Multi-Sided Marketplaces and the Transformation of Retail:

A Service Systems Perspective

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ABSTRACT

Retail is undergoing a series of major transformations as platform-based multi-sided marketplaces, like *Amazon, Alibaba, eBay, JD.com* and *Rakuten*, are challenging incumbent retailers. From the thriving brick and mortar stores and the development of shopping centers, malls and retail chains throughout the 1900's, retail has become increasingly digital as multi-sided marketplaces are uniting the online and offline to create more sophisticated and personalized customer experiences. We assimilate these ongoing changes with a service systems perspective into a conceptual framework of how multi-sided marketplaces are integrating their front and back stage processes to create more personalized, convenient, and speedy shopping experiences.

Keywords: Service science, service systems, multi-sided marketplace, customer experience, retail, platform economy

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1. INTRODUCTION

The past decade has seen the retail sector undergo a major digital transformation (e.g. Hagberg et al. 2017), as novel digital technologies (Grewal et al. 2017) and business models (Sorescu et al. 2011), such as platform-based multi-sided marketplaces (e.g. Hagiu & Wright, 2015), are now challenging incumbent retailers worldwide. While large retail chains have been dominant during the past few decades, as the optimization of distribution has often been the differentiating factor (e.g. Mitronen & Möller, 2003; Choi, 1996), we are now witnessing increased disintermediation in the retail value-chain as new entrants are applying advances in information technology to create novel combinations of value for end-customers (e.g. Podreciks et al. 2018; Ailawadi & Farris, 2017; Aversa et al. 2017). Multi-sided marketplaces, such as the ones created by *Alibaba, Amazon, eBay, JD.com* and *Rakuten*, are now raising the bar for the retail customer experience, aggregating supply and demand-side data, as well as merchandise, logistics, customer service, and payment information to create a harmonized customer experience across their digital platform-based ecosystem (e.g. Hänninen et al. 2018). In addition, the online and offline channels are gradually converging, as end-customers now expect an integrated customer experience, regardless of the retail channel they use for any particular shopping journey (e.g. Verhoef et al. 2015).

As a result of this transformation, a significant gap has formed between the leading, largest multi-sided marketplaces and other retailers. For example, in 2017 *Amazon* accounted for around 50% of all growth in US online retail sales and now around 50% of all online shopping in the US begins on *Amazon* rather than a retailer's own website or a search engine (eMarketer, 2018b). Multi-sided marketplaces have thus arguably transformed how retailers build and sustain their competitive advantage in the 21st century (e.g. Parker et al. 2016). While the marketplace[2] model in itself is not new, as bazaars and malls have been popular shopping environments for centuries (Paquet, 2003), advances in information technology have however enabled the marketplace to now be transformed to a digital environment (Hänninen et al. 2018). This transformation has been possible through the platform revolution (Parker et al. 2016), in which platform-based multi-sided marketplaces that facilitate the interaction and exchange of products and services between third-party providers and end-customers (McIntyre &

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[2] The concept of "*Marketspace*" was introduced in (Dutta et al. 1998) in the early days of e-Commerce where many vendors were online only and did not have physical presence.

Srinivasan, 2017), have been launched in several parts of the economy (e.g. Kenney & Zysman, 2016). In retail, the platform revolution has enabled, for example, *Alibaba*, *Amazon*, *eBay, JD.com* and *Rakuten* to grab significant market share (e.g. Hänninen et al. 2018), at the expense of many incumbent retailers (e.g. Bean, 2017).

Rather than competing with fixed assets and capabilities, such as a network of stores, the power of multi-sided marketplaces comes from their ability to tap into a large group of end-customers and providers (Gawer & Cusumano, 2014). Furthermore, marketplaces earn revenue primarily from commissions rather than the sales margin as they only intermediate exchanges between buyers and sellers rather than baring the inventory risk (e.g. Haucap & Heimeshoff, 2014). In addition, key features of the multi-sided marketplace model are its scalability, and the use of supply and demand-side data to personalize the customer experience (Hänninen et al. 2018). Multi-sided marketplaces can be described as pure-play multi-sided marketplaces, e.g. *Alibaba's Tmall and Taobao,* when all of the sales through the marketplace come from third-party providers, or hybrids, e.g. *Amazon.com,* when half of the sales come from third-party providers and the remaining half from own inventory (Hagiu & Wright, 2015), including a growing share of private labels.

In this paper we develop an understanding of how retailers embrace the multi-sided marketplace model to integrate the online and offline channels and succeed in creating a more coherent and personalized customer experience in the 21st century. We create a multi-sided marketplace service system framework by adopting a service system perspective from service science (Maglio & Spohrer, 2008; Spohrer & Maglio, 2008; Spohrer et al. 2007). More specifically, we seek to understand how the multi-sided marketplace service system is structured and how it is distinguished from the traditional approaches to retail. We argue that multi-sided marketplaces are creating a new stage of retail where the online and offline domains are converging to create a more coherent customer experience. For example, while incumbent retailers like *Walmart* are attempting to catch up to the their digitally native rivals with aggressive investments in online and mobile channels, multi-sided marketplaces are simultaneously launching brick-and-mortar stores (e.g. Badrinarayanan & Becerra, 2018) and pioneering new technologies (e.g. Madridakis, 2017). We contribute to the retail, marketing and service science literature by arguing that multi-sided marketplaces take customer experience to a new level by way of shared products, information and services, through the integration of

the back stage to provide for the front stage processes. In this transformation, the critical components of vertical, horizontal and global integration are enabled by the service system. As retail continues to be increasingly information technology driven, through increased customer understanding with big data analysis, and the possibilities provided by data analytics as well as new technologies like artificial intelligence (e.g. Bradlow et al. 2017), the leading players in the future will likely be the ones with the most coherent customer experience and service system across both the online and offline domains.

2. RETAIL TRANSFORMATION FROM RETAIL 1.0 TO RETAIL 2.0

Retail has gone through a major evolution during the past couple of decades as new technologies and the resulting changes in customer behavior have transformed the retail customer experience from the physical elements of the store to one that increasingly combines elements of both the online and offline (Figure 1). This transformation has also led to the development and popularity of multi-sided marketplaces. In this section, we briefly review the transformation of retail and the recent shift from a multichannel to an omnichannel mode of exchange.

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The first retail transformation, Retail 1.0, was self-service shopping in the 1900's (e.g. du Gay, 2004) and the resulting shift from regional, highly service-focused retailers, such as department stores, to a network of regionally dispersed shopping centers and large retail chains. Before the mid-1900's, retail had traditionally been local, with retailers serving their local markets and a few urban areas (Ghosh & McLafferty, 1991). As new innovations in transportation and logistics made moving products from one place to another faster, and more cost-efficient, the 1900's saw the regional diversification of retail formats, for example, the development of shopping centres and malls (e.g. Eppli & Benjamin, 1994). This meant that department stores which traditionally had flagship locations in the centres of large metropolitan cities, then created a national presence at large suburban shopping centres and malls (Ghosh & McLafferty, 1991) where a mix of retailers and service providers co-exist under one roof (Teller, 2008).

This changed the competitive dynamics of the retail sector and new dominant retail chains were formed to take advantage of the amply available retail space. For example, pioneers like *J.C Penney* and *Sears* were able to create a large national network of stores in the United States by becoming anchor tenants in shopping centres and malls, while other retailers, exemplified by *Walmart,* built a large store network, gaining efficiency through the economy of scale of an efficient distribution network (e.g. Makadok, 1999). By 1982, half of all retail trade in the US was made up of retail chains with four or more store units (Hollander & Omura, 1989). As a result, from the traditional competitive advantage of providing local and personal service, retailers then built their competitive advantage on efficient distribution, delivered, for example, through the use of more sophisticated information systems (e.g. Fernie & Sparks, 2004). The use of information systems to coordinate information transfer across the retail value-chain, resulted in the integration of suppliers, wholesalers and retailers especially in the grocery retail sector (e.g. Lund & Wright, 2003).

The second retail transformation, Retail 1.5, was the adoption of e-commerce and online retailing in the 1990's. While firms had used online interfaces to exchange information with their suppliers since the 1970's (e.g. Vijayasarathy & Tyler, 1997), it was only in the mid-1990's that the Internet emerged as a channel also for B2C e-commerce. For example, Vliet & Dyshyant (2000) argue that a number of factors were required for e-commerce to become more widely adopted, including that consumers had to be computer literate, the technology had to be sophisticated and easy to use, Internet access had to be commonly and inexpensively available, Internet-based search engines had to enable consumers to access information and websites, and online credit card payments needed to be verified and secured. Accordingly, the first B2C e-commerce site, *Internet Shopping Network,* was launched in April 1994, followed by other pureplay e-commerce retailers such as *CDNow* and *Amazon* (Dutta et al. 1998). The dotcom boom of the late 1990's led to a rapid growth of new entrants to the e-commerce market, but many of these new entrants, such as *Webvan* (e.g. Lunce et al. 2006), went bankrupt in 2001 in the aftermath of the dotcom crash as the large investments in e-commerce (e.g. dedicated distribution facilities), were often not yet sustainable due to low sales volumes. For example, in 1999, total e-commerce sales in the US were just $15 billion, or 0.5% of total retail sales (US Census Bureau, 1999). The dotcom crash reduced excitement over new e-commerce business models, and many incumbent retailers lowered investments in the new technologies. As a result, e-commerce was considered just as an additional channel in a retailer's retail and marketing mix (often leading to channel conflict situations, e.g. Imam, 2014; Tsay & Agrawal, 2004). The

retail and marketing literature recognized this and started to call this era *'multi-channel'* retailing (Berman & Thelen, 2004).

The third retail transformation, Retail 2.0, is the ongoing convergence of the online and offline retail channels. While e-commerce was established in the early 2000's as one channel in a retailer's retail and marketing mix, the increasing digitalization in marketing and retailing (e.g. Leeflang et al. 2014) has enabled new technologies, such as smartphones and other mobile devices (Fuentes et al. 2017), to now have an important role in the design of more personalized customer experiences (Piotrowicz & Cuthbertson, 2014, Brynjolfsson et al. 2013). For example, new technologies not only enable customers access to more advanced in-store technologies, such as virtual fitting rooms (e.g. Demirkan & Spohrer, 2014) and intelligent self-service kiosks (e.g. Liljander et al. 2006), but also the ability to now buy anything, anywhere and anytime via mobile devices. This new age of retail is popularly referred to as *'omnichannel'* retailing[3] (e.g. Verhoef et al. 2015) in retail and marketing literature, where the online and offline retail channels are fully integrated in order to deliver more advanced, personalized customer experiences regardless of the channel used by end-customers. In this, technologies are used to create a bridge between a retailer's online and offline customer experience. For example, customers can increasingly *'webroom'* and *'showroom'*, meaning that they can search for information online (with serendipitous and occasionally pleasantly surprised discovery) and enjoy trying on with *'touch and feel'* offline and buy at either, or vice versa. As a result, retail formats have also adjusted to the changing technologies and end-customer expectations, as retailers business models have often moved from pureplay e-commerce to a hybrid format (e.g. Hagberg & Fuentes, 2018). This ability to adjust and reconfigure retail formats in light of the ongoing technological change has created a significant gap between successful retailers that have been able to make the leap from multi-channel to omnichannel, versus those that have not been able to adapt, especially as technologies launched by the frontrunners, like multi-sided marketplace *Amazon*, often reshape consumer buying patterns altogether (e.g. Ramadan et al. 2019; Farah & Ramadan, 2017).

3. OVERVIEW OF SERVICE SCIENCE AND SERVICE SYSTEMS PERSPECTIVES

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[3] This is also called "Online to Offline" retail and abbreviated as O2O (cf. B2C, B2B, etc.) (Woetzel et al., 2017)

We adopt a service science perspective to understand the ongoing retail transformation. Service science is a transdisciplinary approach for understanding service systems with fundamental concepts including entities, interactions, outcomes, value propositions, governance mechanisms, resources, access rights, stakeholder roles, measures, and ecology (Kwan & Spohrer, 2013). In service science, a service system is defined as *"a value coproduction configuration of people, technology, other internal and external service systems and shared information"* (Spohrer et al. 2007, p. 72). All in all, these service systems interact to co-create value for all the stakeholders in the business ecosystem (Kwan & Min, 2008). Service science encompasses disciplines such as marketing, economics, operations, industrial and systems engineering, operations research, computer science, information systems, social sciences and behavioral sciences (e.g. Spohrer & Maglio, 2010).

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In service science, services are often differentiated between various front and back stage processes (Teboul, 2006). Thus, individual services are delivered by a service system where these different processes contribute to a successful service provision. Figure 2 illustrates the distinction between front and back stage processes in digital businesses, where central to both types of processes is the information technology platform. Front stage processes are described in Teboul (2006, p.14) as those that are performed through *"direct interaction with employees, equipment, décor and other customers"*, while back stage processes are described as those delivered through *"operations to prepare products and components and process information"*.

Front stage processes represent all the touch-points and interactions between end-customers and service providers needed to ensure customer satisfaction across the different parts of the service system (Maglio et al. 2010). For example, Glushko & Tabas (2009, p.14) argue that service designers with a front stage mindset, strive to create service experiences that end-customers find *"enjoyable, unique and responsive to their needs and preferences"*. The front stage is where the service is being delivered and it is the touchpoint at which the interaction between the service provider and the end-customer takes place. As this is the stage where the service is provided, it is also the stage in which the quality of the entire service system is determined (Salvendy & Karwowski, 2010).

Back stage processes comprises the operational efficiency needed to deliver the front stage processes (Maglio et al. 2010). Service designers with a back stage mindset, strive to increase *"efficiency, robustness, scalability and standardization"* of the service (Glushko & Tabas, 2009, p.14) in order to increase overall efficiency, productivity, and control of the service system (Safizadeh et al. 2003). For example, back stage optimization requires the analysis of information flows and information requirements that are essential for the successful implementation of the front stage processes (Glushko & Tabas, 2009). Thus, while the quality of the service may be apparent to the end-customer through the front stage processes, the back stage processes enable the *"provision of support"* for the front stage of the service system (Zomerdijk & Voss, 2010, p.70).

As information technology is increasingly employed in service systems, firms have to be careful when defining their service system in light of technological change, and understand the role that technology plays, not only in the front stage customer interactions, but also in the back stage processes, as technology use needs to be balanced in both stages in order to create satisfying customer experiences (e.g. Patricio et al. 2008). Glushko & Tabas (2009) is in agreement that the entire service system is responsible for the overall quality and functioning of the service provision. Thus, in order to remain cost-efficient and provide more valuable services to end-customers, firms need to consistently seek to identify the best design and combination of the front and back stage processes in its service system (Maglio et al. 2010).

4. UNDERSTANDING THE PAST, PRESENT AND FUTURE OF RETAIL WITH A SERVICE SYSTEMS PERSPECTIVE

The retail sector has undergone major transformations in the past couple of decades. For example, digitalization has enabled retail to become more service and customer oriented (e.g. Grewal et al. 2017), which has enabled increased innovation across the retail service system. This transformation has led to the growth of multi-sided marketplaces, and the global expansion of, for example, *Alibaba*, *Amazon*, *eBay, JD.com* and *Rakuten,* the five largest multi-sided marketplaces based on annual revenue and gross merchandise value (GMV). Today, multi-sided marketplaces thus intermediate a growing share of worldwide online retail sales. Table 1 compares the traditional and the new approaches to retail based on the characteristics of their service systems, and table 2 highlights the five largest multi-sided marketplaces,

according to a few key metrics.

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The 'p*latform revolution*' (Parker et al. 2016) has led to the implementation of digital platforms and multi-sided marketplaces across the economy. As a business model, multi-sided marketplaces have become popular due to their large scalability, and ability to harness a large group of users on both the supply and demand-side (Gawer & Cusumano, 2014). Rather than investments in large fixed, physical resources such as logistics facilities and stores, the multi-sided marketplace model generally relies on information technology and data analysis capabilities with the remainder sourced from third-party partners (e.g. Hänninen et al. 2018).

As Figure 3 shows, the multi-sided marketplace acts as an intermediary that enables third-party providers to sell products directly to end-customers. In a multi-sided marketplace the product flow is often directly from the third-party providers to the end-customer, or the product is directly shipped from a third-party logistics centre. This means that the optimization of both the product and information flow is critical to ensuring a seamless customer experience as a number of third-party partners are responsible for various stages in the service system.

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In the following, we elaborate on the changes in the retail service system from the traditional to the new approaches to retail. Using the categorization introduced by Sorescu et al. (2011) we categorize the front and back stage processes of the service system into value creation and value appropriation design themes, respectively. Value creation denotes how value is created for end-customers and value appropriation how value is captured for the retailer and its partners. Table

3 summarizes our analysis. We conclude with a conceptual framework that outlines the elements of the multi-sided marketplace service system.

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4.1 Front stage: Value creation

Value creation addresses the activities and processes that serves as an organizing logic for value creation for a retailer's end-customers (e.g. Sorescu et al. 2011), generally taking place in the front stage of the service system. This means that it encompasses the *"actions that entail the novel combination and exchange of resources, by which resources are diverted from known applications to be deployed in new contexts"* (Di Gregorio, 2013, p. 40). More specifically, it includes the customer value proposition and all the processes through which the value proposition is delivered to end-customers (Sorescu et al. 2011), for example how existing resources are realigned to find new applications and uses in other parts of the service system.

Sorescu et al. (2011) categorize the value creation activities to consist of the customer efficiency, customer effectiveness and customer engagement design themes. In traditional approaches to retail the goal of these processes has been to provide value-adding shopping experiences for end-customers. However, multi-sided marketplaces now arguably provide a larger selection and a unique earnings logic than traditionally in retail, as they only intermediate exchanges between customers and third-party providers, and receive a commission from these exchanges, rather than bearing the inventory risk and making an earning based on the sales margin (e.g. Hänninen et al. 2018).

In the following, we describe in more detail the differences between the traditional and new approaches to retailing with regard to their front stage value creation.

Customer efficiency

By definition, customer efficiency refers to the degree in which a customer's access to the retailers offering is made as easy as possible (Sorescu et al. 2011).

Traditional approach and service system: Traditionally retailers have been able to increase customer efficiency through their product placements, increasing the convenience of product displays and offering direct sales support in-store (Sorescu et al. 2011). Through both multi- and omnichannel retailing retailers also increasingly seek to create a coherent customer experience regardless of whether customers eventually purchase online or offline (Verhoef et al. 2015).

New approach and service system: The competitive advantage of the multi-sided marketplace model is convenience, price, speed and vast selection (Hänninen et al. 2018). Through a sophisticated user interface, customers are able to access up-to thousands of providers for any given product category. In addition, aggregated supply and demand-side data is used to personalize the customer experience and, for example, offer recommendations based on an end-customers purchase history (e.g. Provost & Fawcett, 2013). In addition, the introduction of technological innovations, like *Amazon Dash,* a device for automatic reordering, further increases customer efficiency by making the reordering process speedy and convenient (Ramadan et al. 2019; Farah & Ramadan, 2017).

Customer effectiveness

By definition, customer effectiveness refers to the degree at which retailers facilitate consumers' realization of their consumption goals (Sorescu et al. 2011).

Traditional approach and service system: Traditionally retailers have sought to increase the depth of their selections to cater to the needs of end-customers, with frontrunners focusing on niche selections and, for example, using demand-side data to further optimize their selection and cater to the *"long tail"* (Sorescu et al. 2011). In addition, co-creation is increasingly used by retailers and service providers to enable customers to personalize and customize firms offerings (e.g. Payne et al. 2008).

New approach and service system: Multi-sided marketplaces are built around personalization and customization via the aggregation of both supply and demand-side data (Hänninen et al. 2018). The difference to the traditional approaches of retail comes from the large volumes of data generated through platform-based businesses, and the ability to now capture a large share

of customers online behavior and preferences, for example, based on their use of other services offered by the multi-sided marketplace. As a result, the user interface and customer experience is tailored based on an end-customers recent purchase behavior. On the other hand, product reviews make the multi-sided marketplace more transparent for end-customers, and enable them to compare products based on others experiences (e.g. Kaushik et al. 2017; Engler et al. 2015).

Customer engagement

By definition, customer engagement refers to the degree to which retailers design customer experiences that evoke emotional involvement that goes *'beyond purchase'* (van Doorn et al. 2010, p.254, see Sorescu et al. 2011).

Traditional approach and service system: Traditionally retailers have engaged end-customers through unique selections, in addition to providing more unique, both tangible and intangible, value combinations in-store (Sorescu et al. 2011).

New approach and service system: Multi-sided marketplaces are increasingly creating social experiences in addition to the more tangible value that they provide (Hänninen et al. 2018). When customers switch from buyers to information creators, for example by contributing product reviews to the multi-sided marketplace, they arguably become more engaged with the marketplace (Thakur, 2018). On the other hand, the ecosystem, with value-adding services such as on-demand entertainment, is designed to increase loyalty towards a particular multi-sided marketplace. In addition, subscription services such as *Amazon Prime* also increase customer lock-in and switching costs when customers subscribe for valuable service and benefits that they cannot find elsewhere (e.g. Reinartz, 2016).

4.2 Back stage: Value appropriation

Value appropriation addresses the activities and processes that serve as an organizing logic for value appropriation for the firm itself as well as its partners (Sorescu et al. 2011), generally taking place in the back stage of the service system. This means that it encompasses how value is appropriated, i.e. how organizations "*contend with competitors, suppliers, customers and others to appropriate value, either by occupying a superior position in product markets or by*

possessing firm-specific resources that are difficult to imitate" (e.g. Di Gregorio, 2013, pp. 42-32). More specifically, it includes processes that effect how value is appropriated, for example distribution management and governance structures (e.g. Sorescu et al. 2011).

Sorescu et al. (2011) categorize the value appropriation activities to consist of the customer efficiency, customer effectiveness and customer lock-in design themes. In traditional approaches to retail the goal of these has been to streamline the in-store environment and back-end operations, together with efficient vendor- and inventory management practices. However multi-sided marketplaces now have less investments in fixed, capital resources, as most back stage processes, like distribution and fulfillment, are procured from third-party providers (e.g. Hänninen & Smedlund 2018). In the following we describe in more detail the differences between the traditional and new approaches to retailing with regard to their back stage value appropriation logics.

Operational efficiency

By definition, operational efficiency refers to doing things faster, cheaper and simpler by making more competent and productive use of resources (Sorescu et al. 2011).

Traditional approach and service system: Traditionally retailers have achieved operational efficiency through the streamlining of their back-end operations to improve efficiency and optimizing the in-store environment to reduce costs and increase profits (Sorescu et al. 2011). In addition, advances in information technology have led to suppliers, wholesalers and retailers being increasingly integrated across the retail value-chain (Lund & Wright, 2003).

New approach and service system: Multi-sided marketplaces by definition make more efficient use of resources, through low investments in fixed, capital resources like distribution centres and stores, and the use of both demand and supply-side data to optimize the product flow from a third-party providers warehouse to last-mile delivery (e.g. Ailawadi & Farris, 2017). All of this means that marketplaces have arguably more agility than traditional retailers, combined with a tech-company mindset that enables them to make more competitive and productive use of their resources, in general (Hänninen et al. 2018). For example, multi-sided marketplaces outsource a large number of processes in the service system to third-party partners (Hänninen & Smedlund, 2018).

Operational effectiveness

By definition, operational efficiency refers to the degree to which retailers do the right things and minimize inefficiencies (Sorescu et al. 2011).

Traditional approach and service system: Traditionally retailers have achieved operational efficiency through market research, which has enabled retailers to optimize distribution and inventory management decisions, for example by more effectively matching product assortment with end-customer demand (Sorescu et al. 2011).

New approach and service system: The marketplace model implies matching the supply and demand-sides together, thus intermediating exchanges between buyers and sellers (e.g. Hagiu & Wright, 2015). This and the ability to cater to the '*long tail*' through a large selection sold by third-party providers, means that multi-sided marketplaces reduce inefficiency and transfer the inventory risk from the retailer to the supply-side (e.g. Jiang et al. 2011). On the other hand, multi-sided marketplaces like *Amazon* are also increasingly complementing their marketplace with their own inventory, and launching own private label brands, such as *Amazon Basic*, which serve as an additional earnings channel and drive efficiency through the ability to better control product quality and supply (e.g. Chatterjee, 2018).

Customer lock-in

By definition, customer lock-in refers to the degree to which a customer's propensity to search and switch to a competing retailer is reduced (Sorescu et al. 2011).

Traditional approach and service system: Traditionally retailers have achieved lock-in by increasing the incentives for end-customers to return to a store, for example through loyalty programs or subscriptions like extended warranty. However, more lately the role of loyalty programs has been diminished in order for retailers to capture more organic loyalty and repurchase intention (Sorescu et al. 2011), as increasingly a retailer's relevance, rather than incentives like rewards, rebates or discounts, have started to drive end-customers to prefer specific retailers, especially in light of increasing price competition (Zealley et al. 2018).

New approach and service system: As marketplaces are formed from tens of thousands to up-to millions of providers, they have become popular shopping destinations amongst end-customers. In addition to their superior selection, marketplaces create lock-in through the value-adding service offered through the ecosystem, such as subscription programs like *Amazon Prime* (e.g. Hänninen & Smedlund, 2018). Accordingly, Ramadan et al. (2019) argue that many of the technological innovations from multi-sided marketplaces, like *Amazon Dash,* are difficult for other retailers to imitate as they require a strong emotional and trustworthy relationship between the end-customer and retailer, both key to the value proposition of multi-sided marketplaces.

4.3 Conceptual Model of the Marketplace Service System

As the comparison of the traditional and the multi-sided marketplace approach to retailing shows, multi-sided marketplaces are transforming retail service systems by now combining and integrating various aspects of their front stage operations in order to create more attractive value propositions for end-customers centered on a combination of convenience, customization, engagement, price, selection and speed. For example, supply and demand-side data are increasingly aggregated in order to deliver more coherent customer experiences. Furthermore, this superior customer experience is integrated to new markets and geographical areas, and tailored to fit existing and emerging regulatory environments. Through this integration, multi-sided marketplaces continue to take over new customers, sectors and industries.

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Based on our analysis, we have drafted a framework, Figure 4, that outlines the vertical integration and the distinction between the front and back stage processes in the multi-sided marketplace service system, structured around the value creation and value appropriation design themes. The front stage value proposition of convenience, customization, engagement, price, selection and speed, is delivered through the back stage where critical factors are data, the ecosystem, the marketplace as an intermediary between end-customers and providers, the ability to cater to the long-tail in selections, outsourcing of core processes and the use of technology, as identified through our analysis. Vertical integration means that all the aspects

that are in the control of the multi-sided marketplace are now integrated seamlessly and thus are distinct elements that jointly form the value proposition for the end-customer.

5. DISCUSSION

The retail service system is undergoing major transformations as new competition, in the form of multi-sided marketplaces, are winning over customers minds and wallets by integrating their back stage in order to support the front stage processes and fulfill the different aspects of their value proposition. While many retailers are still attempting to catch-up to the competitive advantage of the largest multi-sided marketplaces, *Alibaba*, *Amazon*, *eBay, JD.com* and *Rakuten*, the multi-sided marketplace model is proving dominant, as evident, for example, through their growing share of global e-commerce sales. This shift in competition is due to multi-sided marketplaces increasingly catering to the needs of more customers demanding convenience, by being able to create a more efficient one-click shopping experience combined with fast delivery and no-hassle returns. This comes from the integration of both the back and front stage processes in the service system, enabling them to deliver more holistic customer experiences that bridge the offline and online domains. The dominant customer experience is now click online (with all the aspects of price, selections, convenience), combined with the speed of receiving the product, the ability to shop whenever and where-ever, and to try and return unwanted products at the customers leisure. This, combined with an increased aggregation of both supply and demand-side data across the online and offline domains to enrich the customer experience, makes the multi-sided marketplace model difficult for incumbents to catch-up to, at least, without a fundamental transformation of their existing service system. Next, we summarize a few of the major changes we are seeing in the retail service system based on our framework and analysis.

First, we are seeing a vertical expansion where marketplaces are increasingly integrating their back stage processes, in order to support their front stage. While multi-sided marketplaces continue to outsource a large proportion of deliveries, many of them are building their own logistics capabilities in order to better integrate this aspect of their operations. For example, *Amazon* has invested in its own logistics fleet in addition to its network of 845 fulfillment centres worldwide by the end of 2018 (MWPVL, 2018). At the same time *Alibaba* has established and invested in the *Cainiao Alliance,* a logistics joint venture, in order for it to be able to have even faster deliveries across China. We are also seeing the ecosystem becoming

an important driver of loyalty and lock-in. For *Amazon,* nearly 50% of US households are *Amazon Prime* members which drives lock-in to the *Amazon* marketplace as customers receive additional benefits such as the access to free delivery and on-demand entertainment for an annual subscription fee (Emarketer, 2018c). For *Alibaba* this integration comes from its affiliation with *Alipay*, a mobile payment provider, which has an over 50% market share in China (China Internet Watch, 2018). More over, multi-sided marketplaces are also expanding vertically towards developing and utilizing novel technologies, such voice-activated speakers, in order to also become a larger part of customer's in-home experience.

Second, we are seeing a horizontal expansion where multi-sided marketplaces are increasingly moving from online to offline to build and sustain their growth, in addition to expanding their end-customer base and offering more services to them. A good example of this is the $13.7 billion strategic acquisition of *WholeFoods* by *Amazon* in 2017. This not only gave *Amazon* access to *WholeFoods'* affluent end-customer base, but also a large network of stores that enable *Amazon* to deliver new services and distribution options to its end-customers. In addition to the acquisition of *WholeFoods*, *Amazon* has also made other horizontal expansion moves by opening stores such as *Amazon Books* and *Amazon Go*. All of these enable *Amazon* to expand its customer experience from the digital to the physical. On the other hand, retailers like *Walmart* are still looking for the right business model to compete with multi-sided marketplaces.

Thirdly, we are seeing a global expansion where retail is becoming increasingly multi-national as multi-sided marketplaces are scaling to other markets. This is possible through partners and also mergers and acquisitions. For example, *Alibaba* has expanded to Southeast Asia and *Rakuten* to Europe with the help of acquisitions, while *Amazon* continues to find growth in markets like India and across Europe through collaborations with local partners. For example, in France, *Amazon* has partnered with grocery retailer *Monoprix* to launch *Prime Now* in a few large French cities (Williams & Torsoli, 2018). Some of the challenges of these global expansions however include local laws and regulations which might differ significantly across regions and could require tailored value propositions, data management, logistics, and payment systems. In India, for example, recently tightened foreign direct-investment (FDI) rules limit the growth opportunities of international retailers, including multi-sided marketplaces (Business Today, 2018).

6. CONCLUSION

In contrast to the large-scale integration between suppliers, wholesalers and retailers during the past few decades, we are seeing increased disintermediation in the retail value-chain as customer experience, in addition to a value proposition centered on convenience, customization, engagement, price, selection and speed, has become the deciding factor for success in the sector, increasingly delivered through the integration of the back and front stage processes in the service system. A new logic for retail has thus emerged through the popularity of multi-sided marketplaces, where the intermediation of exchanges between buyers and sellers rather than efficient distribution and a large network of stores is winning over customer's minds and wallets. Following this logic, multi-sided marketplaces, like *Alibaba*, *Amazon*, *eBay, JD.com* and *Rakuten*, have been successful in creating novel combinations of value to end-customers, delivered, for example, through the use of aggregated demand and supply-side data to optimize the product flow and personalize the customer experience across their service system. The question facing retailers now is how to come to grips with the increasing competition from multi-sided marketplaces, and how to make use of new upcoming disruptive technologies, such as artificial intelligence, as it is likely that in the future the aggregation of supply and demand-side data together with increased customer understanding continue to be the deciding factors between success and failure for retailers worldwide.

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TABLES

Characteristic	Traditional Approach	New Approach
Business Model	Reseller	Multi-sided Marketplace
Primary Channel	Offline	Online
Distribution	Integrated	Outsourced
Selection	Limited	Long-tail
Touchpoint	Store(s)	Online interface
Market	Local	Global
Supply-chain	Integrated	Disintegrated
Role of technology	Limited	Integral
Customer service	Mass customized	Personalized
Margins	Low	High

Table 1. Comparison of the Traditional vs. New Approaches to Retail

	Alibaba	**Amazon**	**eBay**	**JD.com**	**Rakuten**
Year Launched	1999	1994	1995	1998	1997
Business Model	Multi-sided marketplace	Multi-sided marketplace, reseller	Multi-sided marketplace	Multi-sided marketplace, reseller	Multi-sided marketplace
Channel(s)	Online, offline	Online, offline	Online	Online	Online
Home Market	China	USA	USA	China	Japan
Key Markets	Asia, Europe	North America, Europe, Asia, Australia	North America, South America, Europe	Asia	Asia, Europe, North America
Distribution	Integrated, outsourced	Integrated outsourced,	Outsourced	Integrated	Integrated, outsourced
Market Cap (Jan 2019)	$400 billion	$830 billion	$30 billion	$33 billion	$10 billion
Revenue (2017)	$23 billion	$178 billion	$10 billion	$56 billlion	$9 billion
Net Income (2017)	$6.2 billion	$3 billion	$2.2 billion	$0.2 billion	$1.4 billion
Gross Merchandise Value (GMV 2017)	$550 billion	$200 billion	$83 billion	$199 billion	$117 billion

**Table 2.** Comparison of Four Largest Multi-Sided Marketplaces

Design Theme	Activities	Definition (Sorescu et al. 2011)	Traditional Approach and Service System	New Approach and Service System
Front stage: Value creation	Customer efficiency	*The degree in which a customer's access to the retailers offering is made as easy as possible*	• Product placement • Product displays • Sales Support • Multi/Omnichannel customer experience	• Convenience • Price • Speed • Vast Selection • Personalization • Technology
	Customer effectiveness	*The degree at which retailers facilitate consumers' realization of their consumption goals*	• Selections • Demand-side data • Co-creation	• Personalization and customization • Demand and supply-side data • Product reviews • Transparency
	Customer engagement	*The degree to which retailers design customer experiences that evoke emotional involvement that goes "beyond purchase"*	• Unique selection • Tangible and intangible value combinations in-store	• Product reviews, discussion forums • On-demand entertainment • Subscription services
Back stage: Value appropriation	Operational efficiency	*The degree to which things are done faster, cheaper and simpler*	• Streamlining back-end operations • Supply chain integration	• Low investments in fixed, capital resources • Demand and supply-side data • Tech-company mindset • Outsourcing
	Operational effectiveness	*The degree to which the retailers do the right things*	• Market research • Supply-side optimization	• Long tail • Private labels
	Customer lock-in	*The degree to which a customer's propensity to search and switch to a competing retailer is reduced*	• Incentives (loyalty/subscription programs) • Organic loyalty	• Superior selection • Subscription programs • Technology

Table 3. Analysis of Service Systems in the Traditional and New Approaches to Retail Service Systems
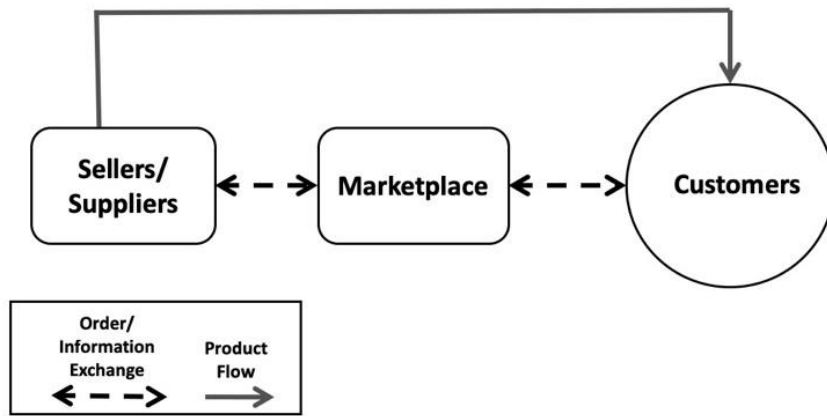
FIGURES

Retail 1.0
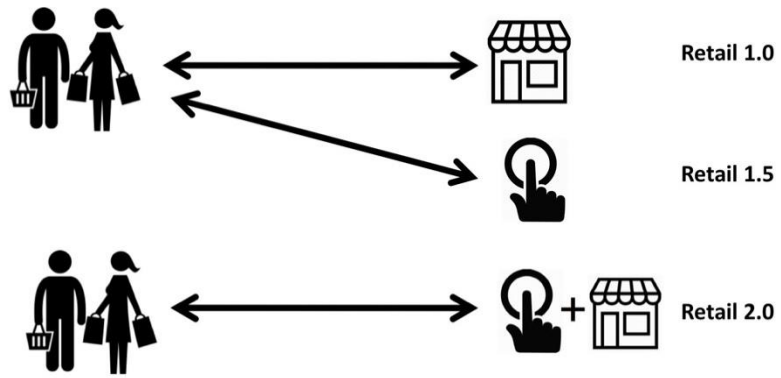
Retail 1.5

Retail 2.0

Figure 1. The Transformations of Retail

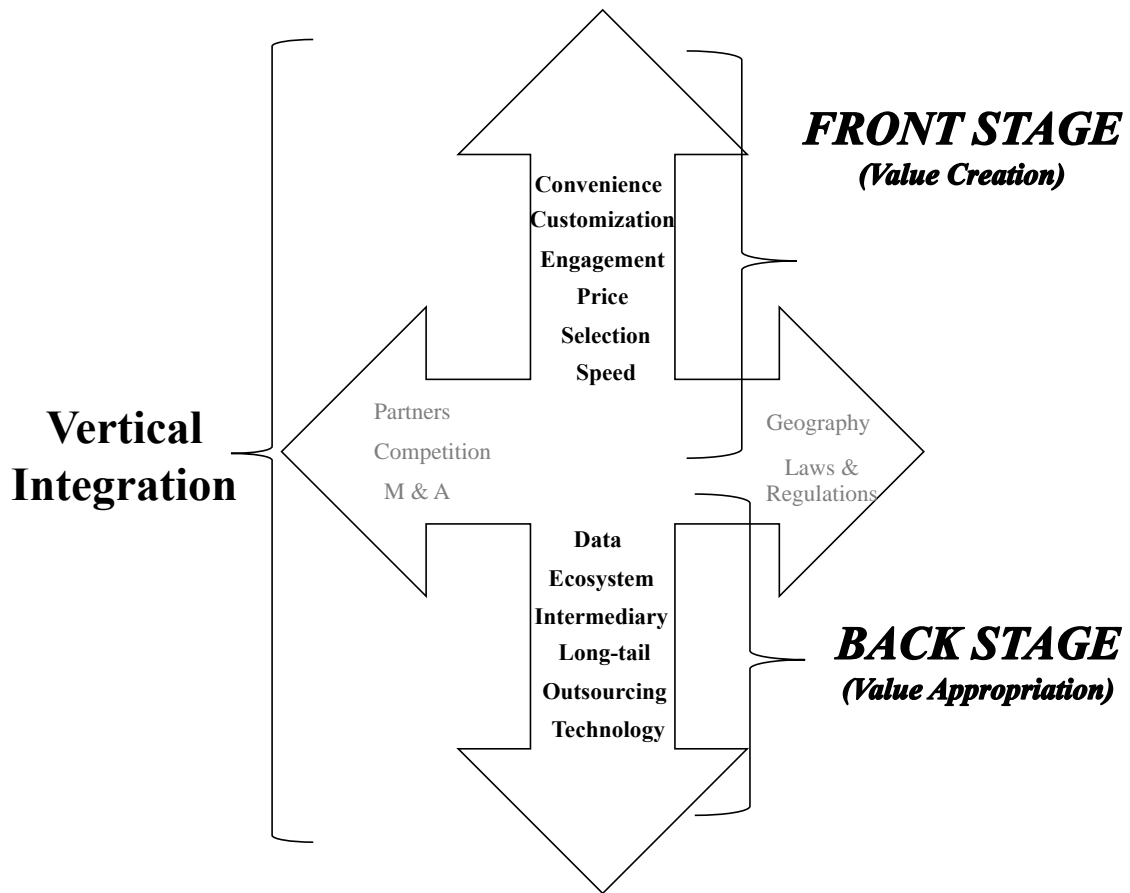**BACK STAGE**   **FRONT STAGE**
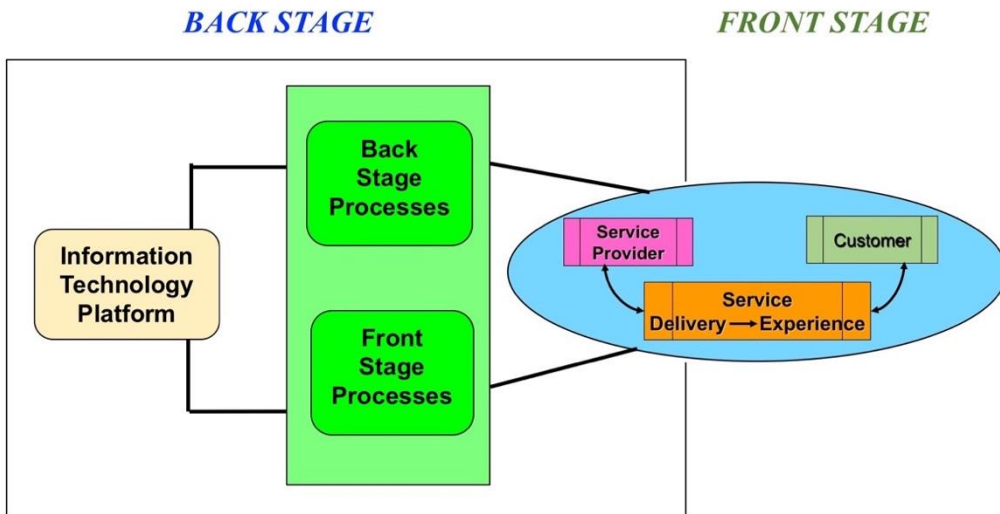
Figure 2. Front and Back Stages of Service in Digital Business

Figure 3. The Marketplace Model

Figure 4. The Marketplace Service System Model