

Accepted for publication in Journal of Service Management
23 April 2018

A Systemic Logic for Platform Business Models

Julia A. Fehrer*

The University of Auckland Business School, New Zealand
University of Bayreuth, Germany

Herbert Woratschek

University of Bayreuth, Germany

Roderick J. Brodie

The University of Auckland Business School, New Zealand

*** Corresponding Author**

Julia A. Fehrer is Research Fellow in the Department of Marketing at the University of Auckland, New Zealand; Owen G Glenn Building, 12 Grafton Road, New Zealand, +64 21 252 2894, j.fehrer@auckland.ac.nz;

and Lecturer in the Department of Marketing & Services Management at the University of Bayreuth, Germany. Universitätsstraße 30, 95447 Bayreuth, Germany +49 175 825 3414, julia.fehrer@uni-bayreuth.de

A Systemic Logic for Platform Business Models

Abstract

Purpose This research introduces a new business model logic, highlighting value processes in and properties of platform business models to inform business model thinking from a systemic and dynamic perspective. It challenges the idea of firms managing, influencing and controlling entire activity systems.

Design/methodology/approach The study traces the evolution of different approaches to business models and assesses theories that explain value cocreation and systemic value capture to develop a new business model logic.

Findings Business model thinking has evolved away from Porter's value chain to a new logic based on open networks and platforms. This study develops a framework for understanding platform business models from a systemic perspective. Derived from S-D logic, this new business model logic responds to phenomena in contemporary business environments characterized by increasing connectivity and sociality among actors.

Research limitations The framework, developed from an extensive body of business model literature, has yet to be subjected to empirical investigation. Future research may involve the exploration of business model design processes and business model innovation from a systemic perspective.

Practical implications Managers who aim to design their business models based on the logic of platform businesses require an understanding of their organisation's collaboration potential, technological interfaces, and potential to leverage network relationships. This research guides start-ups and incumbents to evaluate their platform potential.

Originality This study systematically emancipates the business model logic from a firm-centered, inside-out perspective; focuses on network relationships beyond the customer-firm dyad, explains value processes beyond organizational borders and rethinks value capture from a systemic perspective.

Keywords Platform business models, value cocreation, S-D logic, midrange theory

Paper type Conceptual paper

Introduction

Companies whose business models involve leveraging networks constitute the majority of the fastest growing organizations in the global economy (Wharton, 2016; Fortune, 2015). In today's networked age, strategic benefits are increasingly generated over platforms, which allow various actors to engage with one another (Breidbach *et al.*, 2014; Breidbach and Maglio, 2016). Platform business models extend beyond the 'unicorns'-companies and tech start-ups (Fortune, 2015). An increasing number of mature incumbent organizations in a variety of industries are in environments in which they either need to operate as a platform provider or integrate into a business ecosystem governed by platforms (Altman, 2015). Retailers are shifting from distribution channels selling products, to platform ecosystems integrating resources of various actors. Online retailers such as eBay, Etsy, and Amazon led the way, and now traditional retailers and manufacturers are following. Walmart just recently bought Jet.com, an online wholesaler platform for \$3 billion in cash and \$300 million of Walmart shares to compete with Amazon. Manufacturers, such as GoPro opened their system boundaries to encourage external developers to use their infrastructure. Fast-growing businesses show platform properties and facilitate collaboration practices through which actors engage with one another to change information, knowledge, services, and products (Breidbach and Brodie, 2017).

However, despite increasing recognition of the connectivity among actors in contemporary business environments, most business model conceptualizations to date overlook the systemic participation of versatile actors and overemphasize the role of the firm, which enables and constrains value creation processes (Wieland *et al.*, 2017). Traditional customer-firm roles and relationships do not apply to peer-to-peer service exchange on platforms such as Airbnb, RelayRides, and Uber. Therefore, there is a need to expand the conceptualization of business

models: (1) from a ‘business-to-customer’ perspective to an ‘actor-to-actor’ perspective and (2) from a firm-centered, value chain logic to an open platform logic. Hence, the *purpose of this paper is to introduce a new systemic business model logic, highlighting the properties of platform businesses.*

While the terms ‘platform businesses’ and ‘platform ecosystem’ have been used extensively in the Information Systems literature and business practice, little attention is given to these concepts within the design logic of business models. In the discipline of Marketing and Service Research, the concept of platform business models is still at an embryonic development stage. Platform business models can be understood as open business models, with varying degrees of openness on three layers: (1) the platform user layer, (2) the platform infrastructure layer, and (3) the platform provider layer (Ondrus *et al.*, 2015; Saebi and Foss, 2015; Thomas *et al.*, 2014). Openness on these three layers allows platform businesses to link various groups of actors (e.g. other businesses, customers, developers, investors; e.g. Eisenmann *et al.*, 2009) through a highly adaptable and permeable infrastructure (e.g. Ceccagnoli *et al.*, 2012), which enables the coordination of information and knowledge flows throughout the network of connected actors (e.g. Autio and Thomas, 2014; Gawer and Cusumano, 2014). This novel form of actor-to-actor service exchange challenges the idea of one firm managing an entire activity system – an idea nested in traditional business model logics (Wieland *et al.*, 2017)

Recently Wieland *et al.* (2017) have advocated the need for an advanced service strategy-based understanding of business models, informed by service dominant (S-D) logic (Vargo and Lusch, 2016). Central to S-D logic is that it provides a lens for understanding actor interactions in broader networks and service ecosystems. Consequently, it drives the theorizing process in the disciplines of Marketing and Service Research closer to phenomena relevant for contemporary

business environments. This paper draws from S-D logic and employs its narrative of value cocreation to the logic of platform business models. It systematically combines S-D logic as a metatheory with the business model concept as a midrange theory and thereby brings S-D logic closer to managerial practice and empirical research (Vargo and Lusch, 2017; Brodie *et al.*, 2011)

The key contribution of this study comes from *creating a comprehensive understanding of platform business models*. While previous business model literature has provided fragmented insights into the conceptualization and value creation processes of platform business models (e.g. Ondrus *et al.*, 2015; Kortmann and Piller, 2016; Parker *et al.*, 2016; Fu *et al.*, 2017), a focused systemic approach to value cocreation and value capture has remained absent. This paper equips the marketing and service literature with a future-oriented understanding of business models to address phenomena relevant for contemporary business environments, such as increasing connectivity and sociality among actors, blurring of traditional economic roles, and ubiquity of technology. Our analysis structures extant business model literature by identifying three distinct business model logics embedded in (1) firm-centered networks, (2) solution networks and (3) open networks. The paper provides the foundations for a new business model logic, where firms represent one important actor but do not alone suffice the study of business models in contemporary markets. Drawing from an institutional view on business models anchored in S-D logic (Wieland *et al.*, 2017), this study develops a framework for value cocreation (Vargo and Lusch, 2016) and value capture with reference to complementarity theory (Milgrom and Roberts, 1995), transaction cost theory (Coase, 1937; Williamson, 1983) and network externalities (Katz and Shapiro, 1985). These theories are interpreted in light of a systemic lens to connect them with the S-D logic narrative of value cocreation (Vargo and Lusch, 2016).

The paper proceeds as follows. First, a forward-looking assessment of the evolution of different business model logic is provided. The next section develops a conceptual framework for a systemic business model logic drawing on properties of platform businesses. The final section presents a research agenda and managerial implications for the emerging stream of research on platform business models.

Evolving business model logics

Business model thinking

Business model thinking started to gain attention in the 1990's (Ehret *et al.*, 2013; Coombes and Nicholson, 2013; Osterwalder *et al.*, 2005), leading to an exponential increase in practitioners' interest between 1995 and 2010. Academic publications slightly lag behind (Zott *et al.*, 2010). In the last decade, however, there has been a dramatic increase in academic research. The academic database Scopus reports over 7'200 academic articles in total and over 3'000 articles in the fields of business, management, and accounting dealing with business models. Ehret *et al.* (2013) emphasize that the exponential development of the business model literature is no coincidence since business models emerged to a substantial extent in the new economy, where entrepreneurs use them as a mental device to build a business from scratch.

Business models have evolved as a holistic response to a firm's strategy (e.g., Hedman and Kalling, 2003; Yip, 2004; Casadesus-Masanell and Ricart, 2010; Teece, 2010). However, a business model is not a strategy (DaSilva and Trkman, 2014); it describes how the parts of the business system fit together and it may take competition into account (Magretta, 2002; Benson-Rea *et al.*, 2013). There is a lack of agreement in the academic literature on what a business model is. Zott *et al.* (2011) found, with their literature review, common themes among scholars, such as:

(1) a new unit of analysis; (2) a holistic approach to explaining how firms “do business”, (3) a focus on the firm’s activities and (4) an explanation for how value is created, not just how it is captured.

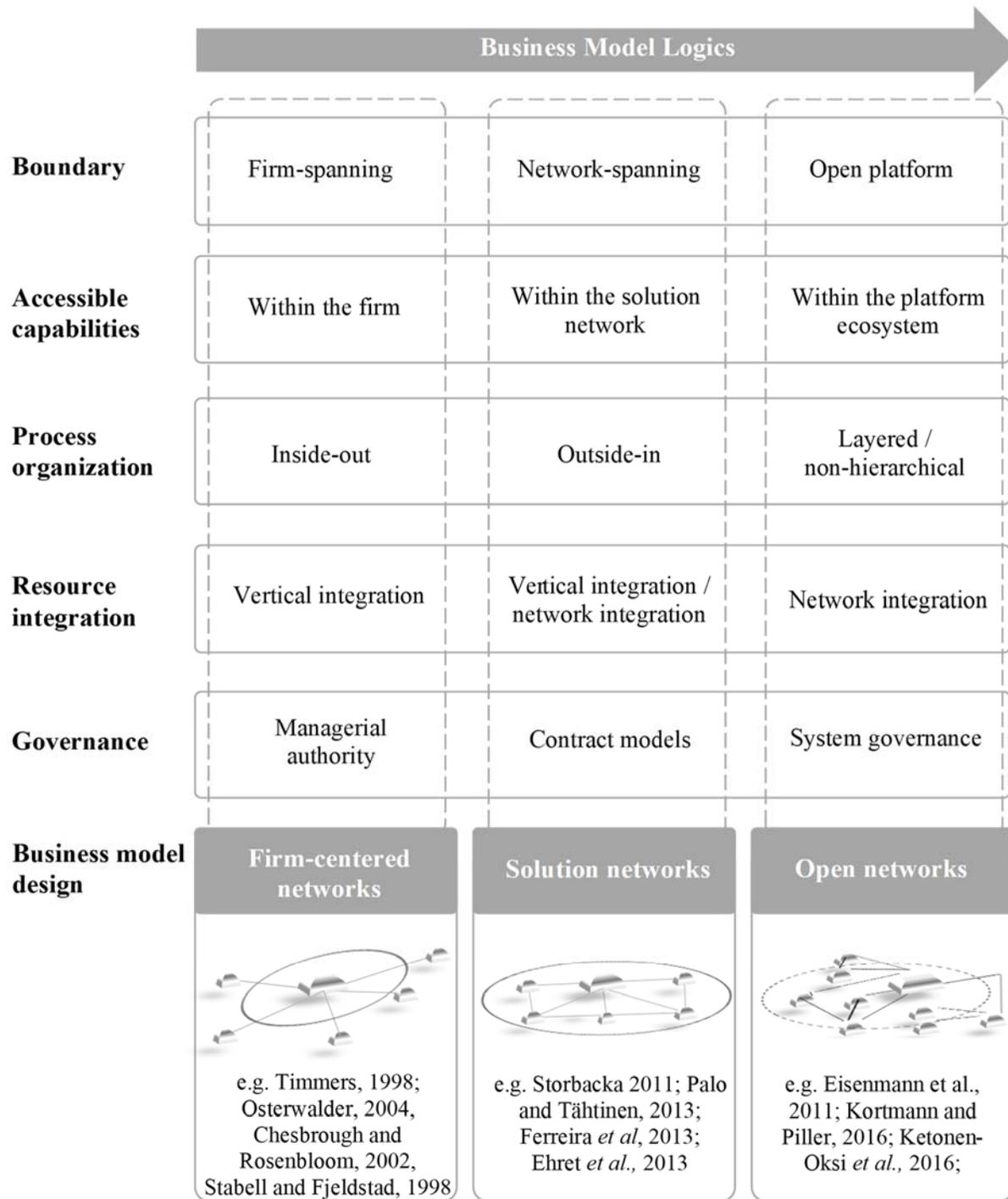
Further, there is a lack of academic consensus on the components of a superior business model. However, the broader management discipline agrees on the *business model as a determinant of a firm's value creation processes* (Benson-Rea *et al.*, 2013; Nenonen and Storbacka, 2010; Zott and Amit, 2008). As shown by Wirtz *et al.*'s (2016b) extensive literature review, typologies of business models regularly comprise components that relate to value propositions (e.g. Demil and Lecocq, 2010; Osterwalder *et al.*, 2005) and core business activities, including resource integration processes (e.g. Armistead and Clark, 2006; Mateu and March-Chorda, 2016), customer and partner relations (e.g. Osterwalder, 2004; Osterwalder and Pigneur, 2003, 2010; Dubosson-Torbay *et al.*, 2002), procurement (e.g. Hedman and Kalling, 2003) and financial processes (e.g. Demil and Lecocq, 2010; Osterwalder and Pigneur, 2010).

Conceptually, business models address a broader set of actors than only paying customers, and identify the role of the firm within a network as a means to define markets (Ehret *et al.*, 2013; Chesbrough, 2006; Zott *et al.*, 2010). According to Mason and Spring (2011), almost all of the business model literature recognizes the *architecture of the network*. An important process discussed in the business model literature, which is not in the center of this study, is business model innovation. Wirtz *et al.* (2016a) classify in their literature review six common themes in the area of business model innovation, including types of innovation, innovation frameworks, design processes, drivers and barriers for business model innovations as well as implementation and controlling of business model innovation.

The systematic literature review by Coombes and Nicholson (2013) concludes that the vast majority of the business model literature has evolved in non-marketing disciplines. To develop the business model concept in the discipline of marketing, the authors point to the potential of open business models and suggest a focus on cocreating business models with multiple stakeholders in the supply chains. Most recent business model literature in the field of marketing acknowledges that value is cocreated between business actors (e.g., companies) and their connected actors (e.g., customers, suppliers) and views all actors as endogenous to the business actor's value creation process. As such, the value is cocreated in conjunction with all of the actors involved rather than being created entirely inside the boundaries of the firm's activity system (Nenonen and Storbacka, 2010). Storbacka et al. (2012) identified business model design as a fundamental unit of analysis for leveraging value cocreation in a business ecosystem.

To demonstrate that the business model literature is evolving towards a new logic, we structure extant business model literature by identifying three distinct designs related to different *network structures*: (1) *firm-centered networks*, (2) *solution networks* and (3) *open networks* (see Figure 1). Next, we discuss these business model logics and highlight how they differ regarding dominant thinking about the role of firms and other actors and their underlying architecture.

Figure 1. Business model logics



Firm-centered networks

Although the business model concept became prevalent with the advent of the Internet and e-commerce in the mid-1990s (Zott *et al.*, 2011), the dominant paradigm used was a traditional strategy approach. The approach follows Porter's structure-conduct-performance approach (Porter, 1980), in which *a firm* chooses an attractive industry, deters entry and *holds a competitive position* (Benson-Rea *et al.*, 2013). Timmers (1998) for example defines a business model as an architecture for the product, service and information flows, including a description of the various business actors and their roles. To develop his classification of eleven e-business models, he deconstructed and re-constructed Porter's (1985) value chain and identified possible ways of integrating information along the chain. In the same vein, Chesbrough (2007) builds on the structure of the value chain to explain value creation and value capture. Timmers (1998) and Chesbrough (2007), in common with the vast majority of business model articles, argue that relationships to stakeholders or partners are central to the business model concept (e.g., Osterwalder, 2004; Dubosson-Torbay *et al.*, 2002). However, a significant strand of business model literature sets the focus of the activity system on *vertical integration processes* instead of on network integration. Applegate (2001), for example, refers to the importance of the value net that generates economic value through complex, dynamic exchange of goods, services, and knowledge between one or more enterprises and its customers, suppliers, strategic partners, and the community. She argues that these nets or networked businesses combine a variety of business models, which are linked with one another across multiple value chain networks based on vertical integration, leading to revenue streams because they are using the same infrastructure.

Coombes and Nicholson (2013) identified the most influential articles dealing with business models based on comprehensive citation analysis. Implicitly, the academic debate of the

majority of these critical articles refers to value creation processes in business models from an *inside-out perspective*. For example, Morris *et al.* (2005) argue that business models describe internal processes and the design of the infrastructure that enables the firm to create value. Chesbrough and Rosenbloom (2002) point out that a business model begins with articulating a value proposition latent in new technology. It requires the illustration of product offerings, and how potential customers may use these products. Further, the business model must specify target groups or market segments to whom the value proposition will be appealing and from whom resources will be received. This inside-out view often goes along with the idea of *one firm managing* the boundary-spanning activity system (Hedman and Kalling, 2003).

While the traditional Porterian view is based on a rational quantifiable sustainable competitive advantage and profitability (Benson-Rea *et al.*, 2013), contemporary business model logics emphasize value cocreation. This leads to the continuous re-drawing of a firm's boundaries and interfaces as a response to its dynamic ecosystem (Ehret *et al.*, 2013).

Solution networks

Coombes and Nicholson (2013) refer to the different trajectory of dynamic *network-spanning activity systems* proposed by Ehret *et al.* (2013) in the industrial marketing business model discourse. Industrial marketing, especially the Industrial Marketing and Purchasing (IMP) group (e.g., Hakansson and Prencert, 2004) has been at the forefront of developing theories which explain value creation in networks. These theories have been applied to *solution or supply chain networks in the B2B context*. Within this literature, the concept of developing value between partners and therefore of value cocreation has a long tradition. Value cocreation acknowledges that value is created between suppliers, distributors, facilitating agencies and customers (Vargo and

Lusch, 2011). Recent industrial marketing literature has examined value cocreation empirically in the context of intensive business services (Aarikka-Stenroos and Jaakkola, 2012), project networks (Mele, 2011) and complex solution networks (Jaakkola and Hakanen, 2013).

Alongside the empirical investigation of value cocreation, marketing scholars began the discussion of value cocreation and value-in-use within the business model concept (Coombes and Nicholson, 2013). Nenonen and Storbacka (2010) proposed that the business model construct could be used to explain value cocreation. It can be seen as the interface through which various actors' resources and capabilities are orchestrated for value cocreation. Following the solution network logic, business models go beyond the scope of an internal boundary spanning activity system – also they include network and market considerations.

A widespread approach to business marketing is to view a given firm within its given network and search for its optimal role in this network (Ehret *et al.*, 2013). The network is seen as a limited – although not a fixed – number of actors that aims to exploit a business opportunity (Möller *et al.*, 2005). Palo and Tähtinen (2013) take a broader view and see networks as emerging during the process of developing technology and services alongside the business model. Consequently, network actors and their roles are likely to change during this emerging solution development process. The network actors' roles and their responsibilities are crucial to facilitating effective collaboration *cross-functionally within and between firms* in the network (Storbacka, 2011). Further, due to the interplay of multiple network actors (cocreation process), the network itself is shaped, while at the same time the network context shapes *outside-in* the actor's activities (Ferreira *et al.*, 2013). Finally, an increasing focus on capabilities and their integration processes have shifted 'business model thinking' from vertical integration, towards network or system

integration (Mason and Spring, 2011) – that is the integration of components provided by networks of partners (Davies *et al.*, 2007; Storbacka, 2011).

These dynamics are challenging to manage and require an interrelated managerial network and well-defined *contract models* that ensure unity, direction and most importantly collective coordination, and at the same time the capability to manage complex and changeable interfaces (Håkansson and Olsen, 2012). The evolving business model concept replies to these challenges by first asking, how network configurations affect the value creation process and what actor roles and capabilities are needed within these networks (Ehret *et al.*, 2013). In short, the business model logic of solution networks spans beyond the internal activity system perspective, highlights the process of cocreation involving multiple actors and is characterized by its emerging, highly dynamic nature (Ferreira *et al.*, 2013).

Open networks

Most recent academic discussions about business models are associated with the rise of platform businesses such as Airbnb, Uber or Kickstarter and the breakthrough of social media applications (Parker *et al.*, 2016). Through novel forms of open peer-to-peer service exchange, as reflected for example by crowdsourcing and crowdfunding, platform business models have the potential to shape markets and blur lines between B2B and B2C (Ehret *et al.*, 2013; Gamble *et al.*, 2017). Similar to the dynamic approach of the solution networks discussed previously, business models in open networks (i.e., platform business models) are based on an idea of continuously emerging, non-hierarchical collaboration among various actors (Ketonen-Oksi *et al.*, 2016). However, the access to actors and their *capabilities* is not restricted to a business network; it is open to an *entire ecosystem* of willing stakeholders and (micro-) entrepreneurs. Empowered by

digital technology and sophisticated software that connects actors more precisely, speedily and easily than ever before (Parker *et al.*, 2016), platform business models mobilize actors' resources extremely efficiently, leading to high resource density (Caridà *et al.*, 2017).

The term 'platform business models' is relatively new to the marketing and service literature and lacks a general definition. It is frequently used interchangeably with multi-sided platforms (Armstrong, 2006; Caillaud and Jullien, 2003), multi-sided markets (Rochet and Tirole, 2006), platform-based markets (Zhu and Iansiti, 2012) and platform ecosystems (Fu *et al.*, 2017). All these conceptualizations have in common that they describe platform properties in open network structures. Table 1 categorizes different types of open networks depending on their layer of openness and their platform properties. Platform businesses models can have multiple layers of openness and consequently appear as examples for multiple categories of open networks.

Table 1. Platform properties in open network structures

Open networks	Layer of openness	Platform properties	Examples	References
Multi-sided platforms; multi-sided markets	Openness on platform user level enabling large numbers of previously unconnected actors (in fragmented and locally dispersed markets) to connect	<ul style="list-style-type: none"> ▪ Platforms function as market intermediaries and enable connection of various user groups which provide each other with network benefits ▪ Platforms facilitate direct interactions between two (or more) distinct types of affiliated actors 	Airbnb, Uber, Kickstarter, The Food Assembly, eBay, Alibaba	e.g., Ondrus <i>et al.</i> , 2015; Eisenmann <i>et al.</i> , 2009; Kortmann and Piller, 2016); Armstrong, 2006; Caillaud and Jullien, 2003; Rochet and Tirole, 2006
Platform ecosystems as technology ecosystems	Openness on platform infrastructure level leading to high permeability for other actors to connect	<ul style="list-style-type: none"> ▪ Platforms as extensible codebases of software systems that provide core functionalities for applications that run on them ▪ Platform ecosystems to refer to technology ecosystems, which organize actors (e.g., developers) around a shared technology platform. 	Unix, Intel, Cisco; IBM Apple's iOS; Google's Android	e.g., Song <i>et al.</i> , 2017; Boudreau, 2012; Ceccagnoli <i>et al.</i> , 2012; Wareham <i>et al.</i> , 2014; Järvi and Kortelainen, 2017
Platform ecosystems as platform-based markets	Openness on platform provider level leading to high collaboration potential between (business) actors	<ul style="list-style-type: none"> ▪ Platform ecosystem as networks of partnerships formed around platform providers. ▪ Platform ecosystem can include an array of horizontally collaborating network partners with specific roles and responsibilities 	Apple's iOS; Google's Android, Google, IBM, Alibaba, Amazon, eBay, Kickstarter	e.g., Thomas <i>et al.</i> , 2014; Nambisan and Sawhney, 2011; Gawer and Cusumano, 2014; Toivanen <i>et al.</i> , 2015

Platform businesses models leverage *openness on three layers* (Ondrus *et al.*, 2015; Saebi and Foss, 2015; Thomas *et al.*, 2014): (1) platform user layer (multi-sided platforms; multi-sided markets), (2) platform infrastructure layer (platform ecosystems as technology ecosystems), and (3) platform provider layer (platform ecosystems as platform-based markets).

Multi-sided platforms function as market intermediaries (Thomas *et al.*, 2014), that link various groups of actors (same-sided and cross-sided) highly effectively and efficiently, based on a high degree of standardization and highly scalable technological infrastructures (Ondrus *et al.*, 2015; Eisenmann *et al.*, 2009).

Platform ecosystems as technology ecosystems provide a permeable infrastructure for large numbers of third-party technologies to connect (Boudreau, 2012; Ceccagnoli *et al.*, 2012). The infrastructure sets the stage for new service exchange between various actors. These actors (e.g., software developers) complement each other (e.g., increase the platform's innovation, output rate, and responsiveness to users) and grow together in the platform ecosystem (Ceccagnoli *et al.*, 2012; Song *et al.*, 2017; Järvi and Kortelainen, 2017).

Platform ecosystems as platform-based markets coordinate modularity, network membership, network stability, knowledge flows and innovation of various actors (Nambisan and Sawhney, 2011; Autio and Thomas, 2014; Gawer and Cusumano, 2014). Partnerships are formed around the platform provider (Toivanen *et al.*, 2015). Platform ecosystems as platform-based markets broaden the scope of platform ecosystem – from a technological infrastructure to include partnerships of horizontally collaborating actors with specific roles and responsibilities (Kortmann and Piller, 2016).

Realizing the potential of platform business models requires that the platform is governed to take advantage of its open and collaborative infrastructure (Tiwana, 2013). Because platform

ecosystems grow faster beyond boundaries of the platform business than inside, *system governance* is a central challenge. It means that not only the platform provider but also other actors contribute to governing the platform ecosystem (Parker et al., 2016). Therefore, institutions (e.g., laws, rules, and norms) have to be in place that encourages actors to engage in positive behaviors and to discourage negative interactions (Tiwana, 2013).

Taken together, recent developments in the business model literature suggest that business model thinking has evolved away from Porter's (1985) value chain logic to a new logic nested in open networks that focuses on network integration and collaboration. While some recent attention has been given to understand platform business models and their value creation processes based on network effects, theoretical understandings are fragmented, and a focused systemic view has remained mostly absent. Given the inherently systemic nature of platform business models, a systemic approach to its theoretical foundation appears to be relevant. With the next section, this paper aims to lay the foundation for a systemic logic of platform business models regarding the value creation and value capture processes within its platform ecosystem. It draws on business model literature that has evolved to date, and further advances the conceptualization of platform business models by adopting a systemic lens – S-D logic (Vargo and Lusch, 2004, 2008, 2016).

A new business model logic

Logic for value cocreation in service ecosystems

S-D logic rethinks the nature of markets and societies and directs study towards networks and interdependencies between versatile actors (Vargo and Lusch, 2016). Actors, according to Vargo and Lusch (2008) refer to any social or economic actor and the role of actors extend beyond the traditional customer-firm roles. S-D logic suggests that all actors depend on and benefit from

each other's capabilities in a complex ecosystem (Vargo and Lusch, 2011). Actors exercise agency to integrate their resources for the benefit of other actors and thereby enhance mutual wellbeing (Taillard *et al.*, 2016).

Institutions and institutional arrangements are shown to play an essential role for value creation in service ecosystems (Vargo and Lusch, 2016). Institutions enable actors for resource integration and service exchange, at the same time they are the 'output' of actor interactions. Central to institutional theory is to consider the notion of legitimacy as an alternative explanation to efficiency (DiMaggio and Powell, 1991). Following the logic of institutional theory, social practices exist not because they are assessed as the most efficient but rather because they are the most appropriate by actors in social environments (Suchman, 1995). Koskela-Huotari and Vargo (2016) recognize institutions as context for resource integration processes. S-D logic consequently implies that value creation must be understood in the context of complex network relationships that are part of and at the same time establish dynamic service ecosystems, comprising not only firms and customers, but their social communities and other stakeholders (Merz *et al.*, 2009).

Within these service ecosystem, actor interdependence results in both value cocreation and emergence (Taillard *et al.*, 2016). Service ecosystems defined as self-contained and self-adjusting systems (Lusch and Vargo, 2014) expand dynamically and create value based on building up and intensifying relationships among actors. Table 2 illustrates the S-D logic narrative of value cocreation and how it links to the logic of value cocreation in platform business models.

Table 2. Platform business model logic

S-D Logic	Platform Business Model Logic	
<p>Value cocreation in service ecosystems <i>S-D logic narrative; Vargo and Lusch, (2016)</i></p>	<p>Value cocreation in platform business models</p>	<p>Systemic value capture in platform business models</p>
<p>Actors involved in resource integration and service exchange;</p>	<p>Actors (i.e., platform providers, platform users) engaged in non-hierarchical collaboration (Gawer and Phillips, 2013; Ketonen-Oksi <i>et al.</i>, 2016), sharing (Kavadias <i>et al.</i>, 2016) and symbiotic service exchange (Fu <i>et al.</i>, 2017);</p>	<p>Leveraging complementarities (Zott <i>et al.</i>, 2010; Porter and Siggelkow, 2008; Milgrom and Roberts (1995), through (standardized) connecting and collaboration practices (Mason and Spring, 2011; Brettel <i>et al.</i>, 2012; Zott and Amit, 2007), that reduce redundancies.</p>
<p>Enabled and constrained by endogenously generated institutions and institutional arrangements;</p>	<p>Enabled and constrained by institutions and institutional arrangements (Wieland <i>et al.</i>, 2017), including open architecture (Ondrus <i>et al.</i>, 2015; Eisenmann <i>et al.</i>, 2009; Kortmann and Piller, 2016) and system governance (Berglund and Sandstrom, 2013);</p>	<p>Reducing transaction costs (DaSilva and Trkman, 2014; Coase 1937) through a collaborative infrastructure (Kumar and van Dissel, 1996; Amit and Zott, 2015) and system governance (i.e., reciprocal evaluation processes; Parker <i>et al.</i>, 2016; Autio and Thomas, 2014).</p>
<p>Establishing nested and interlocking service ecosystems.</p>	<p>Establishing growth beyond the platform business boundaries (Tiwana, 2013; Coombes and Nicholson, 2013) within the broader platform ecosystem (Fu <i>et al.</i>, 2017).</p>	<p>Leveraging network externalities (Katz and Shapiro, 1985; Eisenmann <i>et al.</i>, 2011; Farrell and Saloner, 1985) for all actors in the platform ecosystem (Ceccagnoli and Forman, 2012) leading to an economically significant increase in market concentration. (Dubé <i>et al.</i>, 2010; Caillaud and Jullien, 2003).</p>

Logic for value cocreation in platform business models

Vargo and Lusch (2016) state that only an institutional and systemic perspective can capture the holistic and dynamic nature of value creation. In platform business models value is cocreated through network relationships between various involved actors. Central activities of platform business models are sharing (Kavadias *et al.*, 2016) and a *non-hierarchical collaboration* (Gawer and Phillips, 2013; Ketonen-Oksi *et al.*, 2016). Sharing reduces market entry barriers and unlocks resources and value for all sides. Non-hierarchical collaboration enables *symbiotic service exchange*, which creates mutual benefit for all involved parties, in contrast to purely profit-oriented services exchange (Fu *et al.*, 2017). The value in platform business models is cocreated through the platform's internal and external collaboration practices (Gawer and Phillips, 2013), which shape the architecture of the business model. At the same time collaboration practices are influenced by this architecture.

Wieland *et al.* (2017) argue that a systemic and *institutional approach* shifts business model thinking to the study of how institutions are (re)formed. They suggest, that it is through 'an iterative and dynamic process involving a broad range of actors (i.e., firms, customers, other stakeholders, etc.) that institutionalization – the maintenance, disruption, and change of rules, norms, meanings, symbols – enables and constrains resource integration and value cocreation practices' (p.11). Most business model conceptualizations to date overlook the systemic participation of actors in cocreating institutions and overemphasize the role of the firm, which enables and constrains value creation processes (Wieland *et al.*, 2017).

As previously discussed, platform business models build on an *open architecture* (Ondrus *et al.*, 2015; Eisenmann *et al.*, 2009), characterized by high interoperability across different technologies and the ability to connect a variety of actors and their resources (Kortmann and Piller,

2016). Governance in open business models refers (at least partly) to *system governance*. Because *growth* takes place predominantly *beyond the platform business boundaries* (Tiwana, 2013) within the broader platform ecosystem (Fu *et al.*, 2017), system governance is important. Various actors (not only the platform business) contribute to governing the platform ecosystem. As a consequence, the institutions in place need to encourage actors to engage in positive behaviors and to discourage negative interactions.

Taken together, the logic of value cocreation in platform business models involves versatile actors, engaged in sharing and collaborating to exchange service symbiotically. These actors are connected through a highly adaptive architecture and system governance. Both architecture and governance are influenced by the activities of all actors in the platform ecosystem. The platform business is a central node for actors to connect, growth, however is established mainly outside the platform business in the broader platform ecosystem.

Amit and Zott (2015) argue that a balancing act is required to align value cocreation with value capture (i.e., internalized positive externalities generated by each actor's value proposition). Long-term value capture is not possible if the relationships within the network do not create value. Thus, according to Storbacka (2011) value creation is a pre-requisite for value capture. Value capture represents the economic viability of platform business models (Amit and Zott, 2015). An emphasis on value cocreation without regard to value capture would not resonate with business practice. Conversely, a preoccupation with value capture might unnecessarily reduce the amount of total value (for all actors) that could be cocreated within the platform ecosystem (Cennamo and Santalo, 2013).

The next section will discuss a systemic logic for value capture concerning complementarity theory (Milgrom and Roberts, 1995), transaction cost theory (Coase, 1937;

Williamson, 1983) and network externalities (Katz and Shapiro, 1985). These theories will be interpreted in light of a systemic lens and thus connect with the logic of value cocreation.

Logic for systemic value capture in platform business models

Leveraging complementarities through coordinating and collaboration practices

Berglund and Sandstrom (2013) suggest that an open network perspective implies that firms act under conditions of high interdependences. Complementarity theory provides a systematic way to analyze organizational implications of these interdependences (Zott *et al.*, 2010; Porter and Siggelkow, 2008). According to Milgrom and Roberts (1995), activities are complements when the value of one activity increases as the other activity is increased. On a system level, the *elimination of redundancies* within the entire set of activities captures value (Zott *et al.*, 2010). Complementarities in open business models can be leveraged on three levels: (1) between services, (2) between technologies and (3) between activities. On the services level, leveraging complementarities refers for example to bundling service offerings to promote synergies among them (Amit and Zott, 2015). Airbnb, for example, offers not only accommodation around the globe, but now also provides experience tours, such as VIP experience in the hottest nightlife spots, all organized by private hosts on the platform. Services bundling per se is not a unique practice of platform business models. Platform business models however, *connect actors more effectively* and thereby reduce redundancies among a high number of versatile actors.

On the technology level, sophisticated infrastructure (e.g., filtering algorithms) guarantees that actors and their resources *connect with high flexibility and thus with great efficiency* (Kortmann and Piller, 2016; Velu and Jacon, 2016). Dating apps for example filter for your potential partner based on the criteria that are important to you and ideally adapt these criteria

based on successful connections in the past. This reduces your effort to check for these criteria again and again (i.e., reduced redundancies).

On the activity level, platform business models facilitate *agile collaboration practices* among various groups of actors. For collaboration practices to evolve, platforms ensure a certain level of *common knowledge* (Berglund and Sandstrom, 2013b) and *common meaning* (Brodie *et al.*, 2017) concerning the institutional arrangements in place. The common knowledge and common meaning support the alignment of the engagement of all actors (e.g., platform users, developers, and strategic partners) in the system. Aligning engagement practices represents a central capability of platform business models to reduce redundancies in the overall platform ecosystem. Seen as a bundle of practices, platform business models can be understood as generative and continuously emerging (Mason and Spring, 2011).

Reducing transaction cost through a collaborative infrastructure and system governance

Platform business models emphasize the creation of value between actors, rather than considering value being created within the boundaries of a single firm (Coombes and Nicholson, 2013). Drawing on Mason and Spring (2011), indirect capabilities (Loasby, 1998) – those that relate to how platforms can access and utilize the capabilities of others within the wider network – become essential for value capture in platform business models. Platform business models are designed based on a collaborative infrastructure, which connects a variety of different actors and allows for various resources to be integrated with larger sets of resources. One central value capture mechanism of *platform infrastructures* is the *reduction in transaction costs between multiple actors* (DaSilva and Trkman, 2014).

Coase (1937) addressed the central question, ‘why firms exist’ in the theory of transaction cost economics, which explains why firms tend to expand until the costs of organizing an extra transaction within the firm become equal to the costs of carrying out the same transaction on the open market. He refers to three specific transaction costs: search costs (resources and time for finding what you need), contracting costs (resources and time for negotiation) and coordination costs (coordinate activities among dispersed actors) (Tapscott *et al.*, 2000). At its core, transaction cost theory is concerned with *explaining the choice of the most efficient governance form*. Firms and markets emerge and disappear depending on transaction costs. Value capture can be derived from reducing uncertainty, complexity, information asymmetry, and small-numbers bargaining conditions (Williamson, 1975). Further, drawing on Williamson (1983, 1975) reputation, trust, and transactional experience can lower costs of idiosyncratic exchanges between firms (Amit and Zott, 2001).

Researchers in inter-organizational systems refer to transaction cost theory suggesting that digital infrastructures reduce transaction costs and thereby reduce the need for vertical integration and induce the transformation towards network integration and market structures (Kumar and van Dissel, 1996). Platform businesses use for example advanced search mechanisms (e.g., Google search) to provide high-quality search results in no time and hence, reduce search costs dramatically. Platforms connect large numbers of previously unconnected actors in fragmented markets – for example, Airbnb connects hosts and guests all over the world. Thus, small-number bargaining conditions are nearly obsolete for platform business models. The collaborative infrastructure of platform business models provides access for a variety of different actors and a multitude of transactions between these actors. Integrating new actors and new resources often

works fully automated, instantly and with nearly zero additional costs, neither for the platform provider nor the user.

Finally, in platform business models transaction, uncertainty is reduced by sophisticated rating technologies, such as those used by TripAdvisor. These rating technologies allow for *reciprocal evaluation processes* and thus, *system governance*. System governance goes along with relinquishing control for the platform provider. It means that not only the platform provider but all actors contribute to governing the platform ecosystem. In this sense, both, platform providers as well as platform users become active players to manage central operations. This, in turn, is crucial for the efficiency of platform business operations (Parker *et al.*, 2016). For example, through reciprocal evaluation processes (i.e., one actor is reviewing the activity of another actor and vice versa), service quality can be assured with no gatekeepers (i.e., employees controlling service quality) being involved. The possibility of evaluating other actors' behaviors and viewing evaluations of other actors creates trust in the platform business as well as in other actors. Further, these reciprocal evaluation processes ensure efficient and highly scalable operations within the system, because the more actors connect on the platform, the more actors are entitled to evaluate the service (Autio and Thomas, 2014; Berglund and Sandstrom, 2013a). Governance in platform business models thus becomes socialized. For the platform provider, it is a matter of creating a collaborative infrastructure and establishing a shared knowledge and a shared meaning of the institutional arrangements in place (as previously explained), rather than a matter of command and control (Berglund and Sandstrom, 2013a).

Governance and technological infrastructure interlock in platform business models. Akaka and Vargo (2013) argue, that technological infrastructure not only influences the way actors collaborate, these technological structures are also influenced by the ecosystem's institutions, and

thus by the way actors collaborate. Mason and Spring (2011) point out that the interface, where interactions between actors take place may change over time, caused by institutional and technological innovation. Hence, infrastructure and governance of platform business models are evolutionary, and *value capture is determined by dynamic institutional processes* within the platform ecosystem.

Leveraging network externalities

Interactions in platform ecosystems can occur within one group of actors (i.e., one-sided, e.g., between Uber guests) or across different groups of actors (i.e., multi-sided, e.g., between Uber drivers and Uber guests). The most recently discussed value capture mechanism of platform business models refers to leveraging positive network externalities among multiple groups of actors (Amit and Zott, 2015; Rochet and Tirole, 2006). The original idea of network externalities refers to the positive effects actors derive from the consumption of goods (or using services), depending on the number of other actors consuming the same goods (or using the same services) (Katz and Shapiro, 1985).

According to Katz and Shapiro (1985), there are two possible sources of positive externalities: direct and indirect network effects. *Direct network effects* explain the value that is generated through a direct effect of the number of other actors on the quality of the service (e.g., buying a smartphone provides value only if other people use smartphones as well). *Indirect network effects* refer to value creation based on the diffusion of a certain standard (e.g., Apple iOS). More specifically, the higher the diffusion of a standard, the more services and applications will be provided that are compatible with this specification (Farrell and Saloner, 1985; Bonaccorsi *et al.*, 2006) (i.e., the hardware-software paradigm (Katz and Shapiro, 1985)). Buying an iPhone creates value because of access to the app universe available at the app store. Indirect network

effects can lead to an *economically significant increase in market concentration* (Dubé *et al.*, 2010; Caillaud and Jullien, 2003). This increases the economic viability of the platform business and viability of the overall platform ecosystem, thus represents systemic value capture.

When network externalities are positive, they create incentives to ‘herd’ with others (e.g., taxi firms join the Uber network) which, in turn, can lead to one single platform ecosystem (or natural monopoly) dominating an industry (Amit and Zott, 2015). In platform ecosystems, strong network effects create lock-in mechanisms, that is high switching costs that often shelter platform ecosystems from entry by standalone rivals (Eisenmann *et al.*, 2011; Farrell and Saloner, 1985; Katz and Shapiro, 1985).

Dubé *et al.* (2010) argue that for positive network externalities to evolve, the capability for ‘tipping’ is central. Tipping can be understood as the capacity of a platform business model to pull away from existing market and shape a new market (Katz and Shapiro, 1994). Tipping is enabled by institutional change. Institutionalization, in particular, the disruption of existing institutions (e.g., Uber disrupted the regulated industry of professional taxi drivers; Wieland *et al.*, 2017), accelerates the development of positive network effects. Platform business models act as catalysts by leveraging positive network externalities for all actors in the platform ecosystem (Ceccagnoli *et al.*, 2012). At the same time, platform providers must recognize interdependences between actors in the network and find the appropriate balance between their sometimes competing objectives (Sriram *et al.*, 2015).

Further research on platform business models

The conceptual framework developed in this paper presents a systemic perspective of platform business models. This perspective offers a new way of mapping value cocreation and

systemic value capture processes, emphasizing not only the role of platform business, but also partnerships of horizontally collaborating actors with their specific roles and responsibilities in platform ecosystems (Kortmann and Piller, 2016). It responds to the challenges in contemporary business environments that might have been overlooked, due to the lack of analysis of systemic interdependencies between versatile actors and new actor roles in peer-to-peer interactions.

By using a cross-disciplinary approach, this study integrates service-dominant logic from marketing and service research and business model literature from management – but also includes literature from information systems – to conceptualize platform business models holistically and from a systemic perspective. Further research might take the next step by exploring links between a systemic perspective and five emerging research areas related to open business models: (1) open boundaries, (2) accessible capabilities, (3) systemic business model innovation, (4) alignment of resource investments and (5) system governance. Discussed here and summarized in Table 3, we outline research questions in each of these areas.

Table 3. Future research directions

	Research area 1: Open boundaries	Research area 2: Accessible capabilities	Research area 3: Systemic business model innovation	Research area 4: Alignment of resource investments	Research area 5: Leveraging system governance
Systemic value creation and value capture	<ul style="list-style-type: none"> • What are the dynamics of institutional change and platform business design leading to ‘tipping’ of the platform ecosystem? • How do platform business models attract partnerships of horizontally collaborating actors? How do initial network structures of platform business models expand to shape a platform ecosystem and entire market? 	<ul style="list-style-type: none"> • How do roles and responsibilities change in platform business models? • How do work arrangements change enabled by platform business models? What are the consequences of this change for service exchange and service design? 	<ul style="list-style-type: none"> • How does business model innovation take place on a systemic level? How can systemic design and systemic innovation processes be embedded in the operating model of platform ecosystems? • What are the institutional arrangements supporting systemic business model innovation? What are the tools to facilitate systemic business model innovation? 	<ul style="list-style-type: none"> • How can non-hierarchical collaboration practices be enforced and stabilized within the platform ecosystem? How do these practices emerge, extend and finally affect the institutions of the platform ecosystem? • How can resource investments of versatile actors be aligned to reduce redundancies in the platform ecosystem? What degree of formality (i.e., standards, defined processes) is most supportive for resource integration in different institutional contexts? 	<ul style="list-style-type: none"> • How can governance in platform ecosystems be socialized? And to what degree? • What institutions need to be in place to encourage positive behaviors and discourage negative interactions? • What role do technologies (e.g., block chains, artificial intelligence) play to facilitate system governance?
Systemic failure	<ul style="list-style-type: none"> • When does market concentration result in negative effects for actors in the platform ecosystem? How can these negative effects be diminished? 	<ul style="list-style-type: none"> • What platform business models designs and what institutions support the realization of fair value (e.g., fair payment) from service exchange for all actors? 	<ul style="list-style-type: none"> • How can the high-risk environment created by innovation that outpaces regulation be governed in a fair way? 	<ul style="list-style-type: none"> • When does collective action have negative effects on the platform ecosystems or other ecosystems? What are the triggers for negative dynamics? 	<ul style="list-style-type: none"> • How do misbehaviors influence institutional arrangements about system governance? • How can actors once excluded from the platform ecosystem recover?

Research area 1: Open boundaries

Viewing business models from an open network perspective means that the activity system is continuously developing (Mason and Spring, 2011). Platform ecosystems gain economic viability (Dubé et al., 2010; Caillaud and Jullien, 2003) by continuously growing towards their ‘tipping point’, from where they pull away from the existing market and shape a new market (Katz and Shapiro, 1994). Understanding the dynamics of institutional change and platform business model design leading to the tipping point reflects a central avenue for future research.

Research area 2: Accessible capabilities

Through novel forms of open peer-to-peer service exchange in platform business models, traditional roles of firms, employees, and customers are getting blurred. Consequently, employment arrangements change. The number of full-time permanent employment is predicted to decrease significantly over the next decade (PWC, 2017). This raises important questions regarding work arrangements and responsibilities in platform ecosystems. Actors take a variety of roles in platform ecosystems, and some of these roles may support more effective value co-creation. Further, each context may favor different roles (Letaifa and Reynoso, 2015). Future research may want to discuss changing roles, responsibilities, and (work) arrangements in light of developments of the collaborative economy.

Research area 3: Systemic business model innovation

This study acknowledges the fundamental shift in business model thinking away from the inside-out perspective towards a collaborative network-spanning activity system. This emphasizes the importance of an institutional and systemic view of business models (see Wieland *et al.*, 2017).

However the question of how to innovate systemic business models is yet to be explored (Amit and Zott, 2016). Possible avenues for further research may involve the exploration of continuous business model innovation, and the design of this innovation process.

Research area 4: Alignment of resource investments

Platform business models build on the idea of continuously emerging, non-hierarchical collaboration practices among various actors (Ketonen-Oksi *et al.*, 2016). These practices can start on a dyadic level and form structures on a system level and then come back to the dyadic level (Vargo and Lusch, 2016; Taillard *et al.*, 2016). Change in collaboration practices leads to instability in the system because it changes institutional logics from one network layer to the next one. (Letaifa *et al.*, 2016). Resource investments need to be aligned through efficient collaboration practices to leverage value capture in the platform ecosystem. Understanding how to align these practices represents another important area for future research.

Key research area 5: Leveraging system governance

The orchestration of actors beyond the platform within the broader platform ecosystem – coupled with advanced technologies for analytics, artificial intelligence and autonomy are changing the landscape of business. System governance distributes control and quality management among various actors in the platform ecosystem (Parker *et al.*, 2016). Future research needs to investigate the institutionalization processes for system governance and the important role sophisticated technologies play in this process.

Finally, academics are encouraged to investigate the ‘*dark side*’ of platform ecosystems. Market concentration and collective actions may result in negative dynamics for focal actors, the

economy, the environment or the society. These effects have to be explored in light of platform ecosystems. Further, platform ecosystems allow for accessibility of actors and their capabilities across countries and social systems. This makes inequalities (e.g., in payment structures) visible. Future research may involve studying how fair value of service exchange for all actors in the system can be realized.

Managerial implication

Platform ecosystems constitute the majority of the fastest growing organizations in the global economy (Wharton, 2016; Fortune, 2015). They challenge the idea of one firm managing an entire activity system – an idea nested in traditional business model logics (Wieland et al., 2017). This has important implications for managers. Viewing business models as open networks suggest that their activity systems are continuously developing. Central, for operating in open networks are: (1) collaborative infrastructures, which enable access to resources and capabilities of other actors (i.e., business partners, customers, freelancers, start-ups and other service providers); (2) relinquishing control and (3) continuously evaluating collaboration potential to expand the network.

By establishing a business model design, which allows for flexibly accessing resources and knowledge from various actors, instead of building up knowledge for each problem within a focal firm, redundancies can be reduced within the entire set of activities. A collaborative infrastructure enables non-hierarchical collaboration practices based on high degrees of standardization, automation, and adaptability. Non-hierarchical collaboration practices in open business models imply that firms need to facilitate such practices rather than trying to manage all entities in the collaboration process. Hence, firms need to relinquish control of their activity system. The

continuously emerging nature of business model design points toward a continuous innovation process (Brettel *et al.*, 2012; Zott and Amit, 2007). This raises questions for managers as to how to guide systemic innovation processes.

In mapping the platform business models with the business model of more traditionally organized firms, managers may uncover new collaboration potential embedded in their existing ecosystems. They may detect interfaces on a structural level to extend the boundaries of their systems or even reveal the potential to shape an entirely new market. Incumbent companies, while exploiting the strength and assets of their established activity system from a new angle, may want to deploy 'hybrid' business models (i.e., some platform elements on top of their existing business model) to start the transformation towards a platform ecosystem. In their global survey on 'the rise of the platform enterprise,' Evans and Gawer (2016) state that it is observable, that incumbent firms across a wide range of sectors have moved to establish their platform ecosystems.

Managers who aim to transform their business models in the direction of a platform ecosystem need to understand the system in which they want to operate and its network actors. An integrated understanding of technology, business, and social practices and the anticipation of not only customers' needs, but the needs of all network actors will be essential to the success of the transformation. Questions such as where and how to design technological interfaces, how open or closed they should be, who the complementors will be and how the ecosystems should be governed, will become fundamental to the business strategy (Evans and Gawer, 2016).

Conclusion

This paper advances business model thinking by providing a systemic lens to the concept of platform business models. It expands the conceptualization of business models: (1) from a

‘business-to-customer’ perspective to an ‘actor-to-actor’ perspective and (2) from a firm-centered, value chain logic to an open platform logic. While previous platform business model literature has provided fragmented insights into value creation based on network effects, a focused systemic analysis has remained absent. By systematically combining S-D logic’s narrative of value cocreation (Vargo and Lusch, 2016) and the evolution of business model literature, this paper offers a theorizing process for S-D logic informed midrange theory. It provides three particular contributions.

First, our analysis structures extant business model literature by identifying three distinct design logics nested in business models, firm-centered networks, solution networks and open networks. We have demonstrated that business models as determinants of the firm's value creation processes (Storbacka *et al.*, 2012) are shifting toward an open network perspective, where value processes of versatile actors become essential. Second, the paper lays the foundations for a new business model logic, where firms represent one important actor but do not alone suffice the study of business models in contemporary markets. Drawing from an institutional view on business models anchored in S-D logic (Wieland *et al.*, 2017), this study develops a framework for value cocreation and systemic value capture in platform business models. The logic and structure of platform business models illustrate that value is cocreated through shaping and re-shaping institutional arrangements and at the same time being shaped by these institutional arrangements. Systemic value capture in platform business models can be achieved by leveraging complementarities (Milgrom and Roberts, 1995), reducing transaction costs (Coase, 1937; Williamson, 1983) and leveraging network externalities for all actors in the platform ecosystem (Katz and Shapiro, 1985).

Finally, this paper advances theory development in marketing and service research towards open business models and value cocreation among multiple stakeholders, as suggested by Coombes and Nicholson (2013). While acknowledging the fundamental shift in business model thinking away from the inside-out perspective towards a collaborative network-spanning activity system as presented in this study and nuancing the importance of an institutional and systemic view of business models (see Wieland *et al.*, 2017), question of how to operate, orchestrate and innovate open business models are yet to be explored (Amit and Zott, 2016). The research agenda presented in this paper guides conceptual and empirical refinements when studying open business models from a systemic lens – a stream of research in an embryonic stage with the potential to grow significantly in the next decade.

References

- Aarikka-Stenroos, L. and Jaakkola, E. (2012), “Value co-creation in knowledge intensive business services. A dyadic perspective on the joint problem solving process”, *Industrial Marketing Management*, Vol. 41 No. 1, pp. 15–26.
- Akaka, M.A. and Vargo, S.L. (2013), “Technology as an operant resource in service (eco) systems”, *Information Systems and e-Business Management*, Vol. 12 No. 3, pp. 367–384.
- Altman, E.J. (2015), “Platform and Ecosystem Transitions: Strategic and Organizational Implications. Doctoral dissertation, Harvard Business School.”, available at: <http://nrs.harvard.edu/urn-3:HUL.InstRepos:16881891>.
- Amit, R. and Zott, C. (2001), “Value creation in E-business”, *Strategic Management Journal*, Vol. 22 6-7, pp. 493–520.
- Amit, R. and Zott, C. (2015), “Crafting Business Architecture. The Antecedents of Business Model Design”, *Strategic Entrepreneurship Journal*, Vol. 9 No. 4, pp. 331–350.
- Amit, R. and Zott, C. (2016), “Model Design: A Dynamic Capability Perspective”, in Teece, D.J. and Leih, S. (Eds.), *The Oxford Handbook of Dynamic Capabilities*, Oxford University Press.
- Applegate, L.M. (2001), “Emerging Networked Business Models: Lessons from the Field. HBS No. 9-801-172”, *Harvard Business School, Boston, MA*.
- Armistead, C.G. and Clark, G. (2006), “Resource Activity Mapping. The Value Chain in Service Operations Strategy”, *The Service Industries Journal*, Vol. 13 No. 4, pp. 221–239.
- Armstrong, M. (2006), “Competition in two-sided markets”, *The RAND Journal of Economics*, Vol. 37 No. 3, pp. 668–691.
- Autio, E. and Thomas, L. (2014), “Innovation ecosystems”, *The Oxford handbook of innovation management*, pp. 204–288.
- Benson-Rea, M., Brodie, R.J. and Sima, H. (2013), “The plurality of co-existing business models. Investigating the complexity of value drivers”, *Industrial Marketing Management*, Vol. 42 No. 5, pp. 717–729.
- Berglund, H. and Sandstrom, C. (2013a), “Business model innovation from an open systems perspective: structural challenges and managerial solutions”, *International Journal of Product Development*, Vol. 18 3/4, pp. 274–296.
- Berglund, H. and Sandstrom, C. (2013b), “Business model innovation from an open systems perspective: structural challenges and managerial solutions”, *International Journal of Product Development*, Vol. 18 3/4, pp. 274–296.
- Bonaccorsi, A., Giannangeli, S. and Rossi, C. (2006), “Entry Strategies under Competing Standards: Hybrid Business Models in the Open Source Software Industry”, *Management Science*, Vol. 52 No. 7, pp. 1085–1098.
- Boudreau, K.J. (2012), “Let a thousand flowers bloom? An early look at large numbers of software app developers and patterns of innovation”, *Organization Science*, Vol. 23 No. 5, pp. 1409–1427.

- Breidbach, C., Brodie, R.J. and Hollebeek, L.D. (2014), “Beyond virtuality. From engagement platforms to engagement ecosystems”, *Managing Service Quality*, Vol. 24 No. 6, pp. 592–611.
- Breidbach, C.F. and Brodie, R.J. (2017), “Engagement platforms in the sharing economy: conceptual foundations and research directions”, *Journal of Service Theory and Practice*, Vol. 27 No. 4, pp. 761–777.
- Breidbach, C.F. and Maglio, P.P. (2016), “Technology-enabled value co-creation. An empirical analysis of actors, resources, and practices”, *Industrial Marketing Management*, Vol. 56, pp. 73–85.
- Brettel, M., Strese, S. and Flatten, T.C. (2012), “Improving the performance of business models with relationship marketing efforts – An entrepreneurial perspective”, *European Management Journal*, Vol. 30 No. 2, pp. 85–98.
- Brodie, R.J., Benson-Rea, M. and Medlin, C.J. (2017), “Strategic Advantage from Integrating Brand Meanings with Brand Identification”, *Marketing Theory*, forthcoming.
- Brodie, R.J., Saren, M. and Pels, J. (2011), “Theorizing about the service dominant logic. The bridging role of middle range theory”, *Marketing Theory*, Vol. 11 No. 1, pp. 75–91.
- Caillaud, B. and Jullien, B. (2003), “Chicken & Egg: Competition among Intermediation Service Providers”, *The RAND Journal of Economics*, Vol. 34 No. 2, pp. 309–328.
- Caridà, A., Melia, M. and Colurcio, M. (2017), “Business Model Design and Value Co-creation: Looking for a New Pattern”, in Russo-Spena, T., Mele, C. and Nuutinen, M. (Eds.), *Innovating in Practice*, Springer International Publishing, Cham, pp. 339–361.
- Casadesus-Masanell, R. and Ricart, J.E. (2010), “From Strategy to Business Models and onto Tactics”, *Long Range Planning*, Vol. 43 2-3, pp. 195–215.
- Ceccagnoli, M., Formann, C., Huan, P. and Wu, D.J. (2012), “Cocreation of Value in a Platform Ecosystem! The Case of Enterprise Software”, *MIS Quarterly*, Vol. 36 No. 1.
- Cennamo, C. and Santalo, J. (2013), “Platform competition. Strategic trade-offs in platform markets”, *Strategic Management Journal*, Vol. 34 No. 11, pp. 1331–1350.
- Chesbrough, H. (2006), *Open business models: How to thrive in the new innovation landscape*, Harvard Business School Press, Boston, Massachusetts.
- Chesbrough, H. (2007), “Business model innovation. It's not just about technology anymore”, *Strategy & Leadership*, Vol. 35 No. 6, pp. 12–17.
- Chesbrough, H. and Rosenbloom, R.S. (2002), “The role of the business model in capturing value from innovation: evidence from Xerox Corporation's technology spin-off companies”, *Industrial and corporate change*, Vol. 11 No. 3, pp. 529–555.
- Coase, R.H. (1937), “The nature of the firm”, *economica*, Vol. 4 No. 16, pp. 386–405.
- Coombes, P.H. and Nicholson, J.D. (2013), “Business models and their relationship with marketing. A systematic literature review”, *Industrial Marketing Management*, Vol. 42 No. 5, pp. 656–664.
- DaSilva, C.M. and Trkman, P. (2014), “Business Model. What It Is and What It Is Not”, *Long Range Planning*, Vol. 47 No. 6, pp. 379–389.

- Davies, A., Brady, T. and Hobday, M. (2007), “Organizing for solutions. Systems seller vs. systems integrator”, *Industrial Marketing Management*, Vol. 36 No. 2, pp. 183–193.
- Demil, B. and Lecocq, X. (2010), “Business Model Evolution. In Search of Dynamic Consistency”, *Long Range Planning*, Vol. 43 2-3, pp. 227–246.
- DiMaggio, P.J. and Powell, W.W. (1991), “Introduction”, in DiMaggio, P.J. and Powell, W.W. (Eds.), *The New Institutionalism in Organizational Analysis*, Chicago Press, pp. 1–38.
- Dubé, J.-P.H., Hitsch, G.J. and Chintagunta, P.K. (2010), “Tipping and concentration in markets with indirect network effects”, *Marketing Science*, Vol. 29 No. 2, pp. 216–249.
- Dubosson-Torbay, M., Osterwalder, A. and Pigneur, Y. (2002), “E-business model design, classification, and measurements”, *Thunderbird International Business Review*, Vol. 44 No. 1, p. 5.
- Ehret, M., Kashyap, V. and Wirtz, J. (2013), “Business models. Impact on business markets and opportunities for marketing research”, *Industrial Marketing Management*, Vol. 42 No. 5, pp. 649–655.
- Eisenmann, T., Parker, G. and van Alstyne Marshall (2011), “Platform Envelopment”, *Strategic Management Journal*, Vol. 32, pp. 1270–1285.
- Eisenmann, T.R., Parker, G. and van Alstyne, M. (2009), *Opening platforms: How, when and why? Platforms, Markets and Innovation (Chapter 6)*. Edited by Annabelle Gawer, Edward Elgar Publishing.
- Evans, P.C. and Gawer, A. (2016), “The Rise of the Platform Enterprise. A Global Survey”, available at: http://www.thecege.net/wp-content/uploads/2016/01/PDF-WEB-Platform-Survey_01_12.pdf (accessed 4 February 2017).
- Farrell, J. and Saloner, G. (1985), “Standardization, compatibility, and innovation”, *The RAND Journal of Economics*, pp. 70–83.
- Ferreira, F.N.H., Proença, J.F., Spencer, R. and Cova, B. (2013), “The transition from products to solutions. External business model fit and dynamics”, *Industrial Marketing Management*, Vol. 42 No. 7, pp. 1093–1101.
- Fortune (2015), “Unicorns”, available at: <http://fortune.com/unicorns> (accessed 25 August 2015).
- Fu, W., Wang, Q. and Zhao, X. (2017), “The influence of platform service innovation on value co-creation activities and the network effect”, *Journal of Service Management*, Vol. 28 No. 2, pp. 348–388.
- Gamble, J.R., Brennan, M. and McAdam, R. (2017), “A rewarding experience? Exploring how crowdfunding is affecting music industry business models”, *Journal of Business Research*, Vol. 70, pp. 25–36.
- Gawer, A. and Cusumano, M.A. (2014), “Industry Platforms and Ecosystem Innovation”, *Journal of Product Innovation Management*, Vol. 31 No. 3, pp. 417–433.
- Gawer, A. and Phillips, N. (2013), “Institutional Work as Logics Shift. The Case of Intel’s Transformation to Platform Leader”, *Organization Studies*, Vol. 34 No. 8, pp. 1035–1071.

- Håkansson, H. and Prencert, F. (2004), “Exploring the exchange concept in marketing”, in Håkansson, H., Harrison, D. and Waluszewski A. (Eds.), *Rethinking marketing: developing a new understanding of markets*, John Wiley & Sons, Chichester.
- Håkansson, H. and Olsen, P.I. (2012), “Innovation management in networked economies”, *Journal of Business Marketing Management*, Vol. 5 No. 2, pp. 79–105.
- Hedman, J. and Kalling, T. (2003), “The business model concept: theoretical underpinnings and empirical illustrations”, *European journal of information systems*, Vol. 12 No. 1, pp. 49–59.
- Jaakkola, E. and Hakanen, T. (2013), “Value co-creation in solution networks”, *Industrial Marketing Management*, Vol. 42 No. 1, pp. 47–58.
- Järvi, K. and Kortelainen, S. (2017), “Taking stock of empirical research on business ecosystems: a literature review”, *Int. J. Business and Systems Reserach*, Vol. 11 No. 3.
- Katz, M.L. and Shapiro, C. (1985), “Network externalities, competition, and compatibility”, *The American economic review*, Vol. 75 No. 3, pp. 424–440.
- Katz, M.L. and Shapiro, C. (1994), “Systems competition and network effects”, *The journal of economic perspectives*, Vol. 8 No. 2, pp. 93–115.
- Kavadias, S., Ladas, K. and Loch Christoph (2016), “The Transformative Business Model”, *Harvard Business Review*, pp. 91–99.
- Ketonen-Oksi, S., Jussila, J.J. and Kärkkäinen, H. (2016), “Social media based value creation and business models”, *Industrial Management & Data Systems*, Vol. 116 No. 8, pp. 1820–1838.
- Kortmann, S. and Piller, F. (2016), “Open Business Models and Closed-Loop Value Chains. Redefining the Firm-Consumer Relationship”, *California Management Review*, Vol. 58 No. 3, pp. 88–108.
- Koskela-Huotari, K. and Vargo, S.L. (2016), “Institutions as resource context”, *Journal of Service Theory and Practice*, Vol. 26 No. 2, pp. 163–178.
- Kumar, K. and van Dissel, H.G. (1996), “Sustainable Collaboration: Managing Conflict and Cooperation in Interorganizational Systems”, *MIS Quarterly*, Vol. 20 No. 3, pp. 279–300.
- Letaifa, S.B., Edvardsson, B. and Tronvoll, B. (2016), “The role of social platforms in transforming service ecosystems”, *Journal of Business Research*, Vol. 69 No. 5, pp. 1933–1938.
- Letaifa, S.B. and Reynoso, J. (2015), “Toward a service ecosystem perspective at the base of the pyramid”, *Journal of Service Management*, Vol. 26 No. 5, pp. 684–705.
- Loasby, B.J. (1998), “The organisation of capabilities”, *Journal of Economic Behavior & Organization*, Vol. 35 No. 2, pp. 139–160.
- Lusch, R.F. and Vargo, S.L. (2014), *Service-Dominant Logic: Premises, Perspectives, Possibilities.*, Cambridge University Press, Cambridge.
- Magretta, J. (2002), *Why business models matter*, Harvard Business School Publishing Corporation.
- Mason, K. and Spring, M. (2011), “The sites and practices of business models”, *Industrial Marketing Management*, Vol. 40 No. 6, pp. 1032–1041.

- Mateu, J.M. and March-Chorda, I. (2016), “Is experience a useful resource for business model innovation?”, *Technology Analysis & Strategic Management*, Vol. 28 No. 10, pp. 1195–1209.
- Mele, C. (2011), “Conflicts and value co-creation in project networks”, *Industrial Marketing Management*, Vol. 40 No. 8, pp. 1377–1385.
- Merz, M.A., He, Y. and Vargo, S.L. (2009), “The evolving brand logic. A service-dominant logic perspective”, *Journal of the Academy of Marketing Science*, Vol. 37 No. 3, pp. 328–344.
- Milgrom, P. and Roberts, J. (1995), “Complementarities and fit strategy, structure, and organizational change in manufacturing”, *Journal of accounting and economics*, Vol. 19 No. 2, pp. 179–208.
- Möller, K., Rajala, A. and Svahn, S. (2005), “Strategic business nets—their type and management”, *Journal of Business Research*, Vol. 58 No. 9, pp. 1274–1284.
- Morris, M., Schindehutte, M. and Allen, J. (2005), “The entrepreneur's business model. Toward a unified perspective”, *Journal of Business Research*, Vol. 58 No. 6, pp. 726–735.
- Nambisan, S. and Sawhney, M. (2011), “Orchestration processes in network-centric innovation: Evidence from the field”, *The academy of management perspectives*, Vol. 25 No. 3, pp. 40–57.
- Nenonen, S. and Storbacka, K. (2010), “Business model design. Conceptualizing networked value co-creation”, *International Journal of Quality and Service Sciences*, Vol. 2 No. 1, pp. 43–59.
- Ondrus, J., Gannamaneni, A. and Lyytinen, K. (2015), “The impact of openness on the market potential of multi-sided platforms: a case study of mobile payment platforms”, *Journal of Information Technology*, Vol. 30, pp. 260–275.
- Osterwalder, A. (2004), *The Business Model Ontology. A Proposition in a Design Science Approach*.
- Osterwalder, A. and Pigneur, Y. (2003), “An ontology for e-business models”, in Currie, W. (Ed.), *Value Creation from E-Business Models*, Butterworth-Heinemann.
- Osterwalder, A. and Pigneur, Y. (2010), *Business model generation: a handbook for visionaries, game changers, and challengers*, John Wiley & Sons.
- Osterwalder, A., Pigneur, Y. and Tucci, C.L. (2005), “Clarifying Business Models: Origins, Present, and Future of the Concept”, *Communications of AIS*, Vol. 15, pp. 1–43.
- Palo, T. and Tähtinen, J. (2013), “Networked business model development for emerging technology-based services”, *Industrial Marketing Management*, Vol. 42 No. 5, pp. 773–782.
- Parker, G.G., van Alstyne, M.W. and Choudary, S.P. (2016), *Platform Revolution. How networked markets are transforming the economy and how to make the work for you*, W.W. Norton & Company, Inc., New York.
- Porter, M. (1980), *Competitive strategy*, Free Press, New York.
- Porter, M. and Siggelkow, N. (2008), “Contextuality within activity systems and sustainability of competitive advantage”, *The academy of management perspectives*, Vol. 22 No. 2, pp. 34–56.

- Porter, M.E. (1985), “Competitive advantage: Creating and sustaining superior performance. 1985”, *New York: FreePress*.
- PWC (2017), “Workforce of the future. The competing forces shaping 2030”, available at: <https://www.pwc.com/gx/en/services/people-organisation/workforce-of-the-future/workforce-of-the-future-the-competing-forces-shaping-2030-pwc.pdf> (accessed 09.03.18).
- Rochet, J. and Tirole, J. (2006), “Two-sided markets: a progress report”, *The RAND Journal of Economics*, Vol. 37 No. 3, pp. 645–667.
- Saebi, T. and Foss, N.J. (2015), “Business models for open innovation: Matching heterogeneous open innovation strategies with business model dimensions”, *European Management Journal*, Vol. 33 No. 3, pp. 201–213.
- Song, P., Xue, L., Rai, A. and Zhang, C. (2017), “The ecosystem of software platform: A study of asymmetric cross-side network effects and platform governance”, *MIS Quarterly*.
- Sriram, S., Manchanda, P., Bravo, M.E., Chu, J., Ma, L., Song, M., Shriver, S. and Subramanian, U. (2015), “Platforms: a multiplicity of research opportunities”, *Marketing Letters*, Vol. 26, pp. 141–152.
- Storbacka, K. (2011), “A solution business model. Capabilities and management practices for integrated solutions”, *Industrial Marketing Management*, Vol. 40 No. 5, pp. 699–711.
- Storbacka, K., Frow, P., Nenonen, S. and Payne, A. (2012), “Designing Business Models for Value Co-Creation”, in Vargo, S.L. and Lusch, R.F. (Eds.), *Special Issue – Toward a Better Understanding of the Role of Value in Markets and Marketing, Review of Marketing Research*, Vol. 9, Emerald Group Publishing Limited, pp. 51–78.
- Suchman, M.C. (1995), “Managing legitimacy: Strategic and institutional approaches”, *Academy of management review*, Vol. 20 No. 3, pp. 571–610.
- Taillard, M., Peters, L.D. and Pels, J. (2016), “The role of shared intentions in the emergence of service ecosystems”, *Journal of Business Research*, Vol. 69 No. 8, pp. 2972–2980.
- Tapscott, D., Lowy, A. and Ticoll, D. (2000), *Digital Capital: Harnessing the Power of Business Webs*, Harvard Business School Press, Boston.
- Teece, D.J. (2010), “Business Models, Business Strategy and Innovation”, *Long Range Planning*, Vol. 43 2-3, pp. 172–194.
- Thomas, L.D.W., Autio, E. and Gann, D.M. (2014), “Architectural Leverage. Putting Platforms in Context”, *Academy of Management Perspectives*, Vol. 28 No. 2, pp. 198–219.
- Timmers, P. (1998), “Business Models for Electronic Markets”, *Electronic Markets*, Vol. 8 No. 2, pp. 3–8.
- Tiwana, A. (2013), *Platform Ecosystems. Aligning Architecture, Governance, and Strategy*, Morgan Kaufmann, Waltham MA.
- Toivanen, T., Mazhelis, O. and Luoma, E. (Eds.) (2015), *Network analysis of platform ecosystems: the case of internet of things ecosystem*, Springer.
- Vargo, S.L. and Lusch, R.F. (2004), “Evolving to a New Dominant Logic for Marketing”, *Journal of Marketing*, Vol. 68 No. 1, pp. 1–17.

- Vargo, S.L. and Lusch, R.F. (2008), “Service-dominant logic: continuing the evolution”, *Journal of the Academy of Marketing Science*, Vol. 36 No. 1, pp. 1–10.
- Vargo, S.L. and Lusch, R.F. (2011), “It's all B2B...and beyond. Toward a systems perspective of the market”, *Industrial Marketing Management*, Vol. 40 No. 2, pp. 181–187.
- Vargo, S.L. and Lusch, R.F. (2016), “Institutions and axioms. An extension and update of service-dominant logic”, *Journal of the Academy of Marketing Science*, Vol. 44 No. 1, pp. 5–23.
- Vargo, S.L. and Lusch, R.F. (2017), “Service-dominant logic 2025”, *International Journal of Research in Marketing*, pp. 46–67.
- Velu, C. and Jacon, A. (2016), “Business model innovation and owner–managers: the moderating role of competition”, *R&D Management*, Vol. 46 No. 3, pp. 451–463.
- Wharton (2016), “Knowledge@Wharton”, available at: <http://knowledge.wharton.upenn.edu/article/thenetworkrevolutioncreatingvaluethroughplatformspeopleanddigitaltechnology/> (accessed 22 September 2016).
- Wieland, H., Hartmann, N.N. and Vargo, S.L. (2017), “Business models as service strategy”, *Journal of the Academy of Marketing Science*, Vol. 14 No. 1, p. 3.
- Williamson, O.E. (1975), “Markets and hierarchies”, *New York*, pp. 26–30.
- Williamson, O.E. (1983), “Organizational innovation: the transaction cost approach”, in Ronen, J. (Ed.), *Entrepreneurship*, Lexington Books, Lexington Books, MA, pp. 101–133.
- Wirtz, B.W., Göttel, V. and Daiser Peter (2016a), “Business Model Innovation: Development, Concept and Future Reserach Directions”, *Journal of Business Models*, Vol. 4 No. 1.
- Wirtz, B.W., Pistoia, A., Ullrich, S. and Göttel, V. (2016b), “Business Models. Origin, Development and Future Research Perspectives”, *Long Range Planning*, Vol. 49 No. 1, pp. 36–54.
- Yip, G.S. (2004), “Using Strategy to Change Your Business Model”, *Business Strategy Review*, Vol. 15 No. 2, pp. 17–24.
- Zhu, F. and Iansiti, M. (2012), “Entry into platform-based markets”, *Strategic Management Journal*, Vol. 33 No. 1, pp. 88–106.
- Zott, C. and Amit, R. (2007), “Business Model Design and the Performance of Entrepreneurial Firms”, *Organization Science*, Vol. 18 No. 2, pp. 181–199.
- Zott, C. and Amit, R. (2008), “The fit between product market strategy and business model. Implications for firm performance”, *Strategic Management Journal*, Vol. 29 No. 1, pp. 1–26.
- Zott, C., Amit, R. and Massa, L. (2010), *The Business Model: Theoretical Rots, Recent Developments, and Future Research*.
- Zott, C., Amit, R. and Massa, L. (2011), “The Business Model. Recent Developments and Future Research”, *Journal of Management*, Vol. 37 No. 4, pp. 1019–1042.