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Marketing perspectives on digital business models: A framework and overview of the special issue☆

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ABSTRACT

Strong digital developments are changing markets, and firms may adopt a digital business model to deal with these developments. This special issue focuses on such digital business models. In this editorial, we discuss the relevance of digital business models, propose a conceptual framework, and discuss how digital business models affect firms, firm performance, and markets. We introduce the papers in this issue and show how they each fit within the conceptual framework. We discuss four important areas for future research.

1. Introduction

Approximately 25 years ago, we were ordering the first books online via Amazon. At that time we could never have imagined that Amazon would be one of the most valuable firms worldwide. Amazon is not the only digital firm that has grown enormously. In fact, according to brand equity rankings of Interbrand in 2018, the top three firms are all digital and relatively young—namely Apple, Google, and Amazon—compared with firms such as Coca Cola, General Motors, and Exxon Mobile. Moreover, digitalization occurs across the globe and is not solely a European or US development. New digital giants, such as Alibaba and JD, have arisen in China, and they also serve US and European markets. Global E-commerce sales are projected to increase with approximately 18–20% per year and are approaching around 18% of total retail sales (eMarketer, 2018). All these facts show that digital developments have strongly changed business and affected many traditional firms not only in the retail sector but also in other sectors, such as the media industry. Digital seems to be the new norm on how to serve customers.

Successful digital firms typically started their business sometime in the last decades. Some of these firms have disruptive consequences on existing markets. This occurred particularly because new technologies are replacing older ones. For example, digital music is replacing CDs. Combining digital technology with an increased convenience and lower prices, Spotify has strongly changed the music industry (e.g., Wlömert & Papies, 2016). Moreover, in many instances, digital firms are using other business models than the traditional firms in the market. The latter are platforms (e.g., Perren & Kozinets, 2018) that aim to deliver to customers more value (i.e., more convenience, higher quality) at a lower cost level without major technological changes in the actual product. For example, UBER has dramatically changed the taxi market by providing more convenience to customers using an app offering taxi rides at a lower price. Notably, UBER did not change taxi-ride technology because it is still a car with a driver transporting customers from A to B. In the travel industry, firms like Booking.com have replaced traditional travel agents as intermediaries by offering to customers a digital platform with information on hotel rooms and apartments. Such firms have gained a strong position in the hotel market, which has major impact on hotel margins. Hotels have to pay around 25% of the revenue to these digital intermediaries because a large proportion of hotel bookings occur via these intermediaries, with a few of them dominating this market. The increasing e-commerce sales and increasing market power of firms like Amazon are also affecting traditional retailers. Retail giants like Toys 'R' Us, RadioShack (both USA), and Vroom & Dreesman (The Netherlands) have gone

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bankrupt, while Marks & Spencer (UK) is closing stores to lower costs (Independent, 2018). Every reader can probably come up with many other examples. It is clear that digital developments have a profound impact on customers, markets, and existing players.

Already at the end of the '90s, scholarly contributions in marketing have conceptually discussed the impact of Internet and e-commerce on markets (e.g., Alba et al., 1997; Peterson, Balasubramanian, & Bronnenberg, 1997). Despite these early contributions, marketing science has been rather silent on how digital players are changing markets. Not surprisingly the popular management press has provided several discussions on the impact of digital technology on business and the need to digitally transform existing firms (e.g., Brynjolfsson & McAfee, 2014; Hess, Benlian, Matt, & Wiesböck, 2016). Within the strategic management literature, there has been ample attention to business model innovations and their impact on firms (e.g., Teece, 2010). The information technology (IT) literature is strongly focusing on concepts such as digital transformation and how IT fosters this (e.g., Agarwal, Gao, DesRoches, & Jha, 2010; Karimi & Walter, 2015; Li, Su, Zhang, & Mao, 2017; Lucas, Agarwal, Clemons, El Sawy, & Weber, 2013). Marketing research on digital transformation is rather limited. Although this does not imply that marketing did not consider digital developments, the focus of marketing has been mainly on multi- or omni-channel strategies (e.g., Liu, Lobschat, Verhoef, & Zhao, 2019; Neslin et al., 2006; Neslin & Shankar, 2009; Verhoef, Kannan, & Inman, 2015); digital marketing as a mere tactic for looking at multiple new digital channels to advertise and attract and retain customers (for example, search engine advertising, social media and mobile promotions; Andrews, Goehring, Hui, Pancras, & Thornswood, 2016; Kannan & Li, 2017; Lamberton & Stephen, 2016; Liu, Lobschat, Verhoef, & Zhao, 2019); and on the understanding of digital customer journeys (e.g., Lemon & Verhoef, 2016; De Haan, Kannan, Verhoef, & Wiesel, 2018). There has also been ample attention on determining the contribution of each of these channels to the final purchase (e.g., Kannan, Reinartz, & Verhoef, 2016). Specific models have been developed to assess these contributions both at the aggregate and more individual customer level (e.g., Berman, 2016; De Haan, Wiesel, & Pauwels, 2016; Li & Kannan, 2014) and to allocate marketing resources based on these models (Danaher & van Heerde, 2018). Despite the relevance of these topics as reflected, for example, in the large amounts of money invested in digital marketing and strong investments of existing retailers in new digital channels, marketing has partially ignored the major strategic consequences of new digital business models. These business models will only become more relevant given the increasing development of digital technologies such as big data, artificial intelligence, machine learning, blockchain, and the Internet of things (e.g., Ng & Wakenshaw, 2017; Kumar, Ramachandran, & Kumar, 2019; van Doorn, Mende, Noble, Hulland, Ostrom, Grewal, & Petersen, 2017; Huang & Rust, 2018; Hoffman & Novak, 2017).

Given the paucity of marketing research on digital business models, we proposed to the then IJRM editor, Roland Rust, a special issue devoted to this topic. Given the transforming nature of digital business models, investigating them is extremely important for the development of our field (Kumar, 2018). This special issue aims to have a multi-disciplinary perspective because digital business models involve the entire value chain and is strongly driven and enabled by digital technologies. We believe we have succeeded in creating a special issue that examines the multi-faceted character of digital business models. Before discussing the contents of this special issue, we first deliberate on digital business models and argue that this requires more attention within the marketing discipline. We provide a conceptual model on the central role of digital models in driving change in markets, competition, and firms. Subsequently, we use this conceptual model to classify the papers appearing in this special issue. We also discuss some emerging research topics based on our conceptual model.

2. Digital business models and digital transformation[1]

In the strategic and innovation management literature, it is argued that firms compete and can attain a competitive advantage through their business models (e.g., Casadesus-Masanell & Ricart, 2010; Markides & Charitou, 2004). A business model represents "how the enterprise creates and delivers value to customers, and then converts payment received to profits" (Teece, 2010: 173). Business model innovation affects the whole company and its ways of doing business (Amit & Zott, 2001) and differs from improvements of simple business processes that do not change either the sources of value creation or the existing business model (Mason & Leek, 2008).

Within the marketing literature, there is some, but limited, attention on business models. Sorescu, Frambach, Singh, Rangaswamy, and Bridges (2011) discuss the role of business models in retailing. They define a business model "as a well-specified system of interdependent structures, activities, and processes a firm's organizing logic for value creation (for its customers) and value appropriation (for itself and its partners)" (Sorescu et al., 2011, p. 84). Central to this definition are two aspects: 1) how firms create value for customers through, for example, offering low prices and/or providing more convenience; and 2) how firms appropriate value from customers by, for example, increasing switching costs or reducing customers' opportunity costs. Sorescu et al. (2011) also clearly argue that a business model requires a system, structures, activities, and processes, which all affect value creation and value appropriation. For example, in the case of hard discounters like Aldi and Lidl, they can offer low prices because they have a relatively smaller assortment with mainly own labels and require smaller stores at less expensive locations (Steenkamp & Sloot, 2019).

Digital developments are changing business models. The use of digital technologies is changing systems, structures, activities, and processes. These changes occur specifically when firms are digitally transforming themselves. For example, firms adopting new digital channels are changing their way to the market, which will then affect how they create value for their customers

[1] This section is partially based on Verhoef et al. (2019).

and how they appropriate value for themselves and their partners. Digital transformation may than refer to the product and information about the product, the process leading to the customer experience, and the business platform used for product delivery, all of which require optimization in order to be successful (Weill & Woerner, 2013). Thus, digital developments introduce a new business model by implementing a new business logic using digital technologies to create and capture value for its stakeholders (Teece, 2010; Zott & Amit, 2008). Such new business models are often labeled as digital business models. Following Verhoef et al. (2019) we use the following definition for digital business models: Digital business models are situations where digital technologies have fundamentally affected the way a firm structures and carries out its business and thereby creates value for customers, the firm itself, and its partners (based on Martín-Peña, Díaz-Garrido, & Sánchez-López, 2018).

Verhoef et al. (2019) discuss the concept of digital transformation, which they see as the process leading to the new digital business model. Based on a multidisciplinary literature review, they distinguish three stages of digital transformation: digitization, digitalization, and digital transformation. In the first stage, firms mainly adopt digital technologies to change some processes (i.e., print forms are replaced by digital forms). In the digitalization phase, specific functions are affected; for example, a retailer decides to add an online channel next to their store channel (e.g., Geyskens, Gielens, & Dekimpe, 2002; Homburg, Volmayr, & Hahn, 2014). In the digital transformation phase, firms aim to change their value creation and appropriation by applying digital technologies. They then aim to implement digital technologies in every function of the firm and focus strongly on building up digital capabilities and achieve growth through specific digital growth strategies.

Digital transformation is deemed essential in many industries given a number of developments: 1) new digital technologies, 2) increased digital competition, and 3) changing customer behavior (Verhoef et al., 2019). In the last two decades, we have been confronted with many new digital technologies, of which the advent of the World Wide Web was the most profound (Alba et al., 1997). Recent digital technologies mainly concern social media, mobile and big data (e.g., Andrews et al., 2016; Lamberton and Stephen, 2016; Wedel & Kannan, 2016; Verhoef et al., 2016). Developing new technologies mainly concern the Internet of things (IOT), blockchain, machine learning, robotization, and artificial intelligence (e.g., Hoffman & Novak, 2017; Kumar et al., 2019; Ng & Wakenshaw, 2017; van Doorn et al., 2017; Verhoef et al., 2017). Especially startups are well equipped to use and embrace these new technologies and benefit from them. Startups are able to incorporate these technologies successfully in their business. Firms like Amazon, for example, started to grow successfully by adopting the online channel and analyzing big data. Nowadays they are successfully adopting IOT and AI (i.e., Alexa). Spotify has become very successful by incorporating new digital streaming services. However, incumbent firms face much stronger challenges given their existing legacy of existing channel relationships, investments in fixed assets (e.g., stores), the use of old CRM systems, etc. (Leeflang, Verhoef, Dahlström, & Freundt, 2014). The impressive growth of these digital startups, accompanied by their strong cash positions through high shareholder prices, forces incumbents to digitally transform.

Next to new technologies and new digital competition, the third development and driver of digital transformation is changing customer behavior. Despite some initial hesitations among customers (e.g., Verhoef & Langerak, 2001), a majority of them are now used to buying online and use multiple touchpoints in their path to purchase (e.g., Herhausen, Kleinkercher, Verhoef, Emrich, & Rudolph, 2019; Lemon & Verhoef, 2016). In many markets (i.e., music, traveling), customers seem to prefer digital solutions to other, traditional solutions. Next generations are now growing up with digital technologies and will consider this as the norm. These three developments jointly create a strong attention for digital transformation and incorporation of digital business models in today's business. However, this attention is not strongly reflected in the in today's marketing literature. Given the digital transformation stages of Verhoef et al. (2019), marketing researchers have mainly focused on digitalization and digitalization issues (e.g., addition of new channels, use of social media, SEO) etc.

3. Conceptual model

As discussed above, new digital business models are affected by several digital developments. However, at the same time the increasing and successful application of these digital business models (predominantly by new entrants, such as, UBER, Amazon, Zalando) affect markets and firms. Given the nature of the field, the focus of the marketing discipline might be more on the consequences rather than on the drivers of digital business models. In our conceptual model depicted in Fig. 1, we start with the emergence of new digital business models, which arrive in different forms (such as traditional e-tailing and different platforms; e.g., Perren & Kozinets, 2018; Gielens & Steenkamp, 2019). Novel forms are expected given the emergence of new technologies, such as blockchain and AI. Moreover, existing digital players may embrace these technologies to further change their business model. For example, Amazon has embraced cloud technologies and big data in the past and is now applying AI. The entrance of these new players is typically an exogenous development for incumbent firms; although such firms may also start their own digital ventures or acquire startups. The financial service firm AEGON started the online bank KNAB as a new venture. AHOLD acquired PEAPOD in the USA and online retailer Bol.Com in The Netherlands.

In our model, we assume that the new digital business model will have direct effects on the market and on firms. Following diffusion and disruption theory, these market-level effects can be small initially, but when business models become successful and take off, strong effects may occur (e.g., Christensen, 2006). New digital business models can affect competition and in some markets digital giants take over large parts of the market, leading to monopolistic markets; for example, the dominance of Google within Europe. Customer behavior is also changing and becoming more digitally focused. Moreover, digital competition is less locally oriented and can easily cross borders, leading to more cross-border sales and an increasing globalization of markets. For example, European consumers frequently buy products from Alibaba, also referred to as Ali Express by Dutch consumers. Digital

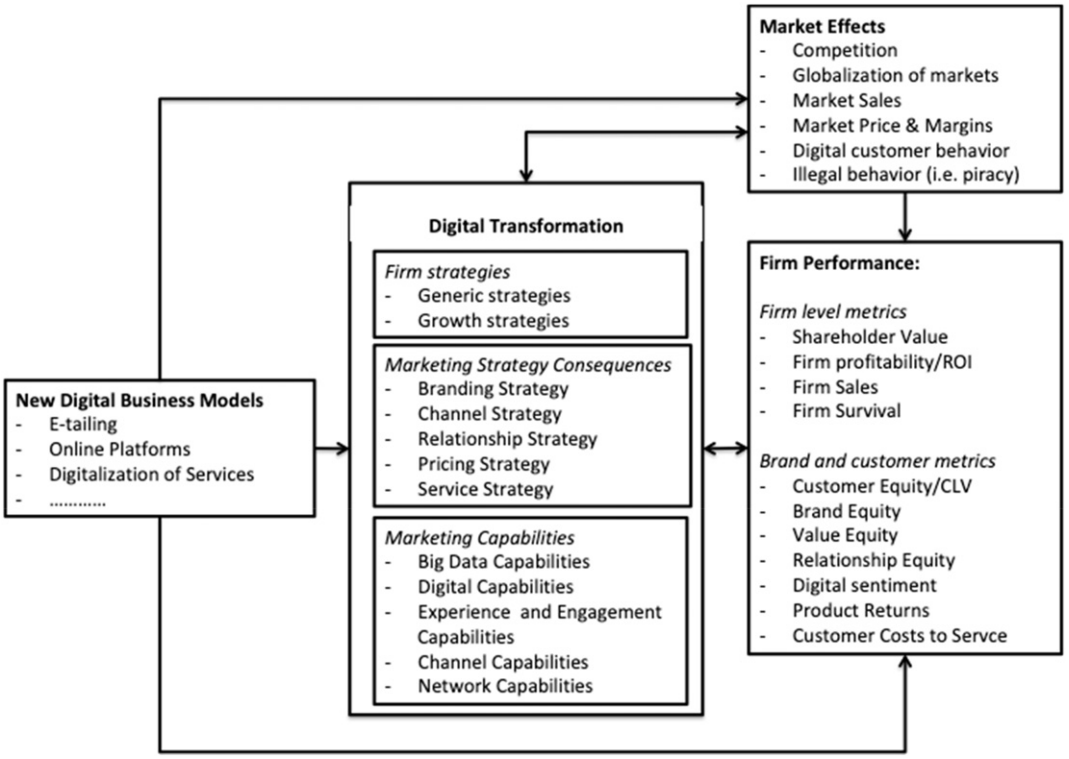

Fig. 1. Conceptual model on the impact of new digital business models on markets and firms.

business models may also induce illegal behavior, such as piracy and purchasing counterfeits from online retailers in, for example, China (e.g., Wlömert & Papies, 2019).

Digital business models, through their effects on market outcomes, may have both a direct and indirect effect on business performance. The new digital entrants can have effects on several firm-level outcomes. Specifically, strong sales and profitability effects may occur, because digital entrants grow at the expense of incumbents. This may ultimately lead to firm survival problems, having observed this with firms like Toys 'R' Us, RadioShack, and many others. Digital business models may also impact several brand- and customer-level metrics. Customers may become less loyal and firms may find it more difficult to attract new customers, leading to lower customer equity and CLV (Rust, Lemon, & Zeithaml, 2004).

Our conceptual model (Fig. 1) also acknowledges that incumbent firms can react and digitally transform (e.g., Verhoef et al., 2019). This digital transformation, should, in principle, have an effect on the firm as a whole. However, in our model we focus mainly on digital marketing transformation. Thereby, we assume that incumbent firms should reconsider their generic strategies or chosen value-disciplines (Porter, 1980; Treacy & Wiersema, 1993). Moreover, firms can reconsider their growth strategies and move to more platform-based growth-strategies benefiting from customer engagement and networks (e.g., Verhoef et al., 2019). Digital marketing transformation also involves change in specific marketing strategies such as channel strategies (i.e., adoption of mobile apps; Van Heerde, Dinner, & Neslin, 2019; Liu et al., 2019) and changing relationship marketing strategies. For example, firms may aim to get closer connections with customers through mobile technologies and AI.

Firms should create specific capabilities that are relevant in markets with strong digital competition (e.g., Venkatraman, 2017). For example, big data and accompanied by analytical techniques (i.e., machine learning) are important to customize offers and to create information-rich products and services (e.g., Verhoef et al., 2016; Wedel & Kannan, 2016). New digital capabilities and, specifically, digital marketing capabilities are required (Kannan & Li, 2017). This is not straightforward. For example, Procter & Gamble has reduced digital ad spending with 10% because of low effectiveness of their digital marketing activities. Procter & Gamble was, for example, confronted with fraudulent digital advertising firms that never advertised for P&G despite being paid for it (Joosten, 2018). At the organization level, digital capabilities may relate to the digital agility and a test-and-learn way of working (Venkatraman, 2017). The use of many touchpoints and the need to create a seamless customer experience across all touchpoints require giving/paying stronger attention to experience and engagement capabilities (e.g., Homburg et al., 2014). Network capabilities are relevant in a platform—where firms cooperate with customers as co-creators (e.g., AirBnB), suppliers, and competitors (e.g., Amazon)—to create the best experience and offer for customers (Verhoef et al., 2019). Specific new channel capabilities should be developed when traditional firms are using new digital channels (Verhoef, 2012).

The digital transformation of firms could affect business performance outcomes both at the firm and the brand/customer level. Therefore, one would typically assume that these outcomes are positive. However, digital transformation is not without

risk. Retail firms have invested strongly in either a multi- or omnichannel strategy, but these strategies are not always successful given the inherent complexity of a multichannel strategy (e.g., Neslin & Shankar, 2009). These strategies may even cause survival problems because too much cash flow is burned in these investments, leading to liquidity problems. Moreover, incumbent firms face the problem of a lack of financial resources. Digital firms are frequently highly valued (or perhaps even over valued) at the stock market, creating huge resources for pursuing expensive growth strategies. Incumbent firms have lower growth expectations and investors have a strong focus on profitability; thus this leads to lower budget for investments in digital transformation strategies.

In the next section, we discuss the papers in this special issue and show how they each relate to the conceptual model.

4. Focus of the special issue

The objective of this special issue is to stimulate research on digital business models and digital transformation and their effects on market and firm outcomes. Together, the nine papers cover many aspects of the conceptual model depicted in Fig. 1. We were fortunate to have papers with different approaches, namely papers that 1) are conceptual, 2) analyze empirical secondary data, 3) use experiments, 4) develop an analytical model, and 5) propose and apply new analytical techniques to analyze big data. So we have a diverse issue in terms of content and methodologies.

This issue includes two conceptual studies that consider the impact of digital business models on existing firms and, thereby, consider firm strategy effects as well as firm performance effects. Reinartz, Wiegand, and Imschloß (2019) discuss how new retail business models affect the retail value chain and how incumbent retailers can react to the rise of firms like Amazon. Their insightful conceptual discussion provides very interesting reflections on how retail will develop. They develop specific propositions that can potentially be tested in future research. This paper is a must-read for channel and retailing researchers and retail practitioners. Gielens and Steenkamp (2019) focus on the consequences of digital business models for brands. They discuss a number of digital business model forms, such as C2C market places, and address the implications for brand-focused firms in terms of their branding, channel, and pricing strategies. Interestingly, they have an in-depth discussion of how the business model of Amazon can affect brand-focused firms. They conclude with an inspiring agenda for future research on this underresearched topic.

One paper in this special issue presents an in-depth study on digital business models as such. Konya-Baumbach, Schuhmacher, Kuester, and Kuharev (2019) study new digital business models and, specifically, how these new entrants can overcome initial low-trust problems. They execute a number of experiments to test different ways of overcoming this initial trust problem. For example, an interesting question in an intensifying debate on privacy issues surrounding big data is how these firms should deal with data and privacy. This is especially important because big data are often essential in digital business models.

Another paper considers the effects of digital business models on the market. Wlömert and Papies (2019) consider the effect of new digital streaming services, such as Spotify, on music sales and piracy. They model main effects and also consider the moderating effect of country characteristics such as culture and economic development. They show some interesting main effects, for example, that streaming services reduce piracy. In addition, they find evidence for the moderating roles of culture and the economic development of countries.

We have several papers on the impact of digital (marketing) transformation on on firm performance. Van Heerde et al. (2019) study the impact of introducing a mobile app on customer purchase behavior for a multichannel retailer. This study fits in the tradition of studies in multichannel retailing on the impact of channel additions on performance (Homburg et al., 2014; Avery, Steenburgh, Deighton, & Caravella, 2011; see for an overview Liu, Lobschat, & Verhoef, 2018). Adding mobile apps may increase customer engagement and may lock-in customers. This may lead to positive sales effects. Accounting for self-selection of mobile app adoption, they show positive effects of the app on sales. This effect is especially larger for offline customers and customers with a large distance from the store. This study clearly shows that transforming marketing channels can be beneficial for a multichannel retailer. Note though that this retailer already had an online presence, and retailers having limited digital presence might have much more difficulties.

On the branding level, Osinga, Zevenbergen, and van Zuijlen (2019) focus on mobile app advertising, a topic that has become important in recent years (Andrews et al., 2016). An important question is whether this advertising is indeed effective. Osinga et al. (2019) determine the offline and online sales impact of a large-scale mobile banner advertising campaign. Relying on a difference-in-difference approach and two matching methods, they demonstrate an offline sales increase of around 2%. Nevertheless, they do not find an online sales effect. This could potentially be explained by the fact that mobile devices have less geographic boundaries and can directly affect choice behavior when customers do their offline shopping.

Within the digital retailing literature, there has been strong attention to product returns and their sales and profit effects (Minnema, Bijmolt, Gensler, & Wiesel, 2016; see Minnema, Bijmolt, Petersen, & Schulman, 2018 for overview). Product returns are a huge challenge for firms because they are very costly and may lead to unprofitable customer relationships (e.g., Shah, Kumar, Qu, & Chen, 2012). As such, reducing product returns is very important for online- and multi-channel retailers to have a profitable digital business model. We included in this issue two papers on product returns. First, Schulz, Shehu and Clement (2019) contribute to the literature by studying the digital product returns of Blendle. Blendle is a new digital business model in the news industry, where customers can download news articles from different sources. The authors are specifically interested in the effects of firm-initiated communication (newsletter) and customer-initiated communication (likes) on both sales and product returns. They show that a newsletter reduces returns, while likes both reduce returns and increase sales. The second study on product returns by Wu, Teunter, and Zhu (2019) focuses on the effect of advanced sales strategies. Retailers can provide customers' refunds for products sold in advance. Using an analytical model

Wu et al. (2019) investigate three advance-selling techniques (i.e., no, no refund, with refund). Their model shows that profitability accounting for negative losses due to product returns by giving refunds is optimal in specific contexts, namely for products with low margins.

The final paper in this special issue focuses on the development of big data analytical capabilities. With the advance of online and social media, text data have become widely available for gaining customer insights (Wedel & Kannan, 2016). Typically, sentiment analysis is being used to analyze these data and measure electronic word-of mouth (eWOM). Machine learning techniques can also be useful for analyzing text data (e.g., Kübler, Wieringa, & Pauwels, 2017). Vermeer, Araujo, Bernritter, and van Noort (2019) propose and test an approach based on supervised machine learning to analyze these data and to derive actions on how to respond to eWOM. Their proposed method first decides whether eWOM is relevant for the brand to respond, and then—based on a categorization of seven different types of eWOM (e.g., question, complaint)—classifies three dimensions of customer satisfaction. Their analysis of a large number of Facebook messages shows that machine learning is well able to classify eWOM messages.

An overview of how each of these papers fits within the depicted framework is provided in Table 1. We first distinguish papers that focus more strategically on the digital business models as such and papers that consider digital transformation. Next, we classify the papers based on the main topics being discussed, from digital generic and growth strategies, to firm consequences. This overview shows that this special issue considers many topics and relationships in the conceptual model, as shown in Fig. 1.

5. Future directions

Digital business models should get much more attention in the marketing discipline, where the focus might be more on the consequences than on the drivers of digital business models. New business models can have a profound impact on markets and firms, as depicted in our conceptual model. The topic of transformative nature of digital business models and technologies requires more research (Kumar, 2018), Hence, as argued above, digital business models are a kind of blind spot within our discipline. Following our conceptual model, we discuss some general areas for future research. It is not our objective to come up with an in-depth research agenda, and we gladly refer to two papers in this special issue (Gielens & Steenkamp, 2019; Reinartz et al., 2019) and to papers such as Kannan and Li (2017) on digital marketing, Verhoef et al. (2017) on the social-mobile and IOT connection, Ng and Wakenshaw (2017) on IOT, Kumar et al. (2019) on new digital technologies, Liu, Lobschat, and Verhoef (2018) on omnichannel retailing, and Verhoef et al. (2019) on digital transformation.

First, we consider in-depth discussions of digital business models as very important for the development of our understanding on the value creation of new digital players. We need to understand their resources and capabilities and how they deploy them. In-depth case studies are urgently required here. One could also measure capabilities of digital firms and relate them to firm performance to assess the key-capabilities that are driving the success. A historical study on the success and failure of digital startups may also be useful. More research is also required on the use and challenges of new digital technologies. A number of conceptual pieces have been written on several technologies (e.g., Ng & Wakenshaw, 2017; van Doorn et al., 2017), but empirical studies on adoption and successful usage within firms and in customer-firm interfaces are needed.

Second, we believe that more research on digital transformation of incumbents is necessary. Studies in marketing have mainly focused on the application of digital technologies on specific aspects of the marketing strategy. This special issue features some of these studies (Osinga et al., 2019; Van Heerde et al., 2019). Studies should be done on the digital transformation of marketing strategies, the internal organizational consequences and on the consequences for external stakeholders, such as suppliers. Measurement tools for digital transformation should be developed based on surveys or secondary data. Digital transformation could also be linked to the role of marketing within firms and to the marketing capabilities required in digitally transformed firms. We refer to Verhoef et al. (2019) for an extended research agenda on this topic.

Third, more in-depth studies on the consequences of digital business models for markets are essential. This is especially relevant given the rise of digital giants and the increasing global nature of digital competition. We need studies on the impact of digital business models on market outcomes as done in Wlömert and Papies (2019). For example, using empirical data, one could study the impact of the growth of Amazon as a digital giant on retail sales, prices, and margins. For public policy purposes, studies on the potential monopolistic nature of these digital giants and the lock-in effects of the application of IOT and AI solutions are important (e.g., Stiglitz, 2019). Global digitalization and cross-border e-commerce sales require more attention as well. In addition,

Table 1
Classification of papers in elements of conceptual model.

Main focus	Topics discussed				
	Firm/growth strategies	Digital marketing strategies & tactics	Digital capabilities	Market consequences	Firm performance consequences
Digital business models	Reinartz et al. (2019)	Gielens and Steenkamp (2019)	Reinartz et al. (2019) Gielens and Steenkamp (2019)	Reinartz et al. (2019) Wlömert and Papies (2019)	Konya-Baumbach et al. (2019)
Digital transformation	N.A.	Van Heerde et al. (2019) Osinga et al. (2019) Schulz et al. (2019) Wu et al. (2019)	Vermeer et al. (2019)	N.A.	Van Heerde et al. (2019) Osinga et al. (2019) Schulz et al. (2019) Wu et al. (2019)

more attention is needed for potential negative externalities of digital business models, such as logistical challenges of more digital sales (e.g., last mile delivery), decreasing presence of physical stores, and the exclusion of specific customers segments due to digital literacy.

Fourth, studies can focus on the development of analysis techniques to support the digital transformation, specifically the development of new machine learning techniques to analyze large amounts of structured and unstructured data. Indeed, we observe a growing number of papers on machine learning in marketing (e.g., Hartmann, Huppertz, Schamp, & Heitmann, 2019); and this special issue includes one such a paper (Vermeer et al., 2019). These techniques can be valuable to gain more market and customer insights. Marketing researchers can play an important role in developing these techniques and testing their applicability in marketing.

6. Conclusion

We hope that this introduction, along with the papers in this special issue, serves as an impetus for further research on the important topic of digital business models. As guest editors, we were very fortunate to receive a large number of interesting submissions by excellent researchers and to have a set of very knowledgeable and responsive reviewers whose critical and constructive suggestions significantly helped shape the special issue papers. We hereby acknowledge their input. We also like to thank the former editor, Roland Rust, for providing us the opportunity to edit this special issue. Special thanks goes to our two designated area editors, Marleen Huysmans and Kees-Jan Roodbergen, for their support in handling submissions on the interfaces between marketing and IS and marketing and operations research. We also like to thank Steve Shugan for serving as guest editor on one of the papers that had potential conflict of interest, and the IJRM managing editor, Cecilia Nalagon, for her great support in handling all the papers.

List of reviewers

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Christian Barrot	Sonja Gensler	Miklos Sarvary
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