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Hänninen, Mikko; Smedlund, Anssi; Mitronen, Lasse

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Digitalization in Retailing: Multi-Sided Platforms as Drivers of Industry Transformation

Mikko Hänninen, Anssi Smedlund and Lasse Mitronen

Aalto University School of Business

Department of Marketing

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Abstract

Purpose

Digitalization has transformed several industries during the past two decades. In this paper we focus on the retail sector, where new business models help retailers and suppliers meet the ever changing and demanding needs of retail shoppers. One example of this business model innovation are multi-sided digital platforms, which have become popular as they connect consumers with suppliers from around the world with a large ecosystem to support the retail platform. In this paper, we provide an overview of how multi-sided digital platforms are transforming the retail exchange logic and we assess the implications and impact of these platform based businesses on the retail sector, especially for business managers and consumers.

Design/Methodology

In this paper, we employ literature review, conceptual analysis and qualitative case study methodology. We provide an overview of how the platform economy is affecting the retail sector through the illustration of four digital multi-sided platforms: Alibaba Group, Amazon.com, eBay and Rakuten Group, and what differentiates them from incumbent business models in retailing.

Findings

Our findings suggest that platforms transform the transaction logic of retailing as they simply intermediate transactions between buyers and suppliers rather than handling the entire supply and logistics chain themselves. We highlight the role of consumer understanding and big data as one example of how multi-sided digital platforms differentiate from their non-platform competitors.

Practical Implications

Our paper highlights how incumbent retailers can compete against new forms of business, such as digital platforms, and we demonstrate some of the managerial capabilities needed to remain relevant amidst this new digital competition.

Originality/value

Very little empirical studies in marketing and retail literature have focused on multi-sided digital platforms and their business models. The present study fills this gap with an overview of how multi-sided digital platforms transform the retail sector.

Keywords

Retailing, Business Strategy, Platforms, Multi-Sided Platforms, Business Model, Industry Transformation

Article Classification

Research Paper

1. Introduction

Incumbent business models in retail are challenged by new competition and evolving consumer expectations as retail has increasingly moved online. New business models take advantage of digitalization and changing consumer expectations, requiring managers to understand and react to the changing retail landscape at a fast pace. One example of this business model innovation in retail are multi-sided digital platforms. These types of platforms consist of multi-sided platforms such as from Alibaba Group without any own inventory and hybrids like Amazon.com combining their own inventory by opening the platform also to independent suppliers (e.g. Hagiu & Wright 2013). Multi-sided digital platform business models transform the nature of exchange in retail as platforms link consumers with the independent supplier base, in other words the marketplace (e.g. Armstrong 2006, Eisenmann et al. 2006, Haucap & Heimeshoff 2014; van Alstyne et al. 2016). In this logic, the retailer intermediates the transactions between buyers and sellers thus shifting the inventory risk from the retailer to the supplier. The platform owners, such as Amazon.com, orchestrate their retail ecosystem of suppliers and consumers (Evans 2003) unlike in other types of online retail business models where the retailer sells their own inventory (Spiller & Lohse 1997). Multi-sided markets thus share similar principles to shopping centres or retail agglomerations by functioning as networks that facilitate social interactions and value co-creation (e.g. Teller et al. 2008; Teller & Elms 2010; Teller et al. 2016) albeit now in the digital realm.

The effects of the platform economy and platform based businesses on the retail sector has received limited attention from academics. Recent research on retailing in the digital era has looked at topics such as consumer engagement and interactivity in online retail channels (e.g. Dholakia & Zhao 2009; Vrechopoulos et al. 2010; Demangeot & Broderick 2016), consumer value (e.g. Poncin & Mimoun 2014), gamification (Insley & Nunan 2014), price promotions (e.g. Breugelmans & Campo 2016), fraud (e.g. Amasiatu & Shah 2014), online recommendations (e.g. Panniello & Gorgolione 2016) and product returns (e.g. Minnema et al. 2016). Much of this past work on online retailing is however carried out with little regard to multi-sided digital platforms and companies such as Amazon.com or eBay. As, for example, Van Alstyne et al. (2016) highlight, there is a need for further enhancing managerial understanding of the unique business models and strategies of multi-sided digital platforms (e.g. Seamans & Zhu 2013; Ritala 2014; Deng & Wang 2016) especially as they have significant repercussions on the retail industry value-chains. So far, however, the potential implications and impact that multi-sided digital platforms have on different industry structures and dynamics have remained under-researched in the retail and marketing literature.

The purpose of this paper is to provide an overview of how the platform economy is changing the retail sector and increase understanding of multi-sided digital platforms in retailing. The topic is highly relevant, since in industries like retailing, firms have traditionally coordinated independently their resources and activities rather than organized them through a platform (e.g. Demirkan et al. 2011; Mele & Poesse 2011). In the platform logic, the consumers are the main assets, as the platform generally does not have any physical capital such as real-estate or inventory. For consumers, the main benefits of multi-sided digital platforms are in convenience and vast selection. With the platform as a mediator, consumers can access up-to tens of thousands or even millions of suppliers through one platform. For incumbent retailers such as brick-and-mortar stores, this kind of vast selection is difficult to match. The platforms generally also include the long-tail in their selection, meaning that products causing incumbent retailers inventory risk are profitable enough to be sold through a platform (e.g. Jiang et al. 2011). If multi-sided markets are becoming the dominant retail business model, there is a need for new knowledge on the topic, specifically on understanding platform based businesses and their implications on the entire retail sector.

We took two steps in our study. First, we conducted a comprehensive literature review to understand multi-sided digital platforms and how the platform logic is applicable to the retail sector. Secondly, we used qualitative case study methods to illustrate the implications and impact of multi-sided digital platforms on the retail sector with the analysis and comparison of four leading multi-sided digital platforms. We contribute to retail research by providing an overview of how digital platform business models are changing the retail exchange logic. Furthermore, our empirical evidence helps practitioners to understand how to create lock-in in a digital environment and how incumbent retailers can respond to the challenges posed by digital platforms.

2. Theoretical Background

In this section, we highlight our theoretical background. We first provide an introduction to digitalization and the new consumer centric business models that have emerged as a result, followed by a discussion of multi-sided digital platforms in the retail context.

2.1 Overview of Digitalization and Consumer Business in the 21st Century

The past decade has seen the emergence of new business models that aim to meet ever-changing consumer expectations and demands. Digitalization has accelerated the shift from product to service based businesses (e.g. Suarez et al. 2013) affecting fundamentally how firms compete and transact with consumers (e.g. Porter & Heppelmann 2014). In the retail industry for example, retailers have traditionally competed primarily on prices, selections and locations (c.f. Burt & Sparks 2003; Leszczyc et al. 2004) but now creating concepts and services that add value to consumers is becoming crucial and cost-efficient to achieve through information technology. This has changed the dynamics of the retail industry as incumbent firms such as Walmart are still coming to grips with the transformations brought on by companies such as Amazon.com and the increasing adoption of online retailing by consumers around the world (e.g. Blitz 2016). Recent studies such as Baršauskas et al. (2008) show that the adoption of e-commerce by retailers has a positive impact on business efficiency further justifying the adoption of these business models by retailers.

New digital businesses and business models aim to make full use of advances in information technology and for example van Alstyne et al. (2016) dub digital platforms as having created new rules for strategy altogether. For consumers, these business models create more possibilities to satisfy hedonistic needs through the facilitation of novel types of digital consumer-to-firm engagement (e.g. Sashi 2012), consumer experience (e.g. Rigby 2011; Weill & Woerner 2015) and consumer value (e.g. Rintamäki et al. 2007; Grewal et al. 2009). In retail literature, the concepts of multichannel and omnichannel retailing, for example, have emerged as a result of digitalization, looking at how retailers can create a coherent consumer experience regardless of the retail channel used (e.g. Verhoef et al. 2015; Lemon & Verhoef 2016). For example, Blitz (2016) argues that successful omnichannel and multichannel retailers focus first on maximizing consumer value and only then on short-term shareholder value.

There is however still potential for firms to catch up with digitally native competitors and emerging business models. For example, several studies show that incumbent firms continue to struggle with a digital business strategy (e.g. Bhadrafwaj et al. 2013). This has prompted research especially in the context of innovation (e.g. Lusch & Nambisan 2015; Nylén & Holmström 2015) as incumbent firms have tried to come to grips with new digital technology and match digital frontrunners (e.g. Lucas & Goh 2009; Henfridsson et al. 2014). Borders and Kodak are often mentioned as two notable examples of companies that failed to manage their responses to emerging technology and business models in their respective industries.

In this paper, we adopt the definition by Teece (2010), defining business models as how a firm creates and delivers value to its consumers. We focus especially on the implications of multi-sided digital platform business models on the retail industry and ignore other types of innovation that have occurred as a result of digitalization. In the next section, we discuss the phenomena of multi-sided digital platforms and their implications and impact for the retail sector.

2.2 Understanding Multi-Sided Digital Platforms

Multi-sided digital platforms are one type of business model innovation that has emerged in the past decades through advances in information technology and changes in consumer demands and expectations. Research on platforms has generally focused on technology management rather than assessing the implications of platform based businesses for platform users and business managers. Through the past decade, the research around platforms has evolved from identifying competitive strategies in platforms (e.g. Armstrong 2006; Eisenmann 2006) to looking at platform management strategies such as platform envelopment and platform mutation (e.g. Tiwana 2013; Mukhopadhyay et al. 2015). Prior literature defines platforms as dynamic and purposive inter- or intradependent networks where participants co-create value (Adner & Kapoor 2009; Autio & Thomas 2014; Kijima 2015; Smedlund & Faghankhani 2015) and to which participants attach complementary products, services or technologies (Jacobides et al. 2006; Gawer & Cusumano 2014; Gawer 2014).

Platforms change the logic for value creation (Smedlund 2012). Value creation in platform ecosystems that include the platform owner, complementors and end-consumers (McIntyre & Srinivasan, 2017) happens in the interaction between independent actors with evolutionary processes due to the internal competition and cooperation between the participants (Pierce 2009; Borgh et al. 2012). The most capable platform owners can better orchestrate value-creation amongst the actors in the ecosystem (Teece 2007). The concept of multi-homing (Choi 2010) is relevant for the consumer side of the platform as participants may use many different platforms simultaneously rather than concentrating on one preferred outlet as per the traditional logics of brand loyalty (e.g. Oliver 1999).

Value creation in platform ecosystems comes from the interaction between independent participants around the platform that together form an ecosystem. While traditionally platform ecosystems include the platform owner, suppliers and end users (McIntyre & Srinivasan 2017), in multi-sided digital platforms the platform ecosystem extends to include competitors that may form secondary or complementary platforms and ecosystems (Autio & Thomas 2014). For example, brick-and-mortar retailers or brands may launch storefronts on multi-sided digital platforms such as on Amazon.com despite being direct competitors on other parts of the ecosystem. Ritala et al. (2014) introduce the concept of co-opetion applied to platforms, with companies able to generate value through cooperation between otherwise competing platform participants.

In retail, platforms have received only limited attention from academics despite the spawn of multi-sided digital platforms globally since the mid 1990's. The platform logic behind technology platforms such as the Apple iPod (e.g. Eisenmann et al. 2006) are somewhat identical to retail platforms, where instead of content and technology providers, the multi-sided digital platforms consist of a wide network of suppliers and consumers with strong competition in this business ecosystem between brick-and-mortar, pure e-commerce and platform retailers compared to competing operating systems. In the multi-sided logic, the retail platforms enable interaction between two or more sides of the platforms users (Hagiu & Wright 2015). As far as we are aware, there are only a few studies that discuss this construct in the retail and marketing literature. These studies look at the competition in retail platforms (Jiang et al. 2011; Abhishek et al. 2015) as well as a consumers' hedonic motivations for using retail platforms (Cheng et al. 2009). For consumers, platforms resemble retail agglomerations due to their greater selections in a single digital channel and the shopping

experience they offer through their online ecosystem (e.g. Teller et al. 2008; Teller & Elms 2010; Teller et al. 2016).

Overall, what differentiates multi-sided digital platforms from incumbent retail business models is that multi-sided digital platforms must create value added for consumers to prevent consumers' transactions directly with the platform's suppliers, or switching to a competing platform where the supplier is also offering their products. The platform leader in the market is arguably the one with the best technology platform and the best ecosystem of suppliers and consumers (Gawer & Cusumano 2008; Cusumano 2010). In addition, the data assets provided by consumers such as the accumulating purchase history, demographic information, preferences and location data make a large difference. This takes multi-sided digital platforms intermediating an ecosystem further away from the traditional supply chain led view of retailing where consumers are treated as a mass.

Based on the analysis of literature, multi-sided digital platforms are defined as platforms that facilitate the interaction and the seamless exchange of products between consumers and independent suppliers through a multi-sided digital platform mediated marketplace. In the following section, we describe the research design of this study and briefly introduce the four case companies.

3. Methodology

3.1 *Research Design*

We conducted an in-depth qualitative case study in order to gain an overview of the implications and impact of multi-sided digital platforms on the retail sector, and identify the key components of the business models of the leading multi-sided digital platforms (Yin 2003). For comparison we selected Alibaba Group, Amazon.com, eBay and Rakuten Group. We decided to focus on the largest marketplaces that have a global presence and sales volumes of over \$1 billion annually, which we take as an indication of the business models success. Case studies allow researchers to explore previously unexplored, emerging phenomena (e.g. Eisenhardt 1989) and help gather rich, empirical descriptions of particular instances of a phenomenon (Yin 1994; Eisenhardt & Graebner 2007). In the field of retail research, a qualitative case study method is also supported by several academics (e.g. McGuinness & Hutchinson 2013; Ritala et al. 2014; Janhonen & Lindström 2015; Elg & Hultman 2016). The qualitative case study approach was thus chosen because the research field on digital platforms is still emerging, and there is little research on the implications and impact of multi-sided digital platforms in the retail context. Furthermore, qualitative case study methodologies are necessary when studying complex research areas such as ours (e.g. Eisenhardt 1989; Ghauri 2004), where only limited previous academic research and theory exists (e.g. Patton 2002; Boeije 2008).

The case study was conducted similarly to the approach followed by Ritala et al. (2014), using a broad range of secondary data as the primary source to gain an in-depth understanding of multi-sided digital platform business models. Similar to the approach taken by Ritala et al. (2014) in their analysis of Amazon.com, in this paper we focus on the processes that lead to the capturing of value and profit-taking in firms using a platform based business model. In our data collection, we focused on identifying factors such as new product or service launches, acquisitions and divestments throughout the histories of the companies. The data gathering took place by the researchers between 2016 and 2017. Data collection started with identifying multiple sources of data, creating an event database and maintaining a chain of evidence to support the findings (e.g. Yin 2003). The secondary data allowed us to form a rich picture of the business models throughout the histories of the four case companies. The main secondary, publicly available data included the full set of annual reports,

analyst reports, SEC filings, prior academic articles, Harvard Business School cases, books, business press articles and other industry reports on the case companies as well as retailer websites. As each of the companies have had a large public interest during the past two decades, there is a large number of secondary data available on them, which was also an important factor in the case choice. The data sources used for the study are listed more specifically in table 1, below.

Source	Details	Use in Analysis
Annual Reports: Alibaba Group (2014 – 2016) Amazon.com (1996 – 2015) eBay (1998 - 2015) Rakuten Group (2005 - 2014)	The public annual reports give a detailed overview of the development of the platforms business and business model as well as information on key financial/non-financial developments	Gaining an understanding of different key events and development Building an event database of key developments and product/service launches Identifying the processes and services in place for end-customer value creation
Books: Brandt (2011) Cohen (2003) Erisman (2015) Kalpanik (2011) Mikitani (2013) Stone (2013) Tse (2015)	The books were written by industry experts, former executives or CEO's of the platforms and give insight into the business models and historical development of the platforms	Building an event database of key developments and product/service launches Providing an overview of business model evolution and key events and developments Identifying the processes and services in place for end-customer value creation
Popular Journal Articles & Industry/Analyst Reports (203 pcs.)	Popular journal articles consist of articles describing the service processes of multi-sided digital retail platforms and provide an overview of key developments as well as service launches. Industry Reports analyse the performance of the focal retailers and the market they operate in	Gaining an understanding of different key events and developments Identifying the processes and services in place for end-customer value creation
SEC Filings	Quarterly SEC filings of Amazon.com and Alibaba Group provide similar information to Annual Reports but fill-in information gaps in the reports	Gaining an understanding of different key events and development Building an event database of key developments and product/service launches

Table 1. Description of the studies primary data sources and their use in the analysis

The data analysis followed a process common to case study research (Yin 2003). We took three steps to data analysis and interpretation. Firstly, we aggregated the data from each company, interpreting common patterns and differences. Secondly, we combined, sorted and linked the data from the four cases. We then organized the data according to the business model canvas framework (Osterwalder 2004; Johnson et al. 2008) in order to identify the value propositions, the profit formula, resources and processes of the four companies and understand how multi-sided digital platforms compare with the traditional exchange logics of retailing. Based on these themes we condensed the findings that are presented in section 4, structured based on the key findings from the case study: the transaction logic is under transformation, consumer lock-in is created with horizontal integration, consumer understanding and big data creates value and loyalty programs and social features facilitate consumer value.

3.2 Detailed Case Descriptions

In the following section, the four case companies are introduced. Table 2, below, compares the companies based on a few key metrics.

	Alibaba Group	Amazon.com	eBay	Rakuten Group
Type of Platform(s)	B2B, B2C, C2C Platforms	B2C Marketplace	C2C and B2C Platforms	B2C Platform
Market Value (Forbes, May 2017)	\$264.9 billion	\$427 billion	\$36.6 billion	\$15.2 billion
Year Founded	1999	1994	1995	1997
CEO (2017)	Daniel Zhang	Jeff Bezos	Devin Wenig	Hiroshi Mikitani
Headquarters	Hangzhou, China	Seattle, USA	San Jose, USA	Tokyo, Japan
Number of Employees (2016)	36 450	341 400	36 500	14 134
Revenue (2016)	\$14.7 billion ¹	\$136.0 billion	\$9.0 billion	\$7.0 billion ²
Net Income (2016)	\$6.2 billion ¹	\$2.4 million	\$7.3 billion	\$0.34 billion ²
GMV (2016)	\$448.62 billion ¹	\$250 billion ³	\$83.8 billion	\$27 billion (Japan only)

Table 2. Comparison of Amazon.com, Alibaba Group, eBay and Rakuten Group

3.2.1 Alibaba Group

¹ 1 RMB = 0.15 USD

² 1 yen = 0.009 USD

³ Piper Jaffray Estimate

China-based Alibaba Group is the world's largest online retailer in terms of GMV (Gross Merchandise value) with several B-to-B, B-to-C and C-to-C multi-sided digital platforms both in China and globally. Around 90% of Alibaba's revenue comes from China (Alibaba Group 2016). Its retail platforms include Alibaba.com (B-to-B), Taobao (B-to-C), Tmall (B-to-C) and Aliexpress (B-to-C). For consumers, Alibaba Group's value proposition is based on connecting buyers with China-based sellers and suppliers. In all of its retail platforms Alibaba Group follows a pure multi-sided digital platform business model, simply facilitating transactions in its ecosystem without vertical integration, own inventory, and in-house supply chain processes. Instead it relies on external service providers such as Alibaba affiliated Cainiao Logistics Alliance for supply-chain functions and Alibaba affiliated financial services provider Ant Financial for payment services. Outside of retail Alibaba's ecosystem includes services from travel to banking that are either directly or indirectly owned by Alibaba Group. Through the vast ecosystem, Alibaba's earnings model is based on commissions and sales from additional platform services such as digital marketing and data analytics. Compared to its competitors such as Amazon.com, Alibaba Group's retail marketplaces take a relatively low commission from its sellers (e.g. Alibaba Group 2015) with several functions free-to-use for sellers instead of relying on the sales of ancillary value-adding services such as analytics to help suppliers to increase their sales performance.

3.2.2 Amazon.com

Amazon.com runs a B-to-C multi-sided digital retail platform globally and is a market leader in several countries where it has a local marketplace in. In 2016 (Amazon Annual Report 2016) Amazon had 15 local marketplaces. Amazon's value proposition is consumer focused, aiming to offer convenience and speed through a vast selection, fast shipping and low prices on its online marketplace. Especially its Amazon Prime subscription program drives this strategy as Prime members gain access to faster deliveries and value-adding services for an annual subscription fee. Amazon.com follows a hybrid business model complementing its own inventory with sales from independent suppliers on the platform, with around 50% of Amazon.com's sales coming from this supplier marketplace in 2015 (Amazon Annual Report 2015). To support its hybrid strategy, Amazon owns an extensive international logistics network with Amazon's key partners consisting of global logistics players such as FedEx, UPS and USPS. However, Amazon has over the past few years realigned its strategy to handle a larger part of deliveries on its own. Outside of retail, Amazon's ecosystem includes several services from cloud computing to on-demand music and video streaming. Amazon's earnings model is based on commissions ranging from 6-15% for third-party suppliers' sales on the Amazon.com platform and revenue from ancillary ecosystem services such as Amazon Prime membership subscriptions and device sales for example from the Amazon Echo and Kindle product lines. Although the retail business has the most visibility, based on the analysis of Amazon.com, most of the profitability comes from the Amazon Web Services cloud computing business unit (e.g. Amazon.com Annual Report 2016).

3.2.3 eBay

eBay runs a B-to-C and C-to-C platform ebay.com which connects sellers and buyers in online auctions and fixed-price sales. In 2016 eBay had local marketplaces in 26 countries (eBay Annual Report 2016). The value proposition of eBay is to ease the transactions between independent buyers and sellers by offering an interface for a smooth exchange between mostly anonymous users. This is supported with a user friendly front-end interface. While eBay started off as an auction platform especially for trading collectables and other rare items, it later adopted fixed price sales especially for the sale of new merchandise by consumers and SME's from around the world. eBay is a pure multi-sided digital platform, without vertical integration and in-house supply chain processes. Thus, it only runs the technical interface through which buyers and sellers make transactions and provides associated support services. While at one time eBay had a diverse ecosystem, in the

recent years it has divested its stakes for example in payment service PayPal and communication service Skype, and is now focusing purely on its retail business. Our analysis of eBay's financial reports shows that as the company simply runs the technical infrastructure its retail business is based on, it has always maintained a strong bottom line compared to its competitors. Its earnings model is based on commissions which depend on the seller's volumes on eBay's platform and the sale of additional services such as premium accounts and digital marketing services.

3.2.4 Rakuten Group

Rakuten Group runs a B-to-C multi-sided digital platform, Rakuten Ichiba, the leading online retail business in Japan. Besides its Japanese retail platform, Rakuten Group has a few local retail marketplaces in Europe, North America and Oceania to add to its strong home market presence. The value proposition of Rakuten Group is based on offering shopping as an entertainment, with its platform serving as a virtual shopping mall allowing suppliers to create their own storefront like in a physical mall. Rakuten is a pure platform, without vertical integration and in-house supply chain processes. Most of these functions have been outsourced to external partners such as Yamato Transport in Japan. However, what makes Rakuten Group and Rakuten Ichiba unique is that they offer a large variety of consumer and business focused services digitally. The Rakuten Ichiba platform in Japan is a market leader in several different digital service sectors from banking to travel thus making it one of the most innovative companies in the world: it was mentioned, for example, by Forbes as one of the world's most innovative companies in 2013. A major part of consumer loyalty is the Super Points loyalty scheme that Rakuten offers. Consumers on Rakuten Ichiba gain Super Points for purchases that can be redeemed for across the services offered through the ecosystem. The earnings model of Rakuten is based on a membership fee and commissions averaging around 8-10% of purchases (Rakuten Group 2016) as well as revenue from additional services such as digital marketing and sales consultancy.

4. Findings

In this section, we present the findings from the case study of Alibaba Group, Amazon.com, eBay and Rakuten Group. Digitalization causes retail to be more data driven, and competing against the global platform leaders requires managers to understand the new business models and their implications for the industry in detail. Similar to Hagiwara & Wright (2014), through the business model analysis we identified several different types of platform business models from hybrids to pureplay digital platforms, with the common element of multi-sided digital platforms the organizing of the digital marketplace through an ecosystem where the value creation happens in the interaction of consumers, suppliers and the platform owner.

4.1. The Transaction Logic is Under Transformation

Our findings indicate that multi-sided digital retail platforms transform the transaction logic of retailing. While traditionally retailers coordinated key activities such as purchasing, marketing and logistics through a hierarchical chain coordination model with little input from suppliers (e.g. Mitronen & Möller 2003), in the platform model the most important activities and resources are coordinated together with suppliers and managed through open data solutions. In multi-sided digital platforms, the suppliers are an asset for the platform owner, as the value of the platform depends on the value generated by the suppliers. A good example is the Rakuten University that aims to help Rakuten Ichiba's suppliers improve their sales performance and learn more about the possibilities of online retailing. Control mechanisms i.e. rules, metrics and norms are also needed as the supplier gains direct access to the platform's consumer base, and poor suppliers may negatively affect the platform owner's brand. Amazon.com and Rakuten Ichiba, for instance, maintain tight control of

their supplier base with strict criteria for entry, and quality criteria during operations (e.g. high feedback ratings, low return rates), which they must adhere to constantly or they will be excluded from the platform.

Multi-sided digital platforms generate revenue from both sales commissions and the sales of value-adding services such as logistics, data analytics and digital marketing as shown through Table 3. As multi-sided digital platforms only facilitate transactions on the platform, they shift the risk from the retailer to third-party suppliers. Our findings suggest that platform based business models are less capital intensive, easier to scale and more profitable in the long-term as their earnings model is based on selling services to their user base rather than just maximizing the sales margin. The chicken and egg problem metaphor (Tiwana 2014) suggests that the cross-side of platform, indirect network effect (e.g. Haucap & Heimeshoff 2014) goes both ways. Alibaba Group, Amazon.com, eBay and Rakuten Group have grown into large marketplaces due to the network effects associated with platforms where a large consumer base attracts suppliers and vice versa. This means that unlike other types of retail business models, multi-sided digital platforms can focus exclusively on creating lock-in, while allowing suppliers to handle the actual transaction of goods with consumers on the platform.

	Alibaba Group	Amazon.com	eBay	Rakuten Ichiba
Gross Merchandise value (GMV) (2014/2015)	\$476 Billion	\$225.6 Billion	\$81.7 Billion	\$64 Billion
Number of commission-based suppliers (2016)	China B2B platforms 830,000 International B2B platforms 136,000 China B2C platforms 10 million	2 million	25 million	40,000
Number of registered shoppers (2016)	385 million	270 million	167 million	106 million
Average Commission (%)	Alibaba.com 0% 1668.com 0% Taobao 0% Tmall 0.3% – 5% Aliexpress 5%	6% - 20%	8% - 15%	8% – 10%
Other earnings models	Upgraded membership packages Data analytics Digital marketing Sales consultancy Affiliate program Ecosystem services (banking, travel etc.)	Own sales Digital Marketing Ecosystem services (Amazon Prime, Amazon Fresh etc.) Amazon Web Services Products (Kindle, Echo etc.)	Digital Marketing	Digital marketing Sales consultancy Ecosystem services (banking, travel etc.)

		Supplier Services (Distribution, payments etc.)		
Supply-chain	Outsourced to affiliated logistics partner Cainiao	394 global logistics facilities (MWPVL 2017), primarily outsourced delivery	Outsourced to third-party providers	Outsourced to third-party providers

Table 3. Earnings Model for Alibaba Group, Amazon.com, eBay and Rakuten Ichiba

4.2. Consumer Lock-in is Created with Horizontal Integration

A key resource for the studied retailers is the platform ecosystem that serves as the heart of the multi-sided digital platform business model. All four platforms have diversified horizontally to provide a comprehensive ecosystem of value-adding supplementary services (e.g. Gawer 2009). The ecosystems of Alibaba and Rakuten Group's platforms include banking, finance, social media and travel businesses while the Amazon.com ecosystem includes for example on-demand video and music streaming services. While a comprehensive service portfolio is not new to retail, what is new is that multi-sided digital platforms can provide a seamless digital user experience as consumers can access all the services through one digital channel.

Similar to Gawer & Cusumano (2014) and Tiwana (2014), our analysis also shows that in retail, the ecosystem also has an essential role in the business model of leading multi-sided digital platforms. Although industry platforms are traditionally defined as having an open ecosystem for complementors such as app developers (McIntyre & Srinivasan 2017) in the four cases analysed, each retail platform has opened its platform for the suppliers while keeping strict control of other parts of the ecosystem. The platforms can maintain better control of their user base and facilitate lock-in to the platform through the ecosystem's digital service offering.

We define the ecosystem as an engagement platform as it allows the companies to extend their reach over their consumer base from purely retail to cover additional physical and digital interactions as well (e.g. Breidbach & Brodie 2016). The role of the ecosystem and value-adding services is thus to maximize loyalty to the platform, as otherwise consumers may use several platforms concurrently i.e. multi-home. The vast user base and engagement that the platforms can achieve, will likely mean that retail platforms in the future will consist of a few global leaders who can amass a large share of users due to these effects, especially when the retail platform is combined with a digital service offering consisting of, for example, entertainment and social media elements. When the platform is enveloped by a large digital offering, it will be difficult for small retailers to stay out of the platform marketplace and for large incumbent retailers to compete with their own digital channels.

4.3. Consumer Understanding and Big Data Creates Value

Our study shows that the consumer understanding, generated through big data, is an essential part of the business model of each case company. Due to the large number of consumer interactions, platform owners accumulate vast amounts of user data. The platforms collect data from their consumers also outside the retail transactions, and use that data to create value for consumers, because the data allows enriching and customizing the shopping experience through complex algorithms. For example, each platform generates customized marketing communications through the wide range of businesses they operate in, meaning that on the Alibaba and Rakuten Group platforms, the information collected from the retail business can be used

to generate customized travel or banking related marketing communications elsewhere on the platform ecosystem. For example, our case study shows that customized user-specific targeted digital marketing forms an essential part of Amazon.com's strategy. When the data is utilized by the suppliers and also to some extent by external advertisers, the transaction data becomes a business of its own. For example, one finding from our case study is that Alibaba Group uses the transaction data from its B2C and B2B retail business to generate credit ratings for their affiliated micro loan business. In the future, the user database will likely be a significant competitive advantage compared to incumbent retailers due to the hundreds of millions of consumer interactions that occur per day on digital platforms and their affiliated ecosystem services both offline and online. The world's largest retailer in terms of physical sales, Walmart, does not have a loyalty program and thus it does not have consumer-specific transaction data at its disposal unlike for example Amazon.com.

4.4. Loyalty Programs and Social Features Facilitate Consumer Value

Multi-sided digital platforms create consumer value primarily through services, especially the value-adding services offered through the digital ecosystem. However, loyalty programs were found as central to the business models of Amazon.com and Rakuten Group. Programs such as Amazon Prime and Rakuten Super Points were found as two examples of loyalty programs that encourage consumers to use a wide range of the platform's digital services also outside of retail thus encouraging consumers to concentrate their purchases to one platform. Although consumer value in online retailing has been studied by researchers such as Maity & Dass (2014) and Carlson et al. (2015), we also extend this discussion to a multi-sided digital platform setting. Our study confirms that multi-sided model might prove existing retail business models obsolete, because rather than focusing on a single value dimension (e.g. Rintamäki et al. 2007), the multi-sided digital platforms can create several different combinations of value digitally for their users. Besides convenience, platforms aim to create a rich user experience and facilitate social interactions between otherwise anonymous platform participants also in a digital domain. For example, social value is facilitated when consumers switch roles from simply buyers of goods to information creators on the platform. Other social processes were identified as discussion boards and feedback systems, as they provide opportunities for communication and interaction processes to create trust between the otherwise anonymous platform participants (e.g. McKnight et al. 2002), addressing one common weakness for online retailing.

5. Conclusion

In this paper, we have provided an overview of multi-sided digital platforms in the retail sector. During the past decade platforms have transformed the fundamental business logics of several industries (e.g. Van Alstyne et al. 2016). In the retail sector, we find that platform business models redefine the basic logics of the industry, as platforms simply intermediate transactions between buyers and suppliers rather than handling the entire supply and logistics chain themselves. We argue that the business models of retail platforms are thus unique compared to incumbent retailers because of the sheer volume and depth of the digital platform ecosystem. Like retail agglomerates such as physical marketplaces, with the advent of digitalization, multi-sided digital platforms can bridge millions of buyers and sellers together, however shifting the inventory risk back to the supplier.

Our findings contribute to retail literature and fill a gap of empirical evidence and theoretical understanding of multi-sided digital platforms and their implications and impact on the retail sector. We show that platform theories are relevant to retailing, where platform based companies such as Amazon.com and Alibaba Group have created retail platforms consisting of independent suppliers and end-users who can co-create value through the retail platform interface. Multi-sided digital platforms are also theoretically interesting due to the

implications of network effects considering consumers as both recipients and resources of value. Our study shows that multi-sided digital platforms aim to create value to consumers through their digital ecosystem thus facilitating several types of consumer value to lock-in consumers to the specific platform. In terms of the business model, we also identified resources that create additional value compared to incumbent retail business models. We suggest that transaction data is one such factor that distinguishes platforms from incumbent retail business models, and expect that data generated through digital platforms will form an even greater competitive advantage in the future as these platforms can collect data from a multitude of interactions with their user base both online and offline. If the growth pace of retailers such as Amazon.com and Alibaba Group continues in the same way as it has in the past decade, it is likely that in the future consumers will be loyal to only a few digital service providers, whose ecosystems will provide a host of digital services also outside retail, and the platform will be fully customized based on the customer understanding gathered through big data. At the same time, multi-sided digital platforms aim to engage with their users even more also in the physical realm which poses a threat to retailers with a brick-and-mortar presence in the years to come.

As the case study conducted in this paper is based on secondary data, this study is subject to a number of limitations (e.g. Cooper et al. 2003). These limitations include the difficulty to assess the reliability of the data sources used (e.g. popular journal articles) and the inability to gain the same depth of data that would be possible with for instance structured or semi-structured interviews and surveys. However, the limitations are counterbalanced with the richness and broad scope of data. We also use the case studies to come up with general findings rather than focusing on micro aspects that would need more corroboration for example with primary data. Secondary data sources have previously been considered sufficient in this level of analysis and successful analysis have been provided by similar types of data (e.g. Ritala 2014; Breidbach & Brodie 2016). Furthermore, as multi-sided digital platforms especially in the context of retailing are a new research area, this paper is only an overview of the implications and impact of multi-sided digital platforms on the retail sector, which limits the generalizability of our findings outside the retail sector. Further research is thus needed to verify these findings and expand our understanding of platform business models especially in the retail context. For example, the platform business models could be examined in detail through established business model frameworks such as the business model canvas (Osterwalder 2004; Johnson et al. 2008). We thus invite further research that uses a mixture of qualitative and quantitative methods to dig deeper into platform business models in retail and other consumer services sectors. This type of study could include a consumer level study, which would help understand in detail consumer perceptions of different platform and incumbent retail business models including their effect and role in consumer value creation. Especially business model innovation is an interesting topic from the consumer perspective and would help managers understand how to respond to digital business models across a wide range of different industries. Furthermore, in-depth case studies would help raise especially managerial interest as there is a lack of case studies of multi-sided digital platforms in retail despite their relevance. Further studies could also focus on the public policy context, as platforms have received a lot of interest from policy makers due to the problems they potentially pose in their respective industries and recently several debates have emerged in the international media on whether some platforms have grown too big in their respective industries. In the context of retailing, interesting questions for public policy are related to the ownership of transaction data and competition, which have so far have received little to none academic research.

We conclude that multi-sided digital platforms pose a threat to incumbent retail business models and that these new forms of retail will require managers to respond to meet consumer expectations. Platforms should be featured in executive education programs for retail executives, and teaching should pay attention to introducing new business models and the managerial skills, such as data analytics, needed to succeed in the digital age. Based on our findings, we suggest a few managerial implications that retail managers should

understand to compete against platform based competition. First, multi-sided digital platforms have adopted new earnings models, which shape the traditional logics retailers operate with, as platform based retailers simply intermediate their platform without inventory risk or supply-chain integration, which have traditionally been the winning formulas in retail. With a drastically higher margin than incumbent retailers, platforms will be able to continue to invest in R&D functions and continue expanding their platform as they do not have the same fixed physical assets in place than incumbent retailers. For example, both Alibaba Group and Rakuten Group have spent billions of dollars investing in start-ups to take advantage of new technologies and expand their global reach. Secondly, if multi-sided digital platforms prove to be the dominant business model in retail this will mean that incumbent retailers are left with the decision to enter for example in the US, Amazon.com or establish their own platform. This option also has several potential problems, especially as entering established platforms means that the suppliers have to adhere to the platform owners' stringent guidelines and commission models with little room for compromise. For small retailers such as brick-and-mortar retailers with an online presence, there is little choice but to be present on platforms such as Amazon.com, where the only way to compete is with price (e.g. Jiang et al. 2011). Finally, as demonstrated through the analysis of the unique features of platform based businesses, responding to the threat posed by platforms requires new types of expertise for retail managers. If digital services facilitated through an ecosystem becomes the de-facto standard of retail in the future, this will require a new business model altogether to respond and stay on top of consumer expectations. Furthermore, incumbent retailers should more actively use the data they hold across their business portfolio to better understand and serve their consumers.

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