Business Ecosystem Research Agenda:

More Dynamic, More Embedded and More Internationalized

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Abstract

We explore the emerging body of research focusing on business ecosystems (BEs). The study of inter-organizational relationships has evolved from a focus at the level of firm, to the supply chain, the platform, and now towards the BE. The co-evolution of inter-related organizations is an essential element of BE research, rather than static structure. The success of leading internet companies in Asia, such as Alibaba in China, Naver in South Korea, Baharti Airtel in India, and Rakuten in Japan, reflects their strategies and practices of leveraging BEs within a fast-changing age. In order to better understand the mechanisms of BEs, in particular within the Asian context, we propose three key research directions within BEs, including dynamics, embeddedness and internationalization.

Keywords:
Dynamics, Embeddedness, Internationalization, Institutional, Business Ecosystems, Research Agenda

1. Asian business ecosystem studies, a research agenda

The study of business ecosystem (BE) research has attracted interest during the last decade. However, the main bulk of studies have focused on Western ecosystem leaders and conditions. For example, in a recent review of BE studies (Jacobides et al. 2018), only two studies relating to Asia could be identified. Nevertheless, in practice, leading Asian firms such as Rakuten (Japan), Naver (South Korea) and Alibaba (China) have developed ecosystem-leading positions. There are also other examples of innovation-driven Asian firms following their example and deviating from the traditional way of doing business in Asia (see Freeman 1988; Greve 2005; Imai and Itami 1984; Witt and Redding 2014; Nolan and Wang 1999). Nonetheless, these very successful firms have not gained equal attention from ecosystem researchers compared to their Western counterparts, despite the fact that it is well known that Western and Eastern societies differ in several significant business aspects. We therefore feel that this provides good grounds for proposing a specific future Asian BE research agenda.

A BE is defined as an economic community in which a variety of inter-related stakeholders co-evolve (Moore 1993, 1996; Iansiti and Levien 2004a). Several review articles have been conducted, with different focuses, on BE research. For example, Dedehayir, Mäkinen and Ortt (2016) studied roles in BE; de Vasconcelos Gomes et al. (2016) focused on the innovation dimension of BE; Tsujimoto et al. (2017) aimed to provide a consensus definition of the BE concept, and Jacobides et al. (2018) studied why and how ecosystems emerge. In this paper, we aim to identify future perspectives for BE research in an Asian context.

With its roots in systems theory and biological evolution (Moore 1993), BE theory has

developed various theoretical cross-disciplinary concepts that stretch far beyond an ecological metaphor for strategy thinking (Adner and Kapoor 2010; Gawer and Cusumano 2013; Rong and Shi 2015; Wareham, Fox, and Cano Giner 2014). In this review, we depart from two major streams of research that have strongly affected BE research: network theory (Shang and Shi 2013; Rong et al. 2015a) and platform theory (Gawer and Cusomano 2014, Winter et al. forthcoming).

Asian economies are well known for the intricate relationship that exists between social and business interactions, and this has implications for the view on the traditional value chain (Avgerou and Li 2013; Ou, Pavlou, and Davison 2014; Martinsons 2008). Therefore, recommendations have also been made that the dynamic relationships between social networks and value networks be subject to study (Shang and Shi 2013; Rong et al. 2015b). Additionally, the development of networks has a close relationship with platform development, and a platform of some sort – whether it is a technology or just a venue for meeting (virtually or in person) – is essential for BEs. These relationships are illustrated in Figure 1. Previous platform studies have also established that Asian firms show high levels of innovation, and that these firms have a good track record in competing with global firms (Fuchs 2015; Jiang 2013; Shi and Liang 2015; The Economist 2011).

Although previous studies provide evidence of lessons learned from BE studies in the Asian context, knowledge regarding the role of networks and platforms in Asian BEs is very limited. The purpose of this paper is therefore to propose a future Asian BE agenda.

The research agenda is created by drawing on, and combining, literature on three streams:

(1) BEs, (2) networks and (3) platforms. Focusing on the Asian context, we initiate the discussion by first reviewing changes in the traditional value chain, and then go on to discuss the development of platforms and co-evolution in BEs. As a next step, we discuss and propose three research directions. Finally, we draw conclusions.

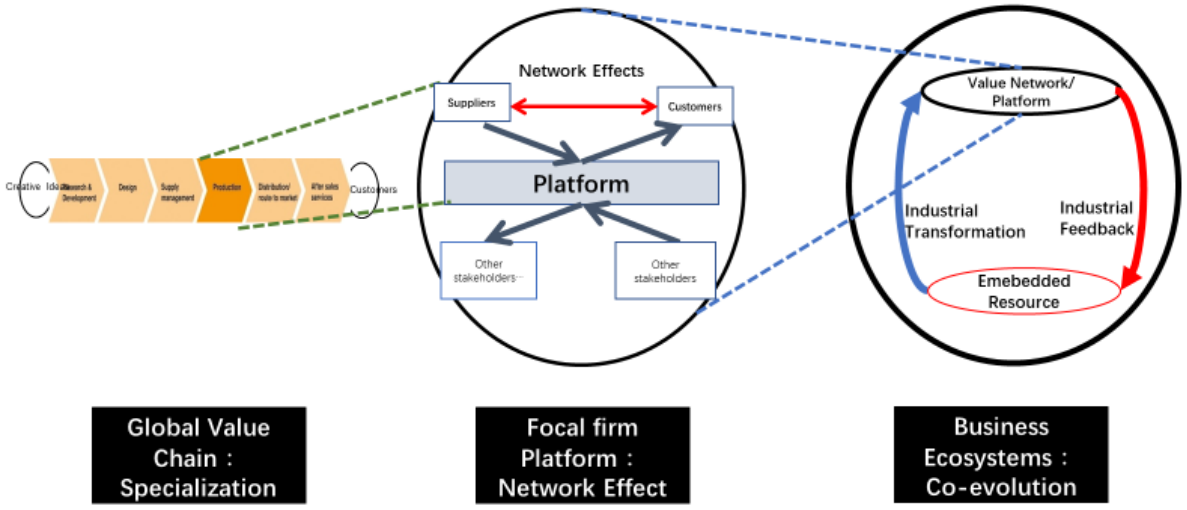

Figure 1. The Evolutionary Path of Business Competition

1.1. Global value chain: Specialization and networks

The traditional view of competition is that firms compete according to the quality and price of their products, and the effectiveness and efficiency of the value chain in delivering their products (Ferdows 1997; Fleisher and Bensoussan 2003; Sanchez 1995; Shi and Gregory 1998). As a consequence, firms have been focused on optimizing structural and infrastructural elements and making strategic choices regarding key tasks and capabilities to create value for customers and remain competitive in the market (Hill and Hill 2009). As part of the traditional view on competition, firms also focus on specializing their business scope and retaining their

core competences, while outsourcing those that are non-core (Christopher 2005; Kano 2017; Quinn and Hilmer 1994). The concept of value chain core competency has received increasing attention from managers and decision makers in terms of thinking about how to nurture and develop competences for competitive advantage (Hafeez, Zhang and Malak 2002; Javidan 1998; Prahalad and Hamel 2000).

Nonetheless, over the last two decades, along with the rapid development of outsourcing strategies and practices, we have seen a wave of globalization processes of multinational companies restructuring their operations internationally and developing international manufacturing networks (Colotla, Shi and Gregory 2003; Shi and Gregory 1998). The vast majority of manufacturing activities are being carried out in dispersed, but interdependently coordinated, locations around the world (Rudberg and Olhager 2003). Through networking, companies can gain better resources and partners, thereby improving their value chain output by increasing their efficiency and agility and reducing lead-time (Lakhani, Kuruvilla and Avgar 2013). Thus, from a traditional viewpoint, the success of business competition resides in management of the value chain, whether it is local or global (Antràs and Chor 2013; Gereffi, Humphrey and Sturgeon 2005; Kogut 1984).

Although it has brought valuable knowledge to the research community, the theory of value chains suffers from a problem: it is limited to issues of managing a sequential, controllable chain of events. Value chain theory therefore lacks the capability of explaining the dynamics and unforeseen events that firms experience in practice (Peppard and Rylander 2006; Sherer 2005). Thus, in parallel with the development of value chain theory, the theory of value networks developed. This perspective brings knowledge about key dimensions, such as process

change and trust mechanisms (Sherer 2005). The notion of network is also important since networks can bring access to resources that the firm would otherwise lack (Birley 1985). Studies of value networks have brought significant knowledge about the dynamics in business life. For example, Christensen and Rosenbloom (1995) explained that new entrants can create technological disruption by managing emerging value networks. Indeed, value networks have been studied in a number of industries, such as e-commerce (Sherer 2005; Leong et al 2016), mobile operators (Peppard and Rylander 2006) and wireless communication (Pagani and Fine 2008), and for the purpose of creating industrial symbioses (Hein et al. 2017).

A number of value network studies have also taken an Asian perspective. For example, Funk (2009) studied the mobile phone industry in Japan; Shoulian and Jianglei (2003) studied the Chinese telecommunication industry; Bu and Gao (2010) studied the network trading environment in China; Lin and Zhang (2005) studied the Publishing industry in Taiwan; and Wang, Lai and Hsiao (2015) studied mobile application services in Taiwan.

A feature of value networks that makes them particularly interesting to study is the fact that the structures and contents of the value network are always changing (Allee 2000; Lin and Zhang 2005). Such dynamics are of special interest from a BE perspective, since BEs consist of a combination of value chains and value networks.

1.2. Focal firm platform: Network effect

Since early 2000, with the rapid emergence and business application of the internet, more and more platform-based business model have grown (Evans and Schmalensee 2010). Platform

competition has received considerable attention in recent research (Tiwana 2015) across many industry sectors; for example, media (Reisinger 2012), broadband (Lee 2006), pay TV (Weeds 2016), online video (Liu 2013) and software (Economides and Katsamakas 2006), videogame (Cennamo and Santalo 2013). In the era of value-chain-centric businesses, firms could create value from information asymmetry. However, in the age of platform-based business, suppliers can instead link with customers directly, as information becomes available (Halaburda and Yehezkel 2013). Focal firms create value by accumulating more suppliers and customers, rather than through agency work (Armstrong 2006). Moreover, the value is co-created with various stakeholders, including complementary providers and customers (Scholten and Scholten 2012; Pera, Occhiocupo and Clarke 2016).

Platform competition emphasizes the role of network effects (Cennamo and Santalo 2013; Chakravorti and Roson 2006). That is, the value of a product/service increases in line with the number of people that use it. This indicates a two-sided market to explain the network effect in platform-based business competition: the focal firm will earn more benefits if its platform is home to more users, from both supply and demand sides (Katz and Shapiro 1994; Parker and Van Alstyne 2005; Rochet and Tirole 2003, 2006; Shankar and Bayus 2003). For instance, in the ICT (Information Communications Technology) industry the more complementors join the ecosystem to supply complementarities, the more valuable the platform becomes to consumers due to a greater variety of choice (Scholten and Scholten 2012). Hence, the network effect between supply and demand sides is key to sustaining the platform business (Armstrong 2006; Li and Pénard 2014; Rochet and Tirole 2003). Management scholars have also proposed a similar concept to restructure the industry and reduce the transaction cost between partners in

order to leverage industrial-level innovation (Gawer and Cusumano 2014; Wulf and Butel 2017).

Platforms have become a core foundation to many technology industries, not only enabling new products and services but also influencing strategies, shaping business models, and even transforming entire industries (Basole and Karla 2011). For example, in the software industry, the platform concept has shifted business competition toward a platform-centric ecosystem (Tiwana, Konsynski and Bush 2010). Platform research has been extended into several streams, including pricing structure over supply and demand (Armstrong 2006), platform competition (Zhu and Iansiti 2012), suppliers' technology strategy (Cusumano 2010) and customers' multi-homing strategy (Landsman and Stremersch 2011), as well as some social issues in the platform (Suarez 2005). Furthermore, various complementors besides the focal firm with the platform have been studied in order to identify the determinants of successfully nurturing a platform-based ecosystem (Boudreau and Jeppesen 2015; Kapoor and Agarwal 2017; Pierce 2009).

1.3. Business ecosystem: Co-evolution

Due to the network effect, a large number and range of stakeholders accumulate around the platform, which forms the BE. A BE, in particular a healthy one, is believed to reinvent value (Kandiah and Gossain 1998; Li 2009; Mäkinen and Dedehayir 2012) and brings competitive advantages to companies participating in it (Adner 2006; Clarysse et al. 2014) by initiating, identifying and integrating stakeholders to create value in the ecosystem (Rong et al. 2015b; Winter et al. 2018). The concept of BE is also believed to be capable of better explaining multi-sided business competition (Boudreau and Lakhani 2009; Eisenmann, Parker and Van

Alstyne 2006;). Obviously, competition is no longer limited to being among individual firms, as firms are now relying on a network of business partners; thus, the competition is BE against BE (Gawer and Cusumano 2014; Liu and Rong 2015; Rong et al. 2015a).

Stakeholders in a BE can be tightly or loosely coupled. Some are organized into tight value networks or platforms, whilst others are still fragmented and loosely connected with each other (Iansiti and Levien 2004a; Shi and Shi 2017). Those loosely coupled stakeholders can be mobilized with a specific vision and embedded into a new value chain. In return, all of the newly created business will extend the embedded ecosystem's resource pool. From this perspective, the key to the success of a BE is co-evolution among stakeholders and co-creation of value to customers (Adner 2006; Iansiti and Levien 2004b). The concept of BE highlights the process of co-evolution of industrial systems and their dynamic environment, which is full of uncertainties but also business opportunities (Breslin 2011; Moore 2006; Porter 2006; Rong et al. 2015a; Zhang and Liang 2011).

Companies in a BE are not only working cooperatively and competitively (or coopetitively (Basole et al. 2015; Gueguen 2009)), but also co-evolving around a new innovation to support new products and/or services to satisfy customer needs (Hearn, Roodhouse and Blakey 2007; Moore 1993; Rong et al. 2010). The term co-evolution originated in biology. It refers to successive changes among two or more ecologically interdependent but unique species, such that their evolutionary trajectories become intertwined over time (Hackney, Burn and Salazar 2004). Within the BE, the evolution of one company will impact the evolution of others; hence, the core of the BE is co-evolution in a mutually beneficial manner (Xiaoren, Ling and Xiangdong 2014), where co-evolution can be explained as a result of the biological metaphor

adoption (Corallo and Protopapa 2007). A company that undertakes strategic planning without understanding the impact on the BE as a whole is ignoring the reality of the networked environment in which it operates (Iansiti and Levien 2004b), while the "keystone", leading companies have a stronger influence over the co-evolutionary process (Iansiti and Levien 2004a; Moore 1996). Recently, scholars have also deconstructed the co-evolution mechanisms into three pillars – co-vision, co-design and co-create – to improve understanding of the nature of ecosystem stakeholders' evolution (Liu and Rong 2015).

In summary, the business of competition has already evolved from the firm to a BE level, following the value chain and platform (Rong, Shu and Yu 2013).

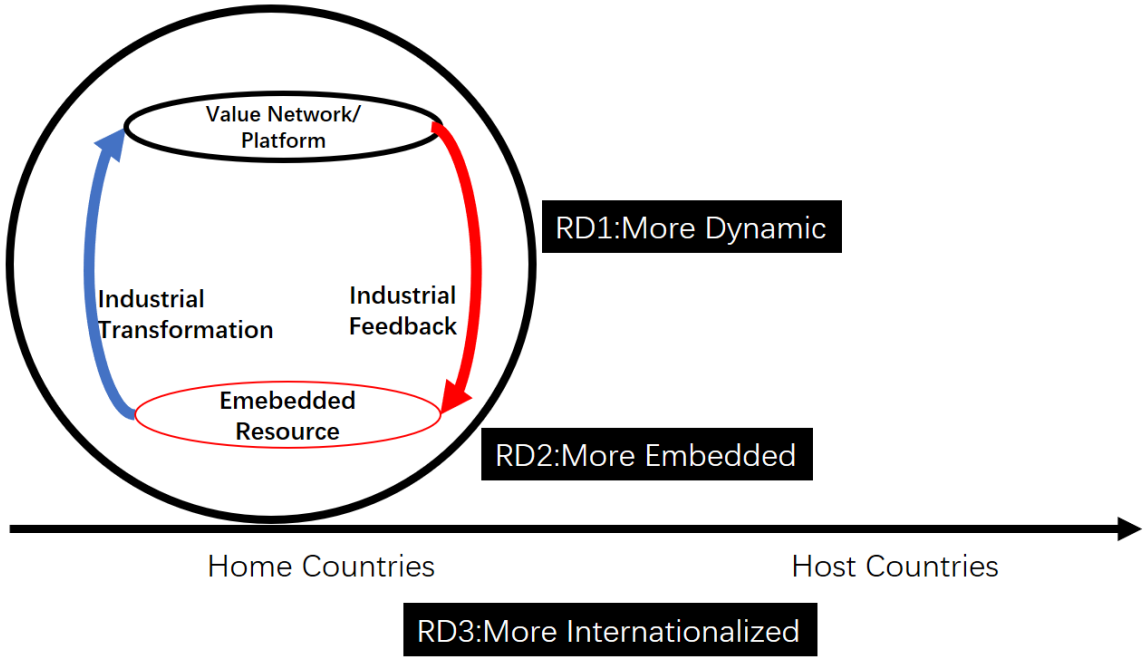

Figure 2 Direction of Future BE Research

2. Three new research directions of business ecosystems

Below, we identify three key research trends that address the key nature of competition within BEs (see Figure 2). First, more research should be focused on ecosystem *dynamics*, rather than the ecosystem structure, because the former embodies the nature of ecosystem–stakeholder interaction. Second, researchers should conduct more relational *embedded* research, rather than value-dominant logic research, in BE. We argue that ecosystem studies should pay more attention to the source of innovation. Third, future research should extend its focus into the *international* context, rather than being limited to specific technology at a local level. The more dynamic institutional and cross-cultural environments will allow stakeholders to interact in a more complex way; hence, the relational mechanism will also take place in this pillar as the value network.

2.1. Research direction 1: Dynamics

Considering BE as a complex, interconnected network of companies, we argue that the dynamics of a BE could be one of the most important areas for future research to explore. In particular, given the rise of Asian digital economies, we know little about how BE strategy can be shaped by the local institutional and cultural structures of Asian countries to cope with those dynamics. In previous studies, many scholars have addressed the static structure of a BE. For example, the narrow scope of an innovation ecosystem (Adner 2017; Adner and Kapoor 2010; Kapoor and Lee 2013), role players and platforms (Gawer and Cusumano 2014; Iansiti and Levien 2004a). These studies narrowed down the BE to a value chain structure or platform structure. However, a BE contains various of stakeholders and involves many stakeholders'

interactions (Rong and Shi 2015; Wareham et al. 2014), and its structure evolves all the time in order to cope with the evolving business and social environment (Adomavicius et al. 2008; Liu and Rong 2015). In order to succeed in a BE, it is essential to have a comprehensive understanding of the dynamics within the ecosystem (Piepenbrock 2009; Winter et al. 2018). The effects of ecosystem dynamics are believed to easily breach traditional industry boundaries (Iansiti and Levien 2004b).

Previously, Moore (1996) proposed a lifecycle concept regarding BE, which includes stages such as birth, expansion, authority and review. Subsequently, Rong and Shi (2015) conceptualized the nurturing strategies along those lifecycle stages. Meanwhile, we also can capture the sense of ecosystem dynamics from some industrial cases. Taking Alibaba as an example, originally this company only had a platform for business-to-business transactions. It then embarked into a different ecosystem by introducing a customer-to-customer platform. Then, in order to facilitate platform transactions, it introduced more stakeholders, such as Alipay, which made the ecosystem structure more complicated and diversified. However, those stakeholders were synthesized together to serve the core business process of the platform transaction. This type of BE emergence has also been acknowledged by Jacobides et al. (2018), who suggested that the dynamics behind ecosystem governance should be further studied.

Taking a similar approach to that of Jacobides et al. (2018), we propose that researchers should seek to understand more about the role dynamics and their interactions, rather than simply role structures themselves. McGrath (2010) argued that dynamic contexts like this lead to resource allocation decisions being made at a time when the environment is uncertain, and the components of the business model are not fully understood. A mechanism to govern those

stakeholders and ensure their interactions towards the shared vision is the driving force for a healthy BE.

Hence, we propose that future research on BE should focus more on its dynamics in order to understand how to develop and share the ecosystem vision with other ecosystem partners, explore how to nurture a BE with the involvement of ecosystem partners, identify how the focal firms can explore the embedded resources to sustainably maintain the ecosystem, and identify key mechanisms for the co-evolution of partners within the BE.

2.2. Research direction 2: Embeddedness

Previous studies have mainly focused on value creation and capture in the BE (Adner and Kapoor 2010; Ceccagnoli et al. 2012; Clarysse et al. 2014), which also largely overlaps with business model studies (Amit and Zott 2001; Baden-Fuller and Haefliger 2013; Teece 2010). However, they seem to have paid less attention to the embedded resource (Avgerou and Li 2013; Granovetter 1985) around the established value chain or platform ecosystem. The embedded resources will enable stakeholders by triggering a greater network effect (Suarez 2005) and more opportunities to connect and co-create value (Saarikko, Jonsson and Burström forthcoming; Shi and Shi 2017). Shi and Shi (2017) suggested that the embedded resources will be mobilized by the ecosystem's focal firms and transformed into a connected value chain or platform and renew the existing ones. The embedded resource pool contains different institutions (Abdi and Aulakh 2012; Ansari, Wijen and Gray 2013), social networks, governments, industrial associations, other industrial stakeholders and local communities, who are not involved in the existing value network but could be potential contributors (Moore 1996;

Parente, Geleilate and Rong 2018; Rong et al. 2017).

Taking Uber as an example, we can see that it has embraced more and more stakeholders into its platform-based BE. Besides Uber ride, it has introduced Uber Eat (a platform-based takeaway business) by involving multiple freelancing delivery drivers in its platform ecosystem. In China, Didi acquired Uber and embraced even more stakeholders, including leasing companies, bus services and designated-driver services. Obviously, the current business competition has moved beyond the traditional focus on the relationship between supplier and buyer to place more emphasis on the relationships between all stakeholders (Grönroos 2000). These relationships are complex, collaborative, unfolding and reciprocal and should be viewed as elements embedded within the value co-creation processes (Vargo 2009).

It is believed that value is not created in a singular discrete production-consumption event, but rather unfolds over multiple time periods at the intersection of multiple networks of resources (Chandler and Wieland 2010). These embedded resources are organizationally complex, but play an important role to the competitiveness of a business or an industry sector (Ahn and York 2011). From the resource-based view, competitive advantages are based on embeddedness in the organization fabric and other factors such as value, rareness and uniqueness (Barney 1991, 2001). Within the Asian context, the embedders of those social, cultural, and political factors in the BE are vital to the success of digital business (Avgerou and Li 2013; Martinsons 2008; Ou et al. 2013).

Hence, regarding the embedded resource pool, we propose that the second research direction should focus on the embeddedness of BE so as to explore how to mobilize the

embedded resources to renew an existing BE, to understand the key stakeholder roles and their interaction within the embedded resources pool, and to investigate how to nurture the embedded resource pool and balance it with and existing or new business models.

2.3. Research direction 3: Internationalization

After establishing BEs in their home country, many companies will try to explore the global market, competing for dominance and survival (Javalgi et al. 2005). Many companies from mobile internet business sectors have come to China but have failed when competing with local counterparts. For example, Uber was acquired by Didi in the ride-sharing industry, eBay left the Chinese market because of Alibaba, and Groupon was defeated by Meituan in the group-buying sector. Businesses engaged in the mobile internet field are more successful as a result of employing a BE strategy. One reason for this is that, in this sector, many and various stakeholders from other sectors will contribute to the core platform – for example, mobile payment, social network messengers – and these vary by country. Thus, besides the traditional liability of foreignness (Johanson and Vahlne 2009; Zaheer 1995), we also have to face the more complicated liability of the foreign "ecosystem", as opposed to the direct network resource (Chen 2003; Chen and Chen 1998; Johanson and Mattsson 1988; Rong et al. 2015b). An alternative approach suggested by some scholars that businesses use social mechanisms to coordinate those key resources (Kano 2017).

Some countries have highly developed ecosystems to support firms (Neubert 2016); however, others entail considerable institutional uncertainties, where newly internationalizing firms have access to very limited social and economic resources and networks. For instance,

within Asian countries, multinational companies confront serious difficulties when entering into or growing within markets due to limited access to the local BEs (Bhattacharya and Michael 2008; Oh and Larson 2011; Fuchs 2015). In this context, developing ecosystem stakeholders and nurturing local partners is essential when starting a business in a foreign market, in particular in the Asian countries. For example, ARM, the leading semiconductor company, spent its first two-years after entering China in 2001 nurturing ecosystem partners, before it got its first business deal (Rong et al. 2015a). Based on this case, three steps related to nurturing BEs in foreign markets have been proposed: incubate complementary partners, identify leading partners and integrate ecosystem partners (Rong et al. 2015b).

Furthermore, BEs have been shown to play a critical role in the growth of born-global firms (Tanev 2012). These born-global firms often act as key players in ecosystems that support large multinational enterprises (Zander, McDougall-Covin and Rose 2015); however, the most important thing is that those firms have the potential to become a leading species in the ecosystem of international trade (Bouncken, Meunch and Kraus 2015; Knight 2015; Knight and Cavusgil 2004). As one of the core organizational capabilities of born-global firms, creating a BE of various stakeholders helps with internationalization and improves their international performance (Kudina, Yip and Barkema 2008; Carvalho, Santos and van Winden 2014). However, the ways in which ecosystems advance the internationalization goals of young born-global firms remains still underexplored (Cavusgil and Knight 2015).

Hence, we propose that further research on BE should focus more on internationalization so as to understand the key challenges and opportunities during ecosystem internationalization, to explore how to internationalize the business via an ecosystem-based business model, and to

identify how to govern the collective actions among ecosystem partners' internationalization process.

3. Conclusion

A growing body of literature, across the disciplines of strategic management, systems science, and operational research, has been developed to uncover the mechanisms, structures, and strategic options of BEs in different sectors and different countries. However, very few studies have addressed Asian countries. Many fast growing, leading firms in Asia have been successful at managing their BEs to achieve competitive advantages not only in their home market but also globally. In order to better understand their managerial and strategic practices, this paper proposes that future research address dynamics, embeddedness, and internationalization. In particular considering the Asian context, further in-depth BE-related research will help researchers and practitioners to better understand how businesses could successfully enter into or effectively operate in Asian countries.

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