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Kalina Staykova

Copenhagen Business School, kss.digi@cbs.dk

Jonas Hedman

Copenhagen Business School, jhe.digi@cbs.dk

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IN THE SEARCH OF NEW PERSPECTIVE ON ELECTRONIC MARKETPLACES

Research paper

Staykova, Kalina S., Copenhagen Business School, Frederiksberg, Denmark, kss.digi@cbs.dk

Hedman, Jonas, Copenhagen Business School, Frederiksberg, Denmark, jhe.digi@cbs.dk

Abstract

While Electronic Marketplaces (EMs) have existed for the past 30 years, recent technological developments and changing consumer preferences have led to the emergence of Global Online Marketplaces (GOMPs), such as Amazon, Alibaba, eBay, which we view as a new type of EMs. Moving away from traditional linear thinking inherent in supply chain management, these GOMPs operate as Digital Platform Ecosystems (DPEs), which require platform thinking, rooted in network economics. Surprisingly, while researchers have recognized that EMs exhibit the characteristics of DPEs, current research remains predominantly stuck in applying supply chain thinking rather than embracing platform thinking. We argue that such a mismatch can inhibit our ability to comprehend the nature of GOMPs as new type of EMs. To address this gap, we perform hermeneutic literature review encompassing 75 articles from various fields of inquiry, spanning from 1991 to 2018. The purpose of this literature review is to first investigate which aspects of the DPE literature are addressed in the current EM literature, and second, to bridge the two streams of literature by outlining research gaps, which scholars can address in order to provide better understanding of the characteristics, development and impact of GOMPs as new type of EMs.

Keywords: Electronic Marketplaces, Digital Platform Ecosystems, Hermeneutic Literature Review, Global Online Marketplaces

1 Introduction

Electronic Marketplaces (EMs), which serve as intermediaries enabling the interactions between sellers and buyers, have been around for almost 30 years (Alt and Klein, 2011). Initially related closely to supply chains and enterprise applications, for the past three decades EMs have evolved in parallel with technology advancements and changing consumer behaviour and preferences (Alt and Zimmermann, 2014). As a result, a new type of EMs (e.g., Amazon, Alibaba, Asos, Zalando, eWorldTrade) has emerged by consolidating a myriad of services and utilizing digital technologies to become dominant player on global markets as it blurs the boundaries among industries and geographical markets (Alt and Zimmermann, 2014; O'Reilly and Finnegan, 2010). Instead of being an extension of supply chains and the value chain logic, these new EMs, which we refer to as Global Online Marketplaces (GOMPs), operate under the rules of network economics (Alt and Klein, 2011; Alt and Zimmermann, 2014; Bakos, 1991), and as such constitute a type of Digital Platform Ecosystems (DPE).

Over the past three decades, scholars have investigated various aspects, such as pricing, design, uncertainty, and trust of EMs. Their findings, however, remain dispersed across various outlets, with few attempts to provide an overview of them (for existing overviews, see Grieger, 2003; Mangalaraj and Amaravadi, 2016; Shirzad and Bell, 2013; Standing et al., 2010; Wang et al., 2006; Wang and Archer, 2007; Wood, 2015). Apart from urging researchers to address additional issues within the already

identified research themes (Standing et al., 2010), the authors of these studies also called for the use of new methods, theories, contexts and for providing different perspectives (Wang et al., 2008).

Answering these calls to advance existing research, in this paper, we aim to bridge the platform literature and the EM literature by emphasizing on the need of presenting EMs as a type of DPEs, which, we argue constitutes an important, but downplayed perspective in the existing EM literature. Surprisingly, while researchers recognize that EMs exhibit the characteristics of DPEs (Bakos, 1991), few of the studies on EMs in the period from 1990s to 2018 analyse EMs from this perspective, preferring instead other theoretical underpinnings (value chain, electronic market theory, transaction costs theory, agency theory, organizational learning). Thus, we argue that current research, which remains stuck in applying supply chain thinking rather than embracing platform thinking (Jacobides et al., 2018; Parker et al., 2016), is at the perils of not fully comprehending the nature of this new type of EMs, which we refer to as GOMPs. Therefore, we explore the following research question:

What aspects of Digital Platform Ecosystems are being addressed in the literature on Electronic Marketplaces, and which aspects are still under researched?

To answer this research question, we conduct a literature review encompassing 75 studies on EMs across various disciplines with two goals in mind. First, we aim to summarize the relevant literature on EMs to identify themes, which overlap with issues discussed in the DPE literature. Second, we seek to outline a number of research gaps which future research can address by adopting a DPE perspective to study issues related to GOMPs as new type of EMs. To this end, we urge researchers to bridge the literature on EMs and the literature on DPE.

This paper proceeds as follows: First, we briefly present DPEs and their key concepts. We, then, present the methodology we use to carry out our literature review study. As a next step, we introduce the results of the conducted literature review by using the key DPE concepts. In the final sections of the paper, we discuss research gaps and offer some conclusions.

2 Digital Platform Ecosystems

DPEs function as complex social-technical systems that enable and regulate the interactions between various affiliated actors through developing and managing an IT architecture and determining and enforcing a set of rules and norms (Boudreau and Hagiu 2009; Hagiu and Wright, 2011; Tiwana, 2014). As such, DPEs constitute an encompassing concept, bridging the two previously fragmented research streams in the platform literature, namely economic and engineering (Gawer, 2014; Thomas et al., 2014).

DPEs encompass a diverse set of companies, from social media services (Facebook, Instagram, WeChat), e-commerce marketplaces (eBay, Amazon, TaoBao), and gaming (Nintendo, Sony) to payment instruments (ApplePay, Pingit, Google Pay). Despite their heterogeneity in terms of services, industries, and users, all these companies function as DPEs as they consist of three key components, namely actors, architecture and governance. While the composition of these components differs from one ecosystem to other, regardless of their industry and size, all of these ecosystems can be characterized in terms of their actors, architecture and governance. Each of these DPE elements consists of a number of sub-themes, which we identify by reviewing the platform literature (Figure 1).

A myriad of actors, assuming different roles, form part of a DPE. Researchers usually recognize four types of actors. Platform owners determine the operation and development of the platform as well as monitor and sanction the activities of other actors (Eisenmann et al., 2009; Parker et al., 2016). Platform users comprise of both demand-side users that consume services and supply-side users that provide products or services (Eisenman et al., 2009; Ondrus et al., 2015). Finally, platform providers participate in the production and distribution of the digital platform (Eisenmann et al., 2008; Ondrus et al., 2015, Tiwana, 2014).

To become part of a DPE, platform users and platform providers has to become affiliated to it by creating an account or signing an agreement with the platform owner, thus incurring homing (or affiliation) costs (Evans, 2009; Hagiu and Wright, 2011; Shapiro and Varian, 1999). Depending on the affiliation costs and the overall value platform users can receive, they decide whether to adopt a particular DPE (Evans, 2009). Both demand-side and supply-side users, however, can multi-home, that is becoming affiliated with one or more DPEs due to low switching costs (Eisenmann et al., 2011; Shapiro and Varian, 1999), thus enhancing competition between different DPEs. Once having joined a DPE, platform users engage in various behaviour patterns. For example, they interact with other actors to create and exchange services and products (Hagiu and Wright, 2011), provide feedback for their interactions (Parker et al., 2016), compete with other actors, such as other supply-side users or the platform owner (Gawer, 2009), and also, sometimes, engage in opportunistic behaviour (Evans, 2012).

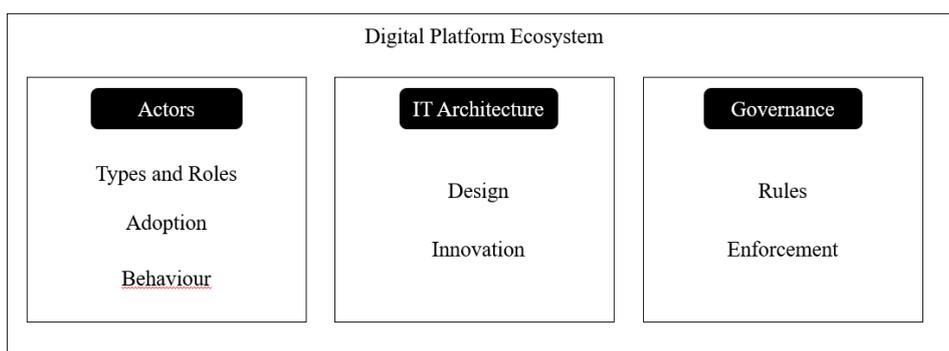


Figure 1. Overview of Digital Platform Ecosystems

To facilitate the interactions among the various types of actors affiliated to its DPE, a platform owner relies on an underlying IT architecture, which encompasses the digital platform itself (also referred to as platform core), its adjacent platform periphery and the boundary resources, which connect them (Baldwin and Woodward, 2009; Gawer, 2014; Tiwana, 2014). The design of the IT architecture, created by the platform owner, serves as a ‘blueprint’ (Tiwana, 2014), which also reflects the type of actors who contribute to it. The platform owner, possibly in combination with various platform providers, develops and maintains the digital platform, which encompasses the main functionalities offered to platform users (Baldwin and Woodward, 2009; Tiwana, 2014). The platform owner, however, can rely on third-party complementors, who act as supply-side users, to offer services to demand-side users (e.g., third-party apps on Apple Store), thus extending the use of the platform core by encouraging external innovation (Tiwana et al., 2010; Parker et al., 2016). To enable the third-party access to the platform core, the owner offers a suite of boundary resources (APIs and SDKs) (Ghazawneh and Henfridsson, 2013). The services offered by third-party complements then form part of the platform periphery, formed around the platform core (Baldwin and Woodward, 2009; Tiwana, 2014).

To regulate access and participation in a DPE, the platform owner relies on a myriad of rules, roughly categorized as pricing and non-pricing (Boudreau and Hagiu, 2009). While pricing rules require determining which actors to charge and how much (Evans, 2009), non-pricing rules regulate issues such as access, openness, control, decision rights, ownership, and so on (Boudreau and Hagiu, 2009; Evans, 2009; Parker et al., 2016). To enforce these rules, the owner utilizes “contractual, technical and informational instruments” (Boudreau and Hagiu, 2009, p. 3).

3 Research Design

To identify and summarize the relevant studies on EMs dispersed across various disciplines and covering 30 years of research, we conduct a hermeneutic literature review, which consists of two parallel phases - “search and acquisition circle” and “analysis and interpretation circle” (Boell and Cecez-Kecmanovic 2014, p. 258). The initial search cycle leads to the identification of a number of studies,

which, upon the completion of their analysis, may prove to capture incompletely the studied phenomenon, requiring, thus, a new search cycle (Boell and Cecez-Kecmanovic, 2014). By adopting this approach, we can incorporate in our literature review all relevant studies with some level of certainty.

3.1 Data Collection

As the literature on EMs suffers from lack of clear conceptualization, with authors proposing several terms to refer to the same phenomenon (Wang and Archer, 2007), to identify relevant studies, we use a number of keywords such as “electronic marketplaces”, “intermediary”, “market maker”, “online marketplace”, “auction”, “online exchange”, “e-market”, which reflect the variety of conceptualizations across the EM literature. For the purposes of this literature review, we focus on journal articles. The search across several databases, including AIS Library, EBSCO Host, and Web of Science, result in 589 articles covering the span of almost 30 years (1991- 2018). After consulting the findings in previous literature reviews, we set on 1991 as the start date of the timeframe we use to select relevant studies as few relevant articles were published prior to this year (see Wang et al., 2008, p. 557; see also Malone et al., 1987 as exception). We further narrow down the scope of the articles, by selecting only these studies, which 1) present EMs as intermediaries facilitating the interactions between sellers and buyers, 2) deal with topics not covered by previously identified studies, 3) are generalizable and not too case specific. Thus, we exclude a number of articles, which constitute discussion papers and commentaries and briefly mention EMs in the context of general e-commerce research. As a result, we include 75 articles from various research fields in our final sampling, which we argue is representative of the themes within the EM literature.

3.2 Data Analysis

After selecting the relevant studies, we proceed by analyzing them based on coding scheme we develop to reflect the main constructs and sub themes of DPEs (see Figure 1). In particular, we read each article to identify any topics related to actors, architecture and governance of EMs and assigned two codes to it: 1) codes in relation to DPE components (that is, actors, architecture and governance), and 2) codes in relation to specific topics within each DPE component (that is, types and roles of actors, and so on). In addition, we allow other topics to emerge (such as performance), which are not captured by the initial theoretical framework (compare Figure 1 and Figure 2). To ensure the validity of our analysis, we also compare the themes we identify in relation to actors, architecture and governance with previous literature reviews. The purpose of this comparison is to prevent omitting already identified themes from our literature review.

4 Summary of the EM Literature

Based on our hermeneutic literature review, we identify a number of research themes that we categorize according to our theoretical framework, while also including additional research themes (e.g., performance), which emerge from the analysis. We integrate our findings into a framework (Figure 2), which also captures the interplay between the different themes as discussed in current research.

4.1 Actors in Electronic Marketplaces

4.1.1 Actor Types and Roles

Researchers studying EMs account for a myriad of actors involved in their production, operation and use. The majority of the EM studies focus solely on sellers and buyers as supply-side and demand-side users (Bakos, 1991; Chen et al., 2016; Curchod et al., 2014; Grover and Ramanlal, 1999; Pavlou et al., 2007; Son et al., 2006). In particular, sellers constitute supply-side users (both individuals and firms), who post offers on EMs in search of demand-side users (buyers) (both individuals and firms), who evaluate the offerings and, in cases of actions, bid to obtain the desired offering (Muthitacharoen et al.,

2011). Cross-side network effects, where value for one group of platform users (that is supply-side or demand-side) to join EM increases when the other group of users grow in numbers, characterize the interactions between buyers and sellers on EM (Chakravarty et al., 2014; Galbreth et al., 2005; Koh and Fichman, 2014; Yoo et al., 2007).

A number of researchers also identify other actors, who participate in EMs. Moving from studying dyadic (seller-buyers) to investigating triadic (seller-buyer-intermediary) relationship within EM (Chakravarty et al., 2014), scholars also acknowledge the role of the owner and provider of EM in their research (Bakos, 1979; Beiley and Bakos, 1997, Koch and Schultze, 2011; Son et al., 2006). Referred to as intermediary (Bakos, 1997; Chirku and Kauffman, 2006; Lee et al., 2010), EM provider and owner (Son et al., 2006; Yoo et al., 2007), broker (Koch and Schultze, 2011; O'Reilly and Finnegan, 2009) or market maker (Bakos, 1991; Grewal et al., 2018; Soh et al., 2006), this central actor engages in a number of activities. Bailey and Bakos (1997) outline the role of this intermediary as “aggregating, matching suppliers and customers, providing trust, providing inter-organizational market information” (p. 7). In addition, an intermediary can act as broker and can provide integration services to the affiliated participants (Soh et al., 2002; O'Reilly and Finnegan, 2010). Recently, Grewal et al. (2018) summarize the role of the platform owner as market maker, which consist of five activities: content creation, matching between buyers and sellers, managing misbehaviour, establishing prices, and providing supporting services (logistics, credit), thus expanding the role of the intermediary in comparison to early studies. Apart from outlining the role of sellers, buyers and intermediaries (or platform providers) as key actors within EM, researchers also recognize that the ecosystem around EM consists of a number of additional actors. For example, actors such as logistics companies, financial service providers enabling payments on EM, and investors support the main activities on EM (Dai and Kaufmann, 2002; Leong et al., 2016; O'Reilly and Finnegan, 2009).

While the actors within a given EM appear to be diverse (sellers, buyers, market makers, etc.), researchers also emphasize on the heterogeneity existing within one or more distinct types of actors. The heterogeneous nature of actors within EM has implications for the adoption of services offered by the platform owner, such as matching (Bhargava and Choudhary, 2004), pricing (Muthitacharoen et al., 2011) and patterns of use (Bapna et al., 2004). For example, studies demonstrate that heterogeneity among sellers on EM affects dynamic pricing in auctions as a certain type of EM (Bandyopadhyay et al., 2005; Muthitacharoen et al., 2011). On the other hand, heterogeneity among demand-side users can account for specific behaviour patterns and for the presence of various strategies among, for example, bidders in online auctions (Bapna et al., 2004). Furthermore, by recognizing the heterogeneity of actors within EM, the owner can offer different types of services (basic services or value-added services) to ensure the continuous use of the EM (Bhargava and Choudhary, 2004).

4.1.2 Adoption by Actors

A number of the identified studies discuss the process through which various actors decide to become affiliated with specific type of EM (Büyüközkan, 2004; Granot and Greys, 2005; Mahadevan, 2003; Stockdale and Standing, 2002; Yoo et al., 2015). Recognizing that multiple types of EM exist (Mahadevan, 2003), researchers find it useful to design a decision-making process guiding different sellers and buyers when deciding in which EM to participate.

Investigating this selection process from a company's perspective, Stockdale and Standing (2002) put forward a decision-making framework to help guide the company's endeavours. While, in general, they state the main selection criterion is the ability of a EM to deliver value to affiliated actors, in addition, they identify three types of factors, related to the macro environment, the internal structure of the company and to a specific EM, which collectively determine the ongoing selection. In particular, companies evaluating whether to join a specific EM need to account for their macro environment by analysing the relevant legislation, effects of globalization and technology developments, while also accounting for internal factors such as motivation for participation (imposed by managers, competitive pressure, first mover advantage, etc.), resources, degree of outsourcing, change in relationship, level of

value-added services. Finally, a company should consider the characteristics of the specific EM, such as ownership, transaction mechanisms and facilities (Stockdale and Standing, 2002).

Pondering further upon the process of selection, Büyüközkan (2004) points out that the evaluation and selection of EM unfolds under uncertainty, as companies cannot estimate prior which EM will succeed or fail over time. To manage this uncertainty, Büyüközkan (2004) recommends a complex process, based on multiple criteria, namely objective performance, economic value, e- transformation of the processes within the EM, e-transformation level of the industry, which can be facilitated through the use of computational methods.

While the rationales of different companies to join a specific EM vary (Zhu, 2004), most companies assess carefully whether to join an EM based on whether they view the other participants as competitors or collaborators (Granot and Greys, 2005; Kalvenes and Basu, 2006; Zhu, 2004). In particular, a company joining a EM along with its rivals may suffer from reduced prices for competitors and accidental sharing of confidential information about new products and services, which can be used in unfair manner (Granot and Greys, 2005; Kalvenes and Basu, 2006). If the EM owner is also one of the participants, a company may suffer further from reduced transparency due to power asymmetries between the owner and other participants (Kalvenes and Basu, 2006). To amend for this, researchers recommend that the EM owner ensures that all participants benefit when joining certain EM by increasing transparency, changing ownership, and granting certain level of autonomy to participants (Granot and Greys, 2005; Kalvenes and Basu, 2006).

Apart from joining one EM, both demand-side users (buyers) and supply-side users (sellers) can decide to join more than one EM, thus multi-homing across a number of EMs (Mahedavan et al., 2003; Stockdale and Standing, 2002). For example, while Stockdale and Standing (2002) urge companies to participate in several EMs, Mahedavan et al. (2003) recommend being present on no more than two distinct EMs. Whether a company multi-homes or not depends on the presence of other actors, with whom the company can engage in valuable interactions (that is, selling and buying) (Koh and Fichman, 2014). Thus, the stronger the cross-side effects between sellers and buyers, the less incentive for a company (whether it is a buyer or a seller) to multi-home (Koh and Fichman, 2014).

The studies focusing on adoption of EM cover wide-range of related issues, such as adoption by both sellers and buyers (Ordanini, 2005), adoption by specific distinct type of actors (sellers; see Son and Benbasat, 2007), factors influencing adoption (Yoo et al., 2002), barriers to adoption (Hsiao, 2003). Companies, for example, adopt B2B e-marketplace if a specific EM can provide efficiency (lower search costs for discovering potential sellers; improve capability to manage additional activities such as logistics, payments, etc.), effectiveness (facilitating matching between buyers and sellers), partnership benefits (better collaborations), better negotiation position due to increased market bargaining power or legitimacy (Ordanini, 2005; Son and Benbasat, 2007; Son et al., 2006). Whether a company has the capability to participate efficiently in EM, such as IT resources, management supports, previous e-commerce experience, is also of importance (Wang et al., 2008).

Among the various rationales for adopting EM, the ability of the EM to improve the performance of the affiliated companies proves to be of more relevance for actors than legitimacy and IT capability to participate in EM, with the ease of use of EM being the least important rationale (Wang et al., 2008). Apart from the presence of various benefits for the participants (Son et al., 2006; Wang et al., 2006), researchers also identify a number of other factors, related to the specific design of a particular EM, which affect the decision of actors to adopt it. For example, scholars point out that whether actors join or not an EM depends on the pricing level (Galbreth et al., 2005; Yoo et al., 2002), information transparency (Zhu, 2004) and ownership structure (Yoo et al., 2007).

In addition, sellers and buyers tend to put emphasis on different rationales when adopting a particular EM. For example, buyers tend to focus on whether EM addresses their needs effectively; while sellers evaluate more whether joining a particular EM increases their legitimacy and whether they have the capability to participate (Wang et al., 2006). Furthermore, sellers, who are usually concerned with decrease of the price of their products or services due to increased price transparency on EM, are more

cautious when adopting EMs than buyers, who, in general, benefit from the possibility to compare prices among several sellers (Bakos, 1997; Grover and Ramanlal, 1999; Soh et al., 2006).

Scholars have also accounted for the presence of a number of adoption barriers, which impede actors from joining a particular EM (Hsiao, 2003; Loukis et al., 2011; Stockdale and Standing, 2004). Barriers of adoptions often relate to technology, organizational structure, culture, and distrust in EM (Hsiao, 2003; Loukis et al., 2011; Stockdale and Standing, 2004). In addition, researchers point out that different in size companies (SMEs and large companies) face different barriers of adoption (Loukis et al., 2011; Stockdale and Standing, 2004). SMEs, for example, struggle with internal barriers, such as identification of benefits for participation, managing global presence, lack of financial resources, technical integration, knowledge about e-commerce as well as external barriers related to design of specific EM, lack of technology standards and overall e-competencies in specific sectors (Stockdale and Standing, 2004). On the other hand, large companies face difficulties in relation to technology (integration of internal systems to various EMs due to lack of common standards) and organizational structure (internal inconsistencies, employees' distrust) (Loukis et al., 2011).

4.1.3 Behaviour

Researchers have also investigated in detail the behaviour patterns of actors affiliated to EM ecosystem, in particular related to continuous use, competition and misbehaviour. Researchers attribute the continuous use of EM to the presence of strong cross-side network effects between buyers and sellers, which depend on the pricing policy of the EM (Galbreth et al., 2005), trust in the EM (Sun, 2010) and on the number of actors, acting as experts (Grewal et al., 2001). Specifically, Grewal et al. (2001) argue that the various actors in EM engage differently as they can be in exploration phase (initial adoption), expert phase (continuous use) or passive phase (reduced use) depending on their motivation in terms of gaining efficiency and legitimacy and their capabilities (IT resources, learning). Thus, Grewal et al. (2001) attribute the presence of strong network effects, affecting continuous use of EM, to the number of experts (active users) rather than the sheer size of the actors as some of them may be passive or can leave after short exploration phase.

Due to the observed heterogeneity both between distinct groups of actors (sellers and buyers) and within a particular group of actors (heterogeneity among sellers), researchers account for the presence of intra-platform competition among actors within the EM, which characterizes their interactions. For example, scholars observed tensions between sellers and platform owners due to different perceptions, between sellers and buyers, and between business sellers and private sellers, who compete for attracting buyers (Bandyopadhyay et al., 2005; Campbell et al., 2005; Chakravarty et al., 2014; Granot and Greys, 2005; Grover and Ramanlal, 1999). While increased competition between sellers can prompt individual sellers to differentiate their products or offer more compelling prices to buyers (Bandyopadhyay et al., 2005; Li et al., 2015), it can also reduce significantly the number of sellers over time as a decrease in price to improve competitive position towards buyers can lead to high operating costs (Bandyopadhyay et al., 2005). As more and more sellers leave, the cross-side network effects weaken, which impairs the continuous use of the EM.

Due to the heterogeneity of the EM actors, interests of sellers, buyers and intermediary can diverge, leading often to occasions where one party misbehaves by committing fraud, providing misleading information, and not delivering goods (Pavlou and Geffen, 2004).

4.2 Architecture of Electronic Marketplaces

4.2.1 Design

While early studies investigating the design of EM focus on explaining how novel technologies, such as EDI and the Internet (Bailey and Bakos, 1997) change the role of the intermediary, later studies view the design of EM in terms of the functionalities offered by the intermediary to facilitate the interaction between sellers and buyers (Wang et al., 2006). For example, researchers outline a number of

functionalities, such as product catalogues with item characteristics and prices, price bidding, price negotiation, payment settlement, shipping, reporting, insurance, financial support, consultancy (Bhargava and Choudhary, 2004; Dai and Kaufmann, 2002; Ordanini et al., 2004; Soh et al., 2006; Yoo et al., 2002).

To enable the provision of some of these functionalities, the intermediary often relies on the use of intelligent software agents (Castro-Schez et al., 2010; Kontolemakis et al., 2004; Wang et al., 2006). In particular, these agents, which constitute software programmes deployed in a layer of the EM architecture (Castro-Schez et al., 2010), can support the activities of the affiliated to the EM actors, such as buyers, sellers and the intermediary (Kontolemakis et al., 2004; Zhu, 2004). For example, a software agent can help the intermediary learn more about the buyers' behaviour and as a result offer personalized services to them (Kontolemakis et al., 2004). Further, a multi-agent can enable and manage the interactions between sellers and buyers ensuring efficient exchange of information (Castro-Schez et al., 2010; Kontolemakis et al., 2004).

4.2.2 Innovation

While the intermediary designs and manages the architecture of EM in terms of functionalities, capabilities and structure, it can often rely on external actors to offer some of the functionalities (that is, external innovation) such as payment settlement, logistics, reporting (Dai and Kauffman, 2002; O'Reilly and Finnegan, 2009). Instead of focusing on external innovation, however, the majority of the literature discusses at length the integration and interoperability of the EM architecture towards existing external IT systems (buyers and sellers joining an EM who have to integrate their own IT systems (inventory, etc.) to the EM architecture).

Researchers also point out that lack of standardization, incompatibility between systems utilizing different generations of technology and lack of clearly defined guidelines for integration processes (Castro-Schez et al., 2010; Chatterjee et al., 2006; Dai and Kauffman, 2002; Loukis et al., 2011) stall integration to EMs. To amend for this, scholars recommend the implementation of technical standards and proper system integration (Choi and Whinston, 2000; Dai and Kauffman, 2002).

4.3 Governance of Electronic Marketplaces

4.3.1 Trust-Building

A high level of uncertainty characterizes EMs and the ecosystems of actors around them (Chakravarty et al., 2014; Grewal et al., 2018; Pavlou et al., 2007; Rice, 2012). Due to information asymmetry between sellers and buyers and between intermediary and other actors (Pavlou and Gefen, 2004; Rice, 2012; Tang et al., 2008), which can lead to opportunistic behaviour (Pavlou et al., 2007), various forms of uncertainty, such as behavioural, demand and transaction uncertainty (Ba and Pavlou, 2002; Grewal et al., 2018; Son and Benbasat, 2007) can arise. As uncertainty challenges the optimal performance of EM (Grewal et al., 2018), the intermediary needs to introduce appropriate measures to address it. To this end, the intermediary can adopt a number of mechanisms, such as installing trust, providing information, evaluating products, monitoring, community-building, or self-participating as buyer or seller (Grewal et al., 2018; Pavlou et al., 2007).

Researchers pay special attention to the concept of trust as a means to address uncertainty, which they present as consisting of various dimensions (Pavlou et al., 2007). For example, trust can relate to various types of actors, such as sellers (that is, trust in sellers), buyers, and intermediary (Sun, 2010; Wang et al., 2006) or to various aspects of the EM interactions, such as institutional trust, reputation trust, technology trust (Brown and Morgan, 2006; Dellarocas, 2006; Hsiao, 2003; Pavlou and Gefen, 2004). In particular, trust of sellers and trust of buyers are constructs with different dimensions as, for example, sellers use different aspects of the EM (Pavlou and Gefen, 2004; Sun, 2010). Researchers also estimate the trust of distinct type of actors, such as sellers, in the EM, which consists of cognitive and

affective trust in the intermediary and cognitive and affective trust in the community of buyers (Sun, 2010).

Scholars also identify a number of trust-building mechanisms (Pavlou and Gefen, 2004; Ye et al., 2014). Son et al. (2006), for example, put forward 11 trust-building measures addressing trust issues between sellers and buyers and trust issues related to the intermediary. To restore trust between sellers and buyers, intermediary should introduce institutional mechanisms such as escrow, monitoring, insurance, screening of participants, credit card guarantees and process-related mechanisms such as reputation systems and feedback mechanisms (Ba and Pavlou, 2002; Son et al., 2006). In addition, to ensure that sellers and buyers trust the EM, the intermediary should rely on third-party assurance seals, privacy policy, and affiliation with respected organizations (Son et al., 2006). Various EMs rely on different combination of mechanisms (Son et al., 2006).

Researchers also evaluate the effects of some of these mechanisms on trust-formation. Ba and Pavlou (2002), for example, investigate whether feedback mechanisms, such as ratings, impact trust and conclude that favourable feedback results in strengthening of trust. Apart from ratings, scholars account for the greater impact of text comments as part of the feedback mechanism for installing trust in sellers (Pavlou and Dimoka, 2006). Ye et al. (2014) investigate the impact of change in the reputation system in eBay to revoke the right of sellers to complain about buyers in reciprocal manner. They find that to compensate for this, sellers upgraded their services to buyers. In addition, presenting a positive, well-informed profile (Gregg and Walczak, 2008) and updating it frequently (Ye et al., 2014) increases trust and willingness of buyers to transact.

4.3.2 Pricing

Another important governance issue relates to pricing mechanisms, which impact the adoption by sellers and buyers (Banker et al., 2011; Galbreth et al., 2005; Kuruzovich et al., 2010; Yoo et al., 2002) and the overall revenue strategy of the EM. Due to the presence of cross-side network effects between sellers and buyers, their strength can determine the pricing levels for each of the distinct types of actors (Yoo et al., 2002). For example, if buyers experience stronger network effects than sellers, the intermediary should reduce price for sellers (Yoo et al., 2002).

As certain type of EM, such as auctions, allow for dynamic pricing (Muthitacharoen et al., 2011; Oh and Lucas, 2006), researchers also investigate the behaviour of sellers in such setting. Studying how prices of similar products can vary in an auction, Muthitacharoen et al. (2011) attribute this to sellers' heterogeneity as when more sellers join different price levels emerge. Looking specifically at how sellers set their prices, Oh and Lucas (2006) account for different pricing strategies such as increase or decrease over time. In particular, they find that sellers adjust their price on regular basis and engage more frequently in incremental price increase than decrease (Oh and Lucas, 2006).

A number of researchers also analyse the revenue model of different EMs (Chen et al., 2016; O'Reilly and Finnegan, 2009). O'Reilly and Finnegan (2009) identify several revenue sources such as transaction fees, membership/licence fees, advertising, and value-added service fees, which an intermediary can adopt. Comparing two of these revenue streams (brokerage and advertising), Chen et al. (2016) recommend that intermediaries adopt an advertising model, which usually leads to higher participation rates.

4.4 Performance

After the proliferation of EMs in the 1990s and the subsequent dot.com crisis, which lead to the demise of many of these EMs, researchers try to identify the factors, which can account for the success of an EM over time (Soh and Markus, 2002). In particular, to achieve success (measured as profit (Ordanini et al., 2005; Soh and Markus, 2002) or growth of actors in terms of types and volume (Soh et al., 2006)), an EM needs to ensure a fit among its value proposition, market characteristics, value activities and ownership structure (Grewal et al., 2001; Ordanini et al., 2005; Soh and Markus, 2002). Similarly, Castro-Schez et al. (2010) state that some of the most common reasons for EM failure are

lack of value to participants, excessive focus on pricing, information overload and immature technology.

4.5 Interaction between Research Themes

The above identified research themes do not exist in isolation. Researchers, for example, have established various interdependencies among the research themes, which we indicate with arrows in Figure 2. For example, researchers point out that due to their heterogeneity, actors with diverse interests may engage in misbehavior (Actors), which requires the platform owner to use trust-building mechanisms (Governance) (Ba and Pavlou, 2002; Pavlou and Geffen, 2004; Rice, 2012). Similarly, scholars also observe that decisions regarding pricing (Governance) impact the adoption and continuous use of EMs by various actors (Actors) (Soh et al., 2006; Sun, 2010; Yoo et al., 2002).

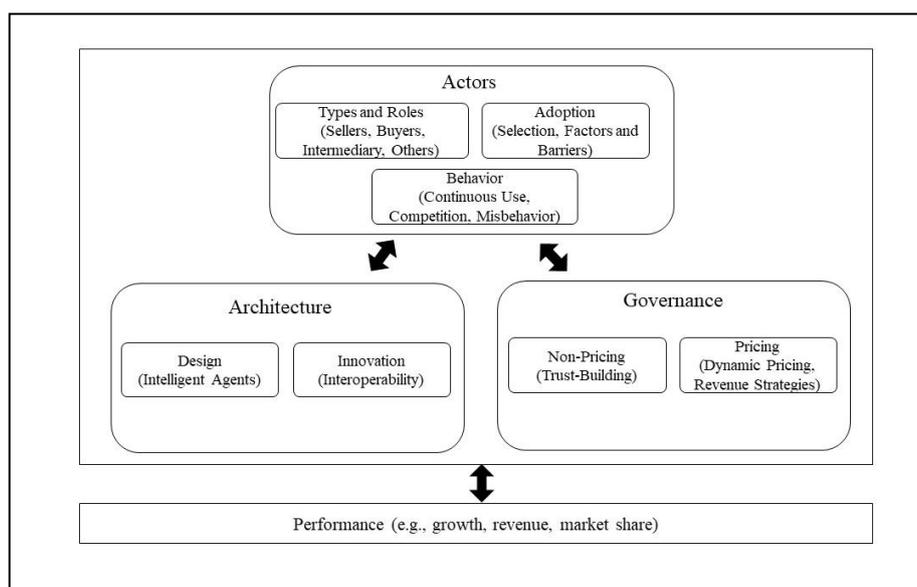


Figure 2. Overview of the EM literature

At the same time, the presence of actors, who play various roles (Actors), requires the use of different intelligent agents (Architecture) which can support the actors in the performance of their activities (Castro-Schez et al., 2010; Kontolemakis et al., 2004; Wang et al., 2006). On the other hand, the lack of standardization between the EM architecture and the IT systems of the actors affiliated to the EM (Architecture) affects the ability of the actors to join the EM (Actors) (Dai and Kauffman, 2002; O'Reilly and Finnegan, 2009).

The interplay between architecture and governance in the current research is less prominent; with researchers investigating mainly trust-building mechanisms such as feedback systems and price bidding functionality and occasionally discussing the design of such features, which become part of the EM architecture (Bhargava and Choudhary, 2004; Dai and Kaufmann, 2002).

Scholars also account for the interplay between the composition of EM in terms of actors, architecture and governance and the EM performance. For example, Chakravarty et al. (2014) establish a link between heterogeneity of actors (Actors) and the decision of the platform owner how to allocate revenue (Governance) among them, on one hand, and the overall financial performance of the EM (Performance), on the other hand. In another study, Ordanini (2005) states that if the owners of an EM are established companies (Actors), the performance of this particular EM in terms of revenue (Performance) is high as these companies utilize their vast network of existing collaborators.

5 Research Gaps

To address the research question we pose above, we summarize the relevant studies on EM based on our analytical framework (Figure 1). We build upon the above synthesis (Figure 2) to outline a number of research gaps, which can guide future scientific endeavours when studying the current forms of EMs, which have evolved from related to supply chains to emerging as DPEs with global presence (GOMPs).

5.1 Moving from Supply Chain Management to Embracing Platform Thinking

The majority of the existing research on EM is rooted in supply chain management and operation management (Wang et al., 2008), disregarding, with few exceptions, the inherent nature of EMs as a type of DPEs. In particular, while DPEs have become a widespread phenomenon over the past decade (Jacobides et al., 2018; Parker et al., 2016), research on EM falls behind as it does not fully engage in the platform ecosystem discourse. Researchers also do not consider that, due to their inherent digital properties (Kalinikos et al., 2013; de Reuver et al., 2017), which allow for rapid scalability, evolvability and proliferation across industries and markets through integration of numerous previously dispersed services (Parker et al., 2016), DPEs move away from the traditional linear business logic of supply chains (Parker et al., 2016). Instead, they follow the principles of platform ecosystem thinking (Jacobides et al., 2018; Parker et al., 2016), which put emphasis on different issues (openness of architecture, co-creation), about which the current EM literature offers few insights. As a result, the nature of EMs has also changed from operating under the rules of supply chain management to functioning as DPEs (Alt and Klein, 2011). Thus, we urge researchers to adopt DPE as an analytical lens to study a myriad of unaddressed issues in GOMPs as a new type of EMs.

Further, the shift from linear to ecosystem thinking has facilitated the emergence of new types of EMs, which we refer to as Global Online Marketplaces (GOMPs). We argue that GOMPs differ from EMs in three ways: 1) GOMPs exhibit increasingly digital properties and incorporate a myriad of novel technologies; 2) GOMPs are characterized by high scalability, which allows them to amass significant market power and engulf a myriad of standalone, often unrelated services; 3) GOMPs innovate at rapid speed. In particular, functioning as DPEs, GOMPs have inherently digital properties, which make it easy to aggregate services across industries and expand globally, resulting in winner-takes-it-all market situation (Eisenmann et al., 2002). In particular, due to the presence of strong network effects, most of the existing GOMPs (Amazon, TaoBao, Rakuten, etc.) are already the market leaders in specific countries, regions or even globally. Furthermore, GOMPs offer and keep evolving a large suite of functionalities offered by the platform owner, other platform technology providers or third-party complementors. In addition, they can also envelop easily standalone services in related and non-related markets (Eisenmann et al., 2011). The consolidation of market power raises high entry barriers for contenders, thus changing significantly the competitive landscape. Although existing studies recognize the trend towards consolidation of EMs (Soh and Markus, 2002; O'Reilly and Finnegan, 2009), there is lack of subsequent research investigating the market dominance of GOMPs in terms of strategies, competition, capabilities.

In this paper, we argue that the DPE literature provides better analytical lens to discuss the ongoing issues related to GOMPs as new form of EMs. Further, our literature review reveals that the existing EM literature is largely agnostic to the above three characteristics, which depict the difference between EMs and GOMPs. This is unfortunate as failure to understand the new forms of EMs (that is, GOMPs) through the lens of DPE can result in researchers proposing aloof research questions and delivering misguided answers to them. In this case, the scientific efforts will result in advising practitioners to formulate inadequate strategies, engage in inappropriate allocation of resources and not addressing properly the ongoing erosion of competitive advantages within traditional industries (Parker et al., 2016).

5.2 Understanding the Myriad of Actors within GOMPs

Researchers have studied extensively various topics related to the actors within EM ecosystem (see above). Despite their efforts, however, we argue that scholars are yet to comprehend the complexity and vibrancy of GOMPs. Due to their ability to aggregate previously dispersed services across industries and geographical markets, GOMPs connect a myriad of different types of actors, who form part of their ecosystems, apart from the traditionally recognized sellers and buyers. As GOMPs incorporate rapidly new technologies (e.g., Amazon using AI and IoT), new types of actor's form part of their ecosystem. Current EM literature, however, does not engage in investigating the role of these actors such as third-party developers, platform technology providers, platform distributors, and so on. Although past research has recognized the presence of multiple actors (see above), there is a lack of a detailed overview of the actors within GOMPs and an overview of their roles and interactions with one another.

Furthermore, while the current EM literature deals predominantly with selection and adoption of a given EM by sellers and buyers alike, EM scholars fail to address relevant issues in relation to subsequent actor dynamics. For example, the DPE literature recognizes that as DPEs evolve and mature, they become overcrowded (Boudreau and Hagi, 2009), with sellers experiencing high levels of competition and entry barriers and eventually leaving the platform (Parker et al., 2016). Such discussion is largely missing from the current EM literature.

5.3 Designing Architecture to Support the GOMP Ecosystem

Our literature review reveals that IT architecture of EM remains an understudied aspect, although scholars have paid attention to design, the use of intelligent agents and topics such as interconnectivity and integration. Most of the existing research, however, focuses on the functionalities of the platform architecture itself, that is the platform core (design and use of intelligent agents). While scholars also discuss interconnectivity between the platform core and the IT systems of other actors, such as supply-side users (EPR systems of sellers, etc.), the majority of the existing research does not take into account the architecture of the EM ecosystem, which also consists of platform periphery and boundary resources.

One of the strengths of DPEs comes from their ability to attract and orchestrate the activities of numerous supply-side users (third-party developers, sellers, technology providers) (Parker et al., 2016; Tiwana, 2014). To enable their access to the ecosystem, the platform owner needs to open the platform architecture through the provision of boundary resources such as APIs (Tiwana, 2014) and relevant governance regime (Tiwana, 2014). In fact, many of the currently operating GOMPs offer different APIs, which enable the easy integration of external services to their core architecture. Surprisingly, however, we could not identify studies, which investigate the role of boundary resources for establishing interconnectivity of external complementors towards GOMPs (or other EMs). There is also lack of studies discussing the governance regime related to the use of the EM architecture by actors other than the intermediary. Thus, we argue that future research should address this important gap.

Scholars should also look into the use of novel technologies to enable interactions on EMs such as machine learning, IoT, AI, and so on, a topic, which is being currently investigated sporadically and not in-depth under the label of intelligent agents. In addition, future research should also analyse how the platform owner develops and maintains key capabilities of the platform architecture, such as scalability, generativity, interoperability, and so on (Tiwana, 2014), which support the numerous interactions among the ecosystem actors.

5.4 Unaddressed Governance Issues

While existing studies focus on managing uncertainty through trust-building mechanisms and on establishing relevant pricing policies, we argue that there are still a number of issues, which remain unaddressed. In particular, as EMs evolve towards GOMPs, the platform owner needs to embrace a certain degree of platform openness, which is inherent to ecosystem thinking (Parker et al., 2016; Tiwana,

2014). This requires a shift from controlling more or less tightly the activities of EM actors, related to supply chain thinking, to orchestrating their activities, which is associated with granting actors a degree of autonomy. Finding balance between control and autonomy is one of the challenges, which a platform owner faces (Tiwana et al., 2010).

Although there is evidence that certain GOMPs control tightly the activities of its actors (e.g., sellers) (see, e.g., eBay banning SME sellers who cannot meet its requirements (Basalisco et al., 2016), such issues are largely unexplored from existing EM literature. In particular, scholars seem not to engage in discussing in details the various decision rights associated with certain EM actors, a topic which is of key importance to the DPE literature (Tiwana et al., 2010). In addition, while researchers investigate the revenue strategies of various EMs, more up-to-date research can strengthen our understanding of the variety of revenue models adopted and the impact they can have on other strategic issues such as adoption, diversification, and competition.

5.5 Interplay between Actors, Architecture and Governance

While several scholars have identified certain interdependencies among the actors, architecture and governance of EM, there are still unaccounted interdependencies. For example, while the platform literature recognizes the interplay between architecture and governance (Tiwana, 2014), our review of the literature on EM demonstrates that researchers have not investigated this interplay thoroughly. In addition, there is lack of comprehensive overview of the interdependencies among the three constructive elements. As none of them exist in isolation, a change in one (growth in the number of actors) results in change in one or both of the other two (improved capability of the architecture to support the increased volume of interactions). Thus, understanding the interplay between them is vital for grasping the complexity of GOMPs as a type of EMs.

In addition, there is lack of studies, which trace the evolution of specific EMs over time (for an exception, see Tan et al., 2016). The insights from these studies, however, can explain the changing characteristics of EMs over time and put emphasis on their growing complexity. Understanding the triggers that drive EMs to evolve following a specific trajectory requires the adoption of various theoretical underpinning such as dynamic capabilities, real option theory, and path constitution. Despite the call for adoption of diverse theories (Wang et al., 2008), our literature review showcases that current research on EM is still far from providing multiplicity of theoretical perspectives.

6 Conclusion

The purpose of this paper is to draw researchers' attention towards the emergence of a new type of EMs, which we refer to as Global Online Marketplaces (GOMPs). In particular, we advocate for fully adopting Digital Platform Ecosystems as a lens to study GOMPs, which require moving away from traditional linear thinking inherent in supply chain management and value chain thinking. To guide the future scientific endeavours, we outline a number of research gaps, which we identify after summarizing 75 articles in the EM literature from various fields of inquiry, spanning from 1991 to 2018. For almost 30 years, scholars have studied important issues related to the actors, architecture and governance of EMs and have followed the transformation of EMs over time enabled by technology advancements and changing consumer preferences. Yet despite the fact that scholars recognize and reflect upon the changing nature of EMs, our literature review demonstrates that there is lack of research, which captures the most recent developments in this phenomenon. Thus, we call for future research, which, by adopting platform thinking, can capture more accurately the nature of GOMPs and provide better understanding of their characteristics, development and impact.

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