Controlling and enabling practices to manage supply in online service triads

van Kalsbeek, Robert; Broekhuis, Manda; Roodbergen, K.J.

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Link to publication in University of Groningen/UMCG research database

Controlling and enabling practices to manage supply in online service triads

Robert van Kalsbeek, Manda Broekhuis and Kees Jan Roodbergen
Faculty of Economics and Business, University of Groningen, Groningen, The Netherlands

Abstract

Purpose – The purpose of this paper is to understand which controlling and enabling practices are used, how the numerous supplying partners are managed and how positive network effects are generated in online service triads (multi-sided platform – supplying partners – consumers).

Design/methodology/approach – A single representative in-depth case study was conducted to refine theory on managing service triads. The main data source consists of field notes collected by one author, who held a temporary position within the organization. Additional data were collected from observations, internal documents, informal talks and 20 interviews.

Findings – The authors found controlling and enabling organizational practices in four main categories on two levels as follows: managing network composition (system level), managing order fulfillment and returns (operations level), category management (both levels) and capability enhancement (both levels).

Research limitations/implications – The authors show that both controlling and enabling practices are present in online service triads. This enables platform owners and supplying partners to share responsibilities for creating positive network effects, i.e. to increase scale, which increases value, which again attracts more suppliers and consumers, which creates more value, etc.

Practical implications – The authors present a range of and controlling and enabling practices that describe how multi-sided platforms can manage numerous supplying partners in an online context.

Originality/value – This study is the first to show that contractual and relational governance is insufficient in service triads in online settings with numerous supplying partners. Further, the authors provide empirical evidence that supply networks continuously adapt over time.

Keywords Service, Control systems, Network organization, Supplier relationships, Collaboration, E-Commerce, Supply network, Controlling, Service triad, Multi-sided platform, Enabling practices

Paper type Research paper

1. Introduction

Service supply chain management has had to change because of the increasing use of online service channels for communicating and providing services to consumers. Consumers can order their products from home 24/7, with subsequent same-day or next-day delivery. This transition changes the roles of existing actors and opens opportunities for new actors in the supply chain. On the supply side, many companies, increasingly rely on digitally enabled services that require an end-to-end perspective between service providers and consumers. Through using information and connected technologies, multi-sided platforms now serve as intermediaries between consumers and suppliers (Hagiu and Wright, 2013). These platforms use an open business model that relies on independent participants (Parker *et al.*, 2016) aiming to co-create and appropriate value (Eisenmann *et al.*, 2006; Gawer and Henderson, 2007; Armstrong, 2006). Importantly, value appropriation can occur by generating positive network effects, i.e. a feedback loop where larger scale generates more value, which, in turn, attracts more suppliers and consumers, which, in turn, creates more

value, etc. (Van Alstyne *et al.*, 2016). Although various kinds of multi-sided platforms have emerged in many industries, we focus on multi-sided platforms that exchange tangible products and focus on business to consumer (B2C) transactions (Täuscher and Laudien, 2018). The competitive advantage of these multi-sided platforms is ultimately in the number of efficient transactions and the associated network effects (Van Alstyne *et al.*, 2016; Täuscher and Laudien, 2018). Within this triadic structure, made up of the platform, supplying partners and consumers, the numerous suppliers have to be managed. This research focusses on the controlling and enabling practices that the multi-sided platform uses in this service triad to grow and to enhance value.

Recent literature has explored various ways in which multi-sided platforms govern their supplying partners such as by using different strategies (Wan *et al.*, 2017; Hagiu and Spulber,

2013), by applying different ways to capture value (Täuscher and Laudien, 2018; Smedlund, 2012) or by establishing the interface rules and varying the level of openness: *A platform [...] must be open such that third parties can exchange value and it must have governance such that participants abide by the rules* (Wan *et al.*, 2017, pp. 2-3). Notably, multi-sided platforms have to find an acceptable balance in attracting a high volume and/or an exclusive set of supplying partners to their platform to become an attractive and innovative offering (Ondrus *et al.*, 2015), while at the same time they need to manage these supplying partners, which involves considerable effort plus coordination and control costs, as misbehaviour and poor performance by some supplying partners could cause other partners to leave the platform (Hagiu and Wright, 2015b; Parker and Van Alstyne, 2018; Thomas *et al.*, 2014). A recent study by De Reuver *et al.* (2018) for instance showed that a lack of control led to poor performance. Despite the recognition that multi-sided platforms often struggle with the key decision of how to control their numerous suppliers, scholarly literature offers only limited insights. Filling this gap warrants attention. In response, the purpose of this study *is to understand, which controlling and enabling practices are used, how the numerous supplying partners are managed and how positive network effects are generated in online service triads*. In this study, the online service triad consists of a multi-sided platform, supplying partners and consumers.

With this study, we make three important contributions. Our first contribution is to advance the understanding of governance in online service triads with numerous suppliers. A multi-sided platform, supplying partners and consumers create a triadic relationship in which the platform facilitates the interaction and service delivery between consumers and supplying partners, while the supplier directly delivers the service to the platform's consumers. All three actors relate to each other, and they are performance and relationship dependent (Choi and Wu, 2009). For this reason, we ground our research in the theory of governing service triads (Wynstra *et al.*, 2015). In service triads, the performance of the service delivery is dependent on how the actors, and the relationships between them, are managed (Van der Valk and Van Iwaarden, 2011). Although an increasing stream of research into how to govern service triadic relationships has appeared, the focus is often on the prolonged relationship between buyer and supplier in a context where the buyer has to manage a limited number of suppliers (Van der Valk and Van Iwaarden, 2011; Van Iwaarden and Van der Valk, 2013; Broekhuis and Scholten, 2018; Bastl *et al.*, 2019). In online service triads, such as a multi-sided platform that facilitates the service delivery of numerous supplying partners, some of the potential ways of managing suppliers such as the use of pre-contractual bonding (Broekhuis and Scholten, 2018), mutual adjustment (Bastl *et al.*, 2019), intense information sharing (Karatzas *et al.*, 2017) and the use of one-to-one contacts might be unrealistic due to cost limitations.

Our second contribution is that we provide in-depth insights into how a multi-sided platform manages its supplying partners through applying a range of management practices on two managerial levels. We show the combined use of management practices that aim to control plus others that aim to enable supplying partners to make their own decisions. The level of openness towards the supplying participants of a platform is seen as a key topic in the governance of multi-sided platforms. Eisenmann *et al.* (2009) describe platform openness using two dimensions:

1. access, referring to which suppliers are allowed to act on the platform; and
2. authority, referring to what an actor is allowed to do on the platform.

A high level of openness implies that there are hardly any restrictions on becoming a supplying partner (access), and/or in terms of, for instance, conforming with technical standards and paying licensing fees (authority) (Eisenmann *et al.*, 2009). Governance in terms of varying the level of openness has been discussed in the literature, although the focus has primarily been on the access dimension (Kumar *et al.*, 2008; Wan *et al.*, 2017; Boudreau, 2010). However, we show in our study how a multi-sided platform deploys a deliberate range of control practices while also providing considerable room for partners to manage themselves.

Our third contribution is that we show and explain a phenomenon that is often described in the literature but not empirically well-founded. We show how these platforms and their supplying partners constitute service supply networks that have purposeful interconnections and relationships that may change over time (Andersen and Christensen, 2005, p. 1261). The strength of these at least partly self-organizing systems seems to be that they make optimal use of the power and capabilities of individual firms to respond effectively to contingencies (Choi *et al.*, 2001; Mitleton-Kelly, 2003) This might evoke new, emerging collaboration practices and, as a result, a highly dynamic, adaptive and agile set of management practices to satisfy consumer demands (Surana *et al.*, 2005; Weick, 2000).

The remainder of this paper first discusses the theoretical background to our research in Section 2. We present the literature on governing service triads and then continue by discussing governing multi-sided platforms by setting the level of openness. Subsequently, we dive deeper into the authority dimension of openness based on various literature streams that discuss the concept of authority provision. Section 3 presents a methodology that involves a single in-depth case study in a large retail multi-sided platform that acts in various highly competitive markets. Especially in this context, platforms have to develop innovative managerial practices to sustain and survive and have to be very adaptive in meeting various and highly dynamic consumer needs while, at the same time, guaranteeing optimal delivery and availability. After detailing our findings in Section 4, we discuss their significance, the limitations of our study and offer recommendations for further research in Section 5.

2. Theoretical background

2.1 Governance in service triads
Actors in service triads are faced with the potential alteration of their roles. More than in traditional settings, the success of the buyer, i.e. the multi-sided platform, depends on the performance of the suppliers in situations where the suppliers directly deliver their services to the buyer's consumers (Wynstra *et al.*, 2015; Li and Choi, 2009). The buyer acts as a bridge between supplier and consumer, i.e. the buyer connects

supplier and consumer or as a solution integrator (Finne and Holmström, 2013; Karatzas *et al.*, 2016). In this situation, the buyer is vulnerable to opportunistic behaviour by the supplier (Li and Choi, 2009). The final consumers might experience delivery as provided by the buyer, and hold the buyer responsible and accountable for a supplier's bad performance. Furthermore, if the consumer no longer experiences value from the buyer, the supplier can decide to bypass the buyer (Mena *et al.*, 2013). This would result in the buyer losing its position as a bridge or losing an essential part of their service package. Due to these risks, it is important for the buyer to control and safeguard the relationship with the suppliers and to align the interests of all three parties (Wynstra *et al.*, 2015).

Controlling buyer–supplier relationships often involves an interplay between contractual and relational governance (Cao and Lumineau, 2015). Contractual governance is the formal relationship in which a contract is crafted and managed, whereas relational governance encompasses the informal relationship and is formed by trust and relational norms (Huber *et al.*, 2013). A few studies have addressed how buyers in a triadic relationship control their suppliers. These studies first showed the relevance of closing the contract and managing formal behaviour, and establishing outcome-based contracts between the buyer and suppliers to control the third-party relationship between supplier and consumer (Van der Valk and Van Iwaarden, 2011; Van Iwaarden and Van der Valk, 2013), while others also addressed the relevance of building trust between buyer and supplier (Peng *et al.*, 2010). More recent literature demonstrates the relevance of intense interpersonal and electronic information exchange, high-level operational linkages, a moderate level of relationship formalization and having legal bonds, as well as the relevance of sharing cooperative norms such as mutuality, durability and flexibility (Karatzas *et al.*, 2017), while also building a social contract in the pre-contractual stage (Broekhuis and Scholten, 2018). Further, Holma *et al.* (2015) found that controlling suppliers and establishing their commitment to complying with the buyer's policy is essential, while Wuyts *et al.* (2015) found that a close relationship between supplier and consumers and relatively stable consumer requirements are essential elements in assuring the service quality provided by the suppliers. Recently, Bastl *et al.* (2019) showed that both control and coordination mechanisms are required and that using these mechanisms is not the responsibility of a single actor (the buyer), but the shared responsibility of two or maybe all three actors depending on the context.

It is important to note that the context of many of the above studies is one where buyers cooperate with a limited number of suppliers, and/or the supplier is physically present in the buyer's facilities to deliver support services (such as cleaning and security services) (Van der Valk and Van Iwaarden, 2011; Van Iwaarden and Van der Valk, 2013) or core services (Broekhuis and Scholten, 2018; Bastl *et al.*, 2019). Here, the buyer has the option of interpersonal contacts with the suppliers (Wuyts *et al.*, 2015; Finne and Holmström, 2013). This context is in contrast to multi-sided platforms. Using extensive and detailed formal contracts and close performance management, while building trusting and close relationships, is hardly realistic when buyers have to deal with a large number of suppliers and interpersonal contacts would require extensive resources. An

exception regarding the limited number of suppliers involved, is the study by Finne and Holmström (2013). This study discusses how a single large technical equipment firm (the buyer) managed their accompanying services delivered by numerous suppliers from all over the world. However, their study only discusses the issue of what should be delivered by the suppliers as against by the firm itself and ignores the tactical and operational managerial issues that are associated with the large number of transactions that a platform owner, as a buyer, has to deal with when outsourcing their core services.

2.2 Controlling and enabling practices in multi-sided platforms

2.2.1 Multi-sided platforms

A multi-sided platform acts in a triadic structure as an intermediary between suppliers and consumers in such a way that it facilitates interactions and transactions between them (Parker *et al.*, 2016), and aims to co-create and appropriate value. A positive network effect occurs when the value is created for participants on both sides of the platform, the suppliers and the consumers, which in essence is created by the simultaneous growth on both sides of the platform (Parker *et al.*, 2016). The more suppliers who offer their products, the more consumers it will attract and vice versa (Parker *et al.*, 2016). A negative network effect occurs when the promised value is not delivered (Hagiu and Wright, 2013). In that situation, the value for the participant's decreases and this is likely to result in a negative downward spiral (Parker *et al.*, 2016). The essence of multi-sided platforms is that they enable direct interactions between two or more distinct sides of the platform and that these sides retain control over the key terms of the interaction. Each side is affiliated to the platform implying that users on all sides make investments that facilitate direct interaction with each other (Hagiu and Wright, 2015b).

Nowadays, a huge variety of multi-sided platforms exist, with different ways of creating, delivering and capturing value. In this paper, we focus on multi-sided platforms that aim to facilitate transactions of physical products, usually from B2C, with greater efficiency and lower prices (Täuscher and Laudien, 2018). In this type of platform, the supplier sells its product(s) directly to the consumer (Eisenmann *et al.*, 2011). Exchanges in these platforms have a triangular structure (Eisenmann *et al.*, 2006) and, to prevent market failures, some control has to be applied to ensure healthy participant interactions (Parker and Van Alstyne, 2016), and therefore a platform should provide a regulatory framework for interactions (Täuscher and Laudien, 2018).

2.2.2 Managing openness in online service triads

A crucial aspect in controlling and maintaining multi-sided platforms is selecting optimal levels of openness (Eisenmann, 2008). Although, in this study, we focus on supplier openness, managing the openness towards demand-side users (consumers) also profiles a platform. The level of openness is determined by two dimensions:

1 *access*: who is allowed to participate in the platform – a form of input control; and
2 *authority*: who is authorized to take, which decisions.

Allowing *access* to a large number of suppliers (high level of openness) might lead to an attractive assortment and increase

consumers' choice, cross-selling and profitability (Kumar *et al.*, 2008). However, it also leads to greater dependency on suppliers, the need to develop an effective value-capturing model (Täuscher and Laudien, 2018) and maybe even strong competition between suppliers, which might be both a risk and an advantage. It is also clear that managing numerous suppliers requires considerable coordination and control as a platform wants to prevent the delivery of poor products and services.

The *authority* dimension of openness is addressed much less often. In the context of multi-sided platforms, it refers to which decisions a multi-sided platform transfers to its suppliers. Hagiu and Wright (2015b) observe that where the interaction involves trading, the key decisions in the interaction could cover the pricing, bundling, marketing and delivery of the products traded, and the terms and conditions. Platforms can use a very restrictive controlling strategy, which brings them close to the reseller business model, *as they control the relevant decision variables such as marketing activities and prices* (Hagiu and Wright, 2015b, p. 164). However, which decisions should be taken by the platform, and which decisons could be handed over to suppliers, these issues have hardly been addressed in the literature.

2.2.3 Controlling and enabling practices
As highlighted earlier, different contractual and relational governance mechanisms are used in triadic relationships for the effective retention of control and coordination. Here, the authority aspect adds to this debate by raising the issue as to *which party or parties in the triad have the authority to control*. The large dependency that a platform might experience on its suppliers is posited to require considerable control and coordination, and because of the triadic structure, Bastl *et al.* (2019) argued that buyers, suppliers and customers share the responsibility for controlling and coordinating their dependencies. Investigating control in triads with longer-term relationships between buyer, supplier and even customers, they concluded that this depends on the risk exposure and substitutability of the offering. Hagiu and Wright (2019) make a distinction between controlling, where the principal (i.e. the buyer) keeps control over all decisions and enabling, where control over transferable decisions is handed over to the agent (i.e. supplier). They discuss the distinction between controlling and enabling in a context where a firm has to decide between using professionals (labelled as control) or operating as a platform enabling independent professionals to provide services directly to consumers (independent contracting, labelled as an enabling strategy). The contrast between controlling and enabling motivated their theoretical study of a platform's choice as to whether to retain decision authority or to grant it to independent professionals. Although their insights are helpful, they do not provide an empirically driven and in-depth understanding of what kinds of decisions a multi-sided platform might hand over to its numerous suppliers and what they decide for themselves. The conceptual model in Figure 1 provides a graphical display of our research focus.

Research in dyadic service networks shows that applying overly lose control can provide considerable flexibility but might in the whole supply network ending up in disorder. Conversely, overly rigid control will lead to less effectiveness and innovation in the network (Li *et al.*, 2010). When firms in a

Figure 1 Conceptual model
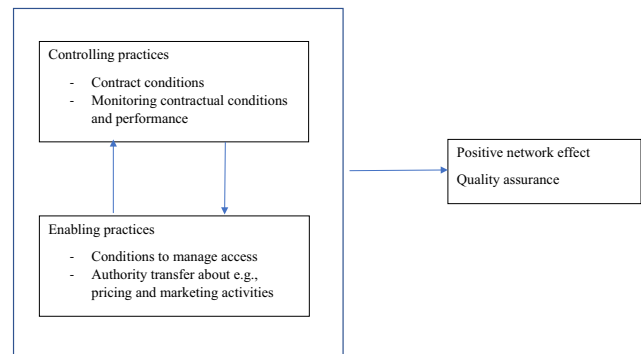
network have relatively greater autonomy, the network will deliver more creative and more adaptive responses (Choi *et al.*, 2001), which is relevant for networks that operate in a dynamic environment (Christopher and Holweg, 2011). This way of thinking and acting creates new temporal structures and collaborations in the network. Accordingly, one needs to understand how multi-sided platforms, on the one hand, use controlling practices to assure a high service quality and create a positive network effect, while, on the other hand, use enabling practices to optimally use the adaptive resources of suppliers.

3. Method

3.1 Main methodology and setting
This study aims to empirically and in-depth investigate how numerous suppliers in an online setting and in a triadic structure are managed such that they generate a positive network effect. Given that this topic is underexplored and that we aim to refine the theory on how to manage suppliers in an online service triad context, a case study was an appropriate approach. To investigate our phenomenon, a selected case had to show a high level of awareness of how supplying partners are managed and demonstrate a high level of "matureness" and "successfulness" in managing the multi-sided platform. It was assumed that, in such a case, the platform had been able to make sound and informed decisions about how to manage these parties. A single typical case was selected (Yin, 2014) to explore in-depth and richly describe this complex phenomenon (Siggelkow, 2007).

3.1.1 Setting
E-retailers became the first adopters of the multi-sided platform business model to source and sell products to consumers. Therefore, we expected e-retailers to be best placed to offer comprehensive insights into our research topic. For this reason, this study was conducted at a large e-retailer that had adopted the multi-sided platform business model. At the time of the study, the firm's offering included more than 15 million products. To offer its consumers this enormous variety of products, the e-retailer collaborated with over 25,000 supplying partners. Initially using only a reseller proposition, where products were bought from suppliers, kept in stock and then sold to consumers, the organization had developed into a hybrid model where consumers can buy directly, through an

online marketplace, from supplying partners. Our unit of analysis is the platform with its supplying partners.

3.2 Data collection and analysis

The focus in collecting data was on uncovering how the multi-sided platform managed their supplying parties and what kind of decisions they made themselves while handing over others to these suppliers. Our main access to data was through one of the researchers who had a temporary position in the organization for over two years. This allowed the collection of considerable data from within the organization by attending many meetings and observing actors while discussing and deciding how to control the supplying partners. Strategic-level data were collected by attending formal meetings at the highest managerial level and through informal discussions with managers. On the tactical level, meetings of the operations and purchasing departments were attended. Here, data collection focussed on how, and in particular why, contacts with supplying partners were created or terminated and how created and existing contacts were managed. On the operational level, day-to-day activities in the contacts with the supplying partners were observed. These activities produced many field notes. For data triangulation purposes, additional data were collected from sourcing contracts, procedural descriptions and handbooks about, for instance, introducing new categories and logistics, internal presentations and factsheets, plus semi-structured interviews with the operations director, marketing director, purchasing officers, operations managers, financial supporting staff and market managers. In total, 20 interviews were conducted. All three researchers evaluated all the data that were accessible to them all.

After this period of data collection, a process of "debriefing" started. As one of the researchers had been deeply involved in the organization, the other two researchers questioned this researcher over several meetings to organize the data that had been collected. In the next stage, all the data were put in a database. We started with a few, very broadly defined, deductive codes, based on our literature study, to decide which practices could be labelled as controlling or enabling. In the next coding phase, we aimed to inductively supplement and refine the coding within these two broad categories. In this stage, we also saw that controlling and enabling practices were deployed on two aggregation levels, namely, on the strategic level of the platform and its partners and on the daily operations level. Therefore, we established two embedded levels to be analysed within our unit of analysis. Finally, we analysed how the mix of different practices on each level contributed to the performance and how trade-offs between performance aspects were realized. In this way, we were able to assess how this large e-commerce firm used a mix of controlling and enabling practices to meet their set of performance standards.

We deployed several techniques to ensure methodological rigour. To ensure internal validity and that any conclusions were unbiased and logically derived from the data, we created a case study database. We extensively discussed tables and figures that were constructed by the first author to explain relationships establishing how and why constructs influence each other, and we discussed rival explanations. Reliability was enhanced by basing the specifications of our main constructs on the literature, by developing an interview protocol and having

two researchers who were not involved in the empirical fieldwork analyze the data. Construct validity was enhanced by using several sources to triangulate our findings and by using established main constructs as the starting codes during the coding process.

4. Findings

As already noted, we found that controlling and enabling practices of the organization occur on two following distinct levels of the organization: on the *system level*, which encompasses practices of a more strategic nature that are aimed at constituting the network, and on the *operations level* where daily processes are executed. The findings for each level are elaborated below (Sections 4.1 and 4.2). Furthermore, we have regrouped and condensed the same findings to create Table 3 as presented in Section 4.3 to better illustrate the process from entry to exit of a supplier in the platform's network.

The rapid growth of the network, in terms of the number of supplying partners and assortment, has led to rapid growth in the volume of daily operations. The main challenge the platform itself identified was to facilitate this growth and at the same time realize a high level of delivery reliability with efficient processes at a manageable cost. Overall, this platform appeared to have achieved its main aims. Annual growth in sales volume of more than 20 per cent (2012-2016) coupled with an improved delivery performance (above 98 per cent) provided evidence that the e-commerce platform was able to manage these balancing challenges and that the services provided by supplying partners directly to consumers were appreciated by consumers.

4.1 Controlling and enabling practices on the system level

The system level is considered to encompass those practices that are directly targeted at network effects, i.e. practices that improve the value of the platform by increasing the number of supplying partners and by increasing the activity of each supplying partner. Based on our observations, we identified three main categories of controlling and enabling practices that are aimed at fostering network effects, namely, managing network composition, category management and capability enhancement (Table 1).

4.1.1 Managing network composition

We saw that the platform puts effort into expanding the network of supplying partners, reflecting their overarching attitude that they described as "open heart, open mind, open will". This attitude reflects the belief that, for the platform to be successful, supplying partners should also benefit from that success, a view formulated in their "fair value-sharing principle". Above all, this principle serves to guide strategic decisions by the platform's management team. As a clear example of policies that result from this, partners pay no fixed fees to the platform rather fees are directly tied to the turnover a partner generates on the platform.

The process for applying to become a supplying partner entails little more than filling out a web-based form, and selling can start just two days after that. Supplying partners have considerable freedom, including the possibility to participate on other platforms. This open approach, we found, has resulted

Table 1 Controlling and enabling practices used at the system level

System-level	Enabling practices	Controlling practices
Managing network composition	No exclusivity obligations for supplying partners (multi-homing is allowed)	Platform sets conditions and procedures for entry and exit of supplying partners
	Attitude of "open heart, an open mind and open will"	Platform has contract composition procedures (legislation, level of detail and warranties)
	Fair value sharing principle	Platform monitors supplying partners on contractual conditions
Category management	Supplying partner manages a within-category assortment	Platform decides on the introduction of new assortment categories
	Supplying partner decides on pricing strategies	Platform monitors overall assortment variety
	Supplying partner decides on merchandising	Platform monitors assortment compliance and activity of supplying partners
Capability enhancement	Platform shares knowledge about online business (how to improve conversion)	Platform actively monitors supplying partners on their performance
	Platform shares commercial knowledge about markets and categories	Platform imposes action paths on low performing supplying partners
	Platform provides their supplying partners with actionable dashboards with performance indicators	

in new supplying partners continually emerging on the platform. The network's composition literally changes from day to day, without the platform owner having a strong orchestrating role.

Nevertheless, these *enabling practices* are supported by *controlling practices*. First, controlling practices are used in managing the entry of new supplying partners. While the platform owner applies "easy-to-use procedures" for adding new supplying partners, these, despite their apparent simplicity, constitute a binding contract between supplying partner and platform. This contract forces the supplying partner to comply with a series of conditions and regulations. As an example, supplying partners must allow consumers to return purchased products within 30 days completely free of charge. In addition, clear legal restrictions are provided to protect the platform against misuse, such as the offering of illegal content. As one of its controlling practices, the platform actively monitors the activities of its supplying partners to verify conformance with the set conditions. Supplying partners that breach the contract may be removed from the platform.

In this way, controlling and enabling practices together create the conditions for a dynamic, but simultaneously safeguarded network composition. On the one hand, supplying partners can enter or leave the platform freely, and sell products as they choose (Section 4.1.2) but, on the other hand, contracts are drawn up such that the platform can force supplying partners to conform with certain procedures and conditions to preserve quality standards and a unified image towards the consumers. More supplying partners and more products on the platform attract more consumers, and vice versa: "every partner on the platform must have the opportunity to grow" *(Marketing Director)*.

4.1.2 Category management

Practices were labelled as *category management* when they impact on the assortment of products offered on the website, the prices of these products or the way these products are promoted. Category management was apparent on both the system level and the operational level. System-level decisions

are driven by marketing considerations, and described here, whereas operational-level decisions are driven by logistics considerations, such as available inventory and are discussed in Section 4.2.2.

The underlying vision as expressed by the platform is to provide "a self-organizing environment" in which supplying partners have complete decision autonomy when it comes to assortment composition, pricing strategy and how they represent the assortment (i.e. merchandising). The data show that using such enabling practices results in fast and flexible changes on a daily basis to the assortment and in a broad assortment.

At the same time, a number of controlling practices are in place that places limits on the self-organization by supplying partners. The platform determines the main assortment categories, and supplying partners are not allowed to offer products on the platform outside those categories. The platform also actively monitors compliance. For example, during the period of our research, the platform added the product category "jewellery and watches". Previously, products in this category had not been offered on the platform but, on its introduction, more than 25,000 different products were soon being offered in this category.

We consider this approach to expanding product categories to be a clear demonstration of how the platform balances controlling and enabling practices. The operating managing director of the platform formulated this as:

> A network is founded on freedom. Freedom with a certain amount of regulation. What you offer and what you sell is a free choice for the supplying partner, but the platform regulates the way of working and in fact determines the rules of the game.

Thus, while supplying partners are allowed to introduce new products within existing categories (enabling), the platform sets the date for new product category introductions and monitors compliance (controlling). The platform believes that this approach provides the ideal blend to achieve positive network effects by expanding offerings and sales, while not disappointing consumers by offering too few products in a category.

4.1.3 Capability enhancement

The platform owner aims to offer a setting in which supplying partners are enabled and stimulated to develop and grow. We saw that once supplying partners join the platform, the platform provides a broad and rich range of enabling practices that stimulate active and innovative learning by the supplying partners. The platform provides information on successful approaches to online business, and commercial knowledge about markets and product categories, which supplying partners can use to enhance their effectiveness. During our study, the provision of personalized feedback to supplying partners was rapidly developing. In this way, the platform enables supplying partners to independently improve their performance by offering various actionable dashboards with performance information (returns, turnover, etc.), delivery reliability and commercial (sales) data.

At the same time, supplying partners are also expected to actively monitor and improve their capabilities. Controlling practices are in place to monitor the performance of supplying partners. Based on automated system alerts or human intervention, poorly performing supplying partners, maybe in terms of on-time delivery, are urged to improve their performance. Action paths are prescribed for supplying partners to follow in such circumstances. This platform has chosen this approach, as the creation of positive network effects requires the platform to be attractive to both supplying partners and consumers. In the platform's view, attractiveness is closely related to the creation of consumer-friendly conditions. As the plaza director explained: "the principle we use is to move from 'being a shop' to 'adding value'. The value we add includes delivery reliability and delivery timeliness".

4.2 Controlling and enabling practices on the operations level

The way in which transactions in the network are handled and how performance is secured is given shape on the operations level. The main challenge we found on this level is to prevent a negative network effect taking place due to market failures such as poor delivery performance, while at the same time facilitating a rapid growth in the number of transactions and shipments. The operations department is tasked with realizing these objectives at a manageable level of costs. Our observations revealed three main categories of controlling and enabling practices aimed at fostering network effects, namely, managing order fulfillment and returns, category management and capability enhancement (Table 2).

4.2.1 Managing order fulfillment and returns

Enabling practices are central to the management of order fulfillment and of the returns process. The supplying partners are responsible for managing and executing the warehousing and administrative tasks related to retrieving, packing and shipping orders. Further, supplying partners manage the processing of returns, both administratively, as well as shipping and warehousing, themselves. Inventory management is the sole responsibility of the supplying partners. This leads to offers changing daily on the e-commerce platform as an alternative supplying partner may offer delivery when another is out of stock. As such, the same product may be being offered with different delivery conditions or a product may automatically disappear from the e-commerce platform.

The platform showed itself to be striving to enable supplying partners to safeguard the quality of their order fulfillment and returns processes. However, we would classify many of the instruments deployed to achieve this goal as controlling practices. To ensure a consistent quality of information, the platform prescribes data exchange protocols for order status information such as a delivery address, product information and promised delivery time. Furthermore, to communicate with consumers, the supplying partners are obliged to use dedicated IT systems provided by the platform. To safeguard performance and the promises made to the consumer such as the delivery date and time, standardized messaging (e.g. orders, cancellations) is applied in all communications to consumers. Standard operating procedures must be followed for various aspects including the logistics for returning goods from consumers and for the corresponding crediting activities.

Table 2 Controlling and enabling practices used at the operations level

Operations level	Enabling practices	Controlling practices
Managing order fulfillment and returns	Supplying partner manages inventories	Platform prescribes data exchange protocols for order status information
	Supplying partner coordinates order management and shipment	Platform provides and prescribes dedicated systems for communication with consumers
	Supplying partner coordinates returns processing	Platform imposes conditions on procedures for order fulfillment, returns, payments and repairs
Category management	Supplying partner manages addition, removal and change of listed products	Platform prescribes data exchange protocols for website content
	Supplying partner manages website content (product information, pictures and logistics parameters)	Platform prescribes frequency of data exchange
	Supplying partner manages pricing and offers	
Capability enhancement	Platform provides a tool for daily assortment management	Platform automatically monitors order fulfillment and returns processes
	Platform provides a tool for monitoring fulfillment (orders, cancellations and returns)	Platform monitors procedural compliance
	Platform provides a tool for daily process analyses	

4.2.2 Category management

Supplying partners are given full responsibility for the daily category management. That is, they manage the addition, removal and changing of listed products themselves. Website content such as product information and photographs is also carried out by the supplying partners directly. Website content also includes logistical parameters, such as the promised delivery time. Finally, the supplying partner manages pricing and offers directly.

The controlling practices put into place to safeguard this inherently enabling approach to category management include prescribed data exchange protocols for website content, along with a prescribed frequency of data exchange.

4.2.3 Capability enhancement

The operations-level *enabling practices* related to capability enhancement are expressed in terms of providing supplying partners with tools to organize and manage themselves. For instance, supplying partners can make use of supporting tools to manage their daily assortment and to monitor order fulfillment. These tools aim to enable supplying partners to manage their assortment offered on the platform on a daily basis and to check and act upon their operational delivery performances. For instance, smart algorithms have been developed to identify delivery obstructions throughout the supply network and to enable supplying partners to trace for themselves where possible delivery issues occurred.

This operations-level daily performance monitoring in terms of returns and repairs was, for some supplying partners, a unique selling point. Selected supplying partners that offer a return and/or repair services could monitor and communicate directly through the system with consumers on the status of their returns and/or repairs in the form of figures and an image. Further, the platform owner supports supplying partners in managing their own inventories, for instance by sharing forecast information with them.

To control daily performance and for other functions, such as to prevent misleading product information, a "call to action" procedure was designed. Here, an operational data quality dashboard monitors if the offered goods fulfill the requirements set by the e-commerce platform.

4.3 From (potential) entry to (potential) exit of a partner

In Sections 4.1 and 4.2 above, we have described the interplay between controlling and enabling practices in a structure that highlights these practices based on the distinction between system and operations level. We have also organized the same practices as described in Tables 1 and 2 into a different and more condensed format to highlight the temporal dimension of the various practices. The result of this is presented in Table 3. Roughly speaking, the table – from top to bottom – follows a partner from its entry into the network until its exit from the network and the controlling and enabling practices that come into play in the various stages.

Initially, a (potential) partner and the platform have to decide upon entry of the partner into the network. The platform requires partners to agree on a binding contract that lists a number of conditions and procedures the partner has to comply with (a controlling practice). At the same time, the platform imposes virtually no other barriers for entry, and potential partners are free to participate as they choose, albeit within the boundaries set by the contract (an enabling practice). Once a partner has entered the network, its process execution has to comply with a number of requirements set by the platform, concerning standard operating procedures, data exchange, etc. (a controlling practice). However, other than that, the partner is completely free to select its offered assortment, the products' prices, inventories level that are kept, etc. (an enabling practice).

Over time, it is in the interest of both the platform and partner to aim at improving processes to achieve higher customer satisfaction and sales rates. To this end, the platform has compulsory monitoring systems (a controlling practice). However, these systems are primarily aimed at supporting and stimulating the partner to improve its own performance itself (an enabling practice). Only for the situation if a partner does not perform well, predefined action paths are available that can be invoked (a controlling practice). The partner may initially receive kind reminders to try and improve performance, training may be offered to the partner or tailor-made

Table 3 Overview of controlling and enabling practices from entry to exit of a partner on the platform

Timeline/activity	Enabling practice	Controlling practice
Entry decision for a partner	No exclusivity obligations for supplying partners (multi-homing is allowed) Attitude of "open heart, an open mind and open will" Fair value sharing principle	Platform sets conditions and procedures for entry of supplying partners Platform has contract composition procedures (legislation, level of detail and warranties)
Process execution	Supplying partner manages within-category assortment, pricing and merchandising, inventories, order management, shipments and returns, website content	Platform prescribes assortment categories, standard operating procedures, communication systems, data exchange protocols and frequency of data exchange
Process improvement	Platform shares knowledge about online business, markets and categories Platform provides their supplying partners with actionable dashboards and various tools for improving their own performance	Platform monitors compliance on contractual conditions and procedures Platform monitors performance in order fulfillment and returns processes
Upon low performance		Platform imposes action paths on low performing supplying partners
Exit decision for a partner	Attitude of "open heart, open mind, open will" (i.e. partner may decide to exit for its own reasons)	Platform sets conditions and procedures for the (forced) exit of supplying partners

suggestions can be given. If the partner consistently has too low performance and exit procedure can be initiated (controlling practice). Also, partners are free –based on their own valuation of trade-offs– to exit the platform at any time they choose (an enabling practice).

5. Discussion and implications

5.1 Main findings and contributions

We have examined how within online service triads, in the form of a multi-sided platform with supplying partners and consumers, various managerial practices are used to create a positive network effect. This research topic was motivated by two main notions. First, although research into supplier governance in service triads is growing (Bastl *et al.*, 2019; Karatzas *et al.*, 2017; Van der Valk and Van Iwaarden, 2011; Broekhuis and Scholten, 2018), this is largely restricted to triads with a limited number of suppliers and where buyers and suppliers often have direct contacts. In online service triads, an almost unlimited number of supplying partners can link to the platform, and sell their products, at any moment of the day. Second, although managing supplying partners in multi-sided platforms by varying the level of supplier openness has received scholarly interest (Hagiu and Wright, 2019; Eisenmann *et al.*, 2009), it remains unclear how in practice to use openness in supplier management to generate a positive network effect in a product-based multi-sided platform. By using a theory-refining approach, in which we relied on a single, in-depth representative case study, we show how a mix of controlling and enabling practices are used at both the system and operations functional levels to manage supplying partners in a service triad.

On the system level, the following three main categories of controlling and enabling practices were identified: managing network composition, category management and capability enhancement. Managing the network composition is closely related to the access dimension of openness. By using a range of enabling practices (Table 1, 2nd row) the platform attracts a large number of suppliers (Ondrus *et al.*, 2015). However, access to the platform is not unlimited and uncontrolled because this could lead to a high risk of poor performance and ultimately result in a negative network effect. Several controlling practices are used to manage these risks. Our findings not only demonstrate that access to the platform and category management are related practices but also distinguishable. However, through the joint use of enabling and control practices and sharing responsibilities for category assortment, the studied platform was able to offer a broad assortment while allowing very fast and flexible assortment changes at low risk and costs. The platform has also used several enabling practices to enhance the capabilities of their supplying partners and to optimally exploit their assets and knowledge within the network. This has enabled it to be better equipped to react to market changes and opportunities (Van Alstyne *et al.*, 2016).

Similarly, three types of controlling and enabling practices were distinguished at the operations level as follows: managing order fulfillment and returns, operational category management and capability enhancement. Clearly, the complexity of the order fulfillment process increases when

multiple actors are involved, making a clear task division and the use and sharing of information throughout the delivery chain crucial (Van Duin *et al.*, 2016). Our data reveal that the multi-sided platform enables its supplying partners to manage these processes within the boundaries that are set by the platform and enforced by the controlling practices. Responsibilities for operational category management were also shared: supplying partners were enabled to perform most of the tasks themselves, but overarching and very visible control of these activities was executed by the platform. Interestingly, the platform provided several tools that were targeted at enhancing the capabilities of the supplying partners, enabling these partners to control themselves. This was often in the first stage of control, where the platform monitors operational performance. In a second stage, the platform could decide to take measures in the event of overly poor performance, resulting in more intensive control or even exclusion.

Our study contributes in several ways to the existing literature. First, whereas research on managing service triads has, to date, only focussed on governance of a limited number of suppliers (Karatzas *et al.*, 2016; Karatzas *et al.*, 2017; Bastl *et al.*, 2019), our study informs on how numerous suppliers can be controlled in an online service triad by using both controlling and enabling practices. Previous research has already identified important contingent factors that influence the roles that governance practices play [such as the various roles that relational governance practices have in different service triad configurations (Karatzas *et al.*, 2016)]. Our study suggests that the number of suppliers is also a relevant contingent factor. Furthermore, while previous research has shown that buyers should build strong relational and integrated relationships with their service suppliers (Bastl *et al.*, 2019; Karatzas *et al.*, 2017), this research shows that suppliers can be empowered to self-manage their performance. While long-term relationships have been developed, these are not governed by strong relational ties. Our study shows that although control is required in online service triads with a large number of supplying partners (and consumers), many managerial decisions that have in the past been undertaken by the buyer-role in the service triad are handed over to the numerous suppliers. This supports the findings of Bastl *et al.* (2019), who also found shared governance responsibilities between different partners in a service triad. More specifically, we found that enabling practices were embedded in a controlled environment. At first, this may seem contradictory, but it can be explained by the need to safeguard against market failures and prevent negative network effects. Excessive enabling might lead to disorder and undermine routines (Choi *et al.*, 2001).

Second, this study sheds light on how to understand and give meaning to the authority dimension of supplier openness. A crucial but hardly investigated topic in managing supplying partners of multi-sided platforms is "what to enable and what to control?" This study has identified a mix of enabling and controlling practices on two levels of the organization and linked these practices to three main topics, namely, managing network composition, category management and capability enhancement. Although enabling suppliers to execute many tasks on their own might be valued, in a very competitive environment it often results in fierce competition between suppliers (Zhu and Liu, 2018; Wan *et al.*, 2017). It is important

for the survival of platforms that they find a balance between cooperating with their suppliers and establishing competition between their supplying partners. This is an interesting avenue for further research (Bengtsson and Kock, 2014). Another interesting topic for further research would be the impact of different contingencies on how controlling and enabling practices are used. For instance, the importance of specific brands in a product category and/or a more stable and long-term relationship with a supplying partner might encourage even looser control or induce a more lenient response to poor performance.

Third, our study provides initial empirical evidence of service supply networks that to an extent are self-organizing and continuously changing over time. This case study, thus, elaborates on the existing literature where supply networks are seen as complex adaptive systems. Many scholars (Choi *et al.*, 2001; Surana *et al.*, 2005; Carter *et al.*, 2015) emphasize the relevance of complexity theory for supply networks, but empirical grounding for these claims appears limited. Here, we found some initial evidence for the relevance of this approach. Our findings should open the door to reappraising the traditional service supply chain management literature, which is mainly based on the paradigm of control (Christopher and Holweg, 2011). As we have seen in our case study, opening up and not completely controlling, service supply networks certainly add value. This supports the more recent theories on platform strategies (Parker *et al.*, 2016; Van Alstyne *et al.*, 2016; Eisenmann *et al.*, 2006). New collaborative practices might be evoked as these networks make optimal use of the power and capabilities of individual firms to respond effectively to contingencies (Choi *et al.*, 2001; Mitleton-Kelly, 2003).

5.2 Managerial implications and limitations

Besides the theoretical considerations, this case study can contribute to managerial practice. This study provides a clear interpretation and understanding of the authority dimension of platform openness. Similar multi-sided platforms that facilitate B2C transactions of physical products and strive for superior efficiency and lower prices (Täuscher and Laudien, 2018) could learn from our study what to control, and how and what types of decisions can be handed over to supplying partners. For instance, we showed how enabling practices related to tooling facilitated the ability to rapidly broaden the assortment on offer. Especially organizations that are transforming themselves from a reseller business model to a multi-sided platform should be aware of the potential of adopting a looser control role.

In terms of its limitations, this paper reports findings from a single representative case study, and only includes data from the buyer. However, it has investigated a multi-sided platform that is considered to be performing very well in a highly competitive international environment. This has forced the organization to continuously improve the way it manages its platform. On this basis, we believe that our study can provide valuable insights for other platforms that operate on a similar basis (Täuscher and Laudien, 2018). Nevertheless, further research is needed to establish the external validity of our findings. Moreover, we would encourage researchers to take a longitudinal perspective to reveal how enabling and controlling

practices might evolve over time, for instance changing market conditions.

5.3 Conclusions

Given the rapid growth in multi-sided platforms that function in a triadic structure, the role these platforms play in the service supply networks becomes ever more important. From the perspective of these multi-sided platforms, and from the perspective of their service-supplying partners, this research contributes to a better understanding of the underlying mechanisms that govern these inter-organizational collaborations. Our research has provided an in-depth understanding of how the service supply network creates a positive network effect by using both controlling and enabling practices on both the strategic and operational levels, accepting those responsibilities for management are shared (Eisenmann *et al.*, 2006; Parker *et al.*, 2016; Bastl *et al.*, 2019). Supplying partners have been given far-reaching responsibilities but within the boundaries of the controlling practices used by the platform. An interesting finding was that the platform, in addition to managing the composition of the network and the assortment offered, also stimulated and supported the supplying partners in reinforcing themselves through education and knowledge sharing, for example through initiating actionable dashboards.

References

Andersen, P.H. and Christensen, P.R. (2005), "Bridges over troubled water: suppliers as connective nodes in global supply networks", *Journal of Business Research*, Vol. 58 No. 9, pp. 1261-1273.

Armstrong, M. (2006), "Competition in two-sided markets", *The Rand Journal of Economics*, Vol. 37 No. 3, pp. 668-691.

Bastl, M., Johnson, M. and Finne, M. (2019), "A mid-range theory of control and coordination in service triads", *Journal of Supply Chain Management*, Vol. 55 No. 1, pp. 21-47.

Bengtsson, M. and Kock, S. (2014), "Coopetition-quo vadis? Past accomplishments and future challenges", *Industrial Marketing Management*, Vol. 43 No. 2, pp. 180-188.

Boudreau, K. (2010), "Open platform strategies and innovation: granting access vs devolving control", *Management Science*, Vol. 56 No. 10, pp. 1849-1872.

Broekhuis, M. and Scholten, K. (2018), "Purchasing in service triads: the influence of contracting on contract management", *International Journal of Operations & Production Management*, Vol. 38 No. 5, pp. 1188-1204.

Cao, Z. and Lumineau, F. (2015), "Revisiting the interplay between contractual and relational governance: a qualitative and meta-analytic investigation", *Journal of Operations Management*, Vol. 33-34 No. 1, pp. 15-42.

Carter, C.R., Rogers, D.S. and Choi, T.Y. (2015), "Toward the theory of the supply chain", *Journal of Supply Chain Management*, Vol. 51 No. 2, pp. 89-97.

Choi, T.Y. and Wu, Z. (2009), "Triads in supply networks: theorizing buyer-supplier-supplier relationships", *Journal of Supply Chain Management*, Vol. 45 No. 1, pp. 8-25.

Choi, T.Y., Dooley, K.J. and Rungtusanatham, M. (2001), "Supply networks and complex adaptive systems: control

versus emergence", *Journal of Operations Management*, Vol. 19 No. 3, pp. 351-366.

Christopher, M. and Holweg, M. (2011), "Supply chain 2.0: managing supply chains in the era of turbulence", *International Journal of Physical Distribution & Logistics Management*, Vol. 41 No. 1, pp. 63-82.

De Reuver, M., Sorensen, C. and Basole, R.C. (2018), "The digital platform: a research agenda", *Journal of Information Technology*, Vol. 33 No. 2, pp. 124-135.

Eisenmann, T.R. (2008), "Managing proprietary and shared platforms", *California Management Review*, Vol. 50 No. 4, pp. 31-53.

Eisenmann, T., Parker, G. and Van Alstyne, M. (2009), "Opening platforms: how, when and why?, in Gawer, A. (Ed.), *Platforms, Markets and Innovation*, Edward Elgar Publishing Inc., Northampton, pp. 131-162.

Eisenmann, T., Parker, G. and Van Alstyne, M. (2011), "Platform envelopment", *Strategic Management Journal*, Vol. 32 No. 12, pp. 1270-1285.

Eisenmann, T., Parker, G. and Van Alstyne, M.W. (2006), "Strategies for two-sided markets", *Harvard Business Review*, Vol. 84 No. 10, pp. 92-101.

Finne, M. and Holmström, J. (2013), "A manufacturer moving upstream: triadic collaboration for service delivery", *Supply Chain Management: An International Journal*, Vol. 18 No. 1, pp. 21-33.

Gawer, A. and Henderson, R. (2007), "Platform owner entry and innovation in complementary markets: evidence from Intel", *Journal of Economics & Management Strategy*, Vol. 16 No. 1, pp. 1-34.

Hagiu, A. and Spulber, D. (2013), "First-party content and coordination in two-sided markets", *Management Science*, Vol. 59 No. 4, pp. 933-949.

Hagiu, A. and Wright, J. (2013), "Do you really want to be an eBay?", *Harvard Business Review*, Vol. 91 No. 3, pp. 102-108.

Hagiu, A. and Wright, J. (2015b), "Multi-sided platforms", *International Journal of Industrial Organization*, Vol. 43, pp. 162-174.

Hagiu, A. and Wright, J. (2019), "Controlling vs. enabling", *Management Science*, Vol. 65 No. 2, pp. 577-595.

Holma, A.-M., Bask, A. and Kauppi, K. (2015), "Ensuring corporate travel compliance – control vs commitment strategies", *Tourism Management*, Vol. 51, pp. 60-74.

Huber, T.L., Fischer, T.A., Dibbern, J. and Hirschheim, R. (2013), "A process model of complementarity and substitution of contractual and relational governance in is outsourcing", *Journal of Management Information Systems*, Vol. 30 No. 3, pp. 81-114.

Karatzas, A., Johnson, M. and Bastl, M. (2016), "Relationship determinants of performance in service triads: a configurational approach", *Journal of Supply Chain Management*, Vol. 52 No. 3, pp. 28-47.

Karatzas, A., Johnson, M. and Bastl, M. (2017), "Manufacturer-supplier relationships and service performance in service triads", *International Journal of Operations & Production Management*, Vol. 37 No. 7, pp. 950-969.

Kumar, V., George, M. and Pancras, J. (2008), "Cross-buying in retailing: drivers and consequences", *Journal of Retailing*, Vol. 84 No. 1, pp. 15-27.

Li, M. and Choi, T.Y. (2009), "Triads in services outsourcing: bridge, bridge decay and bridge transfer", *Journal of Supply Chain Management*, Vol. 45 No. 3, pp. 27-39.

Li, G., Yang, H., Sun, L., Ji, P. and Feng, L. (2010), "The evolutionary complexity of complex adaptive supply networks: a simulation and case study", *International Journal of Production Economics*, Vol. 124 No. 2, pp. 310-330.

Mena, C., Humphries, A. and Choi, T.Y. (2013), "Toward a theory of multi-tier supply chain management", *Journal of Supply Chain Management*, Vol. 49 No. 2, pp. 58-77.

Mitleton-Kelly, E. (2003), "Ten principles of complexity and enabling infrastructures", in Mitleton-Kelly, E. (Ed.), *Complex Systems and Evolutionary Perspectives on Organisations: The Application of Complexity Theory to Organisations*, Emerald Publishing Limited, Bingley, pp. 23-50.

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 No. 3, pp. 260-275.

Parker, G. and Van Alstyne, M. (2016), "Platform strategy", in Augier M., Teece D. (Eds), *The Palgrave Encyclopedia of Strategic Management*, Palgrave Macmillan, London, pp. 1-9.

Parker, G. and Van Alstyne, M. (2018), "Innovation, openness, and platform control", *Management Science*, Vol. 64 No. 7, pp. 3015-3032.

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 Them Work for You, W.W*, Norton & Company, Inc., New York, NY.

Peng, T.J.A., Lin, N.J., Martinez, V. and Yu, C.M.J. (2010), "Managing triads in a military avionics service maintenance network in Taiwan", *International Journal of Operations & Production Management*, Vol. 30 Nos 3/4, pp. 398-422.

Siggelkow, N. (2007), "Persuasion with case studies", *Academy of Management Journal*, Vol. 50 No. 1, pp. 20-24.

Smedlund, A. (2012), "Value cocreation in-service platform business models", *Service Science*, Vol. 4 No. 1, pp. 79-88.

Surana, A., Kumara, S., Greaves, M. and Raghavan, U.N. (2005), "Supply-chain networks: a complex adaptive systems perspective", *International Journal of Production Research*, Vol. 43 No. 20, pp. 4235-4265.

Täuscher, K. and Laudien, S.M. (2018), "Understanding platform business models: a mixed-methods study of marketplaces", *European Management Journal*, Vol. 36 No. 3, pp. 319-329.

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.

Van Alstyne, M.W., Parker, G.G. and Choudary, S.P. (2016), "Pipelines, platforms, and the new rules of strategy", *Harvard Business Review*, Vol. 94 No. 4, pp. 54-62.

Van der Valk, W. and Van Iwaarden, J. (2011), "Monitoring in service triads consisting of buyers, subcontractors and end customers", *Journal of Purchasing and Supply Management*, Vol. 17 No. 3, pp. 198-206.

Van Duin, J.H.R., De Goffau, W., Wiegmans, B., Tavasszy, L. A. and Saes, M. (2016), "Improving home delivery efficiency

by using principles of address intelligence for B2C deliveries", *Transportation Research Procedia*, Vol. 12, pp. 14-25.

Van Iwaarden, J. and Van der Valk, W. (2013), "Controlling outsourced service delivery: managing service quality in business service triads", *Total Quality Management & Business Excellence*, Vol. 24 Nos 9/10, pp. 1046-1061.

Wan, X., Cenamor, J., Parker, G. and Van Alstyne, M. (2017), "Unraveling platform strategies: a review from an organizational ambidexterity perspective", *Sustainability*, Vol. 9 No. 5, pp. 1-18.

Weick, K.E. (2000), "Emergent change as a universal in organizations", in Beer, M. and Nohria, N. (Eds), *Breaking the Code of Change*, Harvard Business School Press, Boston, MA, pp. 223-242.

Wuyts, S., Rindfleisch, A. and Citrin, A. (2015), "Outsourcing customer support: the role of provider customer focus", *Journal of Operations Management*, Vol. 35 No. 1, pp. 40-55.

Wynstra, F., Spring, M. and Schoenherr, T. (2015), "Service triads: a research agenda for buyer-supplier-customer triads in business services", *Journal of Operations Management*, Vol. 35 No. 1, pp. 1-20.

Yin, R.K. (2014), *Case Study Research: Design and Methods*, Sage Publications, Inc., Thousand Oaks, CA.

Zhu, F. and Liu, Q. (2018), "Competing with complementors: an empirical look at amazon.com", *Strategic Management Journal*, Vol. 39 No. 10, pp. 2618-2642.

Further reading

Hagiu, A. and Wright, J. (2015a), "Marketplace or reseller?", *Management Science*, Vol. 61 No. 1, pp. 184-203.

Corresponding author

Manda Broekhuis can be contacted at: h.broekhuis@rug.nl