washizaki, H., & Khomh, F.	2018	Is fragmentation a threat to the success of the Internet of Things?	*IEEE Internet of Things Journal*
6	Aristidou, C., & Marcou, E.	2019	Blockchain standards and government applications	*Journal of ICT Standardization*
7	Bauer, I., Zavolokina, L., Leisibach, F., & Schwabe, G.	2020	Value creation from a decentralized care ledger	*Frontiers in Blockchain*
8	Boily, E.	2022	Combining smart contract and collaborative platforms: exploring the impacts of the computerized transaction protocol on the collaborative economy.	*Handbook of Research on the Platform Economy and the Evolution of E-Commerce*
9	Boukis, A.	2019	Exploring the implications of blockchain technology for brand-consumer relationships: A future research agenda	*Journal of Product and Brand Management.*
10	Cai, Y., & Zhu, D.	2016	Fraud detections for online businesses: a perspective from blockchain technology.	*Financial Innovation*
11	Charles, W., Marler, N., Long, L., & Manion, S.	2019	Blockchain compliance by design: Regulatory considerations for Blockchain in clinical research	*Frontiers in Blockchain*
12	Chethana, D., Yunpeng, Z., & Liang, C. C.	2018	Decentralized, BlockChain Based Access Control Framework for the Heterogeneous Internet of Things	*Proceedings of the Third ACM Workshop on Attribute-Based Access Control (ABAC'18)*
13	Cihon, P., Maas, M. M., & Kemp, L	2020	Fragmentation and the future: investigating architectures for international AI governance.	*Global Policy*
14	De Oliveira, M. T., Reis, L. H. A., Medeiros, D. S. V., Carrano, R. C., Olabarriaga, S. D., & Mattos, D. M. F.	2020	Blockchain reputation-based consensus: A scalable and resilient mechanism for distributed mistrusting applications.	*Computer Networks*
15	Dutta, P., Choi, T., Somani, S., & Butala, R.	2020	Blockchain technology in supply chain operations: Applications, challenges, and research opportunities.	*Transportation Research Part E: Logistics and Transportation Review*
16	Ejiri, Y., Ikeda, E., & Sasaki, H.	2018	Realization of data exchange and utilization society by Blockchain and Data Jacket.	*2018 IEEE International Conference on Data Mining Workshops (ICDMW)*
17	Ertz, M., & Boily, É.	2019	The rise of the digital economy: Thoughts on blockchain technology and cryptocurrencies for the collaborative economy	*International Journal of Innovation Studies,*
18	Ertz, M., & Boily, É.	2020	When Giants Meet: Collaborative Economy, Blockchain Technology, and Social Media.	*Strategies for Business Sustainability in a Collaborative Economy*
19	Eze, S. C., Chinedu-Eze, V. C. A., Okike, C. K., & Bello, A. O.	2020	Critical factors influencing the adoption of digital marketing devices by service-oriented micro-businesses in Nigeria: A thematic analysis approach.	*Humanities and Social Sciences Communications.*
20	Gaur, V., & Gaiha, A.	2020	Building a transparent supply chain	*Harvard Business Review.*
21	Harvey, C. R., Moorman, C., & Toledo, M.	2018	How Blockchain can help marketers build better relationships with their customers	*Harvard Business Review.*
22	Hope, J.	2019	Give students ownership of credentials with blockchain technology.	*Enrolment Management Report*

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Table 4. Continued

S.No.	Author(s)	Year	Title	Journal
23	Hughes, B. B., Bohl, D., Irfan, M., Margolese-Malin, E., & Solorzano, J. R.	2017	ICT/Cyber benefits and costs: Reconciling competing perspectives on the current and future balance.	*Technological Forecasting and Social Change*
24	Jahankhani, H., & Kendzierskyj, S.	2019	Digital transformation of healthcare	*Blockchain and clinical trial*
25	Joshi, A., Han, M., & Wang, Y.	2018	A survey on security and privacy issues of blockchain technology.	*Mathematical Foundations of Computing*
26	Kampani, N., & Jhamb, D.	2020	Analyzing the role of e-CRM in managing customer relations: A critical review of the literature.	*Journal of Critical Reviews*
27	Kim, J., & Shin, N.	2019	The impact of blockchain technology application on supply chain partnership and performance	*Sustainability*
28	Ma, Q., Johnston, A. C., & Pearson, J. M.	2008	Information security management objectives and practices: a parsimonious framework	*Information Management and Computer Security*
29	Mahyuni, L. T., Adrian, R., Darma, G. S., Krisnawijaya, N. N. K., Dewi, G. A. A., & Permana, G. P. L.	2020	Mapping the potentials of Blockchain in improving supply chain performance.	*Cogent Business & Management*
30	Martin, K., Shilton, K., & Smith, J.	2019	Business and ethical implications of technology: introduction to the symposium.	*Journal of Business Ethics*
31	Mendling, J., Weber, I., Van der Aalst, W., & Brocke, J.	2018	Blockchains for business process management- challenges and opportunities	*ACM Transactions on Management Information Systems*
32	Mohammadrezaei, M., Shiri, M. E., & Rahmani, A. M.	2018	Identifying fake accounts on social networks based on graph analysis and classification algorithms.	*Security and Communication Networks*
33	Nofer, M., Gomber, P., Hinz, O., & Schiereck, D.	2017	Blockchain	*Business Information System Engineering*
34	Rathnakar, G.	2019	Blockchain marketing through social media surges the economic growth of India.	*International Journal of Recent Technology and Engineering*
35	Rejeb, A., Keogh, J. G., & Treiblmaier, H.	2020	How blockchain technology can benefit marketing: Six pending research areas.	Frontiers in Blockchain
36	Siu, E.	2020	Chapter 3: Case Studies – Companies Doing Blockchain Marketing Well.	*The Ultimate Guide to Blockchain Digital Marketing and Cryptocurrency.*
37	Torky, M., Nabil, E., & Said, W.	2019	Proof of credibility: A blockchain approach for detecting and blocking fake news in social networks	*International Journal of Advanced Computer Science and Applications*
38	Underwood, S.	2016	Blockchain beyond Bitcoin.	*Communications of the ACM*
39	Vashishth, A., & Jhamb, D.	2021	Why Should Employers Hire People with Disabilities?–A Review of Benefits for the Hospitality Industry.	*Revista Turismo & Desenvolvimento*
40	Vermeulen, E., Fenwick, M., & Kaal, W.	2018	Why Blockchain will disrupt corporate organizations: what can be learned from the "digital transformation"?	*The Journal of the British Blockchain Association*
41	Warner, K. S. R., & Wager, M.	2019	Building dynamic capabilities for digital transformation: An ongoing process of strategic renewal.	*Long Range Planning*
42	Weking, J., Mandalenakis, M., Hein, A., Hermes, S., Bohm, M., & Krcmar, H.	2020	The impact of blockchain technology on business models – a taxonomy and archetypal patterns.	*Electronic Markets*
43	Woodside, J. M., Augustine, F. K., & Gilberson, W.	2017	Blockchain technology adoption status and strategies.	*Journal of International Technology and Information Management*

Chapter 13
Payment Systems as a Driver for Platform Growth in E-Commerce:
Network Effects and Business Models

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ABSTRACT

This chapter visits some of the fundamental concepts from platform economics, network effects, and network externalities. Further on, it discusses definitions of two-sided and multi-sided markets, how they are treated as business models. These concepts are further compared to the concept service ecosystem. A case of a payment service provider whose business model contributes to the growth of e-commerce is included. The purpose is to tease out how research on platforms has developed since e-commerce was in its infancy. The fundamental concepts developed in network economics are still valid and have been translated into different fields with a focus on value creation, information, and interaction. How platforms within platforms spur each other's growth is an area that has the potential to reach new insights on the platform economy.

INTRODUCTION

Online payment platforms have seen tremendous growth in the last few years. For example, the leading online payment provider, PayPal, doubled its transaction volume between 2017 and 2020 (PayPal, 2021). According to the CEO and president of PayPal, 2020 was a record year, on account of businesses of all sizes becoming more digitized in the wake of the covid-19 pandemic. For China's largest mobile payment platform, AliPay, the number of active users doubled between 2016 and 2019, from 451 million to 900 million, according to data from the company (Alibaba Group, 2019). A current trend prominent in e-commerce is to offer buy-now-pay-later mobile payment applications (BNPL). As many consumers face uncertainty whether the ordered products will meet their standards or fit when ordering products

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online, it is easy to see the appeal of a credit option for online shoppers. The top four applications that offer credit options, including installments at the checkout, grew over 180 percent in monthly active users in the U.S. in September 2020 compared to the same month the previous year (Chan, 2020). To explain this remarkable growth of digital platforms and their consequences is something that is occupying more and more scholars.

The growth of platforms in research literature has been chiefly explained with the concept of *network effects*. Simply put, the more users that join a platform, the more attractive it becomes, attracting even more users. On a fundamental level, a platform is a type of intermediary in exchanges. The reason for platforms, or intermediaries in general, to exist is most often referred to as their ability to reduce transaction costs. Payment systems are an early example of platforms that help agents coordinate their wants, but this coordination is also highly dependent on the number of users of the specific payment method. For example, payment card networks allow merchants and consumers to use the same payment network to engage in a transaction (Evans & Schmalensee, 2009). Hence, the platform reduces transaction costs by serving as an intermediary; however, the temporal and geographical distance between agents involved in a platform can also give rise to costs in the form of uncertainty, as in the example of BNPL schemes above.

In recent years, there has been an increase in research on payments as a type of platform. A simple search on the topic reveals that the number of publications tripled in the last five years (2016-2020) compared to the previous five years (2011-2015) (Table 1. appendix). Many of the more recent articles have mobile payment platforms in focus, while earlier work focused on payment card networks. In addition, differences in consumer spending using different payment mediums and temporal separation of payment and consumption have attracted interest throughout the payment and retail literature (Greenacre & Akbar, 2019; Hirschman, 1979; Prelec & Loewenstein, 1998; Runnemark, Hedman, & Xiao, 2015). With a constant change and an increase of new payment services and possibilities to pay online, research calls for more holistic and general theories of behavior and operations (de Luna, Liébana-Cabanillas, Sánchez-Fernández, & Muñoz-Leiva, 2019; Galipoglu, Kotzab, Teller, Yumurtaci Hüseyinoglu, & Pöppelbuß, 2018).

This chapter takes a step back and revisits some of the fundamental concepts of platform markets, lent from theories of network economics. The objective is to gain an increased understanding of the origin of platform thinking in economic research and how it has been translated to other perspectives, such as in the marketing literature. The concept of externalities and network effects, which are central to explaining the mechanisms of multi-sided markets, is discussed with an emphasis on how it has been used in research on platforms. Furthermore, the description of the platform market, including the example of payment platforms, as an ecosystem and multi-sided market in different research perspectives is visited. This is done in order to bring out new insights that have been gained more recently and to better understand the remarkable growth of the platform economy. Lastly, the case of a payment service provider illustrates the new trend of BNPL in practice and raises questions about what the phenomenon might mean for consumers and research ahead.

BACKGROUND

Online shopping has increased all over the world, and in many ways, the ability to shop online is possible and facilitated by the development of online payment intermediaries and financial services (Van Hove & Karimov, 2016). Online payment intermediaries continue their expansion, and many have recently

expanded their financial services to target customers directly. In addition, they have been moving more and more into services where traditional banks have had an exclusive role, such as savings investment (Wang & Ben, 2021). It is often noted how new payment services, increased touchpoints and retail channels affect how consumption and spending are carried out in everyday commerce (Hagberg, Jonsson, & Egels-Zandén, 2017; Kozinets, 2019).

Several economists foresaw the development of platforms and the important role many of them were evolving into and would play in transforming businesses and industries (Evans, Hagiu, & Schmalensee, 2008). In payment research, the object of study has, for the most part, been on payment cards or mobile wallets and their substitutability for cash. On the more theoretical side, the ground-breaking work of Rochet & Tirole (2002, 2003a, 2003b, 2004, 2006b, 2006a, 2011) on two-sided markets opened up a wave of research on the mechanisms of the platform economy, where many times payment cards constituted the example object of analysis. In parallel, with reference to work within network and system competition in economics from the 80s and 90s, research on the platform as a business model and its strategies to attract users has surged within business administration, for example, Gawer & Cusumano (2002). In addition, research on mobile payment platforms has been particularly prominent within computer science or information management (Dahlberg, Guo, & Ondrus, 2015). More recently, marketing and consumption research has embraced platforms as an empirical point of departure to study the digitalization of markets (Hagberg & Kjellberg, 2020).

With the rise of digitalization, platform markets have received an increased interest both practically and theoretically. Theories on platform economics were mainly developed within the economic study of networks and standards. The main concept used in research to explain the growth in platforms is network effects. Network effects mean that the more people and services that join a network, the more value each member can derive from the network. For example, it is of no use for a consumer to have a credit card that no merchant is willing to accept. However, the potential benefit for a consumer increases as more merchants tends to accept the card. Besides, the more consumers that own a card, the better it is for a particular merchant. The challenge lies in getting the different customer groups to adopt the platform or "getting the two sides on board" (Rochet & Tirole, 2003b). The same reasoning can be applied to other platforms. The more possibilities to interact, the more attractive it becomes to join a platform, such as for example Facebook, Airbnb, or Youtube.

Platforms are intermediaries, connecting agents with each other and facilitating exchange by reducing transaction costs. In e-commerce platforms, there are many different services and providers, with each being involved in facilitating the exchange. Most scholars within relevant fields would currently likely call platforms within platforms an *ecosystem* of platforms or service ecosystems. Sun et al.'s (2022) chapter in this book demonstrates this ecosystem-like feature of the platform economy by emphasizing that the vast majority (around 75 percent) of platforms are small, while approximately 19 percent are medium and only about 6 percent are large. In other words, network effects do not necessarily at the platform level per se, but instead at the platform ecosystem level, where multiple small or medium platforms are aggregated together – sometimes through the federative authority or larger platforms – to create denser network effects across platforms.

When e-commerce was in its infancy, technological development was conceptualized in different but sometimes similar ways across different research fields. For example, as informational intermediation in economics (Caillaud & Jullien, 2003), as *new* commerce characterized by information, or as disintermediation and reintermediation in retail marketing (Balasubramanian, Peterson, & Jarvenpaa, 2002; Burt & Sparks, 2003; Peterson & Balasubramanian, 2002). What was discussed in this early literature was how

the competition between traditional sales channels and new channels through the internet would play out; the increasingly vast access to information through the world wide web was the main issue and seen as the competitive advantage for the internet channel (Shapiro & Varian, 1999). In today's research, the current technological development is most prominently framed as *digitalization*. Today, it is not information per se that is discussed, but the vast choices and complementarity embedded in platforms (Gawer, 2009; Mathmann, Chylinski, de Ruyter, & Higgins, 2017) and the changing landscape of consumption in terms of the sharing economy facilitated by platforms (Wirtz, Kam Fung So, Amrish Mody, Liu, & Helen Chun, 2019). The consequences discussed in research of increased platform use include consumer welfare and competition (Lenard, 2019).

Theories of the platform market can also be compared to earlier work on networks as markets. In Thorelli (1986), networks are described as an organizational form somewhere between markets and hierarchies, on a spectrum where the firm is on the one end and the open market on the other. A network can consist of a small part of a market or several markets, where the focal point is an intermediary. Central concepts to his market theory are power, influence, and trust. Concepts that are still highly relevant and present in research on platforms (Hagberg & Kjellberg, 2020). Because of the rise of digitalization, it has become more clear that many organizations and markets today are organized as networks than in a traditional hierarchical form. Similar reasoning of organizational forms has been put forward in ecosystem research in recent years, describing platforms as a new type of structure for organizing economic activity (Jacobides, Cennamo, & Gawer, 2018). The authors emphasize the role of complementarity between agents and activities in an ecosystem, as well as the interdependence between the entities in the system. Platform as a business model is also prominent within the context of the sharing economy. For example, Wirtz et al. (2019) sort out sharing platform business models as a special group of platforms since they typically do not own the assets which they offer. However, the authors fail to see the importance of getting the "two sides on board" in sharing type of platforms, which is one of the fundamental challenges of two-sided markets described in Rochet & Tirole. Overall, describing how the platform market is different from other markets continues to be a pervading challenge among researchers.

PERSPECTIVES ON PLATFORM ORGANISATIONS

Ambiguous Network Effects

Network effects are central to the study of platform economics. What is meant when network effects are at play is that the value for users in a network increase when more users join the network (Katz & Shapiro, 1994). Usually, one separates between *direct network effects* and *indirect network effects*.

Direct network effects are when the incentive to join the network or the value for each user gets greater the more users join from the same type of user group, for example, users of a telecommunication network (Evans & Schmalensee, 2016; Farrell & Klemperer, 2007). Indirect network effects occur when value increases for users as users of different types of user groups join the network, such as buyers and sellers (Evans & Schmalensee, 2016). Indirect network effects are often present in payment and e-commerce platforms since what these platforms do is connect different user groups. Network effects are usually treated as a special case of an externality (Shy, 2011). Broadly speaking, an externality is a non-priced value (positive) or cost (negative) that arises during consumption or production but can also arise during any type of activity.

Network externalities, which are derived from the general concept of an externality, are another central concept in platform economics and are often used interchangeably to network effects. As with network effects, the literature separates between direct and indirect network externalities. Economides (1996) explains that direct network externalities are present in two-way networks, whereas indirect network externalities signify one-way or exchange networks. The author also talks of *size* externalities in financial markets, meaning that as more participants join on each side of the exchange, the sheer market size increases the utility of all the participants. Thus with both network effects and externalities, volume is important to explain its characteristics. Furthermore, the literature sometimes uses the distinction between adoption and usage externalities (Chakravorti, 2010), which means that, in a platform, users' value can increase when other users *join* the platform but may also increase when other users *use* the platform actively. This relates to the quality of the platform and its users, how well users match each other's needs. Volume per se may not always be of value to an individual user since the thickness of the market may cause crowding (Evans & Schmalensee, 2016).

Many authors use network effects and externalities interchangeably, for example, Katz & Shapiro (1994) and Shy (2011). The latter with the argument that the difference in the definition does not matter to the outcome of the analysis. The general definition of network externalities received early critique because it includes a vast plethora of activities and of its main focus on only positive externalities, where some authors argued negative externalities might just as well be present (Liebowitz & Margolis, 1994). Furthermore, the authors argue that a network externality is a type of network effect where gains from the size of the network are non-internalized, in line with the definition of a general externality. However, others argue that network effects are not always externalities but just a type of economic activity. In Rochet and Tirole (2006), externalities are not distinguished based on internalization. The authors state "non-internalized externality," which is a tautology if externalities are non-internalized by definition.

To summarize, some scholars see a network effect as a form of externality, thus externalities are the wider umbrella, while others stress that a network effect is not always an externality. But instead, in general, network effects are treated as an economic effect that arises in network-type organizations. Thus, it seems safer to use network effects rather than externalities, partly because it is more general and partly since an externality has many other uses in the economic literature. Its connotations draw attention to literature streams and debates in public policy. Another, perhaps more accurate and less contested way of describing the value of networks and platforms is the variation in incentive to join a platform depending on the platform's characteristics. At the same time, the platform characteristics could then be divided into different parameters. Often, the second phrase in explaining network effects in a platform context in research is how a user does not benefit from being the sole user of a network, and therefore has no incentive to join if there are no other users. Discussing whether actors have an incentive to join, rather than the more abstract referral to network effects, can provide a clearer image of a platform's value.

Another important concept in platform research related to network effects is compatibility. Different goods and services being compatible with one another have been viewed as favorable, as increased standardization can provide thicker markets, cheaper goods, and foster competition (Farrell & Saloner, 1985). Earlier research, before platform markets were discussed, compatibility was central to describe mechanisms in a *systems market*. A systems market in Katz and Shapiro (1994) involves network goods that are both virtual and physical. For example, video games and video consoles. The authors discuss high switching costs in a systems market since specific investments need to be made. The investments become valuable partly because of the sheer volume of a systems market containing both different components, actors, and knowledge of using the system. The three main issues that arise in a systems market

are coordination, expectations, and compatibility. Actors form expectations of a system whether to invest in it or not. A system already in use has a positive feedback effect since actors are more inclined to join an already popular system as it gives them more value than joining a system with less active users (Katz & Shapiro, 1994). The authors described payment cards as part of the "software/hardware paradigm," with the card being the hardware and acceptance of cards being software. When a system is used by many, it is assumed that it has an advantage over other incumbents since switching to another system means less value to a user in terms of network effects. Thus, established systems with many users are often subject to scrutiny for their market power.

Market Power in Multi-Sided Markets

Large firms' market power in these types of technology-intensive industries where network effects are at play has been debated for a long time. In terms of compatibility, larger firms have an advantage in that other firms must make their products compatible with the standard system that is in use (Farrell & Saloner, 1985). The issue has been and continues to be discussed, whether the market can determine a "right degree of compatibility" (p. 95, Katz & Shapiro, 1994). This implies a level of compatibility, where customers can expect to choose from a different variety of goods and services and that innovation can thrive. In payment platform research and the two-sided markets literature, the finding has often been that the platform is able to exploit one side of the market since the price for usage is shared between the user groups and thus charge that side more than the other. In payment card networks, it is shown that the pricing is inefficient because the merchant side only make the decision of being a member of the network whereas the consumer side choose to be members and *users* (Bedre-Defolie & Calvano, 2013). The idea is that payment networks can incentivize consumers to use the network, while merchants have little ability to steer the consumer towards the merchant's preferred choice of payment (Ding & Wright, 2017; Rochet & Tirole, 2011; Wright, 2012). However, other benefits that merchants might gain from payment networks are seldom discussed, such as access to consumer data or not having to invest in their own infrastructure.

There has been much discussion if the usual anti-trust analysis applied on single-sided markets can reliably be applied to multi-sided platforms. See, for example, Evans & Schmalensee (2013). An understanding of the classic approach of transaction costs and property rights in the analysis of market power in these technology-intensive markets is emphasized by Carlton (2020), and that authorities need to consider the long-run harm and improve the judicial definition of two-sided markets, as recent court rulings have led to confusion. The presence of network effects in platform markets and the growth of internet firms have given rise to new issues regarding the anti-trust policy. Important questions regarding consumer welfare, data as an asset, defining the market, and anti-competitive behavior are raised in a special issue on anti-trust policy and the platform economy (Lenard, 2019). Large tech companies, such as Amazon or Facebook, and the anti-trust policies of today have been compared to 20th-century companies that grew large in the industrial era (Crandall, 2019; Lamoreaux, 2019). Whether their anti-competitive behavior or the anti-trust policies against them had any effect on consumer welfare is contested in some of these papers, and contend that it would be unfortunate to repeat mistakes made during that era.

Some Uses of Network Effects and Externalities in Platform Research

How the concept of network effects and externalities is used in research varies. In Methlie & Pedersen (2007), network effects are conceptualized as attributes in the business model of a mobile service. The three attributes investigated are said to be classified as indirect network effects: complementary service variety, speed of development, and quality. Classifying network effects as attributes is a bit of a travel from the original general definition of network effects, but perhaps a development in a needed direction of a more specific definition.

In a study within marketing on mobile payments, externalities are explained to be direct when the value for each user increase as more users join the platform, whereas they are indirect when the utility of consumers change with an increase in complementary products and/or services (Lee, Ryu, & Lee, 2019). The authors exemplify a direct network externality; with an increase of users of a mobile payment service, the reliability and intention to use the service increase. Thus, the authors stretch the meaning of network externalities to involve reliability, not a certain outcome of more users. Furthermore, an indirect network externality is exemplified with that consumers using a retail platform will have greater value the more retailers that are available on the platform and that more sellers will attract more consumers and vice versa. What they describe here with the increased attraction is rather more towards a positive feedback loop. Some scholars confuse indirect network effects with a positive feedback loop (Zhu & Iansiti, 2012). The positive feedback loop refers to the events when more users join a network that already looks attractive because of its increasing user base, while the effects refer to the value or benefit of each user (Farrell & Klemperer, 2007).

Tipping is another concept that frequently comes up in network or platform research. In the literature on platforms, the concept of tipping is mainly used in the context of competition. Tipping can refer to when a platform is ahead of other competitors and gains more users because of its size. It is thus similar to the concept of network effects and positive feedback loop (or *band-wagon* effect). However, it describes more unstable market mechanisms. It is also used to describe a strategy where the platform owner uses their market position of being the most popular one, to strengthen their customer base further or even raise prices (Farrell & Klemperer, 2007). Thus, tipping is often pointed out to be present in markets with network effects.

There are different concepts to describe how platforms grow and mechanisms for attracting users. However, there is no clear consensus with regards to their definitions. Neither are the concepts clear-cut. Many concepts such as network effects, externalities, positive feedback loop, and tipping are used interchangeably or in a similar manner when explaining platform growth.

Multi-Sided Markets and Business Models

Platforms work as intermediaries and can decrease transaction costs and diminish risks. However, they can also give rise to transaction costs in the form of uncertainty. Online platforms have an embedded uncertainty for users as they are detached in time and space. Therefore different systems and platforms within platforms are needed in order to mitigate this uncertainty. Different payment service platforms are an example of systems and procedures that handle risk and uncertainty; however, the interdependent demand of different user groups gives rise to both challenges and opportunities.

In the literature on two-sided markets, analyzing payment card networks have been central in developing the theory. The advantage of analyzing the payment system within a two-sided market approach is that it considers that a transaction affects different actors in different ways (Maixé-Altés, 2020).

Much of the research has focused on investigating interchange fees and the optimal level of fees and regulation of fees, see for example (Bourreau & Verdier, 2019; Rochet & Wright, 2010; Verdier, 2011). Two-sided markets are said to be a case, of which results more generally apply to multi-sided markets (MSPs) (Rochet & Tirole, 2006b).

Two- and multi-sided platforms (MSPs) have been defined in similar ways across the platform literature, but there has not been a clear, unified definition (Hagiu & Wright, 2015). As a result, it has been difficult to distinguish two- and multi-sided platforms from an ordinary merchant or reseller. At the heart of the issue lies the interdependent demand functions of different users. This type of interdependent demand has been proposed to entail different results than would be predicted by standard economic theory. However, Carlton & Winter (2018) argue that two-sided platforms do not constitute a special case but confirm traditional pricing theory. Furthermore, they are critical of recent anti-trust rulings for choosing a different standard for two-sided platforms.

One of the first papers to discuss interdependent demand and network externalities was Rohlfs (1974). In his paper, the main issue is how consumers choose to subscribe to a communications network with externalities when the decision is based on current payoffs, which has implications for pricing. Internalizing network externalities in payment systems in the form of an interchange fee was discussed early by Baxter (1983). In the theory of two-sided markets, the interchange fee has been studied extensively, with the objective of finding the optimal level of interchange fee given different circumstances (Reisinger & Zenger, 2019). Reisinger and Zenger (2019) show that the interchange fee can provide incentives for card associations to invest in retail services. Thus, despite the fact that most studies have criticized interchange fees for potentially being anti-competitive, there are other benefits of the fee that deserve to be considered.

As mentioned, a difficulty for authors in the literature on two-sided markets has been to explain what makes these markets special compared to traditional markets (Rysman, 2007). In Evans & Schmalensee (2013), their definition of multi-sided platforms emphasizes that the platform solves a coordination problem, reducing transaction costs and "facilitate value creating-interactions" among two or more customer groups. In Rochet & Tirole (2006b), the authors are more specific and mean that a market is two-sided if the platform can have a price structure that allows it to charge different prices to different customer groups. They also state that a market is not two-sided if an outside agent can break up the price structure by side payments. Similarly, in Carlton (2020), a two-sided market can be identified if transaction costs hinder the two sides from directly exchanging with each other, evoking price differences.

As a business model, multi-sidedness has become more prevalent with the rise of digitalization (Evans & Schmalensee, 2016). Conceptually, platform economics thinking has found its way into marketing, business management, and specifically retail research literature, for example, Ailawadi & Farris, (2017); Frishammar, Cenamor, Cavalli-Björkman, Hernell, & Carlsson, (2018); Lee, Ryu, & Lee, (2019). Within the retail context, digital multi-sided platforms are described as a business model that creates value for its users but also changes the "logic" for incumbent retail businesses (Hänninen, Mitronen, & Kwan, 2019; Hänninen, Smedlund, & Mitronen, 2018). This new logic is claimed to mainly entail increased efficiency in the service system. They argue that multi-sided markets have shifted competition and that the growth of e-commerce is mainly due to consumers' increased demand for convenience on all service levels. The authors mean that multi-sided retailers can cater to a more efficient and holistic shopping experience

with fast deliveries, convenient returns, and seamless payments. Compared to traditional incumbents, other aspects of e-commerce advantage are that platforms as intermediaries bear less inventory risk than their traditional counterparts. In addition, they can more easily integrate new service options and have a different earnings model (Hänninen et al., 2019).

In a broad sense, research in business administration has a narrative of multi-sided markets that focuses on describing it as a new business model in which companies compete with each other. The phenomenon of platforms with different "sides" to the market is viewed more as a road map to how companies can use it as an approach and maximize their value creation (e.g., Gandia & Parmentier, 2017). In those types of studies, references to literature on the platform or network economics are present but not elaborated further, and the mechanisms of the market itself are not of interest. Further on, platforms are treated as an entirely new form of organization, although their presence can be noted since ancient times (Evans & Schmalensee, 2016).

How to develop the platform business model in order to reach critical mass and attracting customers in the digital era is the problem addressed in many articles in the business field, for example, for a mobile payment platform (Jocevski, Ghezzi, & Arvidsson, 2020), or shopping malls (Frishammar et al., 2018) and video games (Cenamor, Usero, & Fernández, 2013; Gandia & Parmentier, 2017). A popular topic also includes success factors of firm entry into platform markets (Zhu & Iansiti, 2012). As mentioned, in the retail field, there is research on how multi-sided business models are changing the business logic in retail (Hänninen et al., 2019, 2018), and the platforms as a business model can also be noted to be mentioned in early work on multi-channel retailing (Zhang et al., 2010). Multi-sided markets that combine different user groups are said to be the key feature of new digital markets (Hagberg & Kjellberg, 2020). The authors also raise issues regarding competition, that these new digital markets create power asymmetries that could hinder customer influence in the short term and be detrimental to development in the long term. However, what this development entails is unspecified, but it is concluded that the long-term effects of digitalized markets are difficult to assess.

In a paper on how retailers can innovate their business models, the two-sided platform concept figures in a sort of cross-fertilization of the different perspectives mentioned here, as retailers are described as:

"orchestrators or conductors of two-sided platforms that serve as ecosystems in which value is created and delivered to customers and, subsequently, appropriated by the retailer and its business partners." (Sorescu, Frambach, Singh, Rangaswamy, & Bridges, 2011) (p.S5).

Here, two-sided platforms are understood *as* ecosystems, and it is also contended that any value created is appropriated by the retailer and its business partners.

Ramaswamy & Ozcan (2018) argue that interactive platforms should be treated as a separate category. They also mean that platforms have previously been viewed as only intermediaries, and they argue that the interactive feature is especially present today with the current digitalization of technology. Furthermore, the authors argue that interaction has implications for the cocreation of value among the agents in their proposed framework. However, as we have seen, platforms as intermediaries imply interaction in platform theory and multi-sided markets since they connect different user groups. Thus, there is no need to separate platforms as value-creating and interactive in their proposed framework since value is the fundamental concept in network effects that explain the growth of platforms. Another paper (i.e., Wirtz et al., 2019) delineates the different types of *sharing* platforms, and the categorizations are mainly based on ownership of resources and the type of network effect that is present. Here, the power of network effects

is emphasized and claimed to be less important for sharing platforms in terms of competitive advantage since they are ruled by indirect network effects, compared to platforms that exhibit direct network effects. However, the paper does not problematize network effects but suggests further investigation in terms of platforms' competitive advantage.

When two-sided market theory is brought up in papers in the business and marketing field, it is often used in contexts, such as in some examples above, concepts of ecosystems and value-creation figures. Common contentions of many of the articles focusing on business models are how traditional businesses can compete with platforms or transform their business model into a platform business model. Concepts from network economics figure and are used beyond their original definition or more loosely. The articles reviewed in this area also often have an enthusiastic approach, the sense of being part of an exciting new development in the business field. More nuanced research of platform business models could add to the literature.

An Ecosystem of Platforms

Another term often used within platform economics is the ecosystem. It can be hard to distinguish a multi-sided platform from an ecosystem of services. One definition is as follows:

"An ecosystem consists of all the people, businesses, institutions, and other things that, because they interact with each other, affect the value a platform can create." (Evans and Schmalensee, 2016, p.103).

The key here is that all the entities that affect the value of the platform can be said to be a part of the ecosystem. Thus, the ecosystem can be vast and contain numerous actors. A platform, on the other hand, has a more delineated purpose of exchange.

Scholars who prescribe themselves to a Service-Dominant logic (SDL) view suggest ecosystems are examples of a market (see, for example, Vargo & Lusch, 2011). Their main argument is that the traditional marketing view has not fully recognized that a firm does not work in isolation. Instead, multiple actors, consumers, and stakeholders are needed to create value or *cocreate* value by integrating resources (Akaka, Vargo, & Lusch, 2012). Here, networks are discussed to be mediators of value cocreation. Thus, this thinking is similar to that of network effects in platforms discussed previously, where platforms are intermediaries in exchange for different users that benefit from each other.

Another example within the cocreation of value and service ecosystem research is Storbacka, Brodie, Böhmann, Maglio, & Nenonen (2016). In this paper, the authors talk of engagement platforms, where network effects are described as yields or benefits that can take three different forms; relational, informational, and motivational (p. 3011). The authors propose that these different forms should be investigated in a setting where users leave a platform. Why and how this should be studied is not further developed in the paper. Within this literature, examples of engagement platforms also prominently feature examples of multi-sided markets, such as Uber and Airbnb (Breidbach & Brodie, 2017). The authors propose a framework for analyzing engagement platforms in the sharing economy with a focus on questions related to how platforms facilitate actor engagement. Another paper along the trajectory of actor engagement platforms point to a need to explore the resources that actor interaction means and how they are valued as an asset (Storbacka, 2019).

In a critical analysis of service ecosystem research (Mustak & Plé, 2020), the authors find that, similar to critique of the related field of S-D logic, the research is biased toward describing service eco-

systems as too positive or too optimistic. It is argued that systems may not always create value or work collaboratively, and those premises can lead to false conclusions. For example, the premise that firms in the ecosystem have shared institutional arrangements is contested and exemplified with companies that would commonly be classified as platforms (Apple, Airbnb, Spotify); Apple setting rules for their app store, negative consequences for residents from Airbnb's operations, Spotify bypassing of Apple's rules. With these examples, the authors mean that these companies do not share the same institutional arrangements. However, an alternative view is that this way of operating is the usual competitive behavior of systems or platform competition. Thus, the need to characterize platforms along the original premises set in service ecosystem research requires stronger arguments. Such market operations have also been addressed in terms of the concept of "co-opetition," which emphasizes firms' relationships as complementors in the digital era (Nalebuff & Brandenburger, 1997).

When more negative consequences of platform operation are discussed, it mostly lands in a similar critique as mentioned in the previous paragraph, or that workers on a platform, such as Uber drivers, have earnings below what is socially optimal and are not included in social security systems. Regulation of these markets is then often suggested. That negative consequences of platforms being seldom the focus in platform research can be compared to the critique mentioned in the section on network externalities, that often negative network externalities are ignored in the analysis (Liebowitz & Margolis, 1994).

Ecosystems in Payment Research

The concept of ecosystem is also used in payment research. In particular, mobile payments are frequently argued to give rise to a new ecosystem of market participants (Carton et al., 2012). This is referred to as "the mobile payment ecosystem" (Dahlberg, Bouwman, Cerpa, & Guo, 2015; Guo & Bouwman, 2016; Hedman & Henningsson, 2015), consisting of banks and different financial services. These studies combine business ecosystem literature with economic theories of competition and technology evolution. Ecosystems are, in these studies, defined generally as an environment of cooperative relationships between stakeholders that create mutual value (Hedman & Henningsson, 2015). In addition, studies on the adoption and usage of mobile payments have dominated payment research in the latest years, and a majority of them use different variants of technology adoption theories (Dahlberg, Guo, et al., 2015; N. Singh & Sinha, 2020; Taylor, 2016). More recently, the social features of mobile payment platforms and new financial services have received increased attention (Acker & Murthy, 2020; Kozinets, 2019).

The ecosystem term in mobile payments is in Kremers & Brassett (2017) discussed as a metaphor. They argue that the term itself, in its usage, promotes big companies, while smaller firms implicitly become dependent on these larger market actors. Furthermore, they mainly view mobile payments as a way for companies to gain more information from consumers and increase brand value, and not so much a way for increased freedom for the consumer as often is claimed. In this way, their thinking is similar to that of Mustak & Plé (2020), in that a platform may not always create value for all agents involved. It also ties in with the discussion that new regulation that considers the market mechanisms of multi-sided platforms is needed.

A common feature of the different literature discussed here on platforms, ecosystems, services, and networks or a chosen combination of any of these terms is that they all claim to describe a new form of organization of market or markets, where digitalization or technological development is speeding up the process of change in how companies operate, and consumers behave.

Recent Development in Payment Services in e-Commerce

That payment services facilitate and provide security for shoppers to purchase online has been recognized since the beginnings of e-commerce (M. Singh, 2002). Established payment service providers can signal and ensure trust and security at the checkout (Cardoso & Martinez, 2019). One trend in several countries is that online retailers offer different payment options that enable customers to pay later after buying an item (Sillitoe, 2018). As mentioned in the introduction, using these types of credit options, buy now -pay later (BNPL), has increased in the latest years.

Besides liquidity, there are other reasons that motivate consumers to purchase with credit. Research within mental accounting and pain of payment shows that consumers experience greater value when payment and the benefit of the good or service are separated (Gourville & Soman, 1998; McClure, Laibson, Loewenstein, & Cohen, 2004). There is also evidence that the benefit of the delay increases with the purchase amount (Zielke & Komor, 2020). Despite its increase in popularity, there is little research on BNPL-options. Grüschow, Kemper, & Brettel (2016) find that pre-payment options are the most cost-efficient payment for online retailers. This result contradicts the increasing trend of retailers offering BNPL-options. However, the authors also discuss that different payment instruments have other characteristics such as risk, functionality, and cost of capital that influence the decision of which payment methods to offer. The authors further encourage the investigation of non-pecuniary determinants of payment choices (Grüschow et al., 2016).

Sharma and Pandey (2020) study a scenario where the customer pays before they get the product. Their general finding is that payment depreciation (reduction in pain) occurs discontinuously when measured in shorter periods (weeks) and that the longer between payment and consumption (benefit), the less is the negative effect of the loss. Therefore, the risk and cost of payment and delivery are at stake, while the enjoyability of the consumption is affected by the intertemporality of payment and when the good/service is received. However, they do not test for when the payment is made *after* consumption, but since the focus is the time between consumption and payment, one can expect similar results for when these occurrences are exchanged.

Studies that support that credit use increases consumer spending include Meyll & Walter (2019), that find that individuals that use credit cards frequently also tend to use mobile payments. They suggest that this behavior implies that mobile payment users are higher spenders. Similarly, Boden et al. (2020) find that consumers show a higher willingness to pay with mobile payments such as Apple Pay compared to other payment media. However, they emphasize that the higher willingness to pay is driven by convenience rather than lack of pain of payment. However, it is not clear how these two notions are separate. Another study on consumers adopting the mobile payment AliPay in China shows that spending frequency and transaction amount increased for those consumers (Xu, Ghose, & Xiao, 2019).

Kemper & Deufel (2018) test how different situational factors influence the choice of payment in e-commerce. Comparing credit cards, PayPal, and an invoice option, they find that invoices are more prevalent for repurchases and higher-value purchases, whereas basic products ordered with express delivery are more likely to be paid with PayPal or by credit card. The authors point out that more research on the importance of payment method choices at the checkout is needed, as well as studies on cross-cultural differences and the influence of consumer habits on payment choice.

A concern raised in payments research is privacy issues with online payments. In the case of PayPal, information has been shared between merchants and PayPal since information of the transaction is crucial to merchant operations, including fraud protection (Preibusch, Peetz, Acar, & Berendt, 2016). The

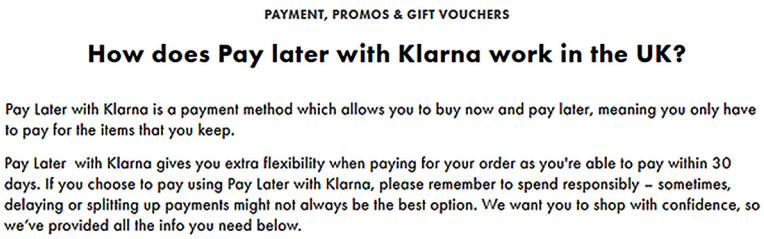
authors argue that payment service providers such as PayPal, because of their access to information, are not passive intermediaries, but to a high degree, part of the overall shopping experience and an integrated part of e-commerce. This poses trust issues between consumers and retailers in relation to the payment service providers. Thus, there is trust and distrust in using payment services online since consumers may find the service reliable but have privacy concerns. This argument ties in with discussing how to value the resources of actor interaction and how companies treat customers' data as an asset. Carlton's (2020) proposition that property rights and transaction costs should still be central to policy analysis of the regulation of multi-sided markets is thus highly relevant. The challenge then lies in how to delineate the property rights of the data.

PAYMENT SERVICE CASE OF KLARNA

The phenomenon of BNPL will here be illustrated with a small example case of payment services from *Klarna*. The company was originally established in Sweden, but it is also available in other European countries and the USA. It is claimed to be one of the fastest-growing payment service providers in the latest years (Klarna, 2020). Klarna has a platform in which consumers register and tie an account to their bank account. On their mobile platform, consumers can also shop directly at certain retailers as well as keeping track of their purchases. With Klarna, recurring customers are recognized so that they need not fill in their information every time that they shop. Klarna also states that they fully bear the credit- and fraud risk for both buyer and seller. In this way, the company's service offer is a classic example of a platform that intermediating exchange and diminishing transaction costs.

The credit-based payment options in BNPL are in many instances marketed in combination with services of free delivery and free returns, showing that the customer does not have to bear the risk of their purchase. The following example (Figure 1), from the online retailer *Asos* (U.K.) that have integrated payment services from Klarna at the checkout illustrate this:

Figure 1. Payment, Asos FAQ
Source: https://www.asos.com/customer-care/payment-promos-gift-vouchers/how-does-pay-later-with-klarna-work-in-the-uk/ (accessed 2020-08-30)


PAYMENT, PROMOS & GIFT VOUCHERS

How does Pay later with Klarna work in the UK?

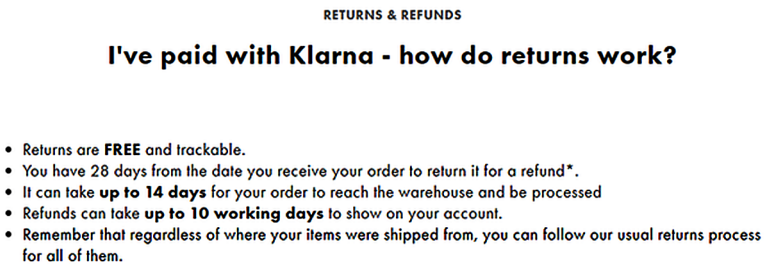
Pay Later with Klarna is a payment method which allows you to buy now and pay later, meaning you only have to pay for the items that you keep.

Pay Later with Klarna gives you extra flexibility when paying for your order as you're able to pay within 30 days. If you choose to pay using Pay Later with Klarna, please remember to spend responsibly – sometimes, delaying or splitting up payments might not always be the best option. We want you to shop with confidence, so we've provided all the info you need below.

In Figure 1, the option to pay later is marketed in a way to ensure security to the consumer, that they do not have to have any money outstanding for their purchase. This is in line with how Hänninen et al. (2019) describe how multi-sided markets in e-commerce focus on customer convenience in their service propositions. Furthermore, the information in the second paragraph also includes a moral call to the consumer, "remember to spend responsibly." One interpretation is that it may be an attempt to soften

perceptions that the company wants to benefit from consumer over-spending on credit. However, such practices could hurt the brand of both the online retailer and the payment provider. The reputation of a payment provider has been shown to affect consumer trust in online retailers (Köster, Matt, & Hess, 2016), but further research on how different integrated platforms affect consumer trust in the overall service offer is needed (Cardoso & Martinez, 2019).

Figure 2. Returns, Asos FAQ
Source: https://www.asos.com/customer-care/returns-refunds/ive-paid-with-klarna---how-do-returns-work/ (accessed 2020-08-30).


RETURNS & REFUNDS

I've paid with Klarna - how do returns work?

- Returns are **FREE** and trackable.
- You have 28 days from the date you receive your order to return it for a refund*.
- It can take **up to 14 days** for your order to reach the warehouse and be processed
- Refunds can take **up to 10 working days** to show on your account.
- Remember that regardless of where your items were shipped from, you can follow our usual returns process for all of them.

Since buying online is associated with not being able to see the actual products, the customer cannot control, for example, the quality or fit or characteristics that might apply to the particular product. However, in the example (Figure 2), this uncertainty is mitigated by also coupling the return with the payment, showing the customer the low risk and convenience of paying with them.

This example illustrates that customer and retailer relationships in e-commerce become prolonged compared to traditional retail. Since the customer can choose to pay later and return products, this gives rise to longer lead times of products and capital flowing back and forth between actors. It also implicitly shows the different risks to both customer and retailer, as the customer may not receive their ordered product or it may be deficient. A retailer has the risk of not receiving payment after shipping the product. A retailer can be aware of the customers' risks and want to make sure that the customer is comfortable with placing an order. Anecdotal evidence points to that some customers do not go through with a purchase if free shipping and returns are not offered (Sundström, Hjelm-Lidholm, & Radon, 2019).

By using payment services that mitigate risk for retailers and customers, the online market can ensure growth. However, it raises sustainability and social issues since customers, in effect, are encouraged to buy larger quantities while they only have to pay for the products that they keep in the end, many unnecessary modes of transport may occur. There is also the possibility that the customer buys more than they actually want to keep or can afford because of the pay-later alternative, and therefore may end up in debt.

In a press release (May 10, 2019) from the company Klarna, with the news that they entered a partnership with payment platforms AliPay and Adyen to add their payment solution to the e-commerce site AliExpress:

From now on, shoppers at AliExpress can choose 'Pay later' at the checkout, and pay for their goods after delivery. This payment alternative allows them to try items at home and keep what they love, before parting with any money. Moreover, after a shopper uses Klarna for the first time, all subsequent purchases only need a single click to buy. This smooth consumer experience aims at providing consumers

with control, clarity and flexibility, and is a key reason why Klarna's 'Pay later' payment option has grown very popular and now has a very strong preference amongst consumers in Europe. (https://www.klarna.com/international/press/alipay-and-klarna-enable-consumers-to-buy-now-pay-later-at-aliex-press/) (accessed 23 March 2021)

The quote illustrates the company's business idea to provide security for the consumer in purchasing online. The company's reasoning for why the consumer chooses to pay using their service is that it allows consumers to buy things without paying until they have decided what to keep.

In line with the discussion of intertemporality of payment and consumption, with BNPL options, the time between consumption and paying thus becomes longer and may impact how consumers enjoy their purchase. There may also be hedonic value in buying things that the consumer does not intend to keep. In addition, the BNPL options make purchasing online convenient and more secure and thus contribute to the expansion of e-commerce as an alternative to traditional retail.

FUTURE RESEARCH DIRECTIONS

E-commerce continues to expand as consumers shop more and more online. Many factors are involved in this development. Research point to that the presence of multi-sided markets that have enabled this expansion. However, new theoretical findings on mechanisms of multi-sided markets are largely absent. Most research refers to concepts of network effects or network externalities from economic theories on networks. These concepts can be further scrutinized, developed, or revitalized. Rather than referring to network effects for explaining the growth of a platform, studies can benefit from investigating actor incentives to join a platform.

Empirically, a lot of research focuses on consumer adoption and the use of different platforms. However, another side to the story would be to study how companies adopt platforms, especially which e-commerce platforms retailers choose to collaborate with. This could provide insights into the motivations of the different sides of a multi-sided market. Thus, case studies on multi-sided markets where the different user groups are studied would better understand how the different sides interact and how they are beneficial or detrimental to each other.

Efficiency in terms of speed, convenience, and cost are often at the center stage in describing how new multi-sided platforms change the organization and operations of commerce. But most often, the increased efficiency is taken as a given or explanation for the growth of e-commerce. Investigating more specifically the efficiency of multi-sided platforms compared to traditional single-sided ones would deepen the understanding of e-commerce growth and provide implications for long-term development. Furthermore, efficiency should be looked upon with a more critical lens, how much efficiency is gained and in what part of the value chain? Are there parts where multi-sided markets can decrease efficiency? Another interesting point taken from one of the papers is to investigate a platform in decay or what happens when users leave a platform. With regards to payments in e-commerce, empirically, there must be certain considerations that precede the decision when a retailer abandons a certain payment method in favor of another. The same reasoning applies to the consumer when facing a different or a new alternate payment online; which one does the consumer choose and why? Another future avenue for research on e-commerce and payments is how credit alternatives such as *buy now pay later* affect the online retail market, its implications for consumption and sustainability.

The interaction between platforms is less researched than interactions on individual platforms. How do different platforms within platforms spur each other's growth? One example in this text has been how payment services that have a large consumer base can affect online retail platforms in gaining customers. Thus, there appear to be network effects or positive externalities between platforms. However, it has not explicitly been investigated how these effects and externalities work.

Research on negative consequences of platform markets contains mostly issues regarding anti-competitive behavior and bypassing of regulation. However, other negative externalities that platforms might give rise to would be interesting to pursue.

CONCLUSION

Platform markets have become increasingly prevalent in recent years, both as an observable phenomenon and as a theoretical concept. However, platform markets are not a new invention (Evans & Schmalensee, 2016), but their growth and prominence are fueled by increased digitalization. Scholars within different fields are eager to develop a satisfying definition, delineation, and explanation of platforms. Many insights on platforms of platforms can be found in earlier economics literature from networks, systems markets, and standards. Concepts developed within that literature are used across different research fields. Since their definitions are not clear-cut, they should be used with more caution.

Research from different fields has in common that platforms are described as intermediaries and facilitators of exchange. A classic example of a platform is a payment card system. This example has been used in theoretical papers on two-sided markets and has been part of developing theories of mechanisms in platform markets. However, scholars have difficulty in explaining the difference between platform markets and other markets. The arguments tend to have a circular feature, such as if the different actors can involve direct exchange, the market is not two-sided. However, with this notion, the market itself seems to have been erased. Therefore, it might not be of importance to sort out what is different with platform markets. However, by studying them, insights on markets, in general, can be gained.

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KEY TERMS AND DEFINITIONS

Complementarity: Different types of entities such as goods, services, or users that, to a varying degree, have greater value as they are consumed together or only function in use together.

Externality: A non-priced economic effect that arises in economic activity.

Network Effects: The increased value for users of a network when more users join the network.

Positive Feedback Loop: The event where different types of goods or user groups of a market/system/platform/network affect each other so that more goods are sold, or more users from both groups join the market/system/platform/network.

Service Ecosystem: A system of different types of actors, all involved in creating value through exchange and interaction.

Tipping: When consumers choose a market/platform/system/network over incumbents only because of its size or popularity.

Two-/Multi-Sided Market: A marketplace or platform that targets two or more distinct groups of customers. The price structure allows for charging different prices to user groups of the platform.

Value Cocreation: A theoretical understanding of exchanges, where firms and consumers do not act in isolation, they are involved in producing value together.

APPENDIX 1

A simple search in the Web of Science Core Collection on the topic of *platform payment* reveals that the topic has had increased popularity in recent years.

Table 1. Number of publications in the period 2001-2020 on the topic platform payment

Years	Number of Publications
2016-2020	870
2011-2015	290
2006-2010	135
2001-2005	43
Total	1338

(Data Source: Clarivate analytics)

Chapter 14
Effectiveness of Social Interactivity in Merchant Websites on Emotional and Behavioral Responses:
Study of the Anthropomorphic Virtual Agent and the Commercial Discussion Forum

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ABSTRACT

In a context of hyper connectivity, the designers of commercial websites are constantly seeking to generate favorable psychological states among internet users and to re-enchant them. This research aims to study the effect of the interaction between the social dimensions of interactivity on psychological states and the approach behavior of the e-consumer. Experimentation is chosen as the most appropriate method for testing the proposed model. An online experiment was conducted with 662 internet users. A merchant website was designed for the purposes of the study incorporating the interaction forms investigated. The results of this research underline the power of the social dimension of interactivity in the mediated market environments and show that a socially interactive site can generate the user's flow state, as well as a feeling of being physically present in a remote environment. This relation is moderated by the perceived risk.

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INTRODUCTION

In a context of hyper-connectivity, the designers of commercial websites are constantly seeking to generate favorable psychological states among Internet users and to re-enchant them. To differentiate themselves from their competitors and gain market share, companies can create or strengthen their competitive advantages through innovation. To this end, innovation becomes crucial and a source of sustainability for any company to differentiate itself (Sahut and Leroux. 2011). Companies choose Information and communication technologies ICT according to their organizational characteristics and the objectives they want to achieve. Therefore, companies' success in adopting an ICT depends on their dynamic capacities and the type of technological innovation.

The development of electronic commerce has revolutionized user's consumption habits. In fact, shopping on merchant websites now offers Internet users the possibility of buying from any point of sale on a national or international scale, saving time and enjoying promotions. Shopping on merchant websites also allows users to easily search for the information they need through virtual platforms with ergonomic features that influence the sensory system of the cyber consumer. We are witnessing a change in the physical management of a store towards digital management. Human interaction is just as important as in media environments, making it possible to enrich visitors' experience by making it pleasant and warm.

A study of Internet users' behavior towards electronic commerce shows that Internet users are increasingly looking for social interaction in addition to their instrumental goals (Statista[1], 2019). Recent results from Forbes[2] (2018) suggest that by 2020, more than 80% of businesses should have some way to automate customer interactions. In addition, 38% of companies are deploying a virtual agent. Another recent study (Forbes, 2017) on Internet users' behavior towards electronic commerce suggests that 75% of Internet users prefer to interact with other site visitors.

The digital transformation in market environments presents a new challenge for companies operating online to better respond to the constant changes in consumption patterns. To improve the visitor's experience, the interactivity of merchant websites is a solution to act on the experience and perception of Internet users and therefore deserves a thorough investigation. A number of studies show that the technical dimension of interactivity materialized by the animation of images, color, music, etc. is capable of improving a visitor's online experience, but it does not alone produce the fiction that Internet users experience in natural interactions with a real person (Balbo, Jeannot, and Helme-Guizon, 2013; Blazevis et al. 2014; Jamy, 2015).

In addition, recent studies show the lack of human warmth and sociability often perceived by visitors of commercial Websites (Norouzi et al., 2019; Jaisie and Cosmin, 2020). This leads many consumers to be strongly reluctant to use the Internet as a transaction tool and consequently shopping at physical outlets where they feel more confident. As a result, the social dimension of interactivity is now an essential success factor (Viot and Bressolles, 2014; Jamy, 2015; Audénis et al. 2017).

In the COVID-19 pandemic context, the concept of social interactivity has taken on all its importance. In fact, lockdowns, physical distancing, and limitations of social life have deeply affected the psychological states of isolated people. In such difficult conditions where most transactions and sales are made virtually, people are increasingly searching for interaction on merchant websites that allow them a realistic user experience. Companies are so innovating with different virtual reality technologies to diversify ways of enhancing interactivity on their online merchant platforms (Schmidt et al., 2019; Norouzi et al., 2019; Jaisie and Cosmin, 2020).

Among the social dimensions of interactivity, the choice is focused in the study on the presence of a commercial discussion forum and a virtual agent with some anthropomorphic characteristics. Recent research value the importance of the social dimension in the websites (Jamy, 2015; Audenis et al., 2017). Internet users are increasingly looking not only for the presence of a simple virtual recommendation agent but also for its characteristics such as voice, conversational skills, and gestures (Ben Saad and Choura, 2017). Indeed, Internet users value the presence of a sophisticated virtual agent with a ritual behavior (able to act, react, talk and move). This study attempts to better understand the effectiveness of the interaction between the social dimensions of interactivity in commercial websites.

The main objective of this research is to determine the effect of this interaction on the psychological states felt by the user and, therefore, on his approach behavior. Several researchers have valued the usefulness of the "flow" and "telepresence experience" constructs to describe the interaction experience in a mediated environment (Csikszentmihalyi, 1988; Ghani and Deshpand, 1994; Yadav et al. 2013; Pelet, Ettis and Cowart, 2014). The notion of flow state was introduced by Csikszentmihalyi (1988) and has been mentioned in several activities such as Internet browsing (Pelet, Ettis, and Cowart, 2014). The flow experience is a state experienced by Internet users who are very involved in a given activity. Furthermore, to reduce the distant, dehumanized, and impersonal nature of merchant websites, several works have introduced the concept of telepresence, initially proposed by Minsky (1980), and refers to the fact that an interface is perceived as warm (Yadav et al., 2013).

LITERATURE REVIEW

With the increased use of new information and communication technologies in virtual merchant environments, in addition to their instrumental goals, Internet users are looking for social interaction in these environments (Balbo, Jeannot, and Helme-Guizon, 2013; Blazevic and al. 2014, Jamy, 2015; Ben Saad and Choura, 2017, 2018).

Interactivity is an ancient concept that has evolved along with the evolution of technology. The literature distinguishes two aspects of interactivity: (1) the technical aspect as it relates to design factors (e.g., like color, music, quality of electronic services, design, ease of use) (Steuer, 1992); and (2) the social feature which refers to social factors often related to the notion of interpersonal human interaction (Huang and Lin, 2007). The social dimension of interactivity in virtual market environments is the conceptual framework of reference retained, particularly the anthropomorphism of the virtual agent and commercial discussion forums.

Virtual agents are graphic representations of a natural person on an electronic platform. They are used as representatives of a company on a merchant website. They are relevant to enrich the offer presentation and to enhance the personalization of the merchant environment. They guide consumers, facilitate their navigation, and hold the attention of the Internet user. They guarantee a better understanding of the message and a strong perceived trust value (Marschner et al., 2015; Jamy, 2015; Zhao et al., 2015). Animated interactive agents have their origins in information systems. They have subsequently developed in marketing in recent years (White, Novak, and Hoffman 2014; Marschner et al. 2015; Jamy, 2015; Zhao et al. 2015). A virtual agent can be designed in an anthropomorphic way which gives it characteristics that humanize it.

Moreover, Internet users are increasingly concerned about the presence of commercial discussion forums with specific characteristics on merchant websites (Ben Saad and Choura, 2018). These forums

are defined as online scheduled meetings in which Internet users can actively participate in a written discussion about a commercial subject, such as purchasing an article (Ben Saad and Choura, 2017).

Several researchers show that the main characteristics of the commercial discussion group are group involvement, similarity, and receptivity (Jauréguibery and Proulx, 2017). Group involvement refers to the group's engagement in the interaction, thus creating a kind of presence in the group. Likewise, the group is required to answer all internet users' questions (Blazevic et al., 2014). The group similarity is the fact that internet users perceive the other participants as being similar to their attitudes and behavior. Indeed, the similarity with other stakeholders reassures us about the relevance of the belief. It creates a oneness feeling. It denotes that the interaction will be free of conflict (Dolen et al., 2007). Group receptivity is the way group members listen to the ideas of other stakeholders. Indeed, the group is required to be receptive to stakeholder issues (Dolen et al., 2007).

Theory of Social Response

The theory of social response assumes that users can interact with computers and social actors and manifest among each other social responses usually reserved for interactions between humans (Lemoine and Cherif, 2015). Social response theory assumes that Internet users can interact with their computers as well as with humans (Lemoine and Cherif, 2015; Steuer and Nass, 1993). Language, voice, interactivity, and social role are the different variables that can reinforce the social aspect of an online experience.

In terms of language and voice, because computers use human language and voice, users behave as if they face different people (Bressolles et al., 2014; Steuer and Nass, 1993; Turkle, 1984). Furthermore, with regards to interactivity, Wang et al. (2007) consider that when interacting with a merchant website is similar to human and interpersonal interactions, users behave as if they were facing a real physical person. Finally, recent studies attribute a social role to Websites (Stevens, Maclaran, and Brown, 2019).

Virtual agents and commercial discussion forums are used to facilitate user navigation and enhance the feeling of a social presence online.

Effect of the Presence of an Anthropomorphic Virtual Agent on the Psychological States of the Internet User

Anthropomorphic virtual agents, also known as embodied agents, have non-verbal abilities (human gestures) and verbal abilities (voice and conversational skills). These features have an impact on the psychological state of the user. In particular, the state of flow and telepresence experience have been identified as possible consequences of the anthropomorphism of the virtual agent (Lemoine and Notebaert, 2011; Charfi and Volle, 2012; Marschner et al. 2015; Ben Saad and Choura, 2017). Indeed, several studies have advanced the idea that the verbal characteristics of the virtual agent, namely his conversational skills and his voice, provoke pleasure for the Internet user (Lemoine and Cherif, 2015; Ben Saad and Choura, 2017; Norouzi et al. 2019). Likewise, non-verbal characteristics such as human gestures have a significant impact on the feeling of total concentration (Ben Saad and Choura, 2017). Furthermore, Lemoine and Cherif (2015) add that embodied agents can act positively on the pleasure and the feeling of the playfulness of the Internet user. Thus, other research stipulates that the presence of sophisticated virtual agents increases the feeling of presence by offering site visitors the opportunity to have a real and warm experience (Yadav et al., 2013; Pelet, Ettis, and Cowart, 2014; Blazevic et al., 2014; Zhao et al., 2015). Based on these observations, we propose the following two hypotheses:

H1: The presence of an anthropomorphic virtual agent positively influences the flow state of the user in the environment of the site.

H2: The presence of an anthropomorphic virtual agent positively influences the Internet user's telepresence experience in the environment of the site.

Effects of the Presence of Commercial Discussion Forums on the Psychological States of the Internet User

The presence of these forums can significantly influence the psychological state of the Internet user. In particular, the flow state and the telepresence experience have been identified as possible consequences of the presence of commercial discussion forums (Marschner et al., 2015; Jauréguibery and Proulx, 2017; Ben Saad and Choura, 2017). A number of studies have succeeded in demonstrating significant relation between the presence of commercial discussion forums on merchant websites, and the pleasure felt when browsing (Balbo, Jeannot, and Helme-Guizon, 2013; Blazevic et al., 2014). They added the idea that happiness is the reaction expressed by users when the forum is receptive to the ideas of others. Marschner et al. (2015) demonstrated the impact of this technology, suggesting that this device creates pleasure. Dolen et al. (2007) also state that discussion forums have a positive effect on pleasure. Commercial discussion forums also increase the feeling of social presence by offering internet users the opportunity to have an authentic experience (Pelet, Ettis, and Cowart, 2014; White, Novak, and Hoffman, 2014; Zhao et al., 2015; Ben Saad and Choura, 2018). In particular, Zhao et al. (2015) put forward the idea that commercial discussion forums receptive and involved in the ideas of Internet users create an impression of presence.

Based on these observations, we propose the following two hypotheses:

H3: The presence of a commercial discussion forum positively influences the flow state of the user in the environment of the site.

H4: The presence of a commercial discussion forum positively influences the Internet user's telepresence experience in the site environment.

The psychological states experienced by Internet users can also significantly determine their approach behavior.

Relation Between the Psychological States of the Internet User and the Approach Behavior

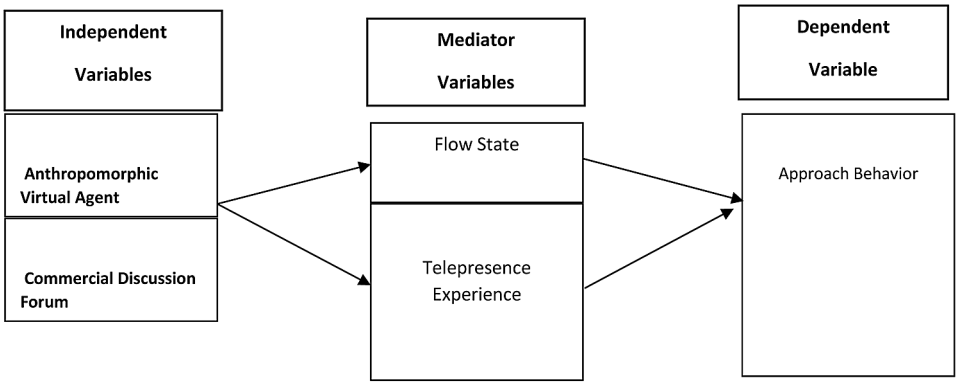
Several researchers define the flow state experienced by Internet users as a state in which they are highly involved in a given activity (Csikszentmihalyi, 1988; Pelet, Ettis, and Cowart, 2014; Marschner et al. 2015). This state is characterized by a feeling of playfulness, total concentration, control, and a perception of challenges (Csikszentmihalyi, 1988). Steuer (1992) defines telepresence as the experience of presence in a mediated environment. This concept refers to the feeling of being physically present in a virtual environment. The state of flow and the feeling of being physically present seem to affect the approach behavior of the Internet user (i.e., the intention to visit and revisit the site, positive word of mouth) (Pelet, Ettis, and Cowart, 2014). Several researchers confirm the significant and positive impact of the state of flow felt on visiting the site and recommending it to friends and other people (Yadav et

al., 2013; Allen et al., 2014). Likewise, the authors demonstrate the significant impact of the feeling of being physically present in a distant environment on the intention to buy and on the electronic word of mouth phenomenon. These different results allow us to advance the H5 hypothesis.

H5: The psychological states experienced by the user positively influence the approach behavior of the user.
H5.1: The flow state positively influences the internet user's approach behavior.
H5.2: The telepresence experience positively influences the internet user's approach behavior.

These results and the study's conceptual framework allow us to propose a conceptual research model (*Figure 1*) to be tested through an experimental quantitative study.

Figure 1. Impact of Social Interactivity on User's Approach Behavior



METHOD

Given the nature of the relations to be tested and the aim of the study, experimentation is selected as the most appropriate method to test the proposed model. A convenience sample of 660 users composition is retained to analyze data (see Table 1 for more details). Respondents were invited by email to visit the experimental site and click on the questionnaire link that appeared during the visit to answer it. All variables are measured on a 7-point Likert scale, except the variable "state of flow" measured on seven 7-point semantic differential items. A merchant website has been designed to test whether the social factors of interactivity can improve the visitor's experience. Two versions have been developed, taking into account the presence of the commercial discussion forum and the presence of a virtual anthropomorphic agent as the main stimuli since they are the two independent variables to be tested. This is a between-subject design: 2 (presence of commercial discussion: presence vs. absence) x 2 (presence of virtual anthropomorphic agent: presence vs. absence). The experimental Website gives a realistic character not only in terms of editorial content but also in terms of ergonomics and page layout (See figures 2, 3, 4, 5 for more details).

The site also mobilizes two virtual reality devices: an embodied virtual agent and a commercial discussion forum.-

Figure 2. A screenshot illustrating the key features of the embodied virtual agent

The embodied virtual agent is characterized by specific ritual behaviors such as human gestures, conversational skills, and voice. He is a lively agent who manages business or decision support discussions. Indeed, the embodied agent is able to answer all questions asked by visitors. An interactive commercial discussion forum is also designed on the experimental Website.

To test the impact of the presence of the forum and the anthropomorphic virtual agent, manipulation consists of a first version in keeping the two independent variables neutral in the experience (a site without a forum and without an agent as shown in Figures 2, 3, 4, and 5). Then in the second version, these variables were manipulated by introducing a forum and an interactive agent. The respondents were assigned to every four conditions randomly. Respondents were very involved and claimed to have experienced moments of concentration generated by colors, decors, the presence of the videos, animations, and the staging of the offer.

Figure 3. A screenshot illustrating the key features of the commercial discussion forum

Respondents are invited through their email addresses to visit the experimental site and click on the link of the questionnaire in order to answer the study questions. The average duration of the site visit was 15 minutes (See Figures 6 and 7 for more details).

In order to verify the effectiveness of our experiment and to increase the reliability of all the data collected, the experiment requires a control step. In particular, two filter questions are asked in the questionnaire of the study. First, “On the site you visited, did you find a discussion space? “; “On the site you visited, did you find a virtual assistant? “. These two questions allow us to know whether the variables of social interactivity manipulated were noticed by the respondents or not.

Figure 4. A screenshot illustrating the site without an embodied virtual agent

Figure 5. A screenshot illustrating the site without a commercial discussion forum

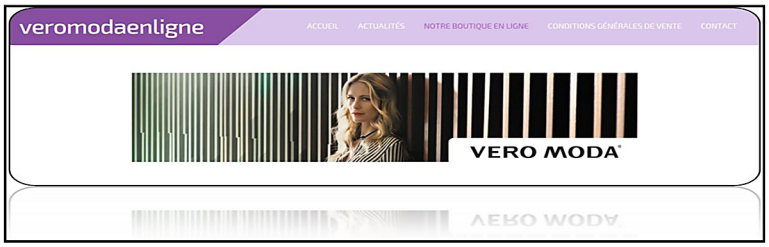


Figure 6. A screenshot illustrating the link for the questionnaire

Figure 7. A screenshot illustrating the invitation email

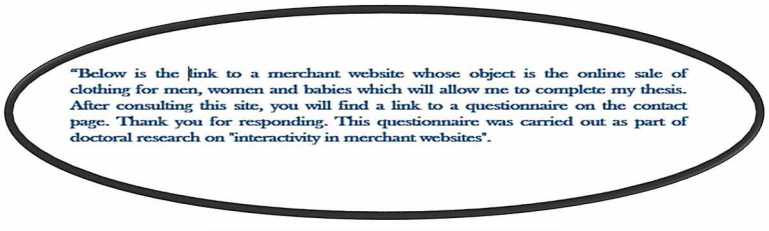


Table 1. Composition of the sample "Quantitative Study"

Variables	Modalities	Frequency	Percentage (%)
Gender	Man	239	36.1%
	woman	423	63.9%
Age	15-20	13	2%
	21-30	278	42%
	31-40	212	32%
	41-50	104	15.7%
	51-60	55	8.3%
Education	Baccalaureate	26	3.9%
	baccalaureate +3	272	41.1%
	baccalaureate +4	240	36.3%
	baccalaureate +5	124	18.7%
Occupation	Farmer	3	0.5%
	Craftsman, trader, or company manager	194	29.3%
	Executives, professors, i.e., Higher Intellectuals	91	13.7%
	Intermediate occupation	46	6.9%
	Student	328	49.54%

RESULTS

Verification of Experimental Manipulations

The manipulations were found to be satisfactory, as a comparison of overall averages confirmed the perception of the presence or absence of each experiential element manipulated. Indeed, the test shows that the absence vs. the presence of the embodied virtual agent was indeed perceived. Comparison of the means of this element confirmed the efficiency of the manipulation: M without_Embodied agent = 1.60; M with_Embodied agent = 6.61; M = 2434.347; p = 0.000.

Table 2. The averages of the scores obtained: Presence / absence of an embodied virtual agent

Manipulation	Mean	Standard Deviation	F
Without an embodied virtual agent	1.60	0.987	2434.347 P=0.000
With virtual agent	6.61	.713	
Total	5.08	2.656	

Concerning the commercial discussion forum, respondents were able to perceive its presence or its absence: M Sans_commercial discussion forum = 2.01; M With_commercial discussion forum = 5.86; M = 950.560; p = 0.000.

Table 3. The averages of the scores obtained: Presence / absence of commercial discussion forum

Manipulation	Mean	Standard Deviation	F
Without a commercial discussion forum	2.01	1.014	950.560 P=0.000
With commercial discussion forum	5.86	1.100	
Total	3.99	2.199	

Measurement of Variables: Presentation, Reliability, and Validity of Scales

To measure the different variables, scales from the literature are used on Likert and semantic differential scales. Table 4 below summarizes the variables chosen with the main values of the reliability and validity tests.

Adjustment of the Conceptual Model

To test the structural model that integrates several variables of different nature, we opted for the method of structural equation modeling. The structural model fit indices are considered very satisfactory. With respect to the absolute indices, the GFI and AGFI are greater than 0.9, the RMR is 0.041, and the RMSEA is equal to 0.086. Therefore, it is a good fit quality. As for the incremental indices, the values of NFI, TLI and CFI are greater than 0.9 (NFI = 0.917; TLI =0.923; CFI =0.930). According to all the statistical results presented above, it is possible to validate the research model.

The Relation Between Social Interactivity and the Psychological States Experienced by the User

Structural equation methods were conducted to test the impact of social factors of interactivity on the responses of the user. AMOS is the software used to test the conceptual model

Regression coefficients were used to test the metric variables. According to the results, all the r.c values exceed $\left| 1.96 \right|$, the regression links are significantly different from zero at a 5% risk of error. The standardized regression coefficient (β) indicates that the presence of commercial discussion forums has a positive impact on the flow status of the user and on his experience of telepresence. The hypotheses H1 and H2 are therefore validated. The analyzes also show that the presence of an anthropomorphic virtual agent positively influences the psychological states felt by the Internet user; which allow the validation of hypotheses H3 and H4. Thus, the psychological states experienced by the user positively affect the approach behavior of the user. Therefore, H5.1 and H5.2 are also validated (see Table 5 and Figure 8 for more details).

DISCUSSION OF THE RESULTS

This study aims to demonstrate the effectiveness of the presence of commercial discussion forums and sophisticated virtual agents with certain verbal and nonverbal characteristics.

Table 4. Measurement, reliability, and validity of the variables selected

Variables	Dimensions of Variables	The Items	Mean	Standard Deviation	Kurtosis	Skewness	Reliability of Constructs	Validity of Constructs
Commercial discussion forum (Dolen, Pratibha, Dabholkar et Ryter, 2007)	Unidimensionnel concept	The group was very involved in our conversations.	3.43	2.03	-1.501	-.163	α= *.87 /* Rhô de Jôreskog=0.96	VME=0.78
		The group was interested in talking.	3.53	2.09	-1.554	-.118		
		The group showed enthusiasm to discuss.	3.45	1.87	-1.533	-.117		
		The group seemed to find the conversation stimulating.	3.34	2.00	-1.542	-.146		
		I am different from the group.	3.23	2.06	-1.458	-.033		
		The group made me feel that we had a lot in common.						
		The group made me feel like we were similar.	4.00	2.07	-1.480	-.156		
		The group wanted to listen to me.						
		The group was not receptive to my ideas.	3.71	2.26	-1.534	-.036		
		The group was open to my ideas.						
			4.05	2.24	-1.551	-.196		
			4.33	2.13	-1.543	.260		
			3.88	2.15	-1.331	-.128		
The anthropomorphism of the virtual agent (Lemoine et Cherif, 2015)	Unidimensionnel concept	Artificial- Realistic	4.16	2.26	-1.397	-.258	α= *.865* / Rhô de Jôreskog=0.76	VME=0.75
		Mechanical-Human	4.32	3.12	-1.535	-.219		
		False-natural	4.02	2.04	-1.450	-.311		
		Unconscious Conscious	4.48	2.05	-1.456	-.281		
		Moves with rigidity -Moves with fluidity (elegance)	3.72	2.32	-1.432	-.218		
Flow state (Ghani and Deshpande, 1994)	The feeling of playfulness Concentration Feeling of control Perception of challenges	Boring / interesting	3.43	2.03	-1.544	-.235	α= *.774* / Rhô de Jôreskog=0.82 α= *.754* / Rhô de Jôreskog=0.78 α= *.892* / Rhô de Jôreskog=0.89 α= *.886* / Rhô de Jôreskog=0.89	VME=0.88 VME=0.65 VME=0.95 VME=0.74
		Unpleasant / pleasant	3.53	2.09	-1.437	-.269		
		Ordinary / exciting	3.45	1.87	-1.522	-.267		
		Unpleasant / pleasant	3.34	2.00	-1.520	-.300		
		I was not deeply busy / I was deeply busy	3.23	2.06	-1.557	-.279		
		I was not intensely absorbed / I was intensely absorbed						
		My attention was not focused on the activity / My attention was focused on the activity	4.00	2.07	-1.539	-.272		
		I was not fully focused / I was fully focused						
		I was confused about what to do / I clearly knew what to do.	3.71	2.26	-1.501	-.267		
		I was restless / I was calm						
		I didn't feel in control / I felt in control.	3.81	2.09	-1.484	-.256		
		Very difficult / Very easy						
		Very complex / Very simple	3.94	2.12	-1.424	-.269		
			4.16	2.15	-1.440	-.290		
			4.32	2.26	-1.507	-.238		
			4.02	2.04	-1.235	-.273		
			4.48	2.05	-1.504	-.158		
Telepresence experience (Klein, 2003)	Unidimensionnel concept	When consulting this site which contains a virtual agent, I forgot everything that exists around me	4.66	2.19	-1.496	-.254	α= *.995* / Rhô de Jôreskog=0.82	VME=0.65
		When visiting this site, I forgot where I was	4.44	2.31	-1.561	-.232		
		After visiting this site, I feel like I am returning to the "real world" after a trip	3.76	2.40	-1.520	-.217		
		Visiting this site created a new world for me which disappeared when I stopped browsing	4.24	2.23	-1.523	-.185		
		When I use the web, I know that I am in a world created by the site visited.						
		When visiting this site, my body was in the room, but my mind was in the world created by this money.	4.57	2.33	-1.488	-.196		
		During the consultation of this site, the world generated by it was more real (more accurate) than the "real world (concrete)."	4.65	2.34	-1.525	-.193		
			4.73	2.35	-1.507	-.201		

continued on following page

Table 4. Continued

Variables	Dimensions of Variables	The Items	Mean	Standard Deviation	Kurtosis	Skewness	Reliability of Constructs	Validity of Constructs
Approach behavior Sweeney, Jilian, Wyber et Fiona (2002)	Unidimensionnel concept	This is the kind of place where I could spend more money	3.94	2.12	-1.339	-.368	α= *.778* / Rhô de Jôreskog=0.72	VME=0.63
		The likelihood of shopping on this site is high	3.99	2.15	-1.388	-.325		
		I would be ready to buy clothes from this site	4.16	2.26	-1.472	-.352		
		I would like to enjoy shopping from this site						
		I would be ready to recommend this site	4.32	3.12	-1.471	-.354		
		I want to explore this site						
		I like the environment of this site	3.43	2.03	-1.468	-.336		
		This is the type of place where I could easily talk to other visitors	3.53	2.09	-1.486	-.337		
			3.45	1.87	-1.509	-.337		
			3.34	2.00	-1.493	-.342		

The issue of the social dimension of interactivity was at the origin of the investigations carried out in this study. As such, social interactivity represents a key element of competitive differentiation in an actual global economy and virtual landscape that is becoming more and more essential in the daily life of consumers contributing highly to changing their habits.

The results of this research underline the power of the social dimension of interactivity in mediated market environments and show that a socially interactive site can provoke a state of flow, as well as a feeling of being physically present in a remote environment. Indeed, interactive merchant virtual environments have a positive effect on the flow state and telepresence that positively influence the approach behavior of the Internet user, also corroborating the work of Lemoine and Cherif (2015) and Blazevics et al. (2014), who argue that affective responses significantly influence Internet user behavior. Furthermore, other studies also add that the social environment can produce a feeling of pleasure and presence in a commercial website (Fiore et al., 2000; Dolen et al., 2007; White, Novak and Hoffman, 2014; Jauréguiberry and Proulx, 2017). Thus, the surfer is indeed looking for advice, which is now possible on commercial sites thanks to the use of sophisticated virtual agents and commercial discussion forums.

THEORETICAL IMPLICATIONS

Social interactivity is a social dimension of a merchant website atmosphere that advertisers seldom use to improve liveliness in a business site. In addition, a lack of consensus has been observed in the research that has studied the impact of this variable on Internet user behavior. While some authors confirm its positive impact (Jamy, 2015; White, Novak, and Hoffman, 2014; Jauréguiberry and Proulx, 2017), others demonstrate the opposite (Jeandrain and Diesbach, 2008). These discrepancies can be attributed to methodological differences in operationalizing the social dimension of interactivity. In fact, the social dimension has so far been little studied. It is treated from a dichotomous perspective in terms of the presence versus absence of a virtual agent. Little research has also highlighted the impact of different types of virtual agents and addressed the characteristics of commercial discussion forums. Therefore, the interest focused on the usefulness of working on all of these two social dimensions of interactivity.

While the usefulness of having the virtual agent on a merchant website has often been emphasized, no research was done on the importance of the usefulness of the embodied agent. Also, what makes

Table 5. Significance of the structural effects between the endogenous latent variables and the endogenous variables

Hypotheses	Structure Links	Beta	S.E	R.C	P	Validation
H1	Commercial discussion forum - Flow state	0.732	0.030	20.343	***	Yes
H2	Commercial discussion Forum- Telepresence experience	0.775	0.042	22.996	***	Yes
H3	Anthropomorphic virtual agent - Flow state	0.842	0.052	20.801	***	Yes
H4	Anthropomorphic virtual agent - Telepresence experience	0.691	0.025	19.143	***	Yes
H5.1	flow state - approach behavior	0.772	0.062	12.221	***	Yes
H5.2	Telepresence Experience - Approach Behavior	0.698	0.042	23.635	***	Yes

Note: Beta = standardized regression weight; SE = standard error; *** $p < 0.05$; R.C: Regression coefficients

commercial discussion forums more effective on commercial sites? The presence of discrepancies in the results on the effectiveness of the social dimension of interactivity on commercial sites was at the origin of all of these questions posed and which represented the starting point of this research.

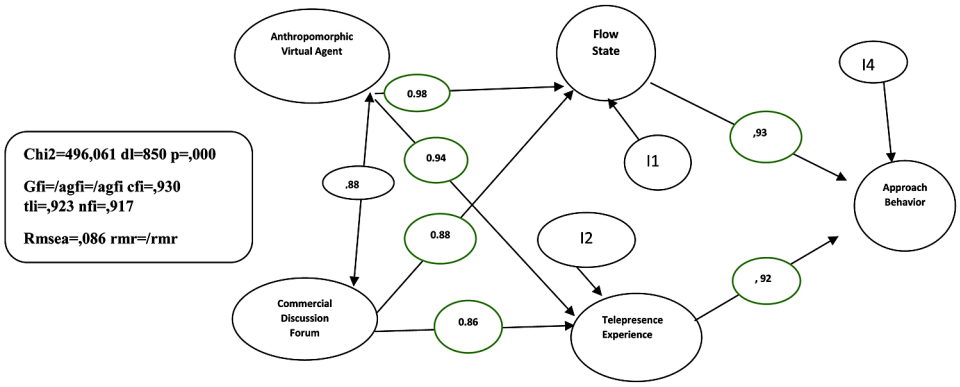
The main contribution of this research is to propose a conceptualization of the significant influence of the interaction of the Internet user with the virtual merchant environment and the other visitors of the site. This interaction is through anthropomorphic virtual agents and commercial discussion forums. The results obtained are consistent with current works suggesting that Internet users are investigating social interaction, in addition to their instrumental goals. Indeed, information and communication technologies not only influence the psychological states experienced by the Internet user (Jamy, 2015) but also affect their approach behavior. Thus, the significant direct impact of the social dimension of interactivity on the psychological states felt by the Internet user and his approach behavior gives many reasons to focus on the anthropomorphic characteristics of the virtual agent and the discussion forum when planning to use these two new interactive formats. Thus, the state of flow and telepresence experience are key variables in the context of electronic commerce.

Many studies have shown that the presence of a simple virtual agent with only conversational skills generates satisfaction, confidence, attitude, and the intention to buy in a distant environment (Lemoine and Notebaert, 2011; Lemoine and Cherif, 2015). Moreover, all of these works have looked at these variables as dependent components of the presence of specific information and communication technologies. On the other hand, recent studies have not focused on understanding the factors able to provoke a state of flow and a feeling of telepresence. Therefore, our conclusions provide information on the generator devices of favorable psychological states not only in relation to these technologies but also in relation to the site in general.

MANAGERIAL IMPLICATIONS

The managerial contributions of this study concern the recommendations for the use of specific information and communication technologies to improve the experience of Internet users visiting merchant environments. Therefore, it is important for a company operating online to use sophisticated agents focusing on their anthropomorphic characteristics, such as conversational skills, voice, and human gestures.

Figure 8. The standardized structure model



It is recommended that companies implement commercial discussion forums in their virtual merchant environments to answer various questions and encourage discussions and sharing experiences between consumers. Governments' decisions to close most physical stores require a reorientation of companies to virtual shops (Stevens, Maclaran, and Brown, 2019; Jaisie and Cosmin, 2020). This may be a solution for many companies to maintain their commercial activity in this difficult context. In fact, the more the forum is involved in the interaction, the more this device enriches the Internet user's visit. Furthermore, the more the forum members listen to the users' ideas, the more this technology improves the commercial site performance. In addition, thanks to these technologies, which can represent differentiating factors, it is now possible to offer content enriched with a high sensory level for Internet users. As a result, to provide Internet users a pleasant experience, site designers should equip their virtual environments with virtual reality devices that make them richer and warmer.

RESEARCH LIMITATIONS AND FUTURE RESEARCH AVENUES

The various contributions of this research do not exclude the presence of some limits that would allow us to propose new perspectives of investigation. Advances in technology are paving the way for greater differentiation of agents in artificial intelligence or humanization. In order to understand the effects that they could have on the psychological states of Internet users, it would be relevant to diversify the technologies related to anthropomorphism such as recommendation agents, research agents, instant messaging techniques, and so on.

In addition, the attractiveness of the site is also an interesting avenue of research, insofar as it depends on the offer it offers. As a result, the study could explore the determinants relating to the attractiveness of the site and which could have positive effects on the flow state, the telepresence experience, and the approach behavior of the Internet user. Second, virtual reality devices are not yet adopted by merchant websites. Therefore, it seems necessary to identify the conditions under which such an information and communication technology would be the most efficient (Holzwarth et al., 2006; Viot and Bressolles, 2014).

Finally, age can influence the purchasing process of Internet users (Graa, 2017; Pelet and Yangui, 2017). In this sense, a study by Business Insider (2017) shows that the capacity to process information

decreases with age from a biological point of view. Thus, many older consumers tend to abandon their shopping process prematurely because of the complexity of access to commercial websites.

In order to facilitate their online purchasing process and enrich their shopping experience on virtual platforms, these Internet users could rely on sophisticated information technologies, such as the embodied virtual agent. Finally, in the context of future research, it would be relevant to combine the interactions between ambiance and design factors with social factors. This investigation would allow us to better understand and measure the possible impact of this interaction on the psychological states of Internet users and their purchasing behavior.

CONCLUSION

With the advent and significant development of information and communication technologies in recent years, electronic commerce is now considered a fundamental way of shopping and has an increasing place in the life of the Internet user.

Social interactivity remains relevant as the main component of the atmosphere of merchant websites (Jamy, 2015; Stevens, Maclaran, and Brown, 2019; Jaisie and Cosmin, 2020). Several authors note that the technical dimension that refers to the elements of the virtual purchasing environment is capable of stimulating the senses of the Internet user, but it does not produce the fiction that the individual is in interaction with another person and not with a machine. Its effect is therefore much less than social interactivity, strangely forgotten by studies of merchant websites. Based on these findings, technical interactivity is an important but not sufficient condition to encourage Internet users to buy online (Marschner et al., 2015; Jauréguibery and Proulx, 2017; Ben Saad and Choura, 2017). The pleasure of interacting with someone in the company is necessary for an online customer. As a result, the social link on the Internet makes it possible to obtain a more efficient online sales site.

Social interactivity is highly prized by advertisers to enhance the liveliness of a virtual merchant environment. The problem of this research was mainly focused on understanding the effectiveness of the social dimension of interactivity, more specifically, the value of a social link. The objective was to study the importance of the impact of information and communication technologies mobilized by commercial sites as atmospheric variables on the psychological states experienced by the user and his approach behavior. The results were released to confirm the significant impact of these devices on the user's state of flow, his telepresence experience, and consequently on his approach behavior.

To improve the Internet presence experience on a merchant website, creating an interactive and attractive environment seems to be a primary condition and places interactivity at the center of the concerns of researchers and professionals of digital marketing. To ensure that visitors of a website live a pleasant interactive, and attractive experience leading to making purchases, which is a significant objective for companies carrying on their online activities, the interaction between different social dimensions of interactivity can now answer this need of the user.

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KEY TERMS AND DEFINITIONS

Anthropomorphic Virtual Agent: Virtual agents are considered people who can be used as representatives of a company on its shopping site. Virtual agents also ensure different types of missions. A virtual agent may be designed in a way anthropomorphic, which gives it characteristics that humanize it. For this type of agent, embodied, non-verbal ability (human gestures) and verbal abilities (voice and conversational skills) reflect ritual behavior.

Commercial Discussion Forums: These forums are defined as meetings scheduled online in which users can actively participate in the form of a written discussion about a commercial topic, such as purchasing an article.

Flow State: The concept of flow has been introduced by Csikszentmihalyi (1988) and has been particularly studied in the context of Internet browsing. The flow is a state lived by Internet users very involved in a given activity. Therefore, the flow state is considered to be a psychological concept.

Interactivity: Interactivity is an empirical phenomenon that occurs when the user acts on the website. It refers to the ease for the internet user and the company operating online to communicate directly with each other. It is the relation that is created between the user and the merchant environment. The proximity between the two partners enhances the shopping experience by creating a human interpersonal relationship.

Social Interactivity: Interactivity is social when it refers to social factors, often denoting the notion of interpersonal human interaction. Social interactivity is strong when it allows the Internet user to com-

municate in real-time with the company's representative or with other Internet users. It is also strong when the merchant environment is able to respond to users' questions in a precise and instantaneous manner.

Telepresence Experience: It is the feeling of being physically present in a virtual environment. Thanks to telepresence, visiting a commercial site is perceived as true and real.

ENDNOTES

[1] Available via: https://fr.statista.com
[2] Available via: https://forbes.com

Section 6

Social Media for the Platform Economy and E-Commerce

Chapter 15
A Look at the New Online Consumer Behavior on Social Media Platforms

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ABSTRACT

Technological advances have caused great business changes. In this new business environment, the internet has become an indispensable technology tool in the creation of new business models, based on the exchange relations between customers/suppliers/distributors/partners, with a significant increase in online purchasing transactions. This virtual environment has provided the development of e-commerce and efficiency gains and influences changes in consumer habits, thus changing consumer behavior. The online purchase presents an important change in consumer behavior; thus, the understanding of online consumer behavior is essential to understand the impact of this behavior on business. This chapter follows a systematic analysis of the literature with a qualitative approach to online consumer behavior in the last 5 years (2015-2020) in order to verify research topics and development patterns. The aim is to identify trends in online consumer behavior and recognize research gaps by providing avenues for further research into online consumer behavior.

INTRODUCTION

The continuous changes in technology, communication, marketing, and information have altered consumers' purchase of specific products and services. The internet has become an indispensable source of information used to increase awareness of different brands and their products and services. In addition, the availability of personal devices, such as laptops, smartphones, smartwatches, and tablets that are permanently connected to the internet has changed consumer behaviors. Dumitrescu et al. (2015) define consumer behavior as the process that leads to the satisfaction of consumer needs by enabling people to choose, buy, use, and dispose of products and services. It involves a dynamic interaction of effect and

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environment, cognition, and behavior in which people exchange various aspects of their lives. The rapid growth of the internet is depicted by the increase in online navigation from 1 million to 3 billion within 20 years and the development of online shopping that reached $370 billion in 2017 in the United States alone (Richard and Chebat, 2016). However, online consumer habits are dependent on various factors, including shopping experiences, trust, attitudes, website quality, brand reputation, and cognitive assessments (Kim and Ammeter, 2018). Understanding these factors can help organizations evaluate consumers' actual online behaviors compared with behavioral intention to maximize the potential of e-commerce.

Exposure to technology, consumer empowerment, and active participation in decision-making are among the factors influencing online consumer behaviors. Unlike past generations, current generations are exposed to various information sources such as social media platforms that allow user-generated content that reflects individual opinions, expectations, and preferences. Therefore, consumers' status has changed continuously from passive recipients of products and services to active contributors to the production process (Richard and Chebat, 2016). Unlike traditional marketing, where consumer behavior depended on the physical environment, modern purchasing decisions depend on consumers' devices to interact and online presentation and sale of products and services. For instance, all the net generation/millennials are estimated to begin using computers between the age of 16 and 18, making e-commerce a comfortable and normal buying channel (Kim and Ammeter, 2018). Millennials can potentially control current business practices and shape the corporate world due to their high numbers, knowledge, and skills to use the internet and digital devices. Martinez-Ruiz and Moser (2019) explain that this condition can be described using psychological and social networking theories, where consumer behavior is influenced by relationships developed with firms over the internet. This condition changes the relationship from physical to virtual environments, where an assessment of beliefs, attitudes, and feelings define online experiences. New business models adopted by business organizations focus on satisfying consumer needs by evaluating consumer behaviors demonstrated in physical and virtual spheres. This research explores the emerging consumer behavior trends and their implications on businesses to develop knowledge in this field and identify research gaps that can help optimize the new opportunities—exploring consumer behavior in the context of social media and purchasing decisions affected by social media.

The article is structured as follows: first, the methodological approach, where the process of systematic literature review, the screening methodology, is presented. Then, in the publication distribution section, the publications used in the systematic literature review are analyzed. Next, in the following sections, the theoretical perspective is presented analyzing the consumer characteristics of online consumer behavior, the influence of social media, the use of interactive media to influence online consumer behavior, analysis of perceived risks and their impact on online consumer behavior, interpersonal influence, trust and privacy and security concerns associated with online consumption, and finally the conclusions are presented.

METHODOLOGICAL APPROACH

A systematic review of the literature was conducted to collect relevant data on online consumer behaviors. Review of literature provides a theoretical background for subsequent research, answers practical research questions by evaluating existing information, and develops knowledge on the topic of interest. This paper utilizes a stand-alone literature review to summarize and access current knowledge on online consumer behavior as an original and valuable work of research (Rosário, 2021, Rosário et al., 2021; Rosário and Cuz, 2019; Sacavém et al., 2019). Okoli (2015) defines a stand-alone literature review as a systematic

methodological approach that explicitly explains the procedures used and comprehensively utilizes numerous materials to make it reproducible by other scholars in the academic community. Therefore, this systematic analysis aims to create a solid starting point for other researchers and business professionals interested in understanding consumer behaviors.

In this study, the literature review process involved the eight steps recommended by Rosário, (2021), Rosário et al., (2021); Rosário and Cuz, (2019); Sacavém, et al., (2019), summarized in Table 1.

Table 1. Process of systematic literature review

Phase	Step	Description
Phase One	Step 1	Formulate the problem
	Step 2	Develop and validate the review process
Phase Two	Step 3	Search for relevant literature
	Step 4	Search for inclusion
	Step 5	Quality evaluation
	Step 6	Data extraction
	Step 7	Data analysis and synthesize
Phase Three	Step 8	Report Findings

Source: own elaboration

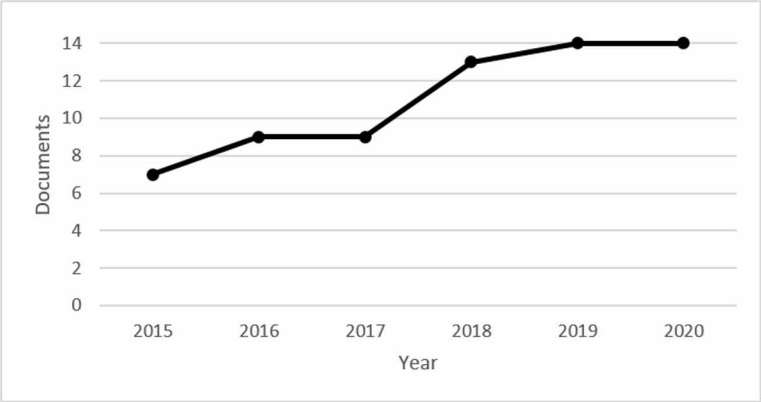
The scientific articles database was SCOPUS, one of the most important peer-reviewed journal databases in the academic world. However, we consider that the study has the limitation of considering only the SCOPUS database, excluding the other academic bases. The keywords used include 'consumer behavior' and 'online consumer behavior.' The literature search includes peer-reviewed scientific articles published until January 2021. Sources identified were limited to 2015-2020 publication years to ensure the data analyzed and synthesized is current and depicts current trends, while the subject area specified for the search was business. Sixty-six relevant documents were selected from an initial total of 20,782 studies (Table 2).

Table 2. Screening methodology

Database Scopus	Screening	Publications
Meta-search	keyword: consumer behavior	20,782
Inclusion Criteria	keyword: consumer behavior and online consumer behavior Exact keyword: online consumer behavior Subject area: Business, Management, and Accounting	99
Screening	consumer behavior and online consumer behavior Exact keyword: online consumer behavior Subject area: Business, Management, and Accounting Published between 2015-2020	66

Source: own elaboration

Figure 1. Documents by year
Source: own elaboration



The process generated 66 scientific articles that are later analyzed in a narrative way to deepen the content and the possible derivation of shared themes that directly answer the article's research question (Rosário, 2021, Rosário et al., 2021; Rosário and Cuz, 2019; Sacavém et al., 2019). Of the 66 selected scientific articles, 64 are articles, and 2 are review articles.

PUBLICATION DISTRIBUTION

Peer-reviewed articles on the topic will be screened in the 2015-2020 period. 2019; 2020 was the year with the highest number of peer-reviewed papers on the subject, reaching 14.

Figure 1 summarizes the published peer-reviewed literature for the 2015-2020 period.

The publications were sorted out as follows:

- *Journal of Research in Interactive Marketing* (23);
- *Journal of Consumer Psychology* (5);
- *European Journal of Marketing* (3);
- *International Journal of E-Business Research* (3);
- *International Journal of Retail and Distribution Management* (3);
- *Journal of Business Research* (2);

Journals with 1 publication include: *Asia Pacific Management Review; Australasian Marketing Journal; Electronic Commerce Research And Applications; Engineering Economics; Espacios; European Research on Management And Business Economics; International Journal of Bank Marketing; International Journal of Business Information Systems; International Journal of Economics and Business Research; International Journal of Electronic Marketing And Retailing; International Journal of Industrial Engineering And Management; International Journal of Information And Decision Sciences; International Journal of Technology Marketing; Journal of Cleaner Production; Journal of Consumer Marketing; Journal of Global Information Management; Journal of Indian Business Research; Journal of Management And Business Administration Central Europe; Journal of Retailing And Consumer Services;*

Journal of the Academy of Marketing Science; Journal of Travel Research; Psychology & Marketing; RAE Revista de Administraçao de Empresas; Research Journal of Textile and Apparel; Spanish Journal of Marketing Esic; Tourism Analysis; Transformations in Business and Economics.

We can say that the research area gained traction in publications.

Table 3 analyzes the Scimago Journal & Country Rank (SJR), the best quartile, and the H index by publication. The Journal Of The Academy Of Marketing Science is the most quoted publication with 5,310 (SJR), Q1 and H index 159. There are 12 journals on Q1, 12 journals on Q2, 7 journals on Q3, and 2 journals on Q4. Journals from best quartile Q1 represent 36% of the 33 journals titles; best quartile Q2 represents 36%, best quartile Q3 represents 21%, and finally, best Q4 represents 6% each of the titles of 33 journals. As evident from Table 3, most articles on online consumer behavior and social media influence rank on the Q1 best quartile index.

The subject areas covered by the 66 scientific articles were: Business, Management and Accounting (66); Computer Science (7); Psychology (7); Economics, Econometrics, and Finance (6); Decision Sciences (5); Engineering (4); Social Sciences (3); Energy (1); Environmental Science (1); Materials Science (1).

The most quoted article was "Omni-channel marketing, integrated marketing communications ..." from Manser Payne et al. (2017) with 59 quotes published in the Journal of Research in Interactive Marketing 0,760 (SJR), the best quartile (Q2) and with H index (31). The published article focuses on studying the integrated marketing communications (IMC) framework to understand how disparate customer touchpoints impact consumer engagement and profitability in an omnichannel environment.

In Figure 2, we can analyze the evolution of citations of articles published between 2015 and 2021. The number of quotes shows positive net growth with an R2 of 41% for 2015-2021, with 2020 reaching 260 citations.

The h-index was used to ascertain the productivity and impact of the published work, based on the largest number of articles included with at least the same number of citations. Of the documents considered for the h-index, 14 have been cited at least 14 times.

In Appendix 1, the citations of all scientific articles from the 2015 to 2021 period are analyzed; 12 documents were not cited until January 2021, until ≤2015, 0; 2016, 13; 2017, 38; 2018, 67; 2019, 160; 2020, 260 and 2021, 54, with a total of 592 citations.

Appendix 2 examines the self-citation of the document during the period ≤2015 to 2020, 66 documents were self-cited 44 times, the article Consumer motives for peer-to-peer sharing by Hawlitschek et al. (2018), published in the Journal of Cleaner Production

How convenient is it? Delivering online shopping convenience to enhance customer satisfaction and encourage e-WOM by Duarte et al. (2018) published in the Journal of Retailing and Consumer Services and Analysis of consideration of security parameters by vendors on trust and customer satisfaction in E-commerce By Hamidi and Moradi (2017) published in the Journal of Global Information Management were cited eight times each.

In Figure 3, a bibliometric study was carried out to investigate and identify indicators on the dynamics and evolution of scientific information using the main keywords. The study of bibliometric results using the scientific software VOSviewe aims to identify the main research keywords in studies of online consumer behavior and the influence of social media.

The research was based upon the studied articles on online consumer behavior and the influence of social media. The linked keywords can be examined in Figure 4, making it possible to clarify the network of keywords that appear together / linked in each scientific article, allowing us to know the topics studied

Table 3. Scimago journal & country rank impact factor.

Title	SJR	Best Quartile	H Index
Journal of The Academy of Marketing Science	5,310	Q1	159
Journal of Consumer Psychology	3,730	Q1	99
Journal of Travel Research	3,010	Q1	122
Journal of Cleaner Production	1,890	Q1	173
Journal of Business Research	1,870	Q1	179
Psychology And Marketing	1,350	Q1	107
Journal of Retailing And Consumer Services	1,340	Q1	75
Electronic Commerce Research and Applications	1,240	Q1	69
European Journal of Marketing	1,030	Q1	91
Journal of Consumer Marketing	0,750	Q1	91
International Journal of Retail and Distribution Management	0,730	Q1	73
European Research on Management and Business Economics	0,640	Q1	14
International Journal of Bank Marketing	0,770	Q2	77
Journal of Research in Interactive Marketing	0,760	Q2	31
Spanish Journal of Marketing Esic	0,510	Q2	7
Asia Pacific Management Review	0,490	Q2	15
Australasian Marketing Journal	0,480	Q2	32
Tourism Analysis	0,470	Q2	33
International Journal of Business Information Systems	0,400	Q2	24
Journal of Global Information Management	0,340	Q2	39
International Journal of Industrial Engineering and Management	0,330	Q2	12
Journal of Indian Business Research	0,300	Q2	16
Transformations in Business and Economics	0,300	Q2	18
Engineering Economics	0,290	Q2	31
International Journal of Technology Marketing	0,330	Q3	4
International Journal of Information and Decision Sciences	0,250	Q3	13
Espacios	0,220	Q3	16
RAE Revista de Administracao de Empresas	0,220	Q3	13
Research Journal of Textile and Apparel	0,220	Q3	15
Journal of Management and Business Administration Central Europe	0,210	Q3	4
International Journal of Electronic Marketing and Retailing	0,180	Q3	10
International Journal of Economics and Business Research	0,130	Q4	5
International Journal of E Business Research	0,110	Q4	5

Source: own elaboration

by the research and identify future research trends. In Figure 5, it is presented a profusion of co-citation with a unit of analysis of cited references.

Figure 2. Evolution of citations between 2015 and 2021
Source: own elaboration

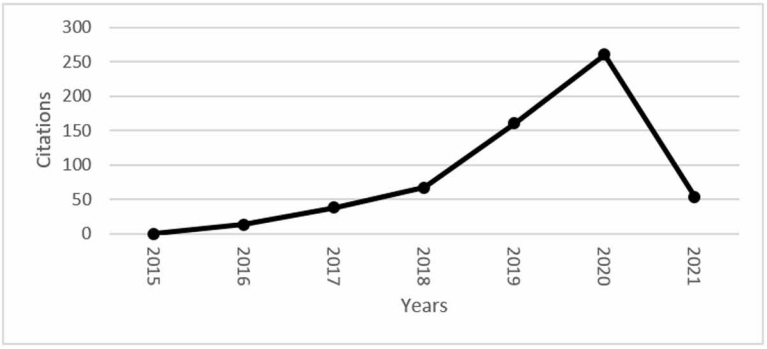
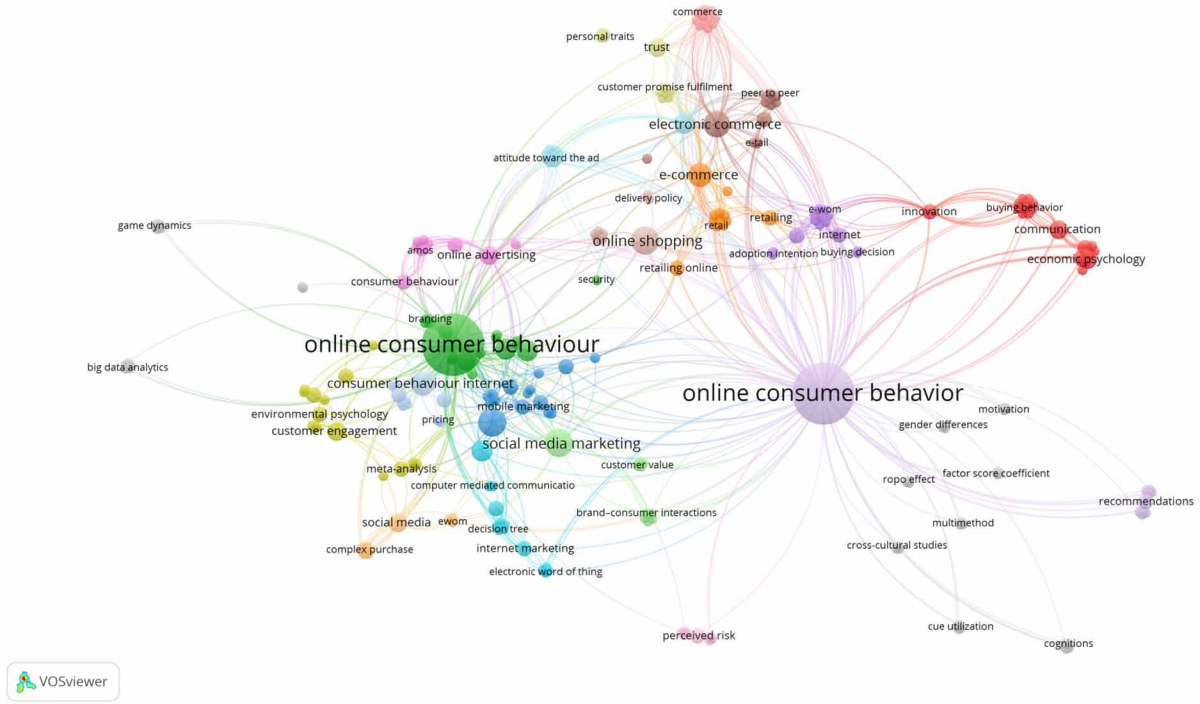


Figure 3. Network of all keywords



THEORETICAL PERSPECTIVES

Web technologies and the internet provide tools for improved communication and services to online clients, creating a channel for gaining consumers' loyalty. The current business environment requires organizations to direct their resources to build web technologies that help them understand potential and existing customers and gain their trust (Ferreira and Antunes, 2015). The relationship between a firm and its consumers, changes purchasing habits, thus, influencing online consumer behaviors. Consumer

Figure 4. Network of linked keywords

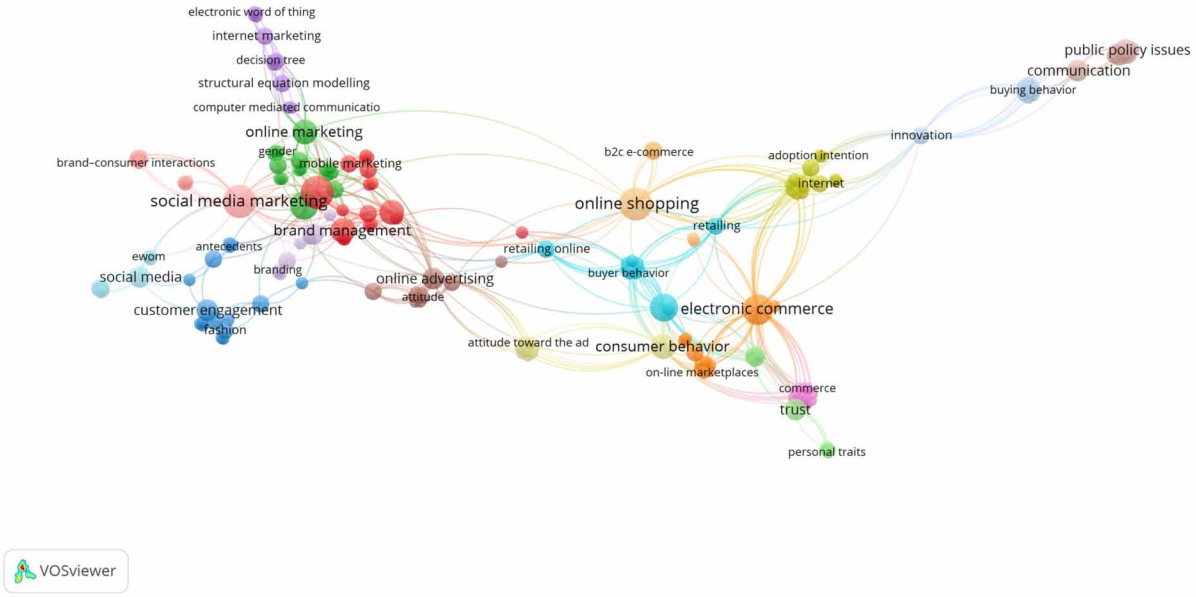
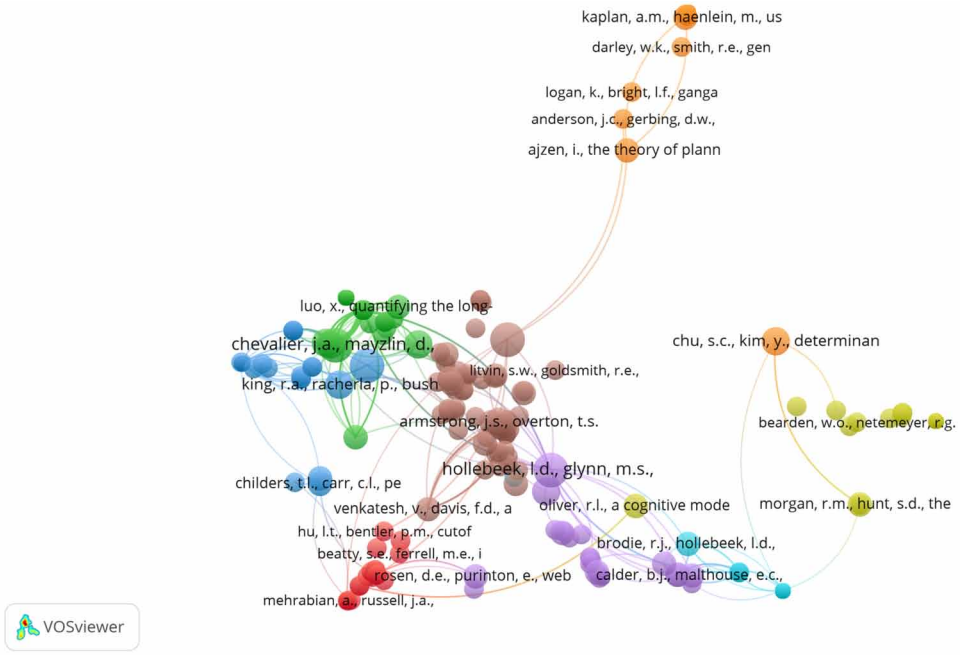


Figure 5. Network of co-citation



behavior refers to activities linked to buying, usage, and disposal of products and services and how attitudes, emotions, and preferences affect the purchasing decision. Factors such as flexibility, conve-

nience, agility, and ease of making transactions regardless of time and distance make online businesses ideal means of purchase (Bermúdez et al., 2019). Besides, e-commerce enhances the speed and ease of contacting outlets through the use of internet-based communication platforms. The perceived control in purchasing decisions supported by the availability of alternative products and services and influence on the production process influence purchasing habits and intentions.

CONSUMER CHARACTERISTICS AS DRIVERS OF ONLINE CONSUMER BEHAVIOR

Decisions to use online shops instead of physical outlets depend on multiple individual characteristics that vary from one person to another. Consumer characteristics refer to personal attributes related to an individual's lifestyle, interests, values, personality, and attitudes that influence behavior (Todd and Melancon, 2018). They determine how the consumer thinks and influence purchasing decisions. Gender, education, and income levels are major consumer characteristics associated with online purchasing behaviors. These sociodemographic characteristics lead to the categorization of online customers as either occasional, frequent, or non-purchasers (Bermúdez et al., 2019). Good education and considerable income influence positive attitudes towards the use of the internet. An educated virtual customer understands the process of purchasing online and invests in personal devices, such as computers and smartphones, to enhance connectivity and convenience (Albastroiu et al., 2018). Online knowledge processing strategies applied by men and women influence gender differences in online services (Walcher et al., 2016). As a result, men are more likely to buy online than women since the former uses a heuristic technique to process selective information. In contrast, the latter uses comprehensive information processing strategies (Gallant and Arcand, 2017). Men make decisions independently while women rely on interdependence with close individuals, influencing their shopping experiences and behaviors. Therefore, men use online shopping information more than women, who sometimes need to consult family members or friends regarding a product, service, or brand (Bhatnagar and Kumra, 2020). These characteristics further influence the speed of making an online purchase since it affects the factors compared and rate of online navigation.

Age is another consumer profile characteristic that influences online consumer behaviors and purchasing decisions and intent. The virtual customer is young due to the high use of internet technologies among young generations. For example, Bermúdez et al. (2019) report that 40% of Ecuador's online buyers are young people aged between 26 and 33 years. Young people's great willingness to buy online results from advanced information searching and browsing skills enhance their experiences and satisfaction. Since they read information online, their algorithms often recommend products and services based on their online activities (Bhatnagar and Kumra, 2020). Babin and Hulland (2019) explain that algorithms drive the vast majority of people's online access, including search results, product recommendations, and social media connection suggestions. These algorithms are established from the enormous data available on the internet, such as brand and product options. Therefore, young generations' reliance on the internet as a leading source of information influences the nature of products and services recommended and presented, consequently shaping their online behaviors.

Trust in the internet influences consumers' interests and attitudes towards online retailing and purchasing. Trust significantly influences the online business's success since consumer behaviors are dependent on the perceived reliability, capacity, and truthfulness of the selling company. In virtual business environments, verifying everything before finalizing transactions is impossible, making trust a necessary

element of the consumer-company relationship (Ek Styvén et al., 2017). Trust enables customers to lower perceived risks and behavioral uncertainty and increases potential customers' propensity to make online purchases. Gallant and Arcand (2017) explain that perceived trustworthiness increases with greater familiarity with understanding the advantages provided by online channels. Therefore, companies should provide adequate information to aid consumer judgment and decrease their perceived risks. Besides, building trust can boost consumer brand advocacy, which Bhati and Verma (2020) define as customers' engagement and spread of word of mouth (WOM) offline and online. The customers become 'brand advocates' by branding the brand to other potential customers. Duarte, Costa et al. (2018) relate this situation with evaluation convenience, where customers engage other customers in online discussions about the desired products and services and compare prices. These strategies enable customers to know the product and compare it with alternatives based on other customers' experiences. Thus, trusting an organization's online platforms can lead to positive online consumer behaviors and enhance purchasing intentions.

THE INFLUENCE OF SOCIAL MEDIA ON ONLINE CONSUMER BEHAVIOR

Social media platforms such as Facebook, Instagram, Pinterest, and LinkedIn encourage consumer engagement, making them effective marketing communication channels. Natarajan et al. (2015) define social media as a group of internet-based applications that allows users to create and share user-generated content and are built from the technological foundations and ideologies of Web 2.0. The rapid growth of these social networking sites (SNSs) and popularity among global populations has led to increased investments as firms strive to convert engagement into meaningful returns. For instance, digital marketing in the United States grew from $108 billion to 150 billion between 2018 and 2020 (de Oliveira Santini et al., 2020). The scholars further report that 49% of the global population uses social media, representing approximately 3.8 billion potentially engaged customers. Demangeot and Broderick (2016) define consumer engagement as a description of customers' active interaction experiences with a market entity, such as a brand, online community, website, or company. Constant connection with the consumers helps build and strengthen a company-customers relationship, enhance loyalty and willingness to buy (Qin, 2020). In addition, a healthy relationship influences consumers' trust in the firm and its associated products and services, potentially influencing consumer behaviors.

Social media has enhanced consumers' access to information on the multitude of products and services available in global markets. Existing and potential customers and companies connect and discuss easily and quickly compared to traditional models of operations and communication where they had to visit physical outlets (Wolkenfelt and Situmeang, 2020). As a result, SNS platforms have increasingly influenced consumer opinions and made them a critical component of the business process, consequently influencing both online and offline spheres (Voramontri and Klieb, 2019). While consumers use social media to seek and obtain information, companies optimize this opportunity by increasing online advertisements that broaden consumers' choices. These activities increase exposure and awareness, which are essential in the decision-making processes that shape consumer habits. Global internet users spend approximately 110 billion minutes on social media and blogging sites, translating to 22% of all time online (Sam and Chatwin, 2015). Therefore, using these platforms creates an interactive-based marketing relationship that allows customers to engage with marketing communications directly and potentially share them with their friends and followers (Manser Payne et al., 2017). The process of sharing information online

increases consumers' knowledge regarding a brand and its products and services, thus, influencing their online behaviors (Couture et al., 2015). Unlike in traditional marketing spheres, the virtual environment has empowered consumers since marketers have no control over their content or frequency and timing of their online discussions (Natarajan et al., 2015). Marketers are thus required to follow these consumer discussions and create marketing content that addresses their concerns and advancing their knowledge. Therefore, the emergence of the internet has significantly increased consumers' understanding of various brands based on online advertisements and accessible data.

The popularity of social media platforms has led to the emergence of social media influencers who significantly influence online consumer behaviors. A social media influencer is an internet user who has established credibility within a particular sector and has access to a large audience that would act on their recommendations. Digital influencers develop interactions with their followers that create better opportunities for interactions, co-creation of values, and improving brand image and perception (Corrêa et al., 2020). These online celebrities help organizations deal with the challenge of converting online engagement into a successful marketing strategy. De Oliveira Santini et al. (2020) explain that although 40% of consumers follow their favorite brands on SNSs and companies have invested about $84 billion to optimize social media marketing, only approximately 25% purchase from them. These statistics show a gap in methods of maximizing SNS engagement to increase positive net revenues and improve organizational performance. Social media influencers can reduce this gap by using their connection with fans to recommends brands and boost sales. Giovanis et al. (2019) found that consumers' usage of modern technologies depends on their attitudes towards ease of use and perceived risks. Influencer marketing can provide potential consumers with reassurance regarding the benefits and quality of products and services provided, thus, reducing the level of perceived risk (Corrêa et al., 2020). The influencers share their experiences with a brand, make positive statements about products or services, and offer recommendations to influence consumer behaviors. The established relationship with peers improves their capacity to influence internet communities and enhance their performance and access to potential markets.

Additionally, social media as a platform for self-representation increases the potential and effectiveness of digital influencers and online marketing. Internet users define the self by indicating their position within a social order, displaying a rule-governed behavior, and setting the tone and direction of online interactions (Pounders et al., 2016). In this case, social media influencers define self-representation through association with particular brands, selection of clothes and outfits, and hairstyles. Unlike mainstream celebrities, online influencers are considered relatable by the general audience since they often share their daily and personal lives, increasing the probability of influencing followers' behaviors. Decision-making processes in a modern business environment are massively influenced by the massive amount of data generated through recommendations, personal opinions, ratings, and reviews (Pantano, Giglio, and Dennis, 2019). Therefore, the popularity of social media sites and the emergence of user-generated content impact competitive and intelligence marketing. With the guidance of social media influencers and other online marketing communications, consumers share their past experiences and expectations and improve their understanding of various brands. Consequently, their online behaviors and decisions are well-informed and comprehensively evaluated through comparisons.

However, successfully using social media platforms to influence online consumer behaviors requires effective targeting and positioning due to the variations in use among different generations. For instance, the internet is an essential component of daily routines among Generation Y and Z, increasing the probability of online purchasing (Matic and Vojvodic, 2017). However, these generations have an enormous understanding of web-based technologies. Therefore, they require firms providing web-based services

to go beyond matching competitors' products and services to offering unique and distinguishable offers. Kowalczuk (2018) describes these young generations as digital natives who are more tech-savvy and confident in online shopping due to the increased awareness and exposure. Modern consumers use a rational approach when purchasing products online since they are more informed and educated. For instance, some Millenials opt to research online and purchase offline or research in in-stores and purchase online. Shankar and Rishi (2020) indicate that these options allow comparing aspects such as prices, quality, ease of use, and other benefits among competing products. Giovanis et al. (2019) explain that individual differences influence consumer readiness, understand varying innovation features, and motivate to adopt new technologies. Therefore, companies need to understand the psychological processes of consumer decision-making when establishing new business models that integrate the needs of current tech-savvy generations. This knowledge can better understand potential customers' acceptance of internet-based marketing and communications and predict consumer usage intentions to improve service.

THE USE OF INTERACTIVE MEDIA TO INFLUENCE ONLINE CONSUMER BEHAVIORS

The success of online businesses relies on the interactions between consumers and the materials published online. As a result, marketers have shifted from traditional to the internet and social media advertising, allowing firms to expand their reach to a broader audience (Martins et al., 2015). The primary characteristic of online advertising is the opportunity to advertise products and services in various forms such as texts, videos, and audio customized depending on the budget and specific requirements (Jain et al., 2018). In addition, the use of interactive media improves consumers' understanding of the message delivered about product functions, benefits, and quality of the services (Scheinbaum et al., 2017). The new opportunities created by these digital transformations enable companies to bridge the digital divide resulting from consumers' exposure to modern technologies that risk brand heritage and identity (Jain et al., 2018). As a result, the new business models should reflect on personal interactions or factors that build the connection between the firm and its target consumers.

Interactive media aids consumers' online research about a brand and its associated products and services. Social media posts on organizations' platforms provide brand-related content, which improves consumers' understanding of the company and its offerings. For instance, luxury brands use video and photo-sharing social networks such as Instagram, Pinterest, and Snapchat to market the tremendous aspirational experiences that consumers desire (Huang et al., 2018). The popularity of these visual- and image-oriented social networking sites appeals to young generations who form the largest market for online businesses. However, Huang et al. (2018) explain that the success of these strategies depends on the organization's understanding of the client base they serve to ensure the multimedia used attracts their attention and enhances their willingness to buy. Furthermore, different people have different preferences, which influence how they interact with and online process information. Failure to understand these variations can lead to loss despite the availability of numerous online business opportunities. Huseynov and Yildirim (2017) recommend using consumer segmentation to understand online consumer behaviors and ensure the success of the business models implemented. The strategy involves dividing potential and existing consumers into sets of similar individuals based on a marketing perspective. Consumer segmentation enables firms to target and position products and services based on each segment's characteristics, thus, facilitating a better understanding of the most and least profitable customer base

(Hoskins and Brown, 2018). Besides, it enables customization of marketing communication and product features to optimize the available opportunities and accommodate consumers' variations in relation to preferences, expectations, and interests.

The interactivity enabled by the internet allows customers to publish reviews, which further improve consumer knowledge of the brand. Online consumer reviews (OCRs) are major influencers of decision-making processes since they provide valuable information and increase engagement (Connell et al., 2019). The total number and average ratings of OCRs contribute to product purchasing behaviors since they are key drivers of brand choice, product sales, willingness to pay, brand loyalty, assessment of brand extensions, and consumer-based brand equity (Hoskins and Brown, 2018). Internet-based platforms create a discussion platform where existing consumers share their experiences with their products and services. The reviews can include text or visual materials indicating the conditions of the product or the results after use for a specified period, thus informing potential clients' decisions to purchase (Aljukhadar et al., 2020). The significance of OCRs can be understood using the Theory of Planned Behavior, which indicates that an individual's behaviors result from behavioral intentions based on perceived behavioral control, subjective norm, and attitudes (Hawlitschek et al., 2018). The theory illustrates that consumer behaviors and intentions to purchase from online businesses depend on the perceived advantages and disadvantages of engaging in the transaction and the benefits accrued from the innovations used. In this case, OCRs that integrate interactive media formats can enhance potential consumers' understanding of the potential benefits of using online services compared to offline purchases. Although online transactions lack the 'touch and feel' product experience, creating virtual experiences enhances consumers' desire (Huang et al., 2018). Reviews are a significant aspect of creating virtual experiences since they enhance engagement and boost personal connections among existing and potential clients.

PERCEIVED RISKS, TECHNOLOGY ACCEPTANCE, AND THEIR IMPACTS ON CONSUMER BEHAVIOR

The uncertainty associated with online transactions and believability of online advertisements can lead to risk beliefs, such as potential losses resulting from low-quality products or failure to deliver ordered products. Giovanis et al. (2019) define perceived risk as the probability of accruing losses as customers pursue desired outcomes using technology-based services. Although online services are convenient, cheaper, and easy to access, they are associated with multiple risks that can negatively influence consumer behaviors (Darley and Lim, 2018). For instance, customers using web-based transactions cannot assess the quality of the ordered products or services other than in-store purchases. Gatautis et al. (2016) explain that the virtual environment consists of stimulating elements that can evoke negative or positive consumer responses. Online spheres have a cognitive and emotional impact on customers, leading to either aspiration or avoidance to buy the promoted product. While aspiration leads to positive consumer behaviors, avoidance can lead to resistance to the technologies, causing organizational failure to achieve the desired outcomes.

Consumers' attitudes and perceptions of the technologies can influence their interactions and willingness to engage in online purchasing behaviors. Fortes et al. (2016) suggest that technology acceptance is dependent on the availability of facilitating conditions, which determines people's beliefs on the presence of adequate technical and organizational infrastructure. Perceptions about the availability of the facilitating conditions can increase the intention to use the provided web-based services since it creates a sense

of security and communication efficiency. For instance, the availability of customer support systems guarantees consumers of efficient responses in case of problems or inquiries. Gatautis et al. (2016) suggest that organizations should operate in a dual virtual environment that consists of the selling and the operator environment. This concept requires firms to focus on online selling and other online activities such as responding to customer complaints or providing adequate information about the brand, products, or services. In addition, the modern customer interacting online can experience cognitive impacts, such as risk awareness, increased knowledge, need for personalization, and uncomplicated management (Manser Payne et al., 2018). For instance, advanced personalized services in the mobile banking sector have increased in adopting new related technologies. These factors can influence their online behaviors and attitudes towards the technologies and intentions of usage. However, firms can counter potential negative issues by providing new information frequently to enhance consumer knowledge and skills of web-based technologies and services.

Organizations can reduce perceived risks (PR) and increase technology acceptance by implementing high levels of PR. Consumers use risk beliefs whenever they need to evaluate the usage risk of new technology-based services, influencing their attitudes and intentions (Giovanis et al., 2019). Therefore, PR enhances their information searching processes and encourages seeking detailed information from personal and non-personal acquaintances to ensure safe decisions. Online customer reviews are examples of channels often used to verify marketing communication, where new and potential customers evaluate others' past experiences with the company and its products. Hoskins and Leick (2019) identify online customer reviews as the most trusted sources of outside information that aid consumers' purchasing decisions. High numbers of online reviews influence product sales since they promote information acquisition (Kakalejčík et al., 2020). The technology acceptance model illustrates that technology adoption behaviors are associated with trust and risks (Manser Payne et al., 2018). Although adequate information provided by an organization can aid risk assessment and build trust, customers are more like to believe other customers' reviews. Hoskins and Leick (2019) argue that prospective customers actively read online consumer reviews that are accurate, relevant, and add knowledge to what they already knew when engaging in purchasing consideration. Therefore, the PR materials used in a marketing campaign should match or support the ideas and information shared by consumers on multiple relevant platforms.

INTERPERSONAL INFLUENCE AND ONLINE TRUST AS DRIVERS OF CONSUMER BEHAVIOR

Consumer behaviors can be influenced by their daily deal environment and social interactions. Scheinbaum et al. (2020) define interpersonal influence as an individual's susceptibility to what others say and the need to acquire their approval. The impact requires consumers to make decisions based on what is considered as 'normal' within the society they live in and with respect to a particular situation. The need to fit and be recognized can influence potential and existing customers to buy products and services from a specific brand. Yeomans (2019) indicates that consumer decision-making processes are heavily reliant on information acquired from other people. While recommendations and reviews are the most common forms of information acquisition, some consumers make purchasing decisions based on other people's opinions (Cabosky, 2016). In such cases, they disregard their interests and focus on others' expectations. Wien (2019) explains that the motivation behind interpersonal influence is self-representation, where consumers desire to present an appropriate and favorable image by managing their

behavior. Self-representation affects consumer tendencies of planning and communication. Vulnerable consumers are likely to be cautious with what they say or do online and offline to avoid criticism and backlash and ensure good relationships with other people.

Internet users that spend a lot of time online are prone to group norms reflected in current trends and discussions. For instance, consumers can be tempted to purchase luxury products trending on social media to conform to the ongoing trend and avoid negative emotions of inferiority. Scheinbaum et al. (2020) equate this habit with impulsive buying tendencies, where consumers feel pressured to buy what they see without much cognition. Constant pop-up ads can lead to this habit, affecting consumers' normal thinking process. Furthermore, although online advertisements can be informative, they can also be irritating, causing adverse reactions (Alcántara-Pilar and del Barrio-García, 2016). These negative marketing responses elicit discussion on the actual impact of online ads on consumers' behavior. However, Ozcelik and Varnali (2019) argue that consumers' intrinsic motivation to purchase products or services online is influenced by the availability of sufficient, engaging, and helpful information. In this case, the decision to buy can develop from the relevance of information gathered online rather than the need to conform to trends. These contradicting notions indicate the need for organizations to understand the consumers' thought processes and factors influencing their purchasing intentions.

Online reviews and recommendations can be forms of social influence since they increase customers' desire to purchase from a particular company. As sources of information, these components present convincing information regarding desired products and services (Mumuni et al., 2019). Although electronic or offline recommendations from peers can be accurate and reliable, Yeomans (2019) indicates that they do not always account for consumers' tastes and preferences. Social media algorithms can provide online recommendations that influence consumers' attitudes towards a particular product or service due to the enhanced perceived usefulness or ease of use. For instance, Facebook can recommend a product that an internet user did not initially intend to buy, but the aesthetics and illustrated benefits encourage purchasing. Ramezani Nia and Shokouhyar (2020) identify visual appeal as the second most influential factor that affects consumers' willingness to buy products online. Therefore, social norms, online comments, recommendations and reviews, and pop-up ads can pressure consumers to purchase products and services online, influencing behaviors.

Emotions associated with interpersonal influence and trust can influence consumer behaviors and activities. For instance, some consumers gather emotional information from online communities that determine the likelihood of engaging in an online transaction (Pathak and Pathak-Shelat, 2017). Emotions play a critical role in consumer decision-making as they influence responses to ads and other marketing information and satisfaction. Richard and Chebat (2016) identify three dimensions of emotions: arousal, pleasure, and dominance. Arousal involves stimulating feelings compared to other unfavorable conditions, such as being bored, sleepy, or relaxed. Pleasure involves feelings related to contentment, satisfaction, and happiness, while dominance involves feelings of being in control, essential and autonomous. These different feelings can have varying effects on consumer behaviors. For example, satisfaction can boost consumer willingness to purchase, while boredom can discourage online purchasing. Ramezani Nia and Shokouhyar (2020) explain that positive intentions result from positive emotional responses and attitudes. Therefore, organizational practices and activities should focus on arousing consumers' positive emotions such as satisfaction and happiness to ensure optimum benefits and returns.

Online consumer behaviors are dependent on interactions and trust between customers and the company. Papadopoulou and Kanellis (2018) recognize trust as a critical success factor in an online business built through constant and reliable communication and interactions. Firms should ensure that

the information delivered to consumers regarding the brand and its associated products and services is accurate and reliable to establish trust and loyalty. Since online transactions do not allow consumers to inspect their desired products, they often seek quality information while making purchasing decisions (Yang et al., 2019). An organization's reputation can influence the believability of the information provided in the marketplace, i.e., firms with a good reputation are more appealing to consumers when conducting online business (Inocêncio and Marques, 2016). Reputable firms can be trusted to provide quality goods and services, while those with a poor reputation are associated with deception and the provision of low-quality products and services. Yeomans (2019) indicates that people's inability to trust online companies is a primary motivator of seeking recommendations from close peers. Firms can improve their reputation and boost trust by repeatedly interacting with consumers through their IT systems. For instance, a firm can respond to consumer feedback posted on social platforms (Kukar-Kinney and Xia, 2017). Distinct interactions over time influence the level of trust and can potentially reduce the abandonment rate in e-commerce. Papadopoulou and Kanellis (2018) indicate that 68.8% to 78% of online consumers do not complete their online purchases due to the decreased trust in the process or the company. The high abandonment rate can be associated with consumers' security and privacy concerns related to the data they provide during the transaction or worries over the genuineness of the company and the quality of products.

PRIVACY AND SECURITY CONCERNS ASSOCIATED WITH ONLINE CONSUMPTION

The rapid growth of the internet and web 2.0-based applications has led to increased privacy and security concerns among users. Although the internet has enhanced shopping convenience and expanded the global market through e-commerce, it has subjected the users to security and privacy issues such as hacking and the sale of personal information to third parties without consent (Hamidi and Moradi, 2017). The new problems and challenges identified by internet users include data protection, the security of payment systems, enforcement rights, validity and enforceability of e-contracts, product quality, and inadequate information disclosure (Kamalul et al., 2018). Unlike in traditional retail stores, online shopping involves higher risks affecting consumers' online and offline activities. Therefore, firms should implement measures of curbing consumers' risk concerns and guarantee the safety of their data and online activities. The regulatory focus theory suggests using prevention focus to measure regulatory orientation to enhance safety and security (Mafael, 2019). Despite organizational efforts to improve security and privacy, consumers should adopt self-regulation measures by understanding their duties and obligations. Krishna (2020) suggests multiple precautions such as choosing privacy settings that limit their social media posts visibility, private responses to group messages and using different email accounts. These precautions reduce consumers' dependency on organizations for protection by restricting access to their posts, accounts, and data shared online.

However, research indicates a difference between desired and achieved privacy, determined by consumers' privacy settings. For instance, access to some websites and apps requires consumers to sign privacy agreements that grant companies access to detailed data (Krishna, 2020). Unwillingness to sign these agreements limits users' access to the technologies and forces them to sign off. This condition can lead to frustrating emotions associated with a perceived lack of control, thus, negatively affecting technology acceptance (Jagadish, 2020). Companies need consumer information to enhance their innova-

tions. Haavisto and Sandberg (2015) indicate that although internet users do not directly engage in the innovation process, they provide large amounts of data online that aid these innovations' success. This need for data can sometimes violate internet users' privacy and security, affecting their tolerance and willingness to use technology-based services. Perceived risks of privacy and safety can negatively affect consumers' willingness to engage in e-commerce. Therefore, firms should ensure explicit disclosure on data usage to ensure informed decisions and influence tolerance.

CONCLUSION

Modern changes in communication, technology, and marketing strategies influence consumer behaviors. The emergence of the internet and the popularity of social media platforms have specifically influenced online consumer behaviors, where customers research and purchase products over the internet. Numerous factors have led to the rapid evolution in customer habits, including shopping experiences, brand reputation, quality of virtual environments, trust, and attitudes. In addition, consumer exposure to new technologies, active engagement, and empowerment influence decision-making processes. Firms optimize modern innovations to enhance their interactions and relationships with existing and potential customers. Due to the uncertainties and high risks associated with online transactions, relationships and trust are significant contributors to positive online consumer behaviors.

Additionally, consumer characteristics such as age, gender, lifestyles, personality, and values influence adopted behaviors. These sociodemographic features influence how people think and plan, consequently influencing purchasing decisions. For instance, Generations Y and Z are more likely to purchase products online than baby boomers due to their early exposure to technologies, knowledge, and skills. Besides, men are more likely to buy online than women due to the differences in information processing strategies, where women depend on a comprehensive assessment of vast information regarding a brand and its products. Therefore, customer profiling is a critical component of e-commerce and influencing consumer behaviors. These features can be evaluated through an analysis of social media discussions and trends. Social networking sites (SNSs) promote user-generated content that reflects individuals' opinions, experiences, interests, and expectations. These platforms facilitate creating online communities where people consult and share views regarding diverse topics, brands, and products. These developments can influence consumer behaviors through recommendations and reviews, where different people share their experiences with a desired product or service.

Although the internet has created multiple opportunities beneficial to firms and consumers, it has also created privacy and security challenges. Unlike traditional retailing, technology-based services require customers to share personal data such as names, location, and bank details to complete online transactions. These requirements subject users to more significant risks and discourage the use of online platforms or lead to a higher abandonment rate where consumers fail to complete their purchases. However, organizations can overcome these challenges by strengthening their relationships with consumers to build trust and improve their reputation. Reputable and trustable firms reduce levels of perceived risks, resulting in positive consumer behaviors and responses to online advertising. Although maintaining security and privacy is a primary organizational responsibility, consumers must ensure self-regulation where they control and limit access to personal information and the visibility of online accounts and posts. Despite the challenges, the internet continues to influence consumer behaviors and decisions as the e-commerce sector grows.

In summary, we can say that technology and the internet have provided new ways to communicate, providing new tools for marketing to influence consumer behaviors. Enabling new marketing strategies and leading consumers to trust the organizations' online platforms may lead to positive online consumption behaviors with better purchase intentions. Online celebrities could contribute to meeting the challenge of converting online engagement into a successful marketing strategy. Consumer segmentation has become very important for this success, allowing to create offers and position products and services based on the characteristics of the customers in each segment, with an understanding of the most and least profitable customers. Finally, male consumers are more likely to purchase online than female consumers due to differences in information processing strategies, with women performing a more thorough evaluation of information from brands and their products.

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APPENDIX 1

Table 4. Overview of document citations period ≤ 2015 to 2020

Documents		≤2015	2016	2017	2018	2019	2020	2021	Total
Convenience matter in mobile banking adoption intention?	2020	-	-	-	-	-	1	2	**3**
Customer engagement in social media: a framework and meta-an ...	2020	-	-	-	-	-	7	1	**8**
Analyzing the effects of visual aesthetic of web pages on us ...	2020	-	-	-	-	-	1	-	**1**
lmagery makes social media captivating! Aesthetic value in a ...	2020	-	-	-	-	-	1	-	**1**
Antecedents of customer brand advocacy: a meta-analysis of t...	2020	-	-	-	-	-	1	-	**1**
The influence of YouTubers on followers' use intention	2020	-	-	-	-	1	-	-	**1**
Regret and nonredemption of daily deals: Individual differen ...	2020	-	-	-	-	1	1	-	**2**
Exploring online consumer curation as user-generated content. ..	2019	-	-	-	-	-	1	-	**1**
How Regulatory Orientation and Feelings of Gratitude Shape O ...	2019	-	-	-	-	-	3	1	**4**
Customer engagement with websites: a transactional retail pe ...	2019	-	-	-	-	3	3	-	**6**
Making sense of consumers' tweets: Sentiment outcomes for fa ...	2019	-	-	-	-	-	12	2	**14**
Adoption of mobile self-service retail banking technologies: ...	2019	-	-	-	-	2	6	4	**12**
Self-presentation via electronic word of mouth - a reflective ...	2019	-	-	-	-	-	1	-	**1**
Adoption of mobile banking services: A comparative analysis ...	2019	-	-	-	-	2	7	1	**10**
Antecedents of consumers' reliance on online product reviews	2019	-	-	-	-	4	-	1	**5**
Determinants of purchase intention in online Latin American ...	2019	-	-	-	-	-	1	-	**1**
lmpact of social media on consumer behaviour	2019	-	-	-	-	1	3		**4**
Some Hedonic Consequences of Perspective-Taking in Recommend ...	2019	-	-	-	-	2	2	1	**5**
Effectiveness of online behavioral targeting: A psychological ...	2019	-	-	-	-	-	8	1	**9**
Consumer motives for peer-to-peer sharing	2018	-	-	-	-	8	23	8	**39**
Hyper-personalization - fashion sustainability through digit...	2018	-	-	-	-	1	2	2	**5**
How convenient is it? Delivering online shopping convenience ...	2018	-	-	-	-	11	24	5	**40**
On the contrasting strategic impact of online customer reviews ...	2018	-	-	-	-	-	1	-	**1**
Mobile banking and Al-enabled mobile banking: The differenti ...	2018	-	-	-	-	2	3	2	**7**
Mavenism and e-maven propensity: antecedents, mediators and ...	2018	-	-	-	-	1	6	-	**7**
lnfluence of consumers' perceived risk on consumers' online ...	2018	-	-	-	-	9	18	4	**31**
Narrative persuasion in social media: an empirical study of ...	2018	-	-	-	-	2	7	-	**9**
Online video advertisements' effect on purchase intention: A ...	2018	-	-	-	-	2	2	-	**4**
Gender and live-streaming: source credibility and motivation	2018	-	-	-	1	6	9	2	**18**
Analysis of consideration of security parameters by vendors ...	2017	-	-	4	6	3	3	-	**16**
The effectiveness of number of deals purchased in influencing ...	2017	-	-	-	-	2	8	-	**10**
Impulse buying tendencies among online shoppers in Sweden	2017	-	-	-	1	4	2	-	**7**
Behavioural segmentation analysis of online consumer audience ...	2017	-	-	-	-	1	1	-	**2**
Omni-channel marketing, integrated marketing communications ...	2017	-	-	-	11	22	22	4	**59**
Managing online environment cues: Evidence from Generation y ...	2017	-	-	-	1	-	-	-	**1**
Future developments in IMC: why email with video trumps tex ...	2017	-	-	-	-	-	2	-	**2**
Consumer characteristics as drivers of online information se ...	2017	-	-	-	-	1	-	-	**1**
Sentiment analysis of virtual brand communities for effective ...	2017	-	-	2	2	2	8	1	**15**
Determinants of consumer intention to use online gambling se ...	2016	-	-	-	1	-	-	-	**1**
Engaging customers during a website visit: a model of website...	2016	-	-	3	7	11	8	2	**31**
Modeling online consumer behavior: Preeminence of emotions a ...	2016	-	3	8	9	13	10	1	**44**
Gender differences in online mass customization: An empírica ...	2016	-	-	1	-	-	-	-	**1**
Social media opinion sharing: beyond volume	2016	-	-	2	2	7	2	1	**14**
[The best and the worst: Word-of-mouth in e-tail websites, O ...	2016	-	1	-	-	1	-	-	**2**
lnsight into the motivation of selfie postings: impression m ...	2016	-	-	5	12	15	20	2	**54**
[The moderator role of web design and culture of the country ...	2016	-	-	1	-	1	-	-	**2**
Gamification as a mean of driving online consumer behaviour: ...	2016	-	-	2	2	3	8	2	17
The lnfluence of tourism lnnovativeness on Online Consumer B ...	2015	-	5	5	7	8	4	2	**31**
Examining beliefs, values and attitudes towards social media ...	2015	-	1	3	2	3	3	-	**12**
Online consumer decision-making styles for enhanced understand ...	2015	-		1	2	4	2	-	**9**
The internet impact on travel purchases: lnsights from Portu ...	2015	-	-	-	-	1	1	-	**2**
Buzzing with disclosure of social shopping rewards	2015	-	1	1	-	1	-	-	**3**
Essential functionalities for commercial internet presence: ...	2015	-	-	-	-	1	-	-	**1**
"Man, this frustrates me": Change of consumer emotions in on ...	2015	-	2	-	1	1	1	-	**5**
		0	**13**	**38**	**67**	**160**	**260**	**54**	**592**

Source: own elaboration

APPENDIX 2

Table 5. Overview of document self-citation period ≤ 2015 to 2021

Documents		≤2015	2016	2017	2018	2019	2020	2021	Total
Customer engagement in social media: a framework and meta-an ...	2020	-	-	-	-	-	2	-	**2**
Making sense of consumers' tweets: Sentiment outcomes for fa ...	2019	-	-	-	-	-	6	1	**7**
Some Hedonic Consequences of Perspective-Taking in Recommend ...	2019	-	-	-	-	1	-	1	**2**
Effectiveness of online behavioral targeting: A psychological ...	2019	-	-	-	-	-	-	1	**1**
Consumer motives for peer-to-peer sharing	2018	-	-	-	-	1	3	1	**5**
Hyper-personalization - fashion sustainability through digit...	2018	-	-	-	-	1	1	2	**4**
How convenient is it? Delivering online shopping convenience ...	2018	-	-	-	-	-	4	1	**5**
Mobile banking and Al-enabled mobile banking: The differenti ...	2018	-	-	-	-	-	2	-	**2**
Analysis of consideration of security parameters by vendors ...	2017	-	2	2	1	-		-	**5**
Behavioural segmentation analysis of online consumer audience ...	2017	-	-	-	-	-	1	-	**1**
Omni-channel marketing, integrated marketing communications ...	2017	-	-	-	2	2	3	-	**7**
The internet impact on travel purchases: Insights from Portugal ...	2015	-	1	1	-	-	-	-	**2**
Buzzing with disclosure of social shopping rewards	2015	-	-	-	-	1	-	-	**1**
		0	**3**	**3**	**3**	**6**	**22**	**7**	**44**

Source: own elaboration

Chapter 16
The Landscape of Social Commerce in Indonesia

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ABSTRACT

Social commerce is a growing research field. However, there is still limited discussion on how social commerce companies can thrive in the emerging market such as Indonesia given some differences in terms of customer and other supporting infrastructure characteristics. The chapter covers the growth of social commerce, Indonesian social commerce landscape, and different elements of social commerce including customer engagement, customer interaction, and digital influencers. It is expected that this chapter can provide better insights into social commerce in Indonesia.

INTRODUCTION

Companies start to feel the pressure to stay relevant and engage in the area where most of their customers interact (Baird and Parasnis, 2011). This would imply that a platform is crucial to stay relevant and be engaged with customers. Furthermore, social media has shown significantly fast growth in only 4 to 5 years since their early establishment (Dong-Hun, 2010) and therefore play crucial roles in companies' interaction with customers.

The rapid social media development would possibly change the way people interact and create new opportunities. As explained by Tsimonis and Dimitriadis (2014), due to the rapid penetration of social media into society, many firms are now using it as part of their marketing and brand-building program, since using social media provides the opportunity to connect with customers using richer media and provide greater result in reach (Tsimonis and Dimitriadis, 2014).

The research on social media has attracted a lot of attention (Lu et al., 2016). A new concept called social commerce recently emerged as a social media platform that facilitates and assists the customer to

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purchase online or even allows the users to sell products and services. These platforms increase communication with massive numbers of consumers, where it becomes easier for both parties, the buyer and seller, to find and attract each other (Akman and Mishra, 2017). It represents a new type of electronic commerce resulting from the interaction between consumers through (social media) technology. In social commerce, consumers can influence other consumers' buying intentions and purchasing decisions via social interactions (Shen, 2012).

E-commerce has been known to provide benefits for the buyers since it allows them to access the market globally from different locations worldwide to find the other sellers that hold larger product availability at different price offerings. (Grandon and Pearson, 2004). However, social commerce provides a new nuance to e-commerce through the addition of social aspects. The addition of the social aspect of shopping to e-commerce enables people to have a more social presence in the online environment (Lu, Fan, and Zhou, 2016). This social presence can be in the form of interaction with other customers and with the company.

Besides social commerce, within the growth of e-commerce itself, emerged the new trend of m-commerce, which is known as an online trading model where mobile devices functioned as the media to perform the basic functions of trade, such as information searching, contact between the customer and the seller. (Fransisco, Fransisco, and Jesus, 2018). As a result, mobile devices have become a vital tool nowadays for any personal or professional activity, and also, it has a very high level of acceptance by consumers, increasing the trend of companies utilizing m-commerce to keep the relevance with the current trend of the customer. (Masamila, Mtenzi, Said, and Tinabo, 2010)

Social commerce in Indonesia is slightly different from the ones in other Asian countries, China. Even though social commerce itself is not exactly a new trend (as Indonesians utilize Facebook and Whatsapp to sell products), the social commerce model found in this country has traditionally relied on a reseller model (techwireasia.com, 2020). Direct e-commerce platforms have struggled to survive in this country, as there are many barriers to business. For example, these businesses are geographically separated from potential buyers by huge distances. Moreover, the lack of reliable internet connections and a dearth of online delivery services that reach many rural areas also add to the problems. The disconnect with rural buyers brought disadvantages to services provided by e-commerce companies, limiting their distribution coverage to most big cities such as Jakarta, Surabaya, Bandung, Semarang, and Medan.

In one of its reports, Goldman Sachs noted that e-commerce platforms only have a 7% penetration rate in Indonesia. This implies that the dedicated social commerce platforms would have to eventually utilize the hybrid system, which combines both online and offline systems. Therefore, the platforms engaged reseller agents as their product ambassadors, enabling them to target consumers via social platforms and making it possible to complete the transactions face-to-face.

Due to Indonesian market conditions, some technological features of social commerce may not be applicable in rural areas. For example, compared to China, the usage of Q.R. code is not widely used to conduct web-based transactions. They are not accustomed to going through several steps to make a purchase, nor are they accustomed to reaching out to customer service if something goes wrong. Then when it comes to logistics, the sector remains fragmented, with manufacturers having difficulty penetrating the last-mile segment in rural Indonesia. This may cause the shipping costs to be astronomical and prevent people from doing shopping through social commerce.

This chapter aims to highlight the roles of social commerce and its roles in Indonesia's e-commerce landscape. More specifically, the chapter will also examine the relationship between perceived characteristics of social commerce and their influence on user's trust, and analyze the influence of trust towards

the platform perceived usage on social commerce intent in Indonesia, especially on Instagram as the platform of social commerce, since Indonesia categorize as the largest Instagram community across the Asia Pacific zone (Ganesha, 2017). The chapter will also discuss how social commerce engagement may occur between the customers and the business.

METHODOLOGY

This research involves a literature review of social media and social commerce in particular. The authors search for literature in recent ten years and come up with some topics that were prominently discussed in this literature. The authors searched some journal databases, including Sciencedirect and Emerald Insight. Some keywords used to search for literature were 'social media,' 'social commerce,' 'social interactions,' 'social identification,' and 'digital influencers,' among others. The themes and topics were then further selected and arranged to create a more coherent flow for this paper—publications used as references in this study vary. The majority of the sources utilized are journal articles, conference proceedings, unpublished dissertations, and credible online articles.

SOCIAL COMMERCE IN DEVELOPING MARKETS

Although social commerce is often regarded as the combination of social media and e-commerce, social commerce, as an emerging and promising field of inquiry, is different from traditional e-commerce in two important ways. First, social commerce is built on various types of social media, such as Facebook, Twitter, WhatsApp, or WeChat, and takes all of the key aspects of the social web.

Recent work has identified four core features of social media, including digital profile, search and privacy, relational tie, and network transparency, which differentiate social commerce from other Internet retailers such as Amazon and eBay (Chen and Shen, 2015).

The emergence of social commerce in emerging markets leads the world to witness the change in the buyers' and sellers' interaction (Gibreel, Alotaibi, and Altmann, 2018). This new interaction model has no intermediary (middleman or broker) to guarantee and assure return policies. Under this condition, both the buyers and sellers of social commerce platforms should develop trust and understand possible risks associated with the online transactions conducted through the platforms. The trust in social commerce is mediated by the sellers and buyers themselves and established through the mechanism of transactions and ongoing communication. Each buyer can communicate with the other through electronic word of mouth and personal interactions.

China is one of the emerging market countries that have witnessed the booming of social commerce (Chu, 2021). This has led to the expectation of online consumers that each brand should have a social commerce presence. Furthermore, social commerce was also shown to solve the high acquisition costs of Chinese digital commerce (Chu, 2021). For instance, the customer acquisition costs of Alibaba and JD.com are 812 RMB ($123 U.S.) and 176 RMB ($26 U.S.), respectively. This suggests how the existence of social commerce has provided a more affordable alternative to gain more customers for these companies.

Key takeaways:

- The core features of social media are digital profile of the users, search and privacy, relational tie, as well as network transparency
- Social commerce has provided more affordable options for companies in emerging markets to gain more customers

SOCIAL COMMERCE AND SOCIAL INTERACTIONS

Li (2017) pointed out that social interactions drive social commerce through social networking sites since social interactions allow customers to receive information about the products, services, or even other experiences by previous buyers. Thus, it will enable them to conduct their own internal process and judgment before a transaction is made. Though some e-commerce websites offer service chats or question and answer pages for customers to solve inquiries, the interactions mainly happen between the company representatives and customers, rather than extensively involving other customers, which makes the social presence minimal; however, the high level of communication on social commerce platforms, i.e., social media, creates a sense of social presence (Shen, 2012).

Moreover, the transaction happening in the social media can be seen as a form of social interaction where the customers not only choose and buy the products, but they also interact with the seller and gather information about the specific product that they want to purchase before the transaction between both parties is conducted. The information can be gained from reviews, social media posting of digital influencers, or simply conversations between social media users.

There are three different types of social commerce that have been identified (Liang & Turban, 2011). The first one is the social networking service website which enables the users to conduct social-oriented transactions. Examples of this are Facebook, Twitter, LinkedIn, and YouTube. The second is how traditional e-commerce websites (such as Amazon and eBay) incorporate social media technologies (features that allow the users to write recommendations, reviews, do social networking, etc.) to facilitate transactional activities. The third one is the group shopping websites in which customers with similar purposes form online social groups based on similar interests and needs and make group purchases to gain price-related advantages

However, the use of social media by businesses is still in the early stage where according to Yahia, Al-Neama, and Kerbache (2018), many businesses are unable to understand the characteristics of social media to fully build an excellent business out of it (Yahia, Al-Neama, and Kerbache, 2018). In addition, several factors made customers distrust social commerce vendors. These include customer suspicion towards social vendors due to the lack of direct face-to-face interactions and an increase in the perceived risk for the customer to purchase at a social commerce vendor in an online platform (Kaiser and Muller-Seitz, 2008).

It is also suggested that social support, which is defined as the condition where a person is socially supported to solve a problem, would influence how this individual perceives social commerce vendors. These social commerce users need mutual help from others that could provide information, experiences, advice, and emotional support such as care and empathy. In turn, these would affect the perception of customer trust towards the social vendors available on social media platforms (Romaniuk and Therese, 2012).

Furthermore, based on the previous study, the platform perceived usage, which consists of perceived ease of use, perceived hedonic motivation, facilitating condition, and habits, would provide insight to

the researcher on why the customer adopt specific social media platform as their preference for social commerce activity (Yahia, Al-Neama, and Kerbache, 2018). These variables are considered relevant as the majority of social commerce users would be motivated by many different factors; understanding these factors can improve social commerce usage and help companies or marketers devise appropriate strategies.

Moreover, since the use of Instagram by most businesses are still in its early stage, it could also provide opportunities for the small businesses who are aiming to establish themselves and gain more target audience by understanding more about the characteristics of Instagram as social commerce platform and the characteristics of social vendor that the social commerce buyer is seeking.

In addition to that, according to Gilliam (2015), Instagram has played a big role in the world of e-commerce in Indonesia, where the existence of Instagram could replace the functionality of shopping malls that may not be available in some rural regions of Indonesia (as cited in Bintoro, 2018). Instagram as a social media platform has enabled the potential social commerce vendor to establish their own catalog through their devices easily. Also, the seller could perform several business activities in a practical way, such as monitoring certain products that hold the high potential of demand, responding to customers in real-time, and reaching a bigger target audience faster than another online channel (as cited in Bintoro, 2018).

Companies in Indonesia have been adapting to Indonesian consumers' social media habits. For example, most Indonesian brands use social media as part of their integrated marketing communication (IMC) and direct sales channels (Gilliam, 2015 in Ananda, Hernández-García, Acquila-Natale, and Lamberti, 2019). In addition, the social media utilized for promotional purposes often involve celebrities or digital influencers ad the endorsers of the products or services.

Social commerce was also perceived as a way out for small and medium enterprises in this country. After the pandemic, the existence of social commerce becomes the main choice of SMEs to shift to digital platforms. Even though only 13% of Indonesia's SMEs have gone digital, Indonesia still scores highly as one of the countries with the highest number of social media users. SMEs may not have an e-commerce account, but they are very likely to use social media to conduct transactions and share information (kumparan.com, 2020). The *social commerce transactions in* Indonesia have reached 344.6 billion Rupiah, or more than fifty percent of e-commerce total revenue, indicating an even bigger opportunity for small and medium enterprises (kumparan.com, 2020)

"Asia Social Commerce Report 2018," published jointly by PayPal and Blackbox Research, suggests how Instagram and Facebook are the most popular platforms to conduct e-commerce transactions in Indonesia. This platform has grown rapidly due to its ability to provide a different shopping experience. In addition, these social commerce platforms enable users to read recommendations and reviews before making any purchase decision (kr-asia.com, 2020).

For Indonesia in particular, the social commerce landscape has previously been dominated by fashion and beauty products. However, after the pandemic happened, sellers of fast-moving consumer goods (FMCG) have moved to this platform to ensure their business survival. In addition to that, many resellers or people who are in between jobs start using social commerce as their main source of income (Redseer, 2020). Furthermore, food sellers have also adapted to the current situation, opening their social commerce to facilitate their businesses and reaching the customers who previously were not able to access their products and services.

Previous research also suggests that the practicality of Instagram for social commerce opens a wide range of opportunities for both buyers and sellers where it was found that some of the sellers are still at

a very young age; however, they are able to successfully establish their business through this platform (Sri, 2014). This is enabled by the ease of use and interaction capabilities that some social media offer. Instagram, for example, has different features such as Instagram stories, highlights, Instagram store, and others, which ease the transaction process between the buyers and the sellers.

The extant literature on social commerce has revolved around social commerce engagement seen from the transactional perspective, such as purchase intention, even though focusing on social commerce engagement may have its own benefits (Bussalim, Ghabban, and Hussin, 2020). Individuals' benefits gained from using social commerce can vary depending on the individual's own behaviours and the information that is shared or spread publicly via such platforms. This opens an avenue for exploration from the perspective of both academics and industry practitioners, especially for research related to online technologies, customer interaction, and business in general. (Lee and Phang, 2015).

Table 1 shows a comparison between social commerce platforms in Asia.

Table 1. Comparison between social commerce platforms in Asia

Platform Name	Business Model	Remarks
Resellee	Mostly grocery deliveries Does not carry its own inventory but instead relies on a network of suppliers.	First launched in the Philippines in 2019
Pindoduo	Introduced the concept of 'social shopping.' Users can shop using the links sent to a shopping group.	Based in China
Facebook, Instagram	Social-media based that now has its own 'store and marketplace.' For example, Instagram has a feature that enables certain users to provide recommendations through its 'story' feature and include the link to purchase the product.	Both are very popular in Southeast Asian markets
LINE	A chatting platform	Based in Japan
Webuy	Community group-buying, focusing on members of social groups	First launched in Singapore in 2020

Source: Authors' own

Key takeaways:

- Social interactions drive social commerce's activities
- Small and medium enterprises may not have an e-commerce account, but they are very likely to use social media to conduct transactions and share information

SOCIAL COMMERCE AND CUSTOMER INTERACTION

The trend of social commerce has attracted the interest of both researchers and practitioners (Lu et al., 2016). This new type of electronic commerce is a result of the interaction of customers with social media technology. Moreover, the interactions taking place in social commerce enable each user to influence

other users' buying intentions and purchasing decisions (Shen, 2012). Hamari and Ukkonen (2016) noted that people's interest in social commerce is mainly driven by their pursuit of utilitarian value (in terms of seeking to fulfill their consumption needs), combined with economic value (in terms of cost and time savings).

In general, there are many different aspects that can be discussed related to consumer behaviours in e-commerce, including the way customers interact in the platforms, customer engagement with the social commerce platform, as well as

Consequently, the role of social media in today's commerce has been extended into the scope of collaboration consumption. For example, Facebook offered a peer-to-peer marketplace for customers to exchange secondhand goods for money. This can be called an innovative form of social commerce in today's business world (Zhang, Jahromi, Hua, and Lu, 2020).

Tajvidi et al. argued that consumer–seller interactions and consumer–consumer interactions positively affect social support on social commerce sites and then impact the intention to co-create brand value. Wang et al. further suggested that interactivity in social commerce positively impacts the perceived utilitarian value of marketing messages. This would then positively affect hedonic value and eventually positively impact the intention to repost the said social media content.

Social presence is an important part of the social commerce environment. The existence of social presence can heighten the sense of human interaction and sociability in the environment, creating closeness and familiarity within the interaction. As such, social presence reduces the perceived social space between interaction parties, in particular buyers and sellers (Pavlou et al., 2007).

Trust has been identified as a key factor for online secondhand marketplaces, as emphasized in Armstrong and Soule's (forthcoming) chapter or in Boily's (forthcoming) one for collaborative economy platforms. Following Da Silveira et al. (forthcoming), trust is constitutive of the mediation process by digital platforms, and it is therefore also a critical factor in social commerce. Brands try to establish consumer relationships characterized by high levels of trust as consumers commit themselves to this relationship. In contrast, a lack of trust leads to a decrease in use and commitment, disregarding any potential advantages (Lacey, 2007).

Another study has emphasized how the information provided by users has been considered more trustworthy than the information shared by companies (Herando, Jiminez-Martinez, and De-Hoyos, 2019). However, it has to be noted that the way users interact with technology can vary with age, and generational cohorts show different shopping behaviors, interests, and attitudes. This means that the users of social commerce who possess different personal characteristics may exhibit different preferences when it comes to the products that they are interested in.

Social media has been noted for its ability to increase consumers' online presence and significantly helps develop trustworthy online relationships (Lu, Fan, and Zhou, 2016). Accordingly, they can positively impact consumer behaviour. Furthermore, Nadeem, Juntunen, Shirazi, and Hajli (2020) noted how social commerce supports customer decision-making processes by adopting ethical standards in online interactions.

The consumer behaviour at different stages of decision-making, including recognition, pre-purchase search, evaluation of alternatives, and selection of products/services, can be analyzed using this framework. Similarly, Chen and Shen (2015) investigated the impact of social support such as social sharing and shopping intentions and relational factors such as community commitment, trust towards community, and members on online social platforms. They found a significant positive relationship between emotional and informational social support with consumers' trust and commitment.

Key takeaways:

- Social support plays a key role in customer-seller and customer-customer interactions
- Social support will also be helpful in customers' decision making, particularly during information search and evaluation of alternatives
- Trust in social commerce can serve as a foundation to conduct transactions

SOCIAL COMMERCE AND CUSTOMER ENGAGEMENT

Past research conducted by Wang, Wang, Li, Yao, and Wang (2020) revealed that the two subdimensions of supportive social information could positively influence consumer involvement and promote consumers' engagement in the community. In particular, involvement imposes a full mediating influence on emotional support but a partial mediating impact on informational support. In social commerce, product presentation is the key, as it may strengthen the effects of customer engagement.

Many studies on social commerce have focused on customer engagement. It has been found that in social commerce, customer engagement is a key predictor of the four dimensions of customer loyalty toward social commerce websites. In addition, the results indicate that social support and two community factors significantly affect customer engagement (Molinillo, Anaya-Sanchez, Liebana-Cabanillaz, 2020). Customers may interact in social commerce by liking and sharing posts, writing reviews, and making purchases.

Social support is another prevalent element of social commerce. This notion refers to the interactions and supports people receive from a group (Cobb, 1976). Nahapiet and Ghoshal (1998) stated how social capital are resources gained by individuals who are part of a network of relationships. Their frequency can determine a person's level of participation and involvement in an online community. (Chang and Chuang, 2011). Social identification can happen when individuals feel that they are an in-group member of a society or community (Hogg and Abrams, 1988; Postmes, Haslam, and Swaab, 2005; Chu and Kim, 2011).

Social support and capital work can enhance people's desire to participate in social commerce. Two different factors can influence participation intensity; the first one is participant involvement, and the second one is social identification. When more participants feel involved and identify themselves as one of the members, they are more likely to have social capital and perceive that they gain more intrinsic support. In social commerce, social support can be in the form of social connections and relationships between people (Fan, Zhou, Yang, Li, and Xiang, 2019). As a result, social commerce enables users to gain utilitarian, hedonic, and social value, which eventually impacts their purchase intention (Gan and Wang, 2017).

Key takeaways:

- Social commerce tends to enable better customer engagement
- In social commerce, customers are not treated in isolation as they can establish connection with the other customers and gain the necessary supports

In traditional e-commerce, customers are treated in isolation, and they make personal purchase decisions. This is different in social commerce. Social media technologies embedded in e-commerce

platforms provide more benefits to the users. For example, the members can have a heightened sense of belongingness, and they can gain informational support and other forms of support. The supports come in a variety of formats; be it opinions, advice, or reviews can be very crucial for the users and enable them to be a part of an environment of assistance (Hajli, 2014). The assistance would be useful for social commerce users to make their purchase decisions.

SOCIAL COMMERCE AND CO-CREATION

Blichfeldt (2018 in Borges-Tiago, Tiago, Verissimo and Silva, 2019) notes that web advances allowed companies and customers to adopt an interactive communication model; and that this model grounds on the central assumption that interactive communication integrates not only information exchange flows but also the co-creation of new meanings and understandings. Value co-creation in social commerce can benefit both companies and customers (Franke and Schreier, 2010; Fuchs and Schreier, 2011). Ideas resulting from co-creation with customers can offer higher novelty values and more benefits to the companies (Poetz and Schreier, 2012). Social commerce and research on social commerce have gained much attention from industry practitioners for facilitating value co-creation for gaining profitable business value.

In terms of co-creation ability, social commerce differs from traditional e-commerce since it offers a purchase experience that enables more participation from the users in the form of content creation and content sharing. (Huang and Benyoucef, 2013). In addition, social commerce platforms have tools that facilitate participation and interaction between three different parties; users, companies, and the community. In terms of the types of transactions, social commerce has both direct and indirect commercial transactions. Direct transactions are the actual transactions that occur during the purchase stage, whereas indirect transactions are all the activities that occur before the purchase decision. Examples of these transactions are reading or gaining word-of-mouth (e-WOM) from others to gain information (information search), making purchase selection and after-sales of the customer decision-making process (such as repurchase, disposal, etc.), is characterized by requests and business information sharing on social media (Zhang, Lu, Gupta, and Zhao, 2014).

There are several tools provided by social commerce applications that allow users to exchange information. The systems include recommendation and referral provisions, ratings, virtual forums, and communities, among others. That way, the social commerce users are seen as content consumers and content producers (Constantinides, 2014).

The interaction between customers using these tools takes place because they wish to obtain information about products and services, seller reputations, and other experience-based information related to social commerce transactions. For example, customers may read reviews that can influence their purchase decisions and see how a product is being used or other activities as part of the information search process. These features can further be enabled if the retailers provide platforms for such communication and collaboration and incorporate social media and social network features into their websites or applications.

Key takeaways:

- Social commerce differs from traditional e-commerce since it offers a purchase experience that enables more participation from the users in the form of content creation and content sharing
- There are several features of social commerce that enable content creation; such as recommendation, ratings, online forums and communities.

SOCIAL COMMERCE AND DESIGN

The extant literature shows that social commerce can be divided mainly into two groups. One is e-commerce with social network platforms, whereas the other is the social media platform on e-commerce websites (Huang and Benyoucef, 2013). The differences between e-commerce websites and social commerce websites can be discussed in terms of marketing, customer control, and system interaction. Previous research has examined social commerce from various perspectives (Huang and Benyoucef, 2013): complex structures such as social interactions, participants, communities, and features supporting social interactions; enabling architectures, infrastructures, platforms, and generated content and services (Baghdadi, 2013).

In the social commerce context, privacy risk can be analyzed through multidimensional perspectives, as it can be influenced by different factors such as social, technological, and commercial elements. (Bugshan and Attar, 2020). As social media users generally share a variety of information through the platforms, it is possible that the information may be stolen and used for somebody else's advantage. This implies that social commerce which relies heavily on

Notwithstanding the importance of usability, functionality, and sociability for social commerce design and for impacts on consumer decision-making, businesses still face the challenge of making their social commerce websites usable, functionally flexible, and socially prosperous (Hassanein and Head, 2007 in Huang and Benyoucef, 2017)

Key takeaways:

- There are two types of social commerce; e-commerce with social network platforms and social media platform on social media websites
- A good social commerce design enables personalization and customer value co-creation.
- Usability, functionality and sociability can have significant impacts on the consumer decision-making process

Social commerce aims to improve economic efficiency (Baghdadi, 2013), and the design of social commerce enables companies to provide personalized service and product delivery based on consumers' preferences, interests, and interactions through the internet (Gibreel et al., 2017). These features can be enabled if the social commerce is equipped with features that can enable interaction and organizational interface that promotes and facilitates the interactive social features of websites, knowledge discovery, and customer intelligence to create value co-creation (Baghdadi, 2013).

SOCIAL COMMERCE AND DIGITAL INFLUENCERS

Previous studies have attempted to provide some insights for companies to shape influencer strategy and promote social commerce intention (Wang, Huang, Davison, 2020). Several social commerce drivers have been identified, including psychosocial factors such as social support and relationship quality (Liang et al., 2011; Chen and Shen, 2015). Technological factors and their interaction with the social elements of social commerce (e.g., virtual experiences, social presence, and social comparison) (Curty and Zhang, 2013; Huang and Benyoucef, 2013; Zhang et al., 2014).

There has been limited empirical research on how digital influencers may influence consumers' social commerce intentions. So far, the existing literature on digital influencers has concentrated on the digital influencers' identification approach (Li and Du, 2011; Ku, Wei, and Hsiao, 2012) or their role in marketing strategy (Wieseke, Ahearne, Lam, and van Dick, 2009) and product or information diffusion (Iyengar, Valente, Van de Boulte, 2011).

Endorsers refer to "figures who are recognized by the masses and use their personal fame to showcase the benefits for customers" (McCracken, 1989). For example, when endorsers send a message related to a product or service, the customers perceive the image of the endorsers and associate the image with the product and service.

Opinion leadership would mean that the individuals can influence others' attitudes and behaviours in the desired way within a given context; this ability is usually related to their roles and social identity function (Grewal, Mehta & Kardes 2000). These opinion leaders tend to be consumers whose opinions and actions can influence attitudes, behaviours, and the overall decision-making process of their social media followers. Therefore, they are disseminators of electronic word of mouth (Moldovan, Muller, Richter, Yom-Tov, 2017). Previous research concerning social network analysis has found out that opinion leaders have a higher number of connections (Jin and Phua, 2014; Valente, 1995). The opinion leaders have also gained more importance in social media research (Winter and Neubaum, 2016) and influencer marketing.

Endorsers' words and actions provide additional values if they have certain characteristics. It has to be noted that the power of endorsers is highly related to the endorser's credibility. The perception of how credible a source of information is, has been investigated in various marketing contexts and online environments (Jin, 2010; Jin and Martin, 2015; Jin and Phua, 2016 in Li, Wang, and Zhang, 2020)**.**

According to Lafferty and Goldsmith (1999), the endorser's credibility can have a positive impact on customers' consumption attitudes and their willingness to purchase. This would imply that highly credible endorsers have a stronger influence on their followers. Another research conducted by Ilicic and Webster (2011) also further pointed out that there are some characteristics that endorsers should have. They argued that an endorser who possesses attractiveness, trustworthiness, and expertise simultaneously improves their endorsement and significantly affects customers' willingness to purchase.

Social identity refers to the "part of an individual's self-concept, which derives from his/her knowledge of his/her membership of a social group (or groups) together with the value of emotional significance attached to that membership" (Tajfel, 1981, p. 255). In relation to social identity elements and consumer behaviour in social commerce, it has been acknowledged that social identity serves as a common factor that drives both social media usage and product purchase behavior (Wang, 2017). People tend to evaluate the ingroup as positive and the outgroup as negative (Tajfel and Turner, 1986).

Berthon, Machulbert, and Pitt (2005) pointed out how celebrities utilize various social media to present their images, human brands, and branded products. These celebrities utilize features of social media by projecting their personality and human brands. They use status, story, and fleet features and encourage comments and likes from their social media followers. Indonesian digital influencers also frequently engage with their followers using Instagram LIVE. This feature enables them to talk and answer questions directly from the participants. In addition, some prize giveaways are usually available to entice the followers to participate, comment, or like their posts.

Even though traditionally a celebrity usually is a well-known person; be it an actor, movie star, musician, professional athlete, or T.V. personality (Djafarova and Rushworth, 2017; Van Norel, Kommers, van Hoof, and Verhoeven, 2014), influencers in social commerce can also be someone whose expertise or

personal characteristics make them worthy of endorsing, or famous because they hold certain positions in the society. Their identification is based on elements such as admiration, association, aspiration, or recognition (Scott, 2015 in Djafarova and Rushworth, 2017).

Strong ties and high social identification can determine consumer decision-making and how the products and services are consumed (Katona, Zubscek, and Sarvary, 2011). Even though consumers and celebrities do not always have strong ties, they identify socially with these celebrities, presumably because they see these celebrities as part of their aspirational groups (Dimofte, Goodstein, and Brumbaugh, 2015) and which to resemble them.

In addition to that, on social networks or social media, ordinary (non-celebrity/non-famous people) can interact with celebrities whom they do not have access to in real life, increasing the feeling of being close and forming parasocial interaction (Horton and Wohl, 1956) with those celebrities. For example, in Indonesia, social commerce users often send direct messages (D.M.s), reply to the 'stories' that the celebrities post, or comment on the posts.

Consumers with high opinion leadership play a crucial role. These consumers spread information, create reviews, and write recommendations about their consumption choices. (Ruvio and Shoham, 2007). The increasing numbers of key opinion leaders signify social commerce growth, where these opinion leaders act as information disseminators and how their choices of consumption can influence their followers (Song et al., 2017).

The influence that these people have driven the companies to utilize their word-of-mouth as a part of their marketing campaigns to increase the sales of their products (Bao and Chang, 2014). However, it should be noted that choosing digital influencers to represent a company can be tricky. For the campaigns to be more effective, the influencers and opinion leaders need to have certain characteristics that resonate with the targeted audiences.

Companies need to be aware of the personalities and images of the digital influencers to be able to identify the right opinion leaders and eventually involve them in the marketing activities of the brands. These influencers would then be expected to communicate information to their followers, provide opinions and recommendations, as well as suggestions on which to choose. (Iyengar et al., 2011; Kaplan and Haenlein, 2011; Makkar and Yap, 2018). Furthermore, customers' choices can be swayed when they follow these influencers, as they tend to perceive these influencers as having a better understanding and more hands-on experiences of using the products or services.

There are various studies discussing different factors that may impact a customer's purchase intention in social commerce. A study by Jin and Ryu (2018) pointed out how significant interaction effects exist between consumer characteristics such as materialism, opinion leadership, and the economic condition of social commerce users. The promotional activities done by influencers and companies alike can trigger the impulsive buying behaviours of the users.

Sohn and Kim (2020) found that there are several factors such as economy, necessity, reliability, and sales promotion that can positively influence purchase intention in social commerce. Another research by Meilatinova (2021) suggests that e-purchase and WOM intentions are positively affected by trust and satisfaction, where both trust and satisfaction are positively affected by reputation and information quality.

Key takeaways:

- Digital influencers are key opinion leaders, who disseminate information and whose consumption choices can influence their followers

- Choosing digital influencers can be tricky. Companies need to know the kind of attributes that an influencer should have to resonate with the audiences.

The next discussion on social commerce could include integrating different promotional activities in social commerce and issues related to the safety and security of conducting transactions in those platforms, even though several security mechanisms have been in place to ensure safer and more secure transactions, especially for the customers who recently embrace online shopping through social commerce. Moreover, discussions on social media habits and how those may influence shopping behaviours would be interesting avenues to explore.

Table 2 summarizes the key takeaways of the chapter.

Table 2. Key takeaways of the chapter

Topics	Key Takeaways
Social commerce in developing markets	Social commerce enables businesses to conduct more affordable transactions and promote their business in a more cost-efficient manner
Social commerce and social interactions	Social interactions are better enabled with social commerce features
Social commerce and customer interactions	Features in social commerce enable better customer interactions. For example, social commerce improves the possibility of social shopping, where customers do not do activities in isolation.
Social commerce and customer engagement	Social commerce tends to enable better customer engagement In social commerce, customers are not treated in isolation as they can establish a connection with the other customers and gain the necessary supports
Social commerce and co-creation	Social commerce differs from traditional e-commerce since it offers a purchase experience that enables more participation from the users in the form of content creation and content sharing Several social commerce features can enable content creation; these include recommendations, ratings, online forums, and communities.
Social commerce and design	There are two types of social commerce; e-commerce with social network platforms and social media platforms on social media websites A good social commerce design enables personalization and customer value co-creation. Usability, functionality, and sociability can have significant impacts on the consumer decision-making process
Social commerce and digital influencers	Digital influencers are key opinion leaders who disseminate information and whose consumption choices can influence their followers Choosing digital influencers can be tricky. First, companies need to know the attributes that an influencer should have to resonate with the audience.

CONCLUSION

Research on both e-commerce and social commerce in Indonesia is essential. As the country shows growing disposable income, it is evident that both e-commerce and social commerce are here to stay. Social commerce platforms should enable users to have better interactions with each other. Some features like 'reply,' 'retweet,' or others can be utilized to full advantage, as those features can, directly and indirectly, communicate the level of engagement that the users may have with a certain company's products and services. As Indonesians tend to be socially active, the existence of social commerce provides better opportunities for SMEs and companies alike to better interact with their customers. This chapter contributes

to the insights on social commerce in Indonesia. The discussions can help decision-makers involved in social commerce markets to create better business opportunities and a more conducive transaction environment for the users.

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KEY TERMS AND DEFINITIONS

E-Commerce: Business transactions conducted over the internet.

Opinion Leadership: A process that entails an individual influencing the attitudes and behaviours of others.

Social Commerce: A type of electronic commerce that relies on social media platforms to conduct transactions and interact with customers.

Social Identification: The way individuals sense who they are and how it is related to other people; will influence how this individual perceive others around them.

Social Identity: A part of an individual's personal identity that is derived from their belongingness to a certain social group.

Social Media: Internet-based applications that allow users to share a variety of contents, including texts, pictures, and videos.

Social Support: The perception that someone is cared for and attended to. In this context, social support refers to the supports gained from other people within the social network.

Chapter 17
This Thing of Social Media!
Indeed a Platform for Running or Developing Business in the Financial Sector

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ABSTRACT

This chapter is about social media and its networking platforms and how they can run or develop a business in the financial sector. As a platform economy, this sector ranges from shadow banks such as mutual funds, leasing companies, brokers, and credit insurance companies to other money market mutual funds. Nevertheless, recent studies in this sector have only focused on the money market, thus creating a vacuum of how social media can run or develop the banking sector through this platform. The social media platform has transformed drastically from being a place for just interaction to buying and selling, forcing many businesses to register on one or two of these media to take advantage of the ever-growing market potentials they offer. However, it also comes with its challenges. This chapter highlights how to manage this medium for a successful business. The study collected data online from bank clients who ever used this platform to transact financial business.

INTRODUCTION

In the current information and knowledge society, the objective of gaining competitive advantage has prompted the need to adopt information and communication technology (ICT) such as Social Networking Services (SNSs) to improve organizational efficiency. SNSs are virtual communities for users to create public profiles, interact with friends and meet people based on shared interests for social collaborations. These platforms come in different forms and models. The first platforms facilitate access to goods or property, and self-employment or services enabled platform economy (E.gs are; eBay and property rental websites like Airbnb). The second is platforms that organize local labor markets or goods exchanges

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and organize or create markets on trans-local and/or global scales (E.gs include Airbnb and Uber) (Drahokoupil & Fabo, 2016). Lastly, platforms that facilitate access to low-to-medium-skilled work (such as data entry or taxi driving) and those that focus on high-skilled activities (such as interior design) also exist (De Groen et al., 2016). All these are nowadays possible through social media.

Historically, SNSs are not meant for business purposes (Assensoh-Kodua, 2019) but to start and sustain relationships with the public. However, this has changed to the extent that LinkedIn and Twitter have created fascinating business models for their clients. Thus, it is no surprise that social media is undergoing intense studies to establish its potential to run or develop a business. Technologically, ambitious change in business organizations, predominantly concerning the rise of the Internet-enabled marketplace on social media, creates a platform economy for both goods and services and social interaction.

In the current information and knowledge society, the objective of gaining a competitive advantage has prompted the need to adopt information and communication technology (ICT) such as social media to improve organizational efficiency. As a result, many businesses have instituted performance systems on internet applications, such as search engines, e-business, and social networks, to achieve their aim of running or developing a business model that performs well. The explosion of online SNS for business activities continues to surge higher, providing opportunities and perils for various businesses. SNS features have given rise to social media, Web 2.0, and, more recently, cloud-based social applications whereby consumers can ubiquitously access vendors' services for data storage (cloud storage).

The growth of social networking online in terms of membership and usage has grown significantly to present substantial business opportunities (Pebrianti, 2016). If properly managed, it could address many of the socioeconomic problems experienced in recent times. In particular, business transactions conducted over social media have offered new opportunities, which have resulted in the following:

- Observing social distance in times of pandemic, such as COVID-19;
- Changing the human perception of traditional business practices;
- Enabling corporate presence on social media;
- Improving client support;
- Placing business information at the fingertips of the clients;
- Enabling distance education;
- Reducing costs of running a business;
- Facilitating low startup costs;
- Providing the capability to do business 24 hours a day, 7 days a week in a world 'without borders.'

Internet-based businesses, of which the most prevalent are those using social network services (SNSs), have been proven empirically to overtake socialization on social media soon by Assensoh-Kodua (2019). However, there are gaps identified by the above author and other researchers (Kayes & Iamnitchi, 2017) that confronts this new business model, such as usability, continuous usage, and loyalty, by SNS participants. Therefore, studies such as the current one are meant to fill these gaps of usage and loyalty by showing how social media can create a continuous intention for financial transactions and should be welcomed because ongoing intention can lead to the actual usage (Assensoh-Kodua (2019).

Social media are a significant source for business (Pebrianti, 2016, Assensoh-Kodua, 2019) that will go more than socialization in the near future. Suffice this prediction by noting that, per Pebrianti's (2016) research findings, SNS websites are ranked the most popularly visited sites by the average internet user. These findings suggest that SNS have become a fundamental part of the online experience globally,

providing a much-needed source for business and economic development. This chapter addresses this issue with this gap in mind by using empirical evidence to support the issues forwarded here. In this context, the document looked at the interaction between clients and vendors for a business whereby profit-making is the driving motive.

LITERATURE REVIEW

Social Networking Sites

Social media is a platform that was meant to connect people and build relationships online. It has many subsets of online social networking sites/services (SNSs) used for business. Thus, social media is broader than SNS since it includes an online application with social features (e.g., blogs, microblogs, forums, social gaming, product evaluation/reviews, virtual worlds). A business can take place via Facebook, Twitter, LinkedIn, MySpace, and other SNS, and it merely describes the act of engaging in a dialogue in a web-based forum. An excellent point to start analyzing social media for financial business is identifying the current trends across some of the most popular SNSs.

In 2012, it came to light that 201 billion videos were viewed per month on Google sites, 350 million Facebook users log in via mobile phone. The total of tracked internet users was 2.1 billion, websites amounted to 555 million, 1 trillion video playbacks on YouTube recorded, 5.9 billion mobile subscriptions noted, and 100 billion photos on Flickr noted (royal pingdom.com 2012: Internet). Currently, 53.6% of the world's population uses social media, with an average daily usage of 2 hours and 25 minutes (globalWebIndex.com, 2019). Some 3.6 billion people were using social media globally in 2020 and are projected to rise to almost 4.41 billion in 2025 (Clement, 2020). The most recent figure had it that 98% of consumers had used a social media network in the past month; thus, being an internet user means being a social media user (GlobalWebIndex., 2019).

This statistic certainly presents a business opportunity for the strong-hearted entrepreneur and a knowledgeable businessman who cares to stay on top of his game. However, being knowledgeable demands a swift understanding of the compelling factors that drive people to the SNS phenomenon and modulate them to participating agents' best interest.

Billions of people all over the world have been attracted by this recent phenomenon allowing individuals to:

- Construct a public or a semi-public profile within their community of networks
- Gather a list of other users with whom they connect and
- Crisscross their list of connections within the system.

The names used to describe these connections may vary from one website to another, depending on the sophistication level. Participation in social media consists of joining as a member and interacting with other network members by, for instance, sharing audio-visual content, contributing to forum discussions, exchanging views and ideas within communities of practice, sharing sources of information, collaborating towards a common goal, and searching for and socializing with members with similar interests (Zanizdra, 2020).

SNS's growth is impressive, with some of these networks reported having millions of members from across the world (Zanizdra, 2020). Therefore, it is no surprise that this phenomenon is currently undergoing intense research in e-commerce and information systems (Benamar, Balagué, & Ghassany, 2017). The private sector companies are also attempting to investigate SNSs to learn about emerging lifestyles that may affect traditional business models (Zanizdra, 2020). Among academics, higher education faculty members have also adopted social media in growing numbers, and 11 percent use SNS daily to pursue professional goals (Chugh, & Ruhi, 2019). This attests to the fact that SNSs have assumed the center stage of our social life, consequently requiring critical research.

Difference Between Web 1.0, 2.0, and 3.0 for Business

To develop a thriving financial service running on SNS, it is imperative that the service providers understand the difference between traditional Web-based sites for a business that runs on Web 1.0 instead of SNS, which runs on Web 2.0.

While the technology behind Web 1.0 is a static file system that only permits communication through email, separated from Website, Web 2.0 is based on social technology, allowing users to generate their content, usability, and interoperability. Thus, the Web 2.0 SNS allow the user to have real-time feedback and interaction with the service provider. Transactions on Web 1.0 are based on one-to-one interaction, while Web 2.0 is a dynamic interaction that allows many-to-many interactions and socialization. The only channel opened to a client to do business created with Web 1.0 technologies is email, phone calls, Websites, etc. To do the same on Web 2.0 is enabled by social media of dynamic client-driven touchpoints. Thus, Web 1.0 flow of message from service provider to the client is inside-out, whereas it is outside-in for Web 2.0. The outside-in or the pull marketing strategy empowers the organizations to capture clients' attention that seeks information about a product or service. For example, those considering different investment options to make the best buying decisions can review the content generated by other users since the social interaction on SNS typically happens through online communities. Engagement in these communities leads to more informed and better decisions online in the financial sector, which users acquire with less effort. This also enables customers to voice out their satisfaction or displeasure about services or products. In this manner, SNS vendors can generate new business ideas based on user comments, such as user likes and user engagement experiences.

The inside-out creates an organized kind of control for Web 1.0 instead of the pull marketing socialization for Web 2.0. The design of Web 1.0 is internally focused, but for Web 2.0, it is a value chain through a total/group of networks. These ambivalences work well for the platform sector to adopt Web 2.0 technologies that accord network analysis instead of subject-oriented analysis for Web 1.0. To this end, information dissemination or marketing on Web 2.0 can simply spread like a virus when this is not possible with Web 1.0. This can lead to 'e-word of mouth' (electronic word-of-mouth occurs when people discuss products, brands, and services among themselves on the Internet) dynamics on Web 2.0 with its bandwagon effects instead of just static returned purchase. Therefore, the Web 2.0 SNS platform is ideal for service-oriented providers like banks more than the goods rendering businesses.

***Web 2.0 for business*:** Web 2.0 is a new approach to web design and content creation that encourages dynamic interaction. It allows active participation through social networking, social media sites, and a wide variety of user-generated content. Social media facilitates social networking, although social media sites have capabilities beyond social networking and are Web 2.0. For example, YouTube is mainly a video-sharing site; however, the comments section is a social networking forum. Thus, web 2.0 is a

technology that enhances interaction on the Internet. Whelan (2019) posits that: "Web 2.0 is the business revolution in the computer industry, caused by the move to the Internet as a platform, and an attempt to understand the rules for success on that new platform. Accordingly, services on Web 2.0 is in three different forms (Hoegg et al. 2006):

- Platforms, which offer the means for users to express themselves,
- Online collaboration tools, which aim to improve processes by making information accessible from every location, and
- Community services: unifying users through a common objective.

As emphasized by Anggreani and Felix's (2022) chapter on social commerce, organizations are beginning to recognize and use the power of Web 2.0. More specifically, they interactively communicate and engage with their supply chain partners while providing their customers with a sense of empowerment and engagement (Wehner et al., 2017; Wirtz et al., 2014). Innovapost is one such organization that has started developing strategies to make the most opportunities in this new environment (Assensoh-Kodua, 2015). For example, Innovapost used Web 2.0 technologies to develop a new portal that allowed its employees to seek new opportunities within the company while allowing managers to post opportunities. Such continuous practices can give rise to a business model, especially if other technologies are developed to further exploit Web 2.0's capabilities.

With Web 3.0, data is decentralized, which means a massive advancement in the current technology of Web 2.0, where data is primarily centralized. Hence, users and machines will be able to interact with data in an unprecedented manner.

***Web 3.0 for Cryptocurrency and Blockchain*:** Web 3.0 networks, through their decentralized protocols, will serve as the main pillars for cryptocurrency and blockchain technologies. Thus, there will be a strong merging between these three technologies and other fields for interoperability, automated through smart contracts. This will be used to power anything and will completely change companies' ways of doing business.

SNSs for business: LinkedIn and Twitter are the two of the numerous SNSs that have made remarkable efforts in using this SNS for business purposes (Ahmed, 2019). Accessing and interacting with these platforms is provided by the principle of facilitating interaction between users and computer, using an application programming interface and software middleware that gather geographically dispersed resources (Assensoh-Kodua, 2015). This makes the phenomenon attractive and easy to use. As such, LinkedIn and Twitter have played a leading role in this regard. Twitter, for instance, is a microblogging service that proliferated within three years of its existence. In that period, it commanded more than 41 million users, over 41.7 million user profiles, 1.47 billion social relations, 4 262 trending topics, and 106 million tweets (Brady et al., 2017). Besides, if an SNS serves as a facility geared toward career management or business goals, SNS with a more serious corporate image, such as LinkedIn, is preferred (Harder et al., 2017). Social media use social technologies (or social networks) to provide new productivity strategies for many organizations, thereby improving their overall business performance. Businesses worldwide are discovering how social media technologies hasten knowledge dissemination, innovation, and collaboration to improve productivity, and many have benefitted tremendously from using SNSs for advertising and promoting their products and services (de Fraga, & Chaves, 2021). The financial institutions might be no exception in using this business model if they could invest in it and ensure the culture of learning for innovation. Unfortunately, most financial institutions, including the banks, have just started to dis-

cover that social media could be used to increase productivity, connect with clients, drive more profound insights into product development and marketing, read and answer emails of both current and potential clients, search and gather information on clients, competitors and collaborate internally (Petropoulos, 2018). When accompanied by effective management processes and cultural transformations, the study revealed that social media could improve the financial workers' productivity by 20 to 25%. Thus, there are benefits to using social media by organizations, including the financial sector.

SNS and the Financial Market Innovations

The finance industry can use SNS to revolutionize the sector, which is becoming a reality. However, it has been slower to grow because professionals were less willing to share their investment estimations on the platform. Instead, many financial professionals have used their Twitter accounts to follow breaking news or shared articles, and data analytics have also used cases on the platform to garner insight into decisions. The early adopters of social data analytics in finance were a small group of hedge funds and high-frequency traders–most of whom were private practitioners. Notable among these was Derwent Capital, which employed a Twitter-only analytics strategy (Greenfield, 2014). Unfortunately, the firm did not survive. Notwithstanding this, however, notable news, events, and information continued to be released on Twitter, whipping up the financial community's interest during 2013. Significant Tweets in this year included (Sherr & Benoit as in Lazonick & Shin, 2019):

- The SEC verification that companies could use social media outlets to announce critical information in compliance with Regulation Fair Disclosure; and
- The Tweet of a famous investor that the APPLE company was going to be significantly undervalued caused the stock price to jump and add $12.5 billion to the market value.

The above incidents aroused financial professionals' attention, causing expansion of social media data monitoring and analytics tools to the professional workstations. The consequential effect was the inspiration of more hedge funds, prop traders, and analytics providers to explore new approaches to capture alpha from social data and the thousands of micro-events that go unnoticed every day. Social medial, and thus, information technologies, have significantly increased the speed of information processing and distribution worldwide, and the SNSs have played their role in this sense. Market participants are enabled with much information through computers to allow them to make the right decisions. Electronic trading has allowed orders to move across continents, directly from customers to brokers and dealers. Automated trade execution and international clearing and settlement have encouraged the cross-listing of securities and have further integrated world financial markets.

Today, traders have access to instruments and overseas markets, even after host countries' trading hours have closed. They can choose to share the sites with their affiliates in overseas markets, who can continue trading in daylight hours in their home countries. This automated trading system provides a 24-hour trading market without national borders that allow dealers to buy and sell automated matched orders according to price and time preferences. Furthermore, interactions between markets, which have been facilitated by SNS technology, have provided market participants with opportunities to diversify, hedge, and increase profits on their investments, thereby promoting the use of new financial products and instruments. This rise in derivatives has led to the over-the-counter markets that involve trading

over computer networks in securities tailored to individual investors, borrowers, and intermediaries' specific needs.

Benefits of Using Social Media to Run and Develop Financial Institution

Social media has a good impact on enhancing clients' relations and services, improving information accessibility, and reducing marketing costs (Parveen, Jaafar, & Ainin, 2015). The benefits could nevertheless be grouped as follows:

- ***Building client base***: Social media technologies such as social networking sites offer distinct advantages to both the financial institution and its clients. As relationships are deepened through social interaction on SNSs, the financial institutions are likely to create clients' loyalty for profitability. In addition, the client database is inexpensive compared to the cost of creating a new one. Lower transaction costs, extended market segment, convenience round-the-clock financial transactions, decreased dependence on brick and mortar branch business, time and energy saving are some of the benefits of the SNS platform. In short, the adoption of online technologies will offer invaluable advantages for financial services, such as the influence of social norms. For instance, DenizBank in Turkey recently announced that they would create a Facebook profile to allow clients with Facebook accounts to transact business anytime while monitoring their daily businesses with the banks (Yaşar & Kiliçkaplan, 2020). In this manner, contacting clients will be much more comfortable, primarily through their handheld devices, to collect their feedbacks. Given that many people have these devices nowadays, the possibility of it creating a bandwagon effect to comply with the social norm is high.
- ***Client service:*** Per the American Financiers Association, most American sets are already engaged with their clients over social media channels to address their problems (Baum et al., 2019). The Bank of America sees many of the same Twitter questions on usual communication channels like telephone or in person. If they could answer these questions on Twitter for their clients, there would be no need for walk-ins or telephonic inquiries, except for the sensitive nature of financial transactions that may not allow clients to use social media for some matters. Issues like queries about the status of mergers between two financial businesses and questions relating to products and online banking could be dealt with on SNSs. This is undoubtedly likely to enhance the client's satisfaction. The study from Korea (Seyyedamiri & Tajrobehkar, 2019) lends some kind of support for this argument. A survey was administered over four months, with a population sample size of 720. The findings demonstrated that the flow of content value was interactive and dynamic, thereby creating operational content for user interaction.
- ***Relationship building:*** Financial businesses could use social networks to run personality studies. For instance, right from attending college to the first day at work, buying first cars and homes, to pension savings, humans deal with a financial institution. As these institutions look forward to building a lasting relationship with people around their products and services, the SNSs provide the golden platform for achieving those objectives. For example, the US Missouri Bank (MoBank) utilizes social networks to positively present an image on their Facebook as an online neighborhood that cares for their clients. Building community relations of this nature to know clients and vice versa positively influences both parties' trust for a lasting business. Publication content via social media attracts community members' attention toward the campaigns and positively influ-

ences community members' attitudes toward the new product or service (Baum et al., 2019). Through the content generated on social media, customers can learn about other participants' reactions toward a product/service and take some cues from their experiences. Clients can then make a more informed decision about their new investments and products.

- ***Research and development (R&D):*** Financial businesses could use social media to determine how clients perceive their products and services. This will enable them to fine-tune or develop new products and services that meet clients' expectations, thus stimulating their continued usage. For example, companies can use SurveyMonkey tools on social media to study their client's needs and use that knowledge to build new products and services to address these needs. Some of these tools can also be used to conduct online surveys to develop a financial lifecycle for their clients. This can also allow them to identify potential clients in their early ages for future engagements. Stephen et al. (2016) studied the impact of social media applications as an informal source in new product development processes in multinational corporations (MNCs) and the fast-moving consumer goods sector. They reported findings that are in line with those recounted by Baum et al. (2019) with a sample from five multinational companies. The outcome suggested that MNCs can use social media platforms as a formal source to provide information in the new product development process instead of relying only on their own trusted and dedicated R&D sources.
- ***Enhancement of new product development (NPD):*** Stephen et al.'s (2016) studies above show that SNS can support NPD. This is because the interactive nature allows clients' inputs in the form of comments and tweets that are taken into consideration. According to Bashir et al. (2017), proper use of SNS in the NPD process generated more valuable information (customers, needs, wants, brand perceptions, etc.) that can be used in the NPD process and improve the quality or performance of existing products. The R&D departments in high-tech companies also use social content marketing via social media platforms as a formal source of effective idea generation in the new product development process (Bashir et al., 2017).
- ***Enhancement of Profits:*** Instead of the old outbound marketing methods of buying ads, email lists, and paying for leads, the out-in marketing strategy of Web 2.0 focuses on creating quality content that pulls new clients toward the company and its products, where they naturally want to be (Patrutiu-Baltes, 2016). SNS content is crucial for companies seeking to maximize profits by promoting their services or products in a competitive market (Rahimnia & Hassanzadeh, 2013). Goh et al. (2013) studied the impact of social media on a firm's profits and reported that user-generated content instead of firm-created content had a considerable impact on profits. The study of Shriver et al. (2013) also identified social ties in the content-generating process on SNSs. They recognized that strong feedback effects between content generation and tie formation could improve the return on investment. Kumar et al. (2016) also considered how the firm-generated content on social media affects sales when the site is easy to use. On the other hand, customers tend to show resistance to high-tech products whose function is beyond their understanding or ease of use.

Downsides of Social Media and How These Can Be Handled to Develop Business

- ***Reputation:*** Social media is a thing for the public (Assensoh-Kodua, 2019). This means that every posting goes public for both positive and negative comments. This social media's complicated and imminent nature demand that a staff member with specialized, creative, and human relations skills be presented online to safeguard the company's brands, status, and assurance to doubting

customers. This requires an experienced member. Given the sensitive nature of this sector and their corporate reputation, financial institutions need to ensure that the right person is selected to handle social media content, identify old and false information meant to tarnish a reputation. They will also need to ensure the firm's tone brand are consistent.

- ***Hackers:*** Professional hackers who make a living from these malicious activities abound online, looking for an opportunity to exploit human vulnerabilities. They can take over a business' page for their selfish interest. Thus, adequate security controls and preventive measures need to be implemented to reassure clients who refuse to do financial transactions through social networks because of hackers.
- ***Hostile public relations:*** The most significant challenge that confronts SNSs is the uncontrollable nature of this platform. Participants can upload anything at all to cause harm to companies before such could be noticed for retraction. Firms are advised to assign full-time workers whose responsibility is to represent the organization online - promoting the firm's interest and interacting with curious clients who want to learn more about the business to deal with this kind of threat. In this manner, trust will be established, and the clients would also have the opportunity to collect facts first-hand from the firm. It will then be easier for the firm to sell its ideas, products, and services to such clients on their social space with little or no hustle, as the trust is already established. While firms hope for an affirmative online client relationship, it will require a well thought and trained personnel to build this rapport because social media could be used to "make or break."

Acceptance of SNS by Financial Institutions

The ICT adoption in the financial sector, particularly the banks, has seen widespread usage. This has taken the form of electronic banking, internet banking, and mobile or cellphone banking. However, this industry's use of SNSs is still in its infancy compared to its anticipated usage level. Furthermore, an analysis of a social media audit industry report (Wachyudi, 2018; Assensoh-Kodua, 2016b) reveals that the financial sectors are falling behind in engaging this strategy with their clients on social networking. This could be attributed to a lack of knowledge or appreciation of such media's benefits to their operations. Therefore, this chapter intends to highlight some of the benefits by theorizing the positions stated in the preceding sections.

THEORETICAL FRAMEWORK

This section's theories are based on user satisfaction and continuance intention, from the expectation-confirmation theory (ECT) of the behavioral sciences due to their strong associations with social norm, from the theory of planned behavior (TPB) because it influences behavioral intentions; and trust from the theory of socio-cognitive trust (TST) since trust is essential in the platform economy.

The Expectation-Confirmation Theory (ECT)

Research into social networking studies has revealed that online shopping behavior has been considered using constructs such as satisfaction and users' continuance intentions. The ECT, by Sharma, and Sharma (2019), contributed to investigating individual user satisfaction and continuance behavior with

IT or IS, having conducted research into cognitive beliefs and affect, including IS users` intention to continue using IS (social media). This IS continuance model has been empirically validated, whereby the results show that IS continuance intention is determined by users' satisfaction and the usefulness of the IS (Gao, 2020).). In light of the evolving nature of social media and the multiplicity of benefits it affords participants, the continuance intention model of Prihatiningtias and Wardhani (2021) argued that usefulness constructs become obsolete as users continue to use the said IS in their daily endeavors. In other words, IS use becomes a habit.

User satisfaction: Electronic commerce has looked at the concept of online acceptance and purchase behavior through SNS and has described user satisfaction as a linear function to define the inconsistency between a user's first-time adoption and acts (Kaleem, & Zaheer, 2019). It should be noted here that the relationship between user satisfaction and usage first stems from the formation of continuance intention as a precursor to the actual usage (Hsiao, Chang, & Tang, 2016). Suppose a financial sector intends to enhance its client service as done by the US Financiers Association and, therefore, engage with their clients over SNS to address their problems. In that case, these patrons' satisfaction levels will likely be boosted since they will be saved from the hustle of traveling to and from the banking office, granted all other factors are held constant. Therefore,

H1: Clients' satisfaction with SNSs will positively influence their continuance intention to use SNSs for financial transactions.

It could be deduced from the above that a dissatisfied client can discontinue using the SNS for financial purposes, with the possibility of influencing others who look up to them for directions and vice versa. This influence is exerted through the social norm, which is pressure to perform or otherwise, a behavior that important ones would approve or disapprove of. Thus:

H2: Clients' satisfaction with SNSs will positively influence others to use SNSs for financial transactions or otherwise.

As pointed out in H1, clients' satisfaction can boost their trust, which will impact their patronage level to use SNS for financial transactions. This trust would even develop better when clients have confidence in their service providers' integrity and decide to transact with SNS. As a result:

H3: Clients' satisfaction with SNSs will positively influence their trust in SNSs for financial transactions.

The SocioCognitive Trust Theory

The sociocognitive trust theory (TST) defines trust as a notion appraised by agents in terms of cognitive ingredients (Falcone & Sapienza, 2018). Trust is one of the greatest assets in building lasting and engaging relationships for companies to engage and secure customers continuously for ongoing, real-time feedback and insight. Companies that need a deeper understanding of their customers through this trust have not relented their effort to register their presence on the SNS platforms because it is a very significant determinant of SNS loyalty. While trust is found in personal correlations and back-to-back interactions between consumer and vendor, it will affect consumers' confidence in the vendor's performance in the future. It can grow the positive feeling of consumers to repeat visits to the website to create

business opportunities (Kim & Lee, 2019). The SNS platform has become one of the best tools to build meaningful relationships with customers online based on trust because of its social nature.

Perceived trust: The TST defines trust as a notion that agents appraise in terms of cognitive ingredients (Hawlitschek, Notheisen, & Teubner, 2018). TST treats trust as a relational factor between a trustor (trust giver) and a trustee (trust receiver). When clients trust their SNS financial providers to be safe and reliable, they will have no issues using it for financial transactions and vice versa. Therefore:

H4: Perceived trust in SNSs will positively influence clients' continuance intention to use SNSs for financial transactions.

As these clients become happy because of their trust from the SNS usage, they can tell their friends and relatives to use it. As the saying goes: "every satisfied client tells only 1 to 3 others, but a dissatisfied one tells 7 to 15 others." The greater the perceived trust among clients, the more promising social norms and information sharing will be. Consequently, clients can influence others because of this trust, thus:

H5: Perceived trust in SNSs will positively influence clients' ability to pressure others to use SNSs for financial transactions.

Theory of Planned Behavior (TPB)

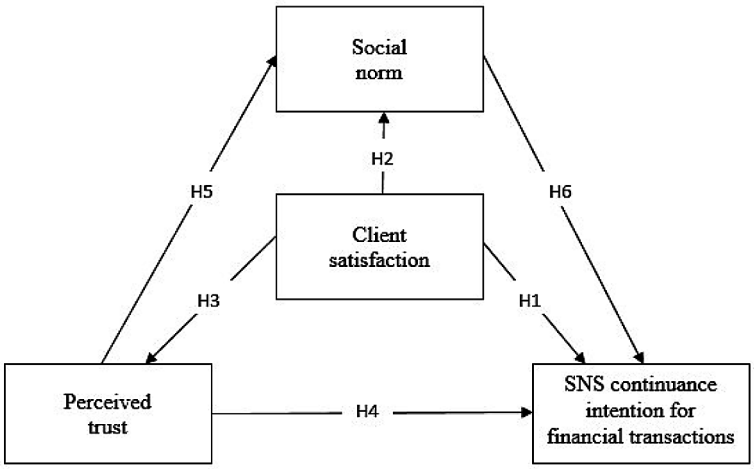
Past information system (IS) research has been conducted under the implicit assumption that IS (social media) usage is mainly determined by intentional (planned) behavior. For instance, the theory of planned behavior (TPB) has helped to explain why a woman may or may not use birth control. According to this theory, a woman's intention, and consequently, her actual behavior, is directly influenced by attitudes and social norms (Sutton & Walsh-Buhi, 2017). Of these, the social norm is expected to have an indirect impact on actual behavior through its influence on intentions (Sok et al., 2021) and is also thought to have a direct effect on behavior when used as a substitute for a measure of actual control (Sok et al., 2021). TPB explains and predicts users' intentions to specifically continue using a Web-based learning program (Rahardja et al., 2019), for example, and the decision to accept and use social media could be influenced by one`s choice of their social norm.

Social norm: The social norm construct is of the TPB origin and is used as proxies to determine the continuance intention of IS such as SNS. The literature on the theory of planned behavior (TPB) has shown a strong link between social norm (SN) and technology adoption such that, when a user is pressured to conform to the usage or social norm of their referent others, coupled with satisfactory reasons, they conform to this social norm, and this enables intention to use to be measurable. Many other scholars (e.g., Hsu, & Lin, 2015.; Boss et al., 2015) have also supported the relationship between social norm and continuance intention as reliable as before. This study, therefore, proposes that:

H6: Clients' ability to influence others to use SNSs will positively lead to their continuance intention to use SNSs for financial transactions.

Based on the combinations of H1 to H6, Figure1 is derived as the conceptual model.

Figure 1. Proposed SNS continuance intention index (SNS-CII)



METHODOLOGY

Measurement Model

This document used a quantitative research approach to investigate the issue at stake empirically. Thus the instrument for data collection was structured and hosted online. The Partial Least Square-Structural Equation Modeling (PLS-SEM) was then used to analyze adoption and continuance intention to use SNS for financial transactions. PLS is a predictive analytical tool, variance-based and nonparametric, robust, and best for prediction. Thus, when this study's results are within acceptable values, it will mean SNS and the arguments presented in this document support social networks for running and developing business. This is because PLS supports exploratory and confirmatory research (Rodebaugh, 2016; Hoff & Bashir, 2015). A 5Point Likert scale from Assensoh-Kodua (2016a), ranging from 1 (strongly disagree) to 5 (strongly agree), was used to operationalize the data.

Sampling Methodology

Of the 270 responses, the female population (55%) surpassed that of the males. Information provided by the respondents on their SNS usage behavior shows that they were experienced SNS clients. Twenty-eight percent (28%) specified that they had used SNSs between 21 and 50 times, 10% Just once, 13% between 2-5 times, 25% between 6-20 times, and 24% said they had used it more than 50 times.

Data was collected from a bank's clients who carry out financial transactions through SNS, according to the bank. A total list of 450 clients was contacted for this study from ABSA, Standard Bank, FnB, and Nedbank, all in South Africa, out of which 270 responded to the questions mailed to them for analysis, representing a 60% response rate.

Analysis of Measurement Model

The reliability and validity check of the measurement model was done through the confirmatory factor analysis strategy to establish how factors measured with multiple item scales reflect the exact scores on the factors relative to the error (Raza, Qazi & Umer, 2017). Internal consistency and composite reliability were used to achieve this. The consistency of various responses to items within a scale was assessed with composite reliability (CR) (Revythi & Tselios, 2019) to offer a more reviewing approach of overall reliability measure of factors in the measurement model and estimate the consistency of the factor itself, plus stability and equivalence of the factor (Vendemia, 2017). The CR was estimated to represent correlations between item and factor following the suggestions by Hair Jr, Hult, Ringle, & Sarstedt (2016), and the results are displayed in Table 1.

Since the values of composite reliability and Cronbach's alpha (grey cells) in Table 1 were above 0.7, the reliability (Hamari, Sjöklint, & Ukkonen, 2016; Hair Jr et al., 2016) of the factors used in this study is unquestionable.

The validity test was done to see if the measuring instrument measures precisely what it was meant to measure (Rönkkö, McIntosh, & Antonakis, 2015), and this was estimated through convergent and discriminate validity. Per Hamari, Sjöklint, and Ukkonen (2016), convergent validity can be estimated using a standardized factor loading, which should be above 0.5 as observed from (Table 1; values in brackets). Discriminate validity indicates the degree to which a given factor is genuinely distinct from other factors (Vendemia, 2017). This is estimated by comparing the Average Variance Extracted (AVE) with the associated square root (Hamari, Sjöklint, & Ukkonen, 2016), which must be greater than the square root of the inter-factor associations (Hamari, Sjöklint, & Ukkonen, 2016). Table 2 shows the AVE values and the correlations among factors, with the AVE's square root on the diagonal (in bracket). Since these values are more significant than the inter-factor correlations, the test of discriminate validity is passed (Hair Jr. et al., 2016). Given the values of both convergent and discriminate validities in this study, it can be concluded that measurement scales have sufficient validity and demonstrate high reliability.

RESULTS

Structural Model

The rule of thumb for PLS-SEM is that, after confirming the reliability and validity of the measurements model, the next step is to assess the structural model (i.e., Fig 1). For this, the structural relationships were hypothesized, and causal paths were assessed. The variance (R^2) of each dependent factor indicates how well the model fits the data, with R^2 showing the amount of variance explained by the conceptual model. Then again, Hair Jr, Sarstedt, Ringle, and Gudergan (2017) suggest a global goodness-of-fit (GoF) whereby the excellence of the model could be assessed in terms of both measurement and structural relationships by the following formula (Hair Jr. et al., 2017):

$$GoF = \sqrt{\overline{CI} * \overline{R^2}} \quad (1)$$

Table 1. Item loadings, cross-loadings, and reliability estimations

Items	Mean	STD	SN	US	PT	SNS-CI
SN1: It is expected that people like me use SNS for my financial transactions	4.00	0.95	**(0.874)**			
SN2: The nature of my life and work influences me to use SNS for my financial needs	3.94	0.96	**(0.908)**			
SN3: My mentors expect me to use SNS for my financial needs	3.92	0.96	**(0.882)**			
SN4: People I look up to expect me to use SNS for my financial transactions	3.90	0.97	**(0.811)**			
SN5: People important to me motivate that I use SNS for my financial transactions	3.89	0.94	**(0.728)**			
CS1: I am satisfied with the use of my SNS for financial transactions	4.05	0.92		**(0.878)**		
CS2: I am pleased with the use of my **SNS:** for financial transactions	3.97	0.92		**(0.877)**		
CS3: I am content with the use of my SNS for financial transactions	4.00	0.90		**(0.825)**		
CS4: I am delighted with the use of my SNS for financial transactions	3.98	0.87		**(0.735)**		
PT1: I feel safe in my financial transactions with my SNS	4.02	0.91			**(0.823)**	
PT2: I believe my SNS can protect my privacy	3.99	0.93			**(0.885)**	
PT3: I select SNS which I believe are honest	3.99	0.94			**(0.872)**	
PT4: I feel that my SNS is trustworthy	3.99	0.93			**(0.810)**	
PT5: I feel that my SNS will provide me with a good financial package	4.02	0.91			**(0.793)**	
CI1: I intend to continue sharing knowledge about SNS with others	3.97	0.88				**(0.846)**
CI2: In the future, I would not hesitate to use SNS for financial transactions	3.99	0.89				**(0.859)**
CI3: In the future, I will consider SNS for financial transactions as the first choice	3.95	0.91				**(0.903)**
CI4: I intend to continue using SNS for financial transactions	3.99	0.97				**(0.901)**
CI5: I intend to recommend the use of SNS for financial transactions	3.98	0.95				**(0.758)**
Composite reliability			0.925	0.919	0.921	0.931
Cronbach's alpha			0.892	0.890	0.893	0.907

SNS-CI (online social network's continuance intention), CS (client satisfaction), SN (social norm), PT (perceived trust), STD (standard deviation).

The formula aims to find the model's overall predictive power as well as showing both the arithmetical mean of the average commonality index (CI) and average R^2. In other words, the structural model's assessment allows the model's fitness to be determined and validated. Furthermore, each hypothesis

Table 2. Factor AVE and correlation measures

Factor	AVE	SN	CS	PT	SNS-CI
SN	0.756	**(1.000)**			
CS	0.697	0.742	**(1.000)**		
PT	0.701	0.648	0.604	**(1.000)**	
SNS-CI	0.731	0.502	0.542	0.585	**(1.000)**

Note: The bracket's value along the diagonal is the AVE's square root for each factor.

(H1 to H6) corresponds to a structural model pathway, and both R^2 and path coefficients indicate the model's effectiveness and efficacy (Hair Jr. et al., 2017). The following section discusses this assessment.

Model Fit

Next, the overall model fit indices are shown to show the uniqueness of this study's model. This was done using six measures: the average path coefficient (APC), the average R-squared (ARS), the average block inflation factor (AVIF), the goodness of fits (GoF), the average adjusted R-square (AARS), and the R-square contribution ratio (RSCR) (Kock, & Hadaya, 2018). Based on the results depicted in Table 3, again, the SNS-CII model has a good fit to show that, indeed, social networks on social media can be used to run a business or develop one. Furthermore, APC and ARS values are significant at a 5% level, while AVIF is still lower than 5. This concludes that a good fit exists between model and data (Creswell, & Creswell, 2017; Kock & Hadaya, 2018).

Test of Hypotheses

The statistical significance of the t-value for each corresponding path determines support for each hypothesis. This was done with the PLS-SEM bootstrapping techniques. Table 4 shows the result of the testing, whereby all hypotheses were supported. Client satisfaction shows a positive influence on SNS continuance intention (β=0.182, p=0.002). This supports hypothesis H1, to mean that it will do well

Table 3. Model fit quality indices

Fit Index	Model	Model's p-Value	Recommendation
Average path coefficient (APC)	0.356	<0.005	Good if P<0.05
Average R-squared (ARS)	0.471	<0.018	Good if P<0.05
Average block VIF (AVIF)	3.213		Acceptable if <= 5, Ideally <= 3.3
Goodness of Fit (GoF)	0.591		Small >= 0.1, Medium >= 0.25, Large >= 0.36
Average adjusted R-squared (AARS)	0.467	<0.015	Good if P<0.05
R-squared contribution ratio (RSCR)	1.000		Acceptable if >= 0.7, Ideally = 1

Table 4. Summary of the hypothesis test

Effect	Cause	Estimate (β)	T-value	SE	P-Value	Result
SNS continuance intention	User satisfaction	0.182	2.309	0.187	0.002**	H1 supported
Perceived trust	User satisfaction	0.714	12.260	0.058	0.001***	H2 supported
Social norm	User satisfaction	0.571	8.467	0.067	0.001***	H3 supported
SNS continuance intention	Perceived trust	0.343	3.825	0.090	0.001**	H4 supported
Social norm	Perceived trust	0.240	3.081	0.078	0.001***	H5 supported
SNS continuance intention	Social norm	0.079	0.935	0.079	0.052	H6 marginally supported

Note: SE (standard error), NS (not significant), *p<0.05, **p<0.01, ***p<0.001 (two-tailed t-tests)

when SNS is used to run or develop financial business. The study also shows client satisfaction to influence perceived trust (β=0.714, p=0.001) to support hypothesis H2.

Again, client satisfaction positively influenced the social norm (β=0.571, p=0.001) to support the third hypothesis (H3). Perceived trust proved to be a crucial factor in the financial transactions on the SNS stage by showing a solid persuading association with the continuance intention (β=0.343, p=0.001) to support hypothesis H4. The influence of perceived trust is also found to impact social norm (β=0.240, p=0.001) to support H5 of this study. The path coefficient between social norm and SNSs continuance intention for banking is noteworthy. This shows (β=0.079), at a significance level of p=0.052, supporting hypothesis H6 marginally. Thus, all hypothesized paths in the SNS-CII model were significant at various levels, as expected.

Having used a bootstrapping technique to obtain the corresponding T-values, when the significance level is 0.01, the acceptable T-value should be greater than 2.0 (Hair Jr. et al., 2016). Thus, the results suggest that the instrument's convergent validity is unquestionable (Geldes, Felzensztein, & Palacios-Fenech, 2017).

DISCUSSIONS

This chapter found that perceived trust, client satisfaction, and social norm influence social media`s continuous intention for financial business, respectively. Perceived trust was the most essential, direct determinant of the social media continuance plan. On the one hand, users might fear supplying their credit card information to any money-making service provider because of online security threats. On the other hand, a commercial, financial service provider may fear the effort of network hackers. This cycle of suspicion borders on trust- a critical issue to be considered when talking about online financial transactions on SNS. Therefore, this finding is of no surprise that perceived trust emerged as the most influencing factor to compel clients to use SNS for financial transactions and provides empirical support to the theoretical suggestions regarding trust centrality that are provided in this book (e.g., Armstrong Soule & Hanson, 2022; Boily, 2022; Henninger et al., 2022; Da Silveira et al., 2022). Given the percentage of clients who have used SNS for financial services only once (10%), it can be deduced that these

will only deal with SNSs that they perceive to be trustworthy. If they do not find a financial institution to meet this need, they will switch to another or, at worst, revert to traditional banking methods. This will be a blow for the SNS crusade for banking. Trust does not happen overnight but through a process and continuous interactions between a particular provider and the taker. Therefore, this study recommends that financial institutions on social networks search for holistic strategies to build the trust that clients seek to keep them coming back for continuous usage. This will undoubtedly improve the number of clients undertaking financial transactions than the statistics shown above.

The second most crucial direct determinant, according to this document, is client satisfaction. These findings give credence to Bhattacherjee and Lin's findings. Thus, this chapter provides the backing that client satisfaction is a post-purchase attitude formed through a mental comparison of service and product quality expected from an exchange and the level of service/product quality clients perceive from that exchange. From documentary reviews, it was discovered that most social media fans are not happy about their financial services websites and thus, refrain from patronage. Therefore, this study contributes to the body of client satisfaction knowledge that social media financial institutions should strive to make clients happy by reversing Consumer Satisfaction 1 to Consumer Satisfaction 4 (table 1) to know what causes clients' dissatisfaction for improvement. This could be done through Word-of-mouth, which is viewed as a social force that impacts consumers' purchase decisions.

The social norm exerts a marginal impact ($\beta = 0.079$, P=0.052*) (see Table 4). Consequently, this study believes that financial institutions, which intend to win more clients and to keep them coming back, should adopt the strategy of peer pressure to motivate users to use their websites. In particular, social media's popularity can be explored to create interpersonal interactions on blogs and in networking communities. After they come to the financial institutions' social networking sites, the business should do all it takes to assure the users' privacy and security and provide them with improved services and products. They should also adopt group banking strategies, whereby risk can be shared among clients in a networking manner (e.g., through swaps**:** a contract to exchange the difference between two cash flows at one or more settled future dates between parties). This can be used to manage interest and exchange rates threats. Swaps can also be used to (i) lessen funding overheads or gaps with groups, (ii) enter new monetary markets, and (iii) avoid controlling limits. Products or services discounted as special packages for groups to emphasize social norm`s effect of banking is another benefit of the swap strategy. This is an indirect pressure to create a group norm among clients. According to this study, most social media clients are young people (between 18 and 35). Before deciding to use social media for financial business, young people are far more likely to consult their social networks for advice. For these young people, social media mirrors the older generations' social groups and therefore relies on the word-of-mouth concept from their peers.

THEORETICAL IMPLICATIONS

Social media has become a double-edged sword that must be handled with extra care. If you mishandle it, the outcome could be costly reputational damage to the organization. If you ignore it, that could even cost a substantial loss to the organization. The many participants talking to many others simultaneously, when they want, where they want, and how they want, create a delicate scenario of both opportunities and perils. A single mischievous complaint from an angry participant can go viral and escalate into a

full-blown crisis in less than 24 hours. Understanding what customers feel, think, and say about the company in real-time is critical in this sector.

The growth of discussion around capital markets, equities, macroeconomic indicators, foreign exchange, and breaking news should be encouraged to serve as the base layer for valuable social analytics for financial services. This is because, given the rate at which SNS is growing among the financial sector in terms of structure, depth, and breadth of financial knowledge, soon, financial use cases, platform creation, user adoption, and relevant discussion will overtake insignificant discussions. Thus, the earlier the financial platform fine-tunes itself for this foreseeable future of opportunity, the better it will set the records straight for its clientele base. A significant catalyst of financial discussions on social media will be adopting the 'Cashtag,' which is the convention of adding the '$ticker(s)' tag to content to associate the discussion with tradable equities. Per Greenfield (2014), Cashtagged in comparable periods from 2011 to 2014 conversations on Twitter around Russell 1000 securities increased more than 550%, reaching several million messages per quarter. This is bound to grow even better in the coming years because social media will go for business than mere socialization (Assensoh-Kodua, 2019). The use of the Cashtag convention will expand beyond equities to foreign exchange, futures, commodities, and BitCoin sooner than later. Stock Tweets will evolve as the leading finance-specific social platform discussion in the sector. They will be an innovator in introducing new conventions and expanding financial discussions on Twitter and other platforms. For example, trading in Bitcoin diffused quickly to new exchanges in 2014, and there is a vast opportunity for alpha for the firms that can best understand the volatility in Bitcoin markets (Greenfield, 2014).

A report by KPMG, as seen in Williams et al. (2013) on the impact of social media on financial services, reveals that banks (like other industries) have an immense untapped opportunity to monitor social networks, analyze trends, and engage with customers to create relationships. Research must, therefore, be beefed up in this area to learn the best practices and controls.

MANAGERIAL IMPLICATIONS

Social media describes the customers' preferences, be it Facebook, Twitter, Linkedin – the endless amount of available data allows the crafting of customer profiles with a level of detail that would have been unthinkable even a couple of years ago. The availability of advanced analytics, abundant computer power, and cheap storage, advanced search and scanning capabilities will allow a bank to offer not generalized but truly customized offers to their customers. Successful financial institutions will have to take customer satisfaction to new levels, provided their underlying operating models can keep pace.

Once the financial sector has identified its social media plan, community management will play a massive part in its strategy. But, more significantly, trust and transparency are crucial, and the SNS channels are where the firm can show just how much they care about customers.

The financial sector will have to be quick to respond and stay focused when managing a community. This is because any slightest negative comment can do real damage that could take years to fix. Thus, this requires a dedicated resource. Understanding public mawkishness is just as crucial as managing a good reputation. The firm will have to instantly spot emerging crises to deal with them before they escalate. When investing more time and experienced personnel in social media, the firm must build a proficient community management team. The selection of sharp and intuitive people to manage the firms` social networks of business responsibly should be taken seriously and given all the needed support. The firm

needs to understand that as long as it continuously shows how much they care, the followers will continue to stay loyal to its platform and agenda for success.

Social media marketing is a new subject in this era. Even on mobile devices, its enablement makes it a formidable tool that the financial sector needs to take advantage of. However, extra care needs to be taken when dealing with it because of its double-edged sword nature. For example, suppose a trouble maker makes a complaint or negative comment based on inaccurate information, the firm should answer immediately to debunk the fabrication. Otherwise, the firm should not respond if it was just meant to steer up trouble because that might only amuse a more negative discussion that can tint the platform. A suggestion from practitioners is to encourage the customer to contact the financial company through a private line. This will deal with the issue away from the public domain.

A few Iranian companies have employed a documented social content marketing strategy to achieve their goals. Companies in Iran have used both SNS content publication and mobile media for presenting new products, while software companies also use social content advertising to epitomize their capabilities. Therefore, both social and financial content on mobile media can reach larger customers to run or develop business in the financial sector. This platform economy also creates new business ideas in:

- real-time
- opportuneness
- familiarity
- trust
- quick response and
- well-defined customer targets.

LIMITATIONS AND FUTURE RESEARCH AVENUES

The chapter did not see similar studies or models to compare the current findings despite a recent surge in social media research, thus, denying it the chance to match bricks and mortar financial operations of social networking type as elucidated here. Therefore, it recommends further studies since many financial institutions and businesses are trying to move to a digital form of social media operations. Again, online surveys generally have some intrinsic limitations, and this study is no exception. Respondents to the survey were self-selected and may have their agenda for participating in the study, rather than being randomly or scientifically selected. Moreover, if the data were self-reported, there is no guarantee that participants would provide accurate information. Future research studies should take the above limitations into account.

CONCLUSION

The current chapter aims to show how social media can serve as a platform for running or developing business in the financial sector. To this end, it assessed clients' acceptance and intention to use social networks to run and develop a business. It also sought to unravel the factors that influence people using social media for business instead of the well-known e-commerce models. The two platforms are not the same, but with a traditional e-commerce mindset, it is hard to see the difference between Twitter,

LinkedIn, and Facebook as distinct from e-commerce websites. Doing business on social media is more than just a platform for social interaction and social media adverts, but a place for creating rapport among potential customers.

After adopting the theory of socio-cognitive trust (TST), PBC theory, and ECT to build a new model that predicts social business intentions, findings suggest that trust, satisfaction, and social norm are crucial when doing business on this platform. PBC was not seen to play a significant role in continuance intention, but it is substantial with satisfaction. In considering social media to buy online for the first time, this study suggests that users were influenced by peers and social media adverts. Possibly, first-time users may also have developed a level of initial trust with any website where they have purchased before, as suggested in Wu et al. (2010).

Providing quality services and products seems to be why people become happy on a social business platform. However, it should be borne in mind by e-vendors on this platform that it is more about interaction than just products. Consequently, vendors should listen to what customers say and provide positive and timely feedback, seeing it as an opportunity to co-create new products and services. For this concept of using social media to develop and run a business to be successful, the technology companies and platform providers, such as Facebook, Instagram, Twitter, LinkedIn, etc., should be included in future studies since

It came to light that, for young people who commonly form the bulk percentage of these platforms, others' opinions and purchase decisions possess great value. This means that to have a business on social media, networks, e-vendor sites should think of strategies embedded in peer pressure to win a more significant market share. In this sense, belonging and social pressure play critical roles in predicting behavior. People, especially the younger generation, seem to be looking for approval from other important people. Therefore, e-vendors should keep these influences in mind when designing their websites. The study demonstrates that norm-based advertisement messages may help attract potential customers through group buying discounts strategies.

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KEY TERMS AND DEFINITIONS

Bank: A financial institution licensed to receive deposits and grant loans. It may also provide wealth management, currency exchange, and other financial services.

Business: An organization engaged in commercial activities for the purpose of either making profit or fulfill a charitable agenda.

Clients: A person who receives goods or services in return for payment.

Financial Transaction: An agreement between a buyer and a seller to exchange a commodity for payment.

Platform Economy: A business model that creates value by facilitating exchanges between consumers and producers through technology.

Social Media: Public thing that serves as a means of interactions among the public to create, share, and/or exchange information in virtual communities and networks.

Social Networking Services (SNSs): Internet-based collaboration among the public designed to connect friends/families for communication and content sharing across communities of networks contacts.

Section 7

New Frontiers in the Platform Economy

Chapter 18
The Paradox of Luxury in Digitalization

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ABSTRACT

Seeing the success of digital platforms and advancement, social media marketing has strengthened the relationship between buyer and seller from a mere commercial transaction to a personal connection. The outcomes of this interaction are meticulous, and like other industries, it has also revolutionised the luxury products industry. It has become pertinent for the luxury brands to participate in the online visibility for customer awareness, customer engagement, customer acquisition, and customer retention. Though certain challenges are there, there is a need to develop strategies to mitigate them for better positioning, building online trust and online value.

INTRODUCTION

"Luxury is a necessity that begins where necessity ends." Coco Chanel

Luxury is a state of one's mind. It is something that is available to few but desired by many. It is something that is linked with one's wealth, power, and status, among others. As per Tsai (2005), the motive for acquiring luxury brands is Buying to impress others. Luxury brands have created a market of their unique kind. In this brand-driven market, people buy the products due to the perception and popularity of the brand. Luxury can be a product to wear/carry; it can be the service that one experiences or can be

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the assets like cars, houses, and so on. Approximately luxury market is growing at 5% worldwide and becoming the preference or desire of each individual.

Earlier, this market was exclusive, but digitalization has made it possible to make the luxury market accessible to all. Increasing incomes, easy consumer credits, changing lifestyles, and so on have made luxury brands more affordable to a broader category of people across the world. Mostly, ultra-high net worth (UNHWI) and high net worth (HNWI) individuals like to purchase luxury brands, and this small segment is even less than one percent of the total world's population. But due to the evolution of the luxury market, new generations are turned into more active, knowledgeable, and demanding. They are getting younger and diverse. They are writing the new rules of this industry. As a result, brands are behaving proactively to the customer's needs and complaints. Luxury is not only about the high price, it's all about the unique experience. The customers want an emotional attachment and trust while investing in these expensive brands. There are eight pillars of luxury brand marketing: pedigree, performance, public figures, paucity, placement, persona, pricing, and public relations (Arora, 2013). Out of these, paucity and performance are the most important (Dhaoui, 2014). Arora (2013) defined paucity as the perception of a brand's scarcity and performance as its brand experience.

Due to the change in the segments of the luxury brands, the mode of targeting has been shifted from offline to online mode. Digitalization increases connectivity that allows access to anyone from anywhere. Brandt and Henning (2002) also stated that digitalization has made people communicate irrespective of time/pace and get exposed to worldwide knowledge. The customer is now not only using this digital channel for searching or downloading movies, photos, music, and so on, but he is engaging himself online by sharing, uploading his own views on different digital platforms. Being digital is the need of the hour for customers as well as for the brands. As per internet world stats Table 1, the total number of internet users in the world reached 4,949,868,338 as of 31st December-2020. China, India, and the US are the top countries in terms of internet users. Out of all world regions, Asia is having 51.8% [calculated as (Internet Users/World Internet users) * 100] of Internet World percentage, has 51.8% [calculated as (Internet Users/World Internet users) * 100] of Internet World percentage, which is much higher than other regions. The penetration rate in North America is 89.9% (calculated as (Internet users/ North America Population) * 100) which is highest compared to all regions. In Asia, China is at the top with 37.1% of internet users, India is holding the second rank by having 24.3% of internet users, Indonesia (7.4%), Japan (5.2%), Bangladesh (4.2%), Philippines (3.4%), Pakistan (3.1%), Vietnam (3%), Thailand (2.5%), South Korea (2.1%). It is found that 400 million people approximately from countries like Singapore, Indonesia, Malaysia, Vietnam, the Philippines, and Thailand came online for the first time in the year 2020. An increase in digital financial services, online health services, educational services, e-commerce sector, online health consultations, remote learning, and so on have contributed a lot to increasing Internet usage. As per a report by Livemint, India has the highest data usage per smartphone in the world, with consumption of over 11GB per month, and it is expected that it will rise to 18GB by 2024.

People are available more online rather than offline. The young purchasers have shifted their purchasing preference from traditional to digital. The customers are becoming more and more digitally engaged. So, making an online presence has become a mandate by the companies and brands. Marketers need to take into consideration how they are portraying their luxury brands in context to the Internet revolution. Belatedly, luxury brands have also realized the importance of being online and started using the Internet as the medium for communication to increase profits. Okonkwo (2010) also emphasized the importance of e-business in the luxury market. Nunes and Cespedes (2003) stated that organizations face the challenge of understanding the customer's needs through digital channels. Adding to this,

Table 1. World internet users and 2021 population statistics

World Internet Usage and Population Statistics 2020 Year-Q4 Estimates						
World Region	**Population (2021Est.)**	**Population % of the World**	**Internet Users 31 December 2020**	**Penetration Rate (% pop.)**	**Growth 2000-2020**	**Internet World %**
Africa	1,357,198,684	17.3%	6,338,856,922	46.7%	13,941%	12.8%
Asia	4,309,503,789	55.0%	2,563,503,922	59.5%	2,143%	51.8%
Europe	835,700,837	10.7%	727,848,547	87.1%	593%	14.7%
Latin America	658,382,700	8.4%	477,824,732	72.6%	2,545%	9.7%
Middle East	263,933,933	3.4%	184,856,813	70.0%	5,528%	3.7%
North America	370,146,066	4.7%	332,910,868	89.9%	208%	6.7%
Oceania/ Australia	43,138,089	0.6%	29,066,532	67.4%	281%	0.6%
World Total	7,838,004,158	100.0%	4,949,868,338	63.2%	1,271%	100.0%

Source: (www.Internetworldstats.com)

Schultz and Peltier (2013) found that the companies face the problem of engaging the customer rather than launching the digital channels.

Every industry today is influenced by digital platforms (Reuver et al., 2018). Facebook, Instagram, Twitter, Pinterest, like social media platforms, have changed the way people interact with others and share their experiences with them. Android and IOS operating systems brought a big transformation in the mobile telecommunication industry. Payment applications like PhonePe, Paytm, Paypal, Amazon pay, BHIM, MobiKwik, Google Tez, and so on have disrupted the banking and financial industry. Uber, InstaCart, Airbnb, OYO Life, Furlenco, or CanYa business models have driven the rise of the sharing economy. The sharing economy is an economic system in which assets and services are shared between individuals. Advancement in digitalization is the biggest driver for its growth. There is an exponential growth of virtual communities in the digital environment (Bagozzi & Dholakia, 2002). With advancements in technology, there is a shift in customer collectives, emancipation, and post-human consumption (Kozinets et al., 2017).

In the digital age, the authors have investigated the use of communication technology by consumers and how their individual and collective desire will alter with these changed conditions. The study stated that collective consumer innovation is taking new forms that transform the nature of consumption and work. This rapid change is emancipatory as digitalization has given the buyer more control than offline mode. The customer is having more and free access to the information anytime and anywhere. This empowerment, information access, and wide reach of digital platforms have changed customer's post-purchase behavior. Moreover, emerging technologies like artificial intelligence (AI), extended realities (Virtual reality, Augmented reality), big data analysis, the smart grid, and blockchain technology greatly impact luxury brands (Ertz & Boily, 2019). These technologies enable the customers to interact with luxury brands more conveniently and in a highly personalized way. Luxury brands are making use of these emerging technologies to generate faster and more precise consumer insights. With the increase in competition, real-time insights prove to be more beneficial to brands. The insights resulting from processing and analyzing millions and millions of conversations that people do on various social media

platforms. These insights help the brands to know much more about their customers, what they think and perceive, and how their preferences change from time to time. Keeping in mind the importance of digitalization in the luxury market, the researchers have framed the following objectives for the study:

- To study the extent the luxury brand content is disseminated in the digital world.
- To understand digital challenges in the luxury industry and how luxury brands can embrace digital multi-actor interactions to enhance their service encounters and strengthen their brand image. To examine how luxury brands digitally integrate customers and maintain their relationship through important effects on communication and branding.

This study is majorly focussed on discussing the various challenges being faced by the luxury brands to go digital, who are the top players in the luxury market, what are the marketing strategies being adopted by the luxury brands, and what new strategies luxury brands should adopt to give a more personalized experience to their customers. The various dimensions of luxury value perception are explained in this study. The researchers have stated the theoretical contribution, managerial and practical implications of the study, and the limitations and future avenues for the study.

DIGITAL CHALLENGE IN LUXURY MARKET

Unlike other products, luxury products are associated with high risks like financial risk (online payments) and product risk (counterfeiting problem) when purchased online. Due to the high expense of luxury products, people prefer to have a touch-and-feel experience in offline stores rather than buying it online. Counterfeiting is the major concern with the luxury brands for appearing online, and the e-commerce market is also linked with heavy discounts. When the customer searches for any luxury brand online, there are a number of fake products presented as real. The luxury market runs on customer's trust. So, once this trust is broken, it's become difficult to stand again. Luxury brands were reluctant to come online because they feared that heavy discounts and cheap imitations would forever spoil their brand image. There are two main reasons for the failure of online luxury marketing in online luxury, i.e., lack of feeling special and lack of trust element in the online environment. As per Sherman (2009), many luxury brands treat the Internet with caution, worrying that being online will dilute its sense of exclusivity. Exclusivity is considered the main characteristic of luxury brands (Okonkwo, 2009). Rarity and limited access to luxury brands justify their high price. That's why many luxury brand owners were reluctant to being digital and lagging behind the other sections in digitalization. On the other side, Riley (2003) stated that the Internet is very likely fulfilling the communication and information role for luxury brands but for less likely to be used for consumer acquisition. Due to the increasing online presence of customers and competition, luxury brands as well started appearing online. Hennigs et al. (2012, p.31) stated that "The internet is the perfect environment for luxury brands to create a sense of desirability with the distribution of the content that appeals existing and potential customers and to remain exclusive in terms of the selective distribution of the actual product." Hence, various digital channels can help luxury brand managers create brand awareness and customer acquisition. Still, they have to maintain the element of exclusivity, which is the main key component of luxury brands. The online luxury customer wants to have a special, stylish, and sophisticated experience. Moreover, although digital platforms contribute to flattening relations, especially two-sided markets such as the sharing economy (Da Silveira et

al., 2022), digital gig platforms, which are based on algorithm-based management (Torrent-Sellens et al., 2022), contribute to information and power asymmetries (Kinder et al., 2019) that have transformed the platform economy into a system segregated by occupation. It is thus examined as a set of distinct occupations rather than a homogenous industry (Lehdonvirta et al., 2019, Sun et al., 2022).

LUXURY BRANDS AND ONLINE TRUST

Despite the risks attached, the companies should not stop trying innovative ways to enhance customer engagement and customer acquisition. Due to technological advancements, there are a number of ways available to do so. For luxury brands, it is mandated to generate a feeling of security and safety among the customer along with personalized experience who purchase online. Luxury customers have high expectations from the brands as compared to the average customer. Trust plays a key role in the effective implementation of e-commerce platforms. Chen (2006) stated that trust is the most crucial factor that restricts people from engaging in online activities. Building and maintaining customer's trust in an online environment is vital for any company's success in a digital era. Due to high pricing in luxury brands, customer's fear mostly revolves around the financial risk associated with online shopping. People become more suspicious during online shopping due to a lack of personal interaction and lack of touch-and-feel of the product. Most online purchases are made relying on the photos along with the descriptions of the products. The virtual environment has made it important for e-tailers to develop trust in customers to maintain long-term relationships.

LUXURY BRANDS AND ONLINE VALUE

Due to the increase in competition, luxury brands are paying more attention to build and maintain long-term relationships with prospective and existing customers. Therefore, luxury brand owners should give proper thought to brand value in the customer's eyes. There are four dimensions of value perception among customers for luxury brands.

1. Financial Value: Premium pricing is one of the key characteristics of luxury brands (Fionda & Moore,2009). The price-value relationship is considered a very crucial factor for the customers. The Internet is mostly known as the heavy discount channel, so exclusivity of the luxury brands should be well maintained in an online platform with limited distribution of products.
2. Functional Value: It refers to the usability, uniqueness, and quality of using a website and other applications. Even elements of touch and feel are missing online, but digital platforms can leverage the brand image online through elements like music, movement, texture, and so on. In addition, luxury brand managers add value for customers through education and entertainment for increasing customer engagement.
3. Individual Value: Bauer et al. (2011) stated that luxury products support individuals in their individual identity projects. For being special, customers invest high money in buying luxury brands. They buy products for what they symbolize or represent (Dubois & Duquesne, 1993; Belk, 1988; Belk, 2014). Therefore, the luxury brand managers should involve the customers online with the brand by taking their opinions and making adjustments in the products accordingly.

4. Social Value: Luxury products symbolize one's status symbol. These products have a snob value associated with them. People buy and wear luxury brands to have good social standing. They broadcast their association with various luxury brands within social circles for their personal branding and acceptance in society.

LUXURY DIGITAL ARCHETYPES

McKinsey has conducted the research and found the set of metrics varying based on each brand's digital archetype. There are "plugged in pros," selective e-tailers," and "hesitant holdouts." Almost all luxury brands belong to any category depending on their brand positioning, channel strategy, and retail control.

Table 2. Digital archetypes

Plugged in Pro	Selective e-Tailor	Hesitant Holdout
Diversified Retail Strategy (both mono-and multi-brand store	Tight Retail Control (mono-brand sites only)	Small companies
Diversified Retail Strategy (both mono-and multi-brand store	Tight Retail Control (mono-brand sites only)	Small companies
360-degree use of digital, from social media to full-fledged online store	Opportunistic use of digital as an entry point for aspirational customers - Marketing Channels - Online stores for entry-level	Tight control of retail(mono-brand store only) -Use of online as a showroom only

Source: Dauriz et al. 2014, p. 4.

Once the luxury brand category is defined, the brand will compare its KPIs, i.e., Key performance indicators, with its rivals lying in the same archetype. Weak KPIs need to be modified, and strong KPIs should be boosted. As a result, it leads to performance enhancement and better results.

For many years, the luxury industry has not been pulled in by digital marketing due to its firm conviction that the Internet is especially helpful for limited items or customers concerned about luxury products not purchasing on the Internet. Therefore, marketers provided a personalized experience to the customers through physical stores. Nonetheless, luxury brands have before long understood that these days Internet acts as a critical success factor for luxury brands in the issue of creation, advancement, and brand management. Furthermore, it is interesting to emphasize the fact that the use of the Internet for many luxury brands still represents a "dilemma that luxury requires to overcome through avoiding e-commerce, whereas other literature has suggested that the Internet is purely a channel of communications for luxury brands" (Okonkwo, 2009, p. 302). These distinct viewpoints make it difficult to understand the power of the Internet and to manage it, even in an industry where innovation is a central feature. In fact, it is "an industry that is known for innovation, avant-gardism, and creativity" (Okonkwo, 2009, p. 303).

Essentially, they are viewed as incongruent because luxury is centered on selectiveness, while the Internet infers mass marketing procedures in light of its nature that everything is accessible whenever and wherever. Moreover, the use of the Internet also implies a lack of touch in the shopping experience in an industry where experience and emotion are crucial issues in a purchase process. Nonetheless, according to data, people seem more and more willing to buy some luxury items online, especially because of the

availability of online products and the physical impossibility to buy in a store. It is interesting to notice that luxury brands need to realize their digital positions and their direct competitors. In line with this, Dauriz et al. (2014, p. 4) posit that luxury brands have to be categorized according to some archetypes as per figure 1: "plugged-in proselective e-tailer," and "hesitant holdout. These archetypes show the degree of brands in terms of digital integration in order to explain both their own position and reposition of a brand. As it is possible to understand, organizations have to deal with critical issues, challenges, and opportunities to develop strategies in the digital environment, which is currently considered the most powerful tool for growth opportunities.

LUXURY IN DIGITAL AGE: BIGGEST CONCERN

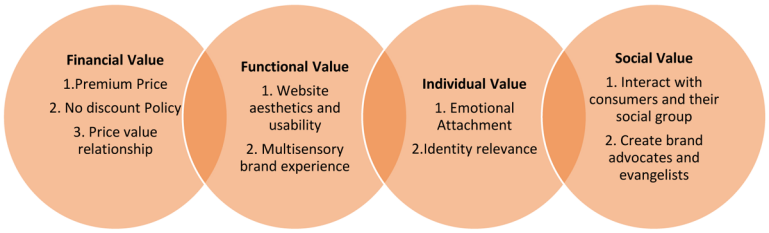
With the Internet ubiquity, the luxury sector cannot perform compared to the rest of the fashion world due to the beauty and motivating nature of store experience. However, with the advancements in technology, such as the usage of artificial intelligence and machine learning, but also augmented reality applications and pseudo-holographic systems (Morillo et al., 2019), as well as virtual try-on technology (Beuckels & Hudders, 2016), even some luxury brands are going for digitalization. In line with this, there are certain predictions that every fifth of luxury sales will be completed online by the year 2025, although many customers feel frustrated with a digital experience that is not aligned with the service they receive in-store (Hansen, 2021)

In purchasing luxury brands online, the customers are mostly facing the fear of financial risk and counterfeiting. They are mainly afraid of product deception risk while purchasing online, so they prefer buying luxury products that give them a touch-and-feel experience. The biggest challenge the luxury face nowadays is the increase in the counterfeit market related to heavy discounting combined with 360-degree product presentations that lure potential and actual customers. As a result, when customers search for a luxury brand online, they come across a number of counterfeits shown as genuine ones. Consequently, owners of the luxury brand are afraid to market their products online as digital platforms are having an image of a discount channel with the domination of counterfeits. However, with the coming of the phygital retail, Internet increased ubiquity, and print media decreased advertising returns, many consumers are buying luxury products online, but marketers need to develop innovative strategies for gaining the trust and creating a multisensory experience of the luxury brands for consumers digitally. To succeed in the era of digitalization, luxury brands need to be close to the customers, and they ought to give usability on an advanced stage. For example, luxury retailers like Net-a-Porter focus on making a creative buy by adopting a solid omnichannel approach. In addition, advertisers must impart brand as story feasible, natural, and vivid as present-day luxury is tied in with passing on a way of life. In accordance, with this Louis Vuitton puts specialists at the cutting edge of the brand, so do Celine and Yves Saint-Laurent by enchanting their clients through customized offers dependent on their individual perusing and purchasing history.

DIMENSIONS OF LUXURY VALUE PERCEPTION

Thee-Luxury Value Model aids in the comprehension of the luxury construct. Values can be viewed as convictions that control the choice or assessment of luxury (Schultz & Zelenzy, 1999). Unique kinds

Figure 1. e-Luxury Dimension
Source: Hennigs et al. 2012, p. 34.



of values impact buyer's buy decisions: A customer luxury esteem discernment and the intentions in luxury brand utilization are not just attached to a bunch of social parts of showing status, achievement, qualification, yet in addition rely upon the idea of the monetary, useful and singular utilities of the specific luxury brand. The luxury looking for customer's dynamic interaction can be clarified by primary factors that structure a semantic organization such as:

- **Financial Dimension of Luxury Value Perception** – The monetary measurement tends to coordinate money-related angles like value, resale value, rebate, venture, and so forth. It alludes to the estimation of the item communicated in dollars and pennies and to what in particular is surrendered or forfeited to get an item (Monroe & Krishnan, 1985).
- **Functional Dimension of Luxury Value Perception** – The useful component of luxury alludes to the center advantage and essential utilities that drive the customer-based luxury worth like the quality, uniqueness, convenience, dependability, and sturdiness of the item (Sheth et al., 1991).
- **Individual Dimension of Luxury Value Perception** – The individual measurement zeros in a client's very own direction on luxury utilization and addresses individual matters like realism (Richins & Dawson, 1992), gluttonous, and self-character esteem (Vigneron & Johnson, 2004).
- **Social Dimension of Luxury Value Perception** – The utilization of luxury merchandise seems to have a solid social capacity. Consequently, the social measurement alludes to the apparent utility people gain by burning-through items or administrations perceived inside their social groups, for example, obviousness and distinction esteem, which may essentially influence the assessment and the penchant to buy or burn-through extravagance brands (Vigneron & Johnson, 2004).

DOMINATING BRANDS IN ONLINE LUXURY

Louis Vuitton

This brand is one of the principal luxury brands having an extensive online system. As the Internet has formed into a social stage, social networks, such as Twitter and Facebook, have become consistently visited by many individuals worldwide. The Facebook page of this luxury brand has a large number of fans and offers customers the most recent news of the brand, information about items, and the organization. It also permits them to remark on these commitments. Individuals from the Facebook fan page are

Table 3. Value Perception Dimension

Value Perception Dimension	Financial	Functional	Individual	Social
Louis Vuitton	✓	✖	✓	✓
Burberry	✓	✓	✖	✓
Gucci	✓	✓	✖	✓

offered recordings of style shows and foundation data, photographs, and tales about the brand's history, for example, "The Art of Travel" by Louis Vuitton. Also, Louis Vuitton gives the chance to customize items. As the Internet is regularly utilized for data chasing, the costs are introduced straightforwardly yet not overwhelmingly and never marked down, which compares to the disconnected value system of Louis Vuitton, along these lines tending to the budgetary worth.

Gucci

As to the Internet shopping experience, Gucci must be referenced as one of the precursors. The brand is exceptionally creative in their item introduction as the site offers a video cut where items are emphasized on experience direction and can be purchased legitimately. Furthermore, with more than 5,000,000 devotees on Facebook, Gucci is ubiquitously situated on social platforms, just as personalization is crucial on the brand's site.

Burberry

"The Art of Trench" made Burberry one of the best luxury brands with respect to user-generated content. As users can communicate with each other and with the brand, it provides value through direct connection and social value needs. Burberry's online presence is innovative; it integrates the users, lets them experience the brand, and creates a vast world of the brand. Product information and prices can be found easily, while the focus is on non-monetary values.

MARKETING LUXURY IN THE DIGITAL AGE

Unquestionably, luxury lifestyle brands need to respond to high net worth (HNWI) individuals and ultra-high net worth individuals (UHNWI) rising engagement with digital channels and stay relevant to these target groups. Therefore, brands should not be shy about adopting innovative new ways to engage with their audience, and the rise of technology provides huge potential benefits to do so. However, the real secret to a successful digital marketing strategy for luxury brands and products is creating stand-out, personalized experiences that evoke both the atmosphere of the luxury you are trying to sell and inspire a feeling of security and safety in purchasing from your brand.

Digital technologies are shaping our environment; in this sense, fashion is no exception from the impact of the digital transformation, changing both the market and consumers' practices of consumption (Ando et al., 2019). In line with this, Bertola and Teunissen (2018) recommended that luxury brands

mainly concerned with fashion should be considered an enjoyable environment to evaluate the implications of the so-called Industry 4.0 paradigm and the digital transformation. As stated by Kalbaska et al. (2019), luxury is also a matter of communication: from a more personal level, luxury helps people to communicate their own identity, which they are and also who they would like to be, and from a wider level, it gathers together many communication and marketing experts, coming from different fields and having different backgrounds. The increasing societal impact of luxury as a field has also been made possible due to the changes in technology and the interactions that the fashion sector has developed within the digital framework (Guercini et al., 2018). Nowadays, fashion can interact with information and communication technologies across different layers, concurring in the adoption of digital media and in the development of new ways of designing and producing (Rocamora, 2017), helping communities to identify practices of the self and intertwining with all the aspects involved in globalization. Recent studies show how the use of the Internet reveals itself as a critical factor for fashion companies when it comes to creating interplay between online and offline channels (Guercini et al., 2020). Luxury actively interplays with digital media or ICTs, becoming a fertile ground for integrating digital tools into the luxury business and industry and within the experience of customers and prospects (Kalbaska & Cantoni, 2019). It is also a vivid research domain, including interdisciplinary studies, varied approaches, and multiple research methodologies (Cantoni et al., 2020).

MARKETING STRATEGIES AND CONSUMER BEHAVIOUR OF LUXURY BRAND

With the digital revolution, the relationship between digital marketing and luxury brand purchase has become a new phenomenon. First, considering firms need to work on marketing activities that involve creating luxury perceptions, such as perceived quality, social, personal, and functional value, these perceptions motivate customers to share information and give recommendations to others on digital platforms. In addition to this, brands might need to emphasize the importance of the functional value factor as it is the most influential factor. Second, while firms pay attention to developing a marketing strategy to encourage consumers to engage on digital platforms in the context of luxury brands, they need to emphasize the right target market. Furthermore, social networking sites play a dominant role in creating a place where luxury consumers can showcase their social status to other users in their social communities. Thus, firms should identify the market based on perceived social status, and then they should try to enhance luxury brands that are able to deliver social status attributes since the engagement in social media tends to vary. Overall, working on identifying market segments could allow firms to adopt personalized and customized strategies to market their luxury products and services to satisfy consumers' needs and preferences on digital platforms.

THEORETICAL CONTRIBUTION

Digitalization has left all industries mesmerized with surprising results; it has also revolutionized the luxury products industry. Digitalization has a greater impact on how luxury customers choose the brands. Various digital technologies enable the brands to use the data insights to get closer to the shoppers and to capture their emerging preferences. The decision to participate in the digital environment is crucial

for luxury brands to strengthen the brand. No luxury brand can afford to ignore the importance of various digital tools available.

But many luxury brands are reluctant to accept the importance of digital platforms and are not ready to embrace the change because luxury brands retaining the brand aura and maintaining the brand reputation are considered critical factors to success. They fear that going online and selling the product through third-party platforms may dilute the brand image by removing the element of 'exclusivity' mainly associated with luxury brands. Moreover, increasing the commerce platforms has made it so easy to run an infringing business. As per Berridge (2018, p. 901), "the lack of alignment with the nature of a luxury brand may be the key factor in not embracing the online world, the proliferation of online infringements including look-alike websites, sales of counterfeit products, domain name squatting, phishing and payment fraud are just a few of the legal issues which also risk damaging a brand's reputation as a luxury brand." Digitalization is a new game, and it is important for luxury brands to learn how to play it to win. Despite its dislike for e-commerce platforms, luxury brands have to find out the various ways to incorporate digitalization into their company DNA (Hougaard, 2016). Factors like Increasing internet penetration, emerging 5G technology, excessive use of smartphones, massive data consumption, more digital literacy, and so on have made the shopper spend more time on digital platforms by smartphones rather than following the traditional media of communication. They use digital platforms to gather brand information, read reviews about products, and compare prices.

Being digital is the need of the hour. No doubt, Luxury brands are well known for their exclusivity. Still, the brands should also plan for having online visibility and interactions adapted for the luxury context by considering the intersection of the physical, digital, and social realms. This chapter outlines how luxury brands can embrace digital multi-actor interactions in ways that enhance their service encounters and strengthen rather than threaten their brand image. Artification or art-based marketing strategies inspire luxury brands to enhance their exclusivity to provide a unique emotional experience to their shoppers (Batat, 2019). It is a process of transforming non-art into art that requires active collaboration with renowned artists and art authorities. Luxury brands are also leveraging AI-Powered technologies like Chatbots, Machine Learning, Voice recognition, image recognition, and so on to deliver personalized online experiences to their shoppers. For example, Louis Vuitton LV Digital assistant chatbot via Facebook addresses customers' issues and provides them with more information about products from the online product catalog of a brand, L'Occitane (Beauty brand) Qubitto provides a more personalized experience to shoppers on mobile phones. With the use of AI, the brand showcases the products to the users on the basis of their behavior on the website. In the app by Sephora (Beauty brand), the customers can upload their picture to experience how the makeup with various products looks on them, and luxury brands are using the AI to enable the shoppers to place orders using their voice, and so on.

This chapter has focused on how luxury brands adopt digital marketing strategies to better connect with their target audience and provide them a unique and personalized customer experience. Luxury is a word that is defined in a number of ways in dictionaries across the world. "Luxury is indulgence in rich and sumptuous living"-Collins English Dictionary, Luxury is something inessential, but conducive to pleasure and comfort-American Heritage Dictionary, Luxury is what is costly, refined and sumptuous. Expensive pleasure one can buy without true necessity-French Dictionary. Luxury is the habit of consuming high quality and expensive range. Rare, Non-necessary products to ornate body or home-Italy's Wikipedia, Luxury is to use money or things for a certain purpose above the necessary level. Not to spare money nor things-Japanese Dictionary and so on. Grossman and Shapiro (1988) stated that Luxury goods are goods that owners display to bring prestige rather than functional utility.

Kapferer (1997) defined luxury as an art applied to functional items. With the increasing popularity of this word, many brands are using this word, but the amount of luxury in a brand depends on the context and the people concerned (Vigneron et al., 2004). A brand perceived as luxurious may not be a luxury brand. Vigneron et al., 2004, p. 485 stated that "A strong element of human involvement, very limited supply and the recognition of value by others are key components" to define a luxury brand. There is a degree of difference between the two words, i.e., "Premium" and "Luxury." The level of acceptance and understanding of luxury vary in different markets. This chapter gives a new definition of luxury brands regarding luxury status/values, luxury consumer behavior, and luxury brand management. This study builds upon important existing conceptual and empirical work and provides a conceptual clarity regarding luxury brands and their marketing efforts in a digital world that will help to aid in the advancement of research on the topic of luxury branding.

Emerging customer segments and increasing digitalization have broadened the scope of research for researchers to have a comprehensive view of the luxury market's future. This study will help the researchers get insightful information about luxury brands and define the new dimensions in this market. The study will help the brand managers know how to improve communication among the target audience, beat the competition in the market, and help in the identification of the new areas for growth. Due to the lockdown announced in 2020, luxury brands struggled a lot to connect with their shoppers through traditional media. This pandemic has pushed the luxury market to adopt and use various digital platforms to create and measure brand awareness, increase customer engagement, and understand consumer buying behavior. Many luxury brands have used the power of social media platforms to communicate their attributes like quality, rarity, rich pedigree, and placement to their target audiences because social media platforms have changed the way the brands communicate with their customers. Facebook has more than 2 billion users, which is the top preference of luxury brand managers to promote the brand and engage with their audiences and customers. The target audience of the luxury market mostly lies from 25 to 44 years old, and this segment is mostly found on various social media platforms. Connecting with the target audience through social media platforms is one of the best approaches used by luxury brand managers. Digital platforms will help luxury brands to create an exclusive image and appeal. In today's scenario, Being Digital has become one of the necessities for the luxury market.

Luxury organizations have a novel relationship with their customers, portrayal themselves as purveyors and curators of a "luxury fashion." However, trust is scarce within the luxury sector. Digitalization is a fairly novel topic within the luxury sector. The goal of any business is to form a competitive advantage and establish a novel positioning, and the same luxury brands are doing in the era of digitalization. The luxury sector ought to request to interact and invest in digital and gain insight into the affluent client by adhering to the triple bottom line of individuals, planet, and profit. Digital may be a useful gizmo with a world reach, no age or geographical boundaries, and aids in achieving sustainable goals by minimizing infrastructure and increasing transportation potency. The role of digital in luxury isn't to interchange physical stores but to boost the expertise and customer shopping experience. Within the era of knowledge overload, the importance of a physical presence to supplement the digital expertise thus customers will actively have interactions with the whole has become even a lot of progressively vital as the luxury sector goes through this metamorphosis, corporations ought to come back up with ways that to include these ways to continue and live up to the virtues of longevity, exclusivity, and splendor. This study fills the gap in the literature in the context of luxury in digitalization that how significant transformation of the retail environment is there as luxury companies are using various digital platforms to attract customers by identifying the impact of digital transformation on customer behavior.

MANAGERIAL AND PRACTICAL IMPLICATIONS

According to Steve Jobs, co-founder of Apple Computer, "A brand is simply trust." Due to digitalization, lack of trust becomes the major concern for the customers that acts as a barrier to engage them in e-commerce activities. It is obvious that customers will feel suspicious while using digital platforms for purchasing products, especially for luxury brands, due to their high price tag. As per Wu et al. (2013), the following are the factors that help luxury e-tailers to develop trust in customers:

1. Usability: As per Barraclough (2007), proper navigation, download speed, and a user-friendly website generate trust as it shows company commitment to customers. This makes customers think that the company values their time.
2. Information content: In purchasing high-priced luxury brands, customers need full-fledged information before making a purchase decision. The luxury e-tailers should provide information about the company, product, company's policies, contact details, security policies, return options, or mode of payments.
3. Technological Professionalism: Good website design, website update, fresh content, or use of the latest gadgets reflects the e-tailer's professionalism, and it has a good impression on the customer's mind.
4. Aesthetics: It is rightly said that "First Impression is the Last Impression. The same follows in context to online retailers. According to Egger (2001), a customer's trust is mainly affected by his first impression of a website. Therefore, the first look at the website helps in customer's attention and engagement. Geissler (2001) also found that websites that are messy and unorganized in nature bore the customers, and the websites that are well designed retain the customers.
5. Safety: This is one of the crucial factors that affect the customer's online shopping preference for luxury brands. Online retailers should properly adopt this measure to generate trust and confidence in the website.
6. e-CRM- This is a key area in which all companies continuously improve and strengthen their relationships with customers. Ganguly et al. (2009) stated that timely communication helps to generate trust. So, this factor is quite important for the luxury market. In addition, the online helpline and 24 hours availability provide the customer a better-personalized experience and fast resolution of complaints than fixed opening/ closing hours of offline stores.
7. Order fulfillment: Once a product is ordered online, every customer waits for its early arrival. The company should facilitate the customer by timely product delivery and order status details and product return process to win their hearts and hence, their loyalty.

Nowadays, people prolonged presence on social media provides the biggest opportunity for marketers to advertise online. As per Godey et al. (2016), the simultaneous rise in rapidly developing digital technology and the increase in advanced internet users call for more sophisticated marketing programs that better use rich, interactive digital media. Entertainment, interaction, and trendiness are the three elements the people mostly look for. Therefore, the marketers should focus more on the latest, entertaining, informative content that will stimulate interaction and engagement among customers. Hughes et al. (2016) suggested the use of story giving as a co-creation tool. It is the practice of co-creation of brand stories through consumer-generated content. Storytelling is a viable communication strategy for popular luxury brands to develop long-lasting relationships with customers. Through storytelling, marketers can reveal

the brand's unique history to educate the customers and develop the connection between the customers and the brand. For example, Jimmy Choo is a leading global luxury brand with an empowered sense of glamour. The brand traces its roots to a bespoke shoemaker named Jimmy Choo, who has launched a number of online and offline engagement initiatives for customers through social media platforms like Twitter or Facebook. In its "In your Stories campaign," the luxury brand asked the customers to submit their special or first experience with the brands. Thus, the concept of storytelling has been transformed into story-giving. There are mainly three dimensions to a luxury brand: experiential, functional, and symbolic. In their study, Berthon et al. (2009) stated that storytelling enables customers to share the experiential dimension with the brand community, which in turn contributed to the co-creation of the symbolic. This is why the concept of storytelling works well with luxury brands. It feeds these symbolic and experiential dimensions adding to the function of a product and developing a luxury brand. For customer engagement, the brands can also use the photographs to evoke aspiration emotions among the viewers. Pinterest provides a big platform for luxury brands to raise brand awareness and advocacy. Along with this, the company can use Facebook ads to target the right audience.

Hashtags (#) play a very crucial role in social media platforms. People's posts are flooded with various hashtags. It helps in categorizing the content for the individuals. It allows the individual to find the relevant posts matching their interests and interact with other social media users who share those interests by using that particular hashtag. Various brands are also using these hashtags to see the customer reactions towards their brand or any other emerging trend and use that trend to formulate marketing strategies to have a meaningful impression on the customer. Like other brands, Luxury brands can increase the use of hashtags(#) to increase their engagement with the customers. For Example, on Instagram, hashtags for Luxury designers are #gucci, #prada, #hermes, #jimmychoo, and other hashtags like #lifestyle, #luxury,#style, and many more. The content written by the customer can be collected from social media platforms like Facebook, Instagram, Twitter, Tumblr to make a social sharing platform that will help the brand to strengthen the brand loyalty and enhance the digital experience of the customers.

Along with this, brands should focus on SEO (Search Engine Optimization). It is often seen that most of the luxury brands are having very stylish websites, but they have suboptimal SEO (maybe due to poor keyword targeting, poor on-site structure, or slowness). Marketers should understand the importance of SEO to target potential customers.

Kim (2019) found that male and female consumers differ in their perceptions of luxury fashion retail website quality. Therefore, luxury brands need to take a gender-specific approach to evaluate their online service performance and pay attention to the dimensions important to male and female luxury customers and optimize their websites to improve overall e-service quality. For example, for women, luxury brands need to focus on resolving their problems promptly and efficiently through direct interaction tools like a live chat by giving them real-time interactions; for men, the luxury brands need to eliminate inessential service attributes to minimize their purchasing tasks.

LIMITATIONS AND FUTURE RESEARCH AVENUES

Some limitations of this chapter are that insights from previous studies have been taken in the context of the digitalization of luxury brands. However, there is a paucity of literature in this regard as most of the studies still rely on conventional marketing activities of luxury brands and provide limited information for marketing scholars. Second, several studies still focus on relatively small sample sizes in surveys

as well as a relatively small amount of key-account interviews conducted. Third, in general, a limited amount of research exists that talks about the paradox of luxury in digitalization. Future research is needed in the area of luxury brand management and in the sub-areas of segmentation and social media marketing in particular. Much of the study of segmentation of luxury consumers have focused on markets at high levels of economic development, so research on the circumstances under which markets can be segmented cross-nationally would be useful. Future research investigating consumer values or motivations to consume most impactful in luxury consumption would also be valuable. Finally, future research on how the social media strategy of luxury brands should differ from standard brands and how social media for luxury brands should differ from traditional marketing media would be useful to researchers and practitioners.

CONCLUSION

Rapidly shifting to digital platforms becomes the new mantra for marketers to ensure success. This advancement in internet technology and the emergence of social media marketing have made the relationship between buyer and seller from mere commercial transactions to a personal connection. Digitalization has left all industries fascinated with its surprising results, and like for many other industries, it has also revolutionized the luxury products industry. The decision to participate in the digital environment is crucial for luxury brands to strengthen the brand. No luxury brand can afford to ignore the importance of various digital tools available. Luxury brands are well known for their exclusivity, but the brands should plan to have online visibility. They should explore and test multiple digital platforms that match the organization's objectives and monitor its impact on designing effective approaches quickly. Digitalization has offered the opportunity to brands to reach billions of people worldwide. The brands that want popularity among current and future customers need to build their image online. It is a need of the hour for each type of business. Therefore, it is mandatory to acknowledge that luxury brands should have a properly well-managed online presence for customer awareness, customer engagement, customer acquisition, and customer retention.

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KEY TERMS AND DEFINITIONS

Algorithmic-Based Management: Algorithmic-based management is a diverse set of technological tools and techniques to remotely manage workforces, relying on data collection and surveillance of workers to enable automated or semi-automated decision-making.

Augmented Reality Applications: Augmented reality applications are a technology that superimposes a computer-generated image on a user's view of the physical world, thus providing a composite view.

Digital Gig Platform: The digital gig platform is an economic and social ecosystem facilitated by platforms. Such platforms are typically online sales or technology frameworks.

Luxury Brand: A luxury brand is a branded product or service that consumers perceive to be high quality; offers authentic value via desired benefits, whether functional or emotional; has a prestigious image within the market built on qualities such as artisanship, craftsmanship, or service quality.

Phygital Retail: The term "phygital" is the integration of digital technology (digital) with the personal communications with the consumers (physical), thereby bridging the gap between the two.

Pseudo-Holographic Systems: Pseudo-holographic system allows object scenes of size up to 21.0 x 11.0 cm to be floating on air, and they can be observed by users from three of the four possible sides.

Virtual Try-On Technology (VOT): Virtual try-on technology enables customers to try products using their camera-equipped devices such as mobile phones. With the help of augmented reality, users may contextually visualize the item in which they are interested, interacting, and confirming the style, size, and fit before making a purchase.

Chapter 19
Examining Virtual Classroom Platforms in Hospitality Education:
Effect of Service Quality, Perceived Ease of Use, and Perceived Usefulness

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ABSTRACT

Though hospitality education relies strongly on experiential learning, the COVID-19 pandemic has compelled all the higher educational institutions including the institute of hotel managements (IHMs) to restrict on-campus learning. As the only possible solution to deliver uninterrupted knowledge and skills to the students under these adverse circumstances, the management of these IHMs has quickly retorted to virtual classrooms. Many virtual platforms such as Google Meet, Microsoft Teams, Zoom, Cisco Webex, etc. emerged as the elixir for the institutions with customized features to fulfil the learning needs of the students. This necessitates the need to not only examine and compare the perceptions of these platforms based on virtual classroom service quality, perceived ease of use, and perceived usefulness but also to understand the impact of these perceptions on the future scope in terms of satisfaction and behavioral intentions of the hospitality students in IHMs.

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INTRODUCTION

Online learning in the last decade has witnessed immense popularity and depicted extraordinary progress owing to the rapid development of internet technologies globally. Society has begun to capture various benefits that technology in virtual learning offer to them. The immersion of the students in virtual platforms will equip them for being future innovators and leaders in the domain of technology (Terrier, 2020).

The digital transformation in education should not be perceived only as a convenience. The Covid-19 scenario had awakened the global education systems when the technology of virtual classrooms emerged as the only means of educational delivery to students around the world. The schools and higher educational institutes had to instantly enhance their technological capabilities to redesign, dissipate and assess their curriculum. The institutions face the challenge of maintaining student engagement digitally and competed in training the teachers on these virtual classroom platforms for contributing to the dynamic learning scenario for both of them. With newer ideas of blended and flipped learning, the institutions compete to create an engaging and interactive environment for education.

In India, with the internet data becoming cheaper than ever before in recent years and with the companies striving to attract customers with value data packs, virtual learning has established its reach to almost every nook of the country. However, with the world managing the Covid-19 (Coronavirus disease 2019) pandemic challenge, the idea of social distancing and self-isolation has become the components of new-normal. Though many businesses and offices have gradually started their operations with these restrictions in place, the educational institutions, including the Institutes of Hotel Management (IHM), in particular, have not yet been granted permission to commence their session in-campus. Therefore, to deliver uninterrupted knowledge and skills to the students, the management of these IHMs has quickly retorted to virtual classrooms as the only possible solution under these adverse circumstances.

The quality of virtual classrooms have been discussed within academia extensively (Nijjer & Raj, 2020). The challenges regarding managing the classroom engagement with feedback and support from faculty, student coordinators, and institute at regular intervals are important indicators for the success or failure of online education service quality (Lee, 2010). Further, ease of assessment in the classroom also contributes to the success of these online classrooms. However, the appropriateness of online delivery and support services and the void of direct faculty interaction remain important issues in online teaching through virtual classrooms.

As obstacles of online learning are alleviated through advanced technology, there is an immense need to evaluate perceptions of hospitality students towards virtual classrooms (Kim & Jeong, 2018). The satisfaction and acceptance of virtual classrooms depend on either excitement or discouragement resulting from technological worries or technological ease to use these virtual classrooms. The students share their positive feelings with their friends and faculty if their virtual classroom experience is amicable. The studies also indicate that the satisfaction and acceptance of virtual learning are impacted through mental barriers of the students regarding the ease of use and usefulness of these virtual classes (Mejia & Phelan, 2013). Compared to in-person learning at the institute campus, online learning has its advantages and challenges (Annaraud & Singh, 2017). This is especially true for hospitality education as most of the curriculum for students is based on experiential learning techniques. At the same time, online learning through virtual classrooms is considered the forthcoming mode of tourism and hospitality education (Kim & Jeong, 2018). As such, there is a need for evaluation of learning through virtual classrooms and the future scope of these platforms, especially amongst hospitality students.

The current research combines both the Technology Acceptance Model (TAM) and Appraisal Theory, invoking several questions: How do hospitality students perceive virtual classrooms? How does the acceptance and satisfaction of virtual classrooms amongst students is influenced by virtual classroom service quality? What role do perceptions of hospitality students play as a mediator between virtual classroom support service quality and their satisfaction and acceptance? Do the perceptions of virtual classroom service quality, perceived ease of use, perceived usefulness, and virtual classroom satisfaction and acceptance vary significantly amongst these students with regards to different virtual classroom platforms used in the hospitality institutes?

The objectives of the chapter are: (1) to study the perceptions towards virtual classrooms on hospitality students online learning acceptance and satisfaction; (2) to study hospitality students' perception of virtual classroom service quality on online learning acceptance and satisfaction; and (3) to study the role of hospitality students' perceptions towards virtual classroom as a mediator between virtual classroom service quality and online learning acceptance and satisfaction and to compare different virtual classroom platforms based on perceptions of hospitality students concerning virtual learning service quality, perceived ease of use, perceived usefulness, and virtual learning acceptance and satisfaction.

The chapter is developed in the following structure. In the next part, the literature review is described as the background of the study. The various sections in the background include the methodology followed in the literature review, different studies describing virtual learning environments in higher education, and a section explaining the literature related to constructs considered in the study related to virtual classroom service quality, technology acceptance, and virtual learning acceptance and satisfaction. In the next part of the chapter, the conceptual model of the study is developed based on different theories. These theories and the past studies lead to the formulation of hypotheses that are evaluated in the present research. The next part of the chapter describes methods, including variables and measures. Preliminary model testing followed as well as research design, sample, and data collection methods for the research. The following part of the chapter involves data analysis with Structural Equation Modeling (SEM) that includes both measurement and structural model. The concluding part of the chapter summarizes the research findings, highlights the theoretical and managerial implications, portrays the limitations, and provides a direction for future research in this field.

BACKGROUND

Literature Review Methodology

The method of selecting the research papers needs to be finalized before conducting the literature review (Rana & Sharma, 2015; Kampani & Jhamb, 2020; Shashi et al., 2020a, 2020b). Systematic advancement in literature in a particular academic subject related to growth can be highlighted through a powerful technique of bibliometric analysis (Shashi et al., 2020b). Further, the PRISMA flow diagram was referred to screen and select the relevant literature for the study (Stovold et al., 2014). Thus, the methodology for literature review in the study involved bibliometric analysis with the help of a PRISMA flow diagram to identify and select the relevant studies. The scholarly journals from renowned publishing houses (i.e., Elsevier, Emerald, Taylor and Francis, Inderscience, Springer, Wiley, Sage) were accessed in the field of virtual learning environments, service quality, and TAM in reputable academic databases (Scopus, Web of Science, ABI/Inform and Proquest). Out of many papers that emerged in the search for the research,

the authors considered only English manuscripts related to scientific articles, conference proceedings, books, and book chapters with studies between 1981 to 2021.

Virtual Learning Environments in Higher Education

This section endeavors to mention the studies undertaken on the topic of virtual classroom service quality in higher education. Xenos (2018), in his study, claimed that the true potential of the virtual learning platforms is still not exploited completely. A qualitative study undertaken on 21 experts from 15 different countries revealed that the teachers are still caught in the traditional teaching practices and cannot completely utilize the advanced features being offered by virtual platforms. Dhawan (2020) highlighted issues related to teachers, students, and content in online learning. The virtual platforms pose a challenge for the institutes to engage students – teachers in the learning process. There is a major mindset issue for the teachers to migrate from real to virtual mode, thereby developing the online content, managing time, and creating an interesting learning experience for the students. Another research undertaken amidst the Covid-19 pandemic among higher education students in Pakistan revealed that the results of online learning could not produce desired results where many students could not afford digital mode due to infrastructure constraints and financial issues (Adnan & Anwar, 2020). Fawaz & Samaha (2020) performed a study during Covid-19 with Lebanese University students to assess their satisfaction and incidences of anxiety, stress, and depression with online teaching. A cross-sectional design involving 520 undergraduate students revealed that depression and stress have emanated through virtual learning platforms, and a significant negative correlation between satisfaction and stress was observed. This was attributed to sudden changes in e-learning methods and increased workload, leading to stress amongst students. Wang et al. (2021) strived to establish the relationship between instructor role and learning outcomes in virtual classrooms for the university students in mainland China during the Covid-19 pandemic. The cross-sectional study that included 7210 students indicated that instructor innovation was positively influenced by students' perceived learning outcomes and learning satisfaction. However, the outcome of student's learning and satisfaction had a negative association with instructor performance. According to the author, the idiosyncratic association in the study resulted from the notion that the students' satisfaction decreased with the increased workload in the virtual classrooms, in spite of favorable performance by instructors.

Tavitiyaman et al. (2021) stated that the sudden shift from offline to online learning mode in hospitality education has led to learning disruptions with different kinds of anxieties. The survey took place in Hong Kong with hospitality undergraduates and revealed that superior levels of agreeableness, as well as openness to varied types of experiences, lead to enhanced levels of learning, technical and financial anxiety. However, students with a higher degree of extraversion and conscientiousness perceived lesser degrees of anxiety. The study by Tavitiyaman et al. (2021) also showcased that the students would perceive higher online learning and satisfaction when their learning and financial anxiety are at lower levels. Al-Nuaim (2012) compared face-to-face and e-learning models of learning. Asynchronous technologies with synchronous components were used to engage students more actively in a program created by the university that underwent rigorous course development and quality control. In-depth reports were prepared after all instructor activities, and interactions with students were monitored. No significant differences in students' performance with regards to online and face-to-face teaching for the same course by the same instructor were observed. A study by Kim-Soon et al. (2014) to assess e-service quality in a Malaysian University revealed an association between service quality of e-learning and the increased

frequency of online classroom tools. Schuster et al. (2016) depicted two qualitative studies mentioning the preferences of engineering students regarding virtual learning environments (VLE) and then building a collaborative VLE for a fourth industrial revolution. This research provides deeper insights into the relationship of personal preferences for VLEs, subjective experiences within them, and actual task performance. This study indicated a connection between communicational behavior and successful collaborative problem-solving in a virtual environment. Lameras et al. (2012) investigated the concepts and approaches in the field of blended university teaching combining VLE and traditional environment. It was a qualitative study undertaken by interviewing 25 computer Science teachers in Greek universities. This study suggested that pedagogical beliefs and circumstances underpinning face-to-face teaching are more influential in shaping approaches to blended VLE use than system features of VLE.

Among many VLE sources in a higher educational institution, the present research strives to highlight the service quality of virtual classroom platforms on the overall satisfaction and acceptance of students learning and the role of perceived usefulness and perceived ease of use as a mediator in the said relationship.

Virtual Classroom Service Quality, Technology Acceptance and Virtual Learning Acceptance and Satisfaction

With offline education relented globally due to the prevailing pandemic, almost all the schools and higher learning institutes have adopted online delivery using different virtual classroom platforms. Different applications have emerged lately with added features customized for online delivery of learning using these platforms. The majority of higher learning institutes and schools have subscribed to one of these four platforms - Google Meet, Microsoft Teams, Cisco Webex, or Zoom. According to Ansari (2020), all these platforms emphasize clarity, user-friendliness. Though all these platforms stress security and their popularity in terms of the number of users, there is a dearth of research comparing their functionality leading to satisfaction and online acceptance amongst the students. One of the research objectives is to fill the gap by comparing these platforms based on students' satisfaction and their intention to use these applications in the future.

Many studies indicating service quality as the predictor of satisfaction are validated in the education scenario. As a strong determinant of satisfaction in the context, service quality is delineated by Helgesen & Nesset (2007). This section focuses on studies on service quality undertaken in the field of virtual learning. A study conducted by Harahap et al. (2019) in the higher education field in Indonesia examined the impact of virtual classroom service quality on the e-satisfaction of the students. Their findings have revealed that the service quality of virtual classrooms has significantly affected the e-satisfaction of the students. Another recent study by Dalbehera (2020) to assess the influence of e-service quality factors on perceived value and loyalty of library services established a significant relationship between e-service quality and e-loyalty of students availing digital services in the library. Also, Sanjebad et al. (2020) studied the quality in terms of services, systems, and information on students' satisfaction and further behavioural intentions. The relationship remained significant with system quality and satisfaction. Lee (2010) studied the perceptions of online learning among American and Korean students in higher education where the association between support service quality, satisfaction, and online learning acceptance of 872 students was measured. The results indicated that the online support service quality of the online classes directly influences the satisfaction and online acceptance of the students.

Also, the perceptions towards online learning systems comprising of perceived usefulness and perceived ease of use mediated the above relationship. In the context of hospitality education, online teaching Mejia & Phelan (2013) used TAM to investigate the intentions of faculty in taking online classes and revealed that perceived ease of use did not influence the behavioral intentions of faculty. Also, a study was undertaken by Demir et al. (2020) to analyze the effect of e-service quality on value, satisfaction, and willingness to pay for the meeting platforms. The study collected responses from lecturers of a university in Iraq, and the results reveal that the e-service quality of meeting platforms influences the satisfaction and value of the lecturers, but the effect is insignificant towards their intention to pay for the same. Furthermore, Al-Fraihat et al. (2020) examined e-learning success in one of the universities in the United Kingdom by combining TAM and service quality models. The study revealed that the combination of technology and e-learning content had created a conducive virtual learning environment for the students. Finally, Goh & Wen (2020) explored the intentions of hospitality students to use electronic discussion boards as a learning tool and revealed that ease of posting and reflection of learning content as the motivational aspects for the students to continue using the discussion board. However, to the best of the author's knowledge, there is scarce research from students' perspectives in online hospitality education, and no other study integrated the service quality model and TAM to measure the perceptions of virtual learning of students in hospitality education. The present research strives to understand the impact of the virtual classroom service quality (VCSQ) of the hospitality institutes on students' behavioral intentions through virtual learning acceptance and satisfaction (VLAS).

RESEARCH FRAMEWORK AND HYPOTHESES

Conceptualizing the structural model (Cronin, 1992) and technology acceptance model (Davis et al., 1989), the current study is based on the theories of emotion and adaptation as well as the theory of reasoned action. The first theory, also known as *appraisal theory,* proposed that any evaluation process involves emotion which in turn leads to behavioral intentions. According to the theory, emotion holds the central position between the appraisal process and coping activities. The appraisal process initiates with personality factors that include attitude perceptions such as service quality, arising positive or negative emotions such as satisfaction or fear, leading to coping responses in the form of behavioral intentions (Smith & Lazarus, 1990). Later, the theory was justified through an appraisal →emotional response→ coping framework (Bagozzi, 1992). This research will accordingly study the students' emotions to understand the perceptions of service quality (Ghosh & Jhamb, 2021) of virtual classrooms, leading to satisfaction and online acceptance of virtual learning.

The present study also adopts the technology acceptance model (TAM) based on the theory of reasoned action, which postulates that the user will only accept the technology if the belief in context to that usage is perceived positively (Davis et al., 1989). The perceived ease of use (PEOU) and perceived usefulness (PU) are the determinants that influence the acceptance behavior of the users. PEOU relates to the perceptions of ease in mental and physical efforts of the user embracing a system, whereas PU relates to the perception of elevation in the job performance of an individual using the system. According to the theory, individuals accept a new technology only when their PEOU and PU are positive.

There is a difficulty in evaluating service quality in virtual environments (Figueiredo, 2000). However, online consumers rely on the service quality of virtual environments like support and feedback services as well as online reviews to understand the ease of use of the online services (Lee, 2010; Jensen et al.,

2013; Raj et al., 2019). Therefore, the influence of online service quality on perceived ease of use in this study can be hypothesized as:

H1: VCSQ impacts the PEOU of virtual learning positively

The popular description of service quality focuses on the difference involving the expectations and actual perception that service provides (Gronroos, 1984; Parasuraman et al., 1988). Later it was verified that the perceived performance only has a high predictive validity (Cronin & Taylor, 1992). The overall superiority of a product or service as judged by the consumer is also described as the perceived service quality (Zeithaml, 1988). The promotion of interaction and relationship-building are the key features of online services that differentiate them from general services (Etzion & Pang, 2014). According to Holbrook (1994), the usefulness of online shopping by consumers is positively influenced by delivering commitment and functions related to the overall service quality perceptions of online shopping. Hence, it is hypothesized as:

H2: VCSQ impacts the PU of virtual learning positively.

The ease of performing tasks with minimum effort in a particular online system is believed by a person as his perceived ease of use. Moreover, the results in the past by information system researchers have shown that there is a positive influence of perceived ease of use on the behavioral intentions (Chin & Todd, 1995; Doll et al., 1998; Chang & Tung, 2008; Lee, 2010). Thus, we can hypothesize:

H3: PEOU impacts behavioral intention toward VLAS positively

The extent to which a person feels that his performance in a job will be augmented by using a particular online system will be his perceived usefulness for that system. Information system researchers' findings support that the behavioral intentions of a person to use an online system are positively influenced by his perceptions of perceived usefulness (Chin & Todd, 1995; Doll et al., 1998; Venkatesh & Davis, 2000; Lee, 2010). As such, we hypothesize:

H4: PU impacts behavioral intention toward VLAS positively.

The literature portraying the relationship between service quality and behavioural intentions is diverse. While many studies in the past have depicted a positive direct impact of service quality on behavioral intentions (Cronin et al., 2000; Choi et al., 2004; Shukla, 2010; Shah et al., 2020), some researches showcased this relationship as not statistically significant and that, an indirect relationship between service quality and behavioral intentions exists (Kuo, 2009; Jen, 2011; Chen & Chen, 2010; Widianti, 2015; Prentice et al., 2018). In the context of virtual learning environments, online service quality in digital classrooms, which is interactive, flexible with superior technical support, impacts the students' satisfaction and behavioural intentions (McGorry, 2003; Rovai, 2003). Furthermore, research on online students' satisfaction highlights the quality of interaction with faculty, student engagement, class assessments, and institutional support significantly influences their behavioural intentions (Yukselturk & Yildirim, 2008; Artino, 2009; Harahap et al.,2019; Sanjebad et al.,2020; Al-Fraihat et al., 2020). Hence, in this study, two hypotheses emerge between VCSQ and VLAS and are described as:

H5: There is a significant positive direct impact of VCSQ on behavioral intentions towards VLAS.
H6: There is a significant positive indirect impact of VCSQ on behavioral intentions towards VLAS.

Further, some researchers combined service quality and TAM models and showed evidence of a mediating effect of perceived ease of use and perceived usefulness in the relationship between online service quality and behavioural intentions in terms of satisfaction and online acceptance (Al-Fraihat et al., 2020; Lee, 2010). Therefore:

H7: PEOU has a significant mediating impact on the relationship between VCSQ and behavioural intentions towards VLAS.
H8: PU has a significant mediating impact on the relationship between VCSQ and behavioural intentions towards VLAS.

At the same time, the study also focuses on comparing different virtual classroom platforms which are used by hospitality institutes to deliver virtual learning to the students. Therefore, the following four hypotheses compare the virtual classrooms used to deliver online hospitality education in IHMs on the constructs used in the study: VCSQ, PEOU, PU, and VLAS. As such, the following hypotheses will be tested:

H9: There is a significant difference in the virtual learning service quality of hospitality students in different virtual classrooms.
H10: There is a significant difference in perceived ease of use among hospitality students in different virtual classrooms.
H11: There is a significant difference in perceived usefulness among hospitality students in different virtual classrooms.
H12: There is a significant difference in virtual learning acceptance and satisfaction among hospitality students about different virtual classrooms.

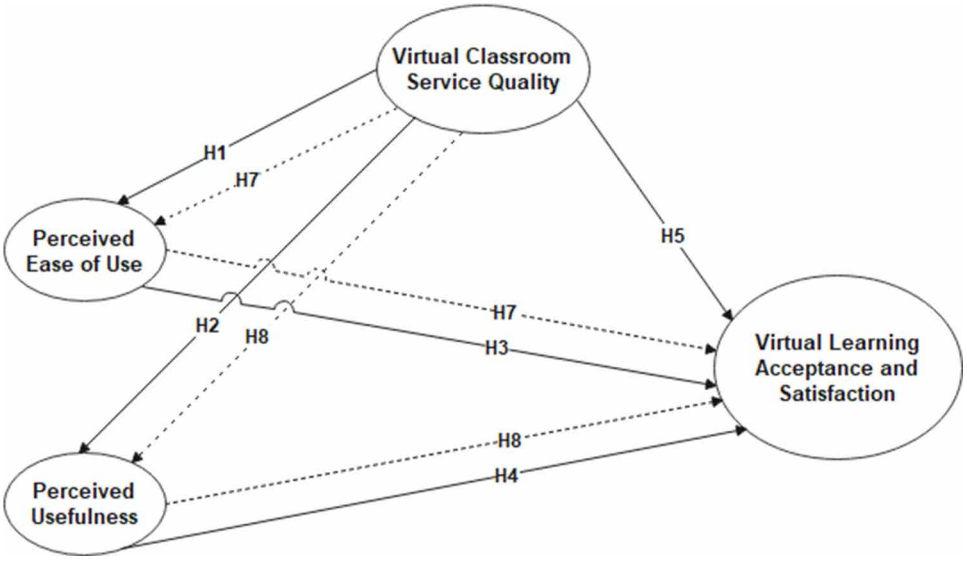
The conceptual framework in this study is developed by combining the structural model and technology acceptance model, as shown in Fig 1.

METHODS

Variables and Measures

The variables considered in the research comprise PEOU, PU, VCSQ, and VLAS. The questions in the instrument were all based on standardized scales. However, the instrument was initially modified to establish content validity. The questionnaire includes three sections. Section I deals with collecting demographic data such as gender, IHM, contact information, and virtual classroom being used. The following section measures the student perceptions of virtual classrooms with two constructs, namely PEOU and PU, with four items each, which are adapted from TAM (Davis, 1989) for this survey. Section III focuses on questions from VCSQ and VLAS. There were six items to measure the VCSQ, which were modified from the scale applied by Lee (2010), whereas four items measured VLAS and were

Figure 1. The study's conceptual model



customized from the standard satisfaction and behavioural intentions scale of Cronin et al. (2000). Except for the demographic data, a 5-point Likert type scale is used to measure all the items in the remaining two sections ranging from strongly disagree (1) to strongly agree (5). For all the items, the higher the respondents' value, the higher the perceptions of the variables.

Preliminary Model Testing

Although the survey was performed at seven different IHMs over a period of 4 months, data for all latent variables were collected simultaneously from each respondent using a single method. As such, it was necessary to determine if common method bias influenced the measurement model results (Gligor et al., 2016; Lii & Kuo, 2016; Podsakoff et al., 2003). Therefore, Harman's one-factor test was applied (Zu et al., 2010). If the overall variance depicted by a single unrotated factor exceeds the overall variance of the entire scale by more than 50%, that indicates common method bias.

The questionnaire was pretested by fourteen members, two from each IHM, comprising of a senior faculty and a student coordinator, to establish face validity (Ikart, 2019). Pooled confirmatory factor analysis was then completed on constructs to check for convergent and discriminant validity (Awang, 2012).

Design, Sample, and Procedure

The research design is descriptive, and the study is cross-sectional, involving seven premier Institutes of Hotel Management (IHMs) located in Tier-I cities in India. The sample IHMs are categorized as 'Group A' institutes based on infrastructure, location, student preferences, placements, and other parameters prescribed by the National Council for Hotel Management and Catering Technology (NCHMCT) under the Ministry of Tourism Government of India. Further, these selected IHMs have proven their mettle in the overall hospitality educational institutes ranking conducted by reputed rating agencies by securing

top positions in the country (India Today Survey, 2018; GHRDC, 2019). The respondents selected in the study were the final-semester students who also carry the experiences of offline teaching in the institute.

Students Sample Size

After undertaking the successful pilot study and checking the constructs depicting satisfactory reliability levels, the final sample was drawn from the total sanctioned strength of 2519 students from these seven IHMs. Applying Cochran's formula with an estimated response of 65 percent (Kotrlik, Barlett & Higgins, 2001), a total sample size of 512 is drawn. As the population is finite, stratified random sampling is used to collect data among seven IHMs with the details shown in Table 1.

Table 1. Profile of participating faculty from six institutes of hotel management in India

IHM	Responses Available	Responses Invited	Responses Collected	Boys	Girls
Mumbai	480	104	19	08	11
Delhi	321	65	129	95	34
Chennai	365	71	90	65	25
Kolkata	400	82	113	73	40
Bengaluru	300	61	111	78	33
Hyderabad	300	61	98	66	32
Ahmedabad	353	68	56	37	19
Total	2519	512	616	422	194

Table 2. Virtual classroom user details

Virtual Classroom Platform	Students	Percent
Google Meet	118	19%
Zoom	117	19%
Cisco Webex	215	35%
Microsoft Teams	166	27%
Total	616	

Table 2 depicts the percentage of students using the popular virtual classroom such as Google Meet, Zoom, Cisco Webex, and Microsoft Teams in these IHMs. The questionnaires were distributed to the sample population through the faculty of the institutes. A total of 616 questionnaires had usable responses and were completed in all aspects, including male 422 (68.50%) and female 194 (31.49%) respondents.

DATA ANALYSES

In the exploratory factor analysis to test for common method bias, the first extracted factor explained 43.56% of the variance below the 50% threshold. The results thus indicated the absence of common method bias in the study. The conceptual model was tested through SEM, which is conducted in two stages (Hair *et al.*, 2010). In the first stage, confirmatory factor analysis (CFA) was used to test the measurement model to investigate how well the indicators measure the individual constructs (Lee *et al.*, 2010). In the measurement model, both content and construct validity were assessed. Fourteen experts, including a faculty and a student coordinator from each of the seven IHMs, performed the expert review of the instrument to ensure content validity while construct validity was used to ascertain that the model should measure what it is assumed to measure (Bagozzi, 1993). Convergent and discriminant validity is used to measure the construct validity. Convergent validity ensures a high correlation among the items of the same constructs with factor loadings equal to or greater than 0.5 (Hair *et al.*, 2010) and the composite reliability (CR) of each construct above 0.7 (Hair *et al.*, 1998). Also, if the average variance extracted (AVE) of the construct is more than the Maximum shared variance (MSV), it meets the criteria of discriminant validity (Fornell & Larcker, 1981). Cronbach's alpha is used to check the reliability of each construct (Hair *et al.*, 2010) that should be equal to or more than 0.7 (Tari *et al*., 2007). Following the criteria set by Hair *et al.* (2010), multiple benchmarks, such as the ratio of χ^2 / df, the goodness of fit index (GFI), root mean square error of approximation (RMSEA), the comparative fit index (CFI) and other indicators were used to confirm that the data collected has a good fit with the proposed model.

To evaluate the relative magnitude of a direct path with that of an indirect or mediated path, Sobel's z test or bootstrapping is advised (Iacobucci *et al*., 2007). It is recommended to use the bootstrap method only to check the indirect effects in the model instead of the Sobel test and Baron-Kenny three tests method to establish mediation. The mediation will be indirect only if the mediated paths are significant and the direct path is not. If the direct path and indirect paths are both significant, the mediation will be either complementary or competitive (Zhao *et al*., 2010). The mediation effect can thus be detected through bootstrapping as it rectifies the non-normality issues (Wood *et al*., 2008). If zero is not included in the bias-corrected interval, the study can conclude the presence of a mediation effect (Hayes, 2009; Ro, 2012). In the present study, to confirm the mediation effect, 2000 bootstrap samples at 95 percentile bias-corrected confidence levels were measured. The entire data analysis was facilitated with the help of AMOS 24.

Measurement Model

Content Validity

As the questionnaire was adapted from standard instruments, the same needs to be customized, rephrased, and amended to ensure content validity through an expert review for value addition (Ikart, 2019). All fourteen experts included from these IHMs are experiencing a virtual classroom environment. Therefore, the questionnaire was customized after the comments recommended by the experts.

Pilot Study

To determine the sample size for a pilot study, it is inferred that a sample size of 59 respondents will be sufficient to detect an existing problem with a 5 percent probability to occur in a study with 95 percent confidence (Viechtbauer et al., 2015). Therefore, the pilot test was done on the first 100 samples to ascertain the reliability of the constructs, which were above 0.7 (Hair et al., 2010).

Confirmatory Factor Analysis

All the main constructs in the model showed very good reliability as depicted in Table where the Cronbach alpha varied between 0.871 and 0.927 compared to the minimum criteria of more than 0.7 (Ho, 2013; Hair et al., 2010). As such, all the constructs in the model depicted acceptable reliability levels. Therefore, confirmatory factor analysis (CFA) involving all the constructs is carried out initially to check the convergent and discriminant validity (Awang, 2012). The output of the same is reported in Table 3.

Table 3. Confirmatory factor analysis results for the measurement model

Construct	Dimension /Item	Factor Loadings	R^2	Cronbach α	AVE	CR
Virtual Classroom Service Quality (VCSQ)	The faculty provides adequate feedback and support services through the virtual classroom.	0.790**	--- *	0.901	0.603	0.901
	The institution provides adequate information and support services through the virtual classroom.	0.787**				
	The student representatives/ class representatives provide adequate support services through the virtual classroom.	0.672**				
	The institute provides opportunities to meet experts across different locations through virtual classrooms.	0.687**				
	The faculty makes the virtual classroom engaging.	0.777**				
	The assessment and evaluation procedure are satisfactory through virtual classrooms.	0.782**				
Perceived Ease of Use (PEOU)	I find it easy to use the virtual classroom to do what I intend to do.	0.817**	0.609	0.871	0.643	0.878
	I find the virtual classroom features are clear and easily understandable to me.	0.830**				
	It is easy to become skillful at using the virtual classroom.	0.685**				
	I find the virtual classroom easy to use.	0.859**				

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Table 3. Continued

Construct	Dimension /Item	Factor Loadings	R^2	Cronbach α	AVE	CR
Perceived Usefulness (PU)	The virtual classroom improves my ability to accomplish academic tasks.	0.914**	0.474	0.927	0.770	0.930
	The virtual classroom increases my productivity in accomplishing academic tasks.	0.881**				
	The virtual classroom enhances my effectiveness in accomplishing academic tasks.	0.869**				
	The virtual classroom is useful in my study completion.	0.845**				
Virtual Learning Acceptance and Satisfaction (VLAS)	The choice to select this virtual classroom is a wise one.	0.866**	0.728	0.920	0.733	0.917
	The facilities provided by the virtual classroom is exactly what is required by the students.	0.824**				
	The probability that I will continue using the virtual classroom in the future is high.	0.858**				
	The likelihood of recommending the virtual classroom to a friend or relative is high.	0.867**				

Note: 1. $^{**}p < 0.01$ (two-tailed). AVE indicates average variance extracted; IHM, institute of hotel management; CR, composite reliability.

2. * R^2 is the amount of variance in an endogenous variable as explained by one or more exogenous variables. Only VCSQ is a complete exogenous variable, and as such, R^2 cannot be measured; PEOU and PU are both endogenous and exogenous, whereas VLAS is a complete endogenous variable. Therefore, R^2 is calculated for PEOU, PU, and VLAS.

At first, the factor loading is studied for each construct and seen whether it is more than 0.5 to be significant statistically (Hair et al., 2010). Then, the composite reliability (CR) of each construct was measured to check if it meets the criteria of 0.7 (Hair et al., 1998). The CR in the study ranged between 0.878 and 0.930, whereas factor loadings had a spread of 0.672 to 0.914. Finally, the average variance extracted (AVE) of constructs was also calculated, crossing the threshold limit of 0.5 (Fornell & Larcker,1981). This satisfies the convergent validity of the model.

Table 4. Discriminant validity measures

	CR	AVE	MSV	VLAS	PEOU	VCSQ	PU
Virtual learning acceptance and satisfaction (VLAS)	0.917	0.733	0.658	0.856*			
Perceived ease of use (PEOU)	0.878	0.646	0.536	0.086	0.802*		
Virtual learning service quality (VCSQ)	0.901	0.603	0.536	0.050	0.683	0.777*	
Perceived usefulness (PU)	0.930	0.770	0.658	0.262	0.451	0.350	0.877*

Note: AVE indicates average variance extracted; CR, composite reliability; MSV, maximum shared variance.

*Square root of AVE.

The discriminant validity is also checked, as shown in Table 4, where AVE is more than MSV in all the cases. Moreover, the square root of the AVE of all the factors is more than the absolute value of correlations with another factor (Fornell & Larcker, 1981). Hence, the discriminant validity of the model is also established. After confirming the validity, reliability, and unidimensionality of the measurement model, the researcher can initiate the Structural model and hypothesis testing (Awang, 2012).

Structural Model

The maximum likelihood estimation method is used to estimate the structural model, as depicted in Figure 2. More than one criterion is used to find out whether the proposed model has a good fit in the form of a ratio of chi-square to the degree of freedom (χ^2 / df), CFI, TLI, GFI, AGFI, and RMSEA that can provide adequate information for model assessment (Hair *et al.*, 2010). The calculated values are being displayed in Table 5. Overall, sufficient proof of model fit is provided by these indices.

Table 5. Goodness of fit measures

Measures	Criteria	Indicators
χ^2/ df	< 5 (Hair et al, 2010)	2.688
CFI	>0.9 (Hair et al, 2010)	0.979
TLI	>0.9 (Hair et al, 2010)	0.971
GFI	>0.9 (Hair et al, 2010)	0.946
AGFI	>0.9 (Hair et al, 2010)	0.917
RMSEA	<0.08 (Hair et al, 2010)	0.052

Note: Chi-square to degrees of freedom (χ^2/ df) - The chi-square value and model degrees of freedom measure the p-value that tests the null hypothesis under the assumption of an insignificant difference between the observed data and the predicted model (Hair *et al.*, 2010).

Comparative Fit Index (CFI) - Less sensitive to the size of the sample. Compares the fit of a target model to the fit of an independent, or null, model (Hair *et al.*, 2010).

Tucker Lewis Index (TLI) – The relative decrease in misfit per degree of freedom is assessed by this index. This index was initially proposed by Tucker and Lewis (1973) in the context of exploratory factor analysis and later generalized for SEM (Hair *et al.*, 2010).

Goodness of Fit (GFI) - GFI is the proportion of variance established by the predicted population covariance (Hair *et al.*, 2010).

Adjusted Goodness of Fit (AGFI) – AGFI is a parsimony fit index that strives to consider different degrees of model complexity. The GFI is adjusted with the degrees of freedom used in the model to the degrees of freedom available. As such, AGFI values are less compared to GFI values (Hair *et al.*, 2010).

Root Mean Square Error of Approximation (RMSEA) – RMSEA is a popular measure for model rejection with large samples or observed variables. It very well represents how good a model fits a population (Hair *et al.*, 2010).

Figure 2. The SEM results of the conceptual model

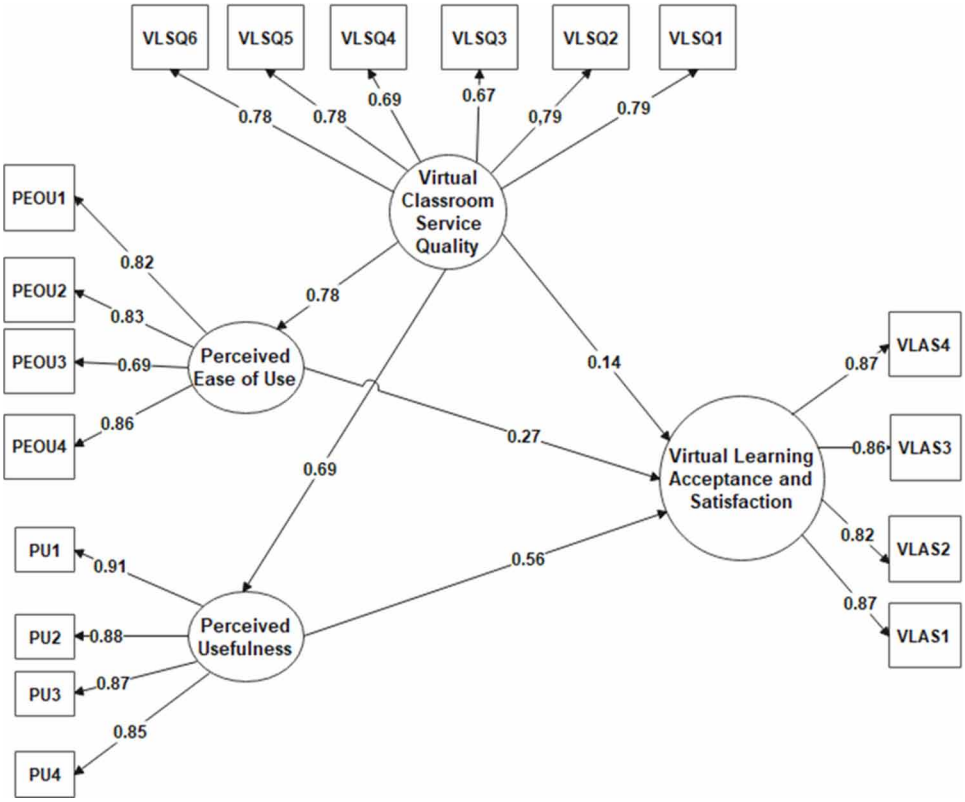

Table 6. Summary of hypothesis testing for Structural Model

Hypothesis	Result	Values	*P*-Value
H1. Direct effect: Virtual learning service Quality → Perceived ease of use	Support	Str. coeff. = 0.780; SE, 0.060; t = 15.401	0.001
H2. Direct effect: Virtual learning service Quality → Perceived usefulness	Support	Str. coeff. = 0.688; SE, 0.060; t = 13.942	0.001
H3. Direct effect: Perceived ease of use → Virtual learning acceptance and satisfaction	Support	Str. coeff. = 0.265; SE, 0.060; t = 5.090	0.001
H4. Direct effect: Perceived usefulness → Virtual learning acceptance and satisfaction	Support	Str. coeff. = 0.558; SE, 0.051; t =12.173	0.001
H5. Direct effect: Virtual learning service Quality → Virtual learning acceptance and satisfaction	Support	Str. coeff = 0.142; SE, 0.085; t = 2.249	0.025
H6. Indirect effect: Virtual learning service Quality → Virtual learning acceptance and satisfaction	Support	0.591	0.001
H7: Virtual learning service Quality → Perceived ease of use→ Virtual learning acceptance and satisfaction	Support	Est = 0.280; lower = 0.175; upper = 0.386	0.001
H8: Virtual learning service Quality → Perceived usefulness → Virtual learning acceptance and satisfaction	Support	Est = 0.519; lower = 0.414; upper = 0.646	0.001

RESULTS AND DISCUSSIONS

The estimated results after studying the relationship between the constructs in the structural model and testing the hypotheses are summarized below in Table 6.

Consistent with the *theory of reasoned action* following TAM and the existing literature, there is a significant influence of virtual classroom service quality on the perceived ease to use and perceived usefulness of students in the IHMs. As such, both H1 and H2 are supported. Further, in Table 3, it is indicated that 60.9 per cent variance in PEOU is explained through VCSQ, whereas PU demonstrates 47.4 percent variations due to the impact of VCSQ. As such, VCSQ influences the perceptions of PEOU higher than PU, which suggests that a virtual classroom platform service quality is considered better if it eases the mental and physical efforts of the students than it would increase their task-related performance.

The theory also supports the results of a significant positive relationship of perceived ease of use and perceived usefulness of the virtual classroom platforms on the virtual learning acceptance and satisfaction, thereby supporting H3 and H4. Interestingly, in this case, the PU has a much more substantial impact on virtual learning acceptance and satisfaction than PEOU, suggesting that the satisfaction and behavioral intentions towards acceptance of a virtual classroom are highly influenced by its ability, productivity, and efficiency to elevate the performance of the hospitality students.

Next, the study also finds support in the *appraisal theory,* where attitude in the form of virtual classroom service quality evokes the students' satisfaction leading to behavioral intention toward acceptance of virtual learning. Both direct and indirect effects of virtual classroom service quality influence virtual learning acceptance and satisfaction, and as such, H5 and H6 are supported. However, the direct effect is weak compared to the strong indirect effect where both PEOU and PU mediate their relationship. This suggests that the relationship between VCSQ and VLAS perceptions amongst the students will be much stronger if these platforms offer high PEOU and PU and that only offering high virtual classroom service quality may not be sufficient for the overall virtual learning experience amongst the students.

Next, as VCSQ influences VLAS directly and indirectly, this situation indicates the presence of complementary mediation between the two constructs. (Zhao, Lynch & Chen, 2010). Next, the individual mediating role of PU and PEOU on the relationship between VCSQ and VLAS indicates that both the path is significant, supporting H7 and H8. In comparison, the mediating effect of PU is larger than PEOU, which again indicates that the increased efficiency and ability delivered by these virtual platforms has a stronger influence than the ease of using the said platforms by the hospitality students in the IHMs. Overall, as reported in Table 3, 72.8 per cent variance in VLAS is explained through VCSQ, PEOU, and PU, which shows that all the constructs play a significant role in the students' behavioral intentions in IHMs.

Finally, to test H9, H10, H11, and H12, a comparison of all the four virtual classroom platforms-Google Meet, Zoom, Cisco Webex, and Microsoft Teams were made based on virtual learning service quality, perceived ease of use, perceived usefulness and virtual learning acceptance and satisfaction. After checking the homogeneity of variances through Levene statistic that no significant differences among population variances are present, one-way ANOVA was applied on the selected variables to investigate if there is any significant difference in perceptions of the students in IHMS. The results of the same are depicted in Table 7 below.

Table 7. Differences in virtual learning perceptions between virtual classroom: Analysis of Variance

Construct		Sum of Squares	df	Mean Square	F	P
VLAS						
The choice to select this virtual classroom is a wise one.	Between Groups	5.153	3	1.718	1.161	.324
	Within Groups	905.118	612	1.479		
	Total	910.271	615			
The facilities provided by the virtual classroom is exactly what is required by the students.	Between Groups	2.345	3	.782	.521	.668
	Within Groups	918.926	612	1.502		
	Total	921.271	615			
The probability that I will continue using the virtual classroom in future is high.	Between Groups	16.965	3	5.655	3.150	.025*
	Within Groups	1098.748	612	1.795		
	Total	1115.713	615			
The likelihood of recommending the virtual classroom to a friend or relative is high.	Between Groups	13.049	3	4.350	2.466	.061
	Within Groups	1079.490	612	1.764		
	Total	1092.539	615			
PEOU						
I find it easy to use the virtual classroom to do what I intend to do.	Between Groups	6.778	3	2.259	1.715	.163
	Within Groups	806.312	612	1.318		
	Total	813.089	615			
I find the virtual classroom features are clear and easily understandable to me.	Between Groups	7.840	3	2.613	1.716	.163
	Within Groups	932.057	612	1.523		
	Total	939.896	615			
It is easy to become skillful at using the virtual classroom.	Between Groups	8.553	3	2.851	1.574	.194
	Within Groups	1108.225	612	1.811		
	Total	1116.778	615			
I find the virtual classroom easy to use.	Between Groups	3.141	3	1.047	.775	.508
	Within Groups	827.196	612	1.352		
	Total	830.338	615			
PU						
The virtual classroom improves my ability to accomplish academic tasks.	Between Groups	1.581	3	.527	.385	.764
	Within Groups	837.458	612	1.368		
	Total	839.039	615			
The virtual classroom increases my productivity in accomplishing academic tasks.	Between Groups	1.972	3	.657	.468	.705
	Within Groups	860.366	612	1.406		
	Total	862.338	615			
The virtual classroom enhances my effectiveness in accomplishing academic tasks.	Between Groups	3.922	3	1.307	.945	.418
	Within Groups	846.520	612	1.383		
	Total	850.442	615			

continues on following page

Table 7. Continued

Construct		Sum of Squares	df	Mean Square	F	P
The virtual classroom is useful in my study completion.	Between Groups	1.060	3	.353	.237	.871
	Within Groups	914.652	612	1.495		
	Total	915.713	615			
VCSQ						
The faculty provides adequate feedback and support services through the virtual classroom.	Between Groups	2.764	3	.921	.750	.523
	Within Groups	751.859	612	1.229		
	Total	754.623	615			
The institution provides adequate information and support services through the virtual classroom.	Between Groups	2.628	3	.876	.701	.552
	Within Groups	764.656	612	1.249		
	Total	767.284	615			
The student representatives/ class representatives provide adequate support services through the virtual classroom.	Between Groups	28.398	3	9.466	6.918	.001**
	Within Groups	837.439	612	1.368		
	Total	865.838	615			
The assessment and evaluation procedure are satisfactory through virtual classrooms.	Between Groups	4.629	3	1.543	1.035	.376
	Within Groups	912.239	612	1.491		
	Total	916.869	615			

Note: *$p < 0.05$; **$p < 0.01$ (two-tailed).

As far as PEOU and PU perceptions of the students are concerned, the results show no significant differences between the four different virtual classroom platforms. Therefore, all these platforms compete well on the features and user-friendliness, and therefore there are no significant differences perceived by the students of IHMs. Therefore, H10 and H11 are not supported.

However, except for one item each from VLAS and VCSQ, all items in the study showed insignificant differences in students' perceptions across all four virtual classroom platforms. So, H9 and H12 are partially supported. To further investigate an item in VLAS that is about the probability of continuing using virtual classrooms in the *future*, a post hoc test was applied to check further which of the virtual platforms vary significantly with that item statement. The results are shown in Table 8.

The results under the Tukey test suggest that the differences in the above mean perceptions amongst students vary significantly between Google meet and Cisco Webex platforms. In such a situation, the management and faculty of the IHMs using the Google meet virtual classroom should explore the reason for the same from the students and provide feedback to the representative of the Google meet platform to upgrade or customize their features and services accordingly. Similarly, an item in VCSQ is about students/ class representatives providing adequate support services in the virtual classroom. Therefore, the post hoc test was applied again to check which virtual platforms vary significantly with that item statement.

As can be seen from Table 9, there is a significant difference among student perceptions of Microsoft teams with Google meet, Zoom, and Cisco Webex virtual classrooms concerning adequate support services provided by the student representatives. The results show a significant lack of support services provided by student representatives on the Microsoft teams platform compared to other virtual classrooms. Accordingly, the student and class representative using Microsoft teams may be further trained and motivated to enhance their support services for all the students using the said platform.

Table 8. Post hoc test -I

Dependent Variable	(I) Virtual Platform	(J) Virtual Platform	Mean Difference (I - J)	P	95% Confidence Interval	
					Lower Bound	Upper Bound
The probability that I will continue using the virtual classroom in future is high.	Google Meet	Microsoft Teams	-0.16408	.740	-.5797	.2515
		Zoom	-0.14276	.847	-.5931	.3076
		Cisco Webex	-0.43615*	.024	-.8316	-.0407
	Microsoft Teams	Google Meet	0.16408	.740	-.2515	.5797
		Zoom	0.02132	.999	-.3953	.4380
		Cisco Webex	-0.27207	.202	-.6287	.0846
	Zoom	Google Meet	0.14276	.847	-.3076	.5931
		Microsoft Teams	-0.02132	.999	-.4380	.3953
		Cisco Webex	-0.29338	.227	-.6899	.1032
	Cisco Webex	Google Meet	0.43615*	.024	.0407	.8316
		Microsoft Teams	0.27207	.202	-.0846	.6287
		Zoom	0.29338	.227	-.1032	.6899

*The mean difference is significant at the 0.05 level.

Table 9. Post hoc test - II

Dependent Variable	(I) Virtual Platform	(J) Virtual Platform	Mean Difference (I-J)	P	95% Confidence Interval	
					Lower Bound	Upper Bound
The student representatives/ class representatives provide adequate support services through the virtual classroom.	Google Meet	Microsoft Teams	.53339*	.001	.1705	.8962
		Zoom	.00275	1.000	-.3904	.3959
		Cisco Webex	.14308	.709	-.2022	.4883
	Microsoft Teams	Google Meet	-.53339*	.001	-.8962	-.1705
		Zoom	-.53064*	.001	-.8944	-.1669
		Cisco Webex	-.39031*	.007	-.7017	-.0790
	Zoom	Google Meet	-.00275	1.000	-.3959	.3904
		Microsoft Teams	.53064*	.001	.1669	.8944
		Cisco Webex	.14033	.723	-.2059	.4865
	Cisco Webex	Google Meet	-.14308	.709	-.4883	.2022
		Microsoft Teams	.39031*	.007	.0790	.7017
		Zoom	-.14033	.723	-.4865	.2059

*. The mean difference is significant at the 0.05 level.

Theoretical Implications

The findings for the study are consistent with appraisal theory, which proposes that any evaluation process involves emotion, which in turn leads to behavioral intentions. The results for the study reveal that ap-

praisal activity initiates with examining virtual classroom service quality leading to student behavioural intentions in the form of virtual learning acceptance and satisfaction. Thus, the overall service quality of virtual classrooms in IHMs evokes students' satisfaction and virtual learning acceptance. Again, TAM is also supported in the study, which postulates perceived ease of use (PEOU) and perceived usefulness (PU) as the users' acceptance behavior. In this study, both PEOU and PU perceptions of virtual classrooms significantly influence their satisfaction and behavioural intentions. Further, the p-values of all the items lower than 0.01 suggest that the items for all constructs are highly significant and robust in this study.

The study results support the significant positive relationship between online service quality and perceived ease of use according to the past literature (Lee, 2010; Jensen et al., 2013). Further, the research findings also advocate that virtual environments' service quality directly impacts the perceived usefulness (Etzion & Pang, 2014; Lee, 2010; Holbrook, 1994). The study also adds to the literature where perceived ease of use and behavioral intentions are positively and significantly associated (Chin & Todd, 1995; Doll et al., 1998; Chang & Tung, 2008; Lee, 2010). Even the previous results of the information system researchers are validated through this study where satisfaction and behavioural intentions are positively influenced by the perceived usefulness of the online systems (Chin & Todd, 1995; Doll et al., 1998; Venkatesh & Davis, 2000; Lee, 2010).

Again, the findings of the study support the previous literature regarding the positive impact of service quality in a virtual environment on satisfaction and behavioural intentions of the users (McGorry, 2003; Rovai, 2003; Yukselturk & Yildirim, 2008; Artino, 2009 Harahap et al.,2019; Sanjebad et al.,2020; Al-Fraihat et al., 2020). However, in the present study, the direct relationship seemed weak in spite of being significant. Also, the study finds support from the literature on the positive and significant role of both perceived ease of use and perceived usefulness in the relationship between online service quality and behavioural intentions in terms of satisfaction and online acceptance (Al-Fraihat et al., 2020; Lee, 2010).

Managerial Implications

It is revealed from the study that the effect of service quality of virtual learning through the classrooms may not be enough for overall satisfaction and learning acceptance of the students. Rather, the efforts to fulfill the gap of experiential learning of hospitality education are achieved through superior technology in terms of perceived ease of use and perceived usefulness that plays a major mediating role in enhancing the behavioural intentions of these students. The results depict that the direct effect of virtual classroom service quality on virtual learning acceptance of students is weaker (0.142) than the indirect or mediated effect (0.591). As such, not only these virtual platforms should customize and upgrade their features, but also the management of the institutes should emphasize their faculty to use the features and technology offered by these virtual classrooms for enhancing the holistic virtual learning experiences, thereby evoking a strong and robust positive feeling amongst the students of these IHMs. Moreover, it is also inferred that 72.8% variance in VLAS ($R^2 = 0.728$) is explained through the impact of VCSQ, PEOU, and PU, which entails that the management in IHMs should focus and strive to enhance the student perceptions of all the constructs for amplified behavioural intentions through the virtual learning acceptance and satisfaction.

Specifically, the role of PU (0.519) as a mediator is higher than that of PEOU (0.280) between VCSQ and VLAS. The results also suggest that there is enough scope to enhance the mediating role of PEOU. As such, the perceived ease of use perceptions can be enhanced by the management and faculty in IHMs through regular awareness and updates sessions with students regarding new features and their applica-

tion in virtual intervals classrooms. It is also seen that perceived ease to use and perceived usefulness perceptions remained insignificant across different virtual platforms, affirming that these platforms are well customized to facilitate positive virtual learning feelings to the students. Only one item each from virtual learning service quality and virtual learning acceptance and satisfaction varied significantly across these virtual platforms, affirming that all these platforms by themselves are well customized to promulgate virtual learning effectively in the IHMs.

Limitations and Future Research Directions

The study had some limitations, which can be addressed by future research. First, the sample involved seven central government-supported Group A IHMs in Tier 1 cities in India. These institutions may have had a higher level of organizational support in providing quality service through virtual classrooms. Next, the research can be further validated if more IHMs and other hospitality institutions were considered in the survey. Also, the research combined satisfaction and behavioural intentions in a single construct rather than measuring them separately.

Future research may replicate the model across other disciplines to validate the relationship between the constructs used in the study. Further, a similar study could be undertaken for other IHMs in tier-2 and tier-3 cities in the country to examine the above relationship. Next, as online teaching may not compensate for the offline interaction in hospitality education, the effect of perceived sacrifice (the perception of loss due to lack of experiential learning on campus) and perceived value of the students (the perception of relative benefits of online learning over experiential learning in campus) may be studied. Also, a comparative study between online and offline learning experiences and virtual learning perceptions of different semester students may elicit new insights in the domain of hospitality education. Finally, faculty perceptions as an internal customer of hospitality institutes may also provide valuable insights regarding the virtual learning environments.

CONCLUSION

This research was driven by the need to study the perceptions of service quality of virtual learning platforms adopted by the IHMs on hospitality students' satisfaction and behavioural intentions during the pandemic when all the institutes remain closed, and the only way to facilitate learning was through the virtual classrooms. The study also investigated the role of perceived ease of use and perceived usefulness of the virtual classrooms and their role in influencing behavioural intentions through virtual learning satisfaction and acceptance of the students. The mediating role of perceived usefulness and perceived ease of use on the relationship between service quality of virtual classrooms and virtual learning acceptance and satisfaction was also measured to find their significant impact. In the end, the most popular virtual learning platforms – Google Meet, Microsoft Teams, Zoom, and Cisco Webex were compared based on student perceptions of the virtual classroom service quality, perceived ease of use, perceived usefulness, and virtual classroom acceptance and satisfaction.

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KEY TERMS AND DEFINITIONS

Behavioral Intentions: Behavioral Intentions is the tendency to purchase a service or merchandise from the unchanged entity and share the experiences with relatives and friends.

Perceived Ease of Use: The ease of performing tasks with minimum effort in a particular online system is believed by a person as his perceived ease of use.

Perceived Usefulness: The extent to which a person feels that his performance in a job will be augmented by using a particular online system will be his perceived usefulness for that system

Satisfaction: Satisfaction indicates the extent to which the possession and consumption of services evoke positive feelings among consumers.

Service Quality: Service quality focuses on the difference involving the expectations and actual perception that service provides. Later it was verified that the perceived performance only has high predictive validity.

Virtual Classroom: A virtual classroom is an online learning environment that allows for live interaction between the faculty and the students as they participate in learning activities.

Virtual Learning Environment: A virtual learning environment is an online platform used for educational purposes and includes resources related to information and reading.

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Index

D

E

F

G

H

I

K

L

M

N

O

P

R

S

T

U

V