

How open innovation strategy and effectuation within platform ecosystem can foster innovation performance: Evidence from digital multi-sided platform startups

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ABSTRACT

This article explores how effectuation approaches – entrepreneurial action that deals with a set of means as given and focuses on selecting between possible effects that can be created with that set of means – contribute to digital Multi-Sided Platform (MSP) startups significant growth. The study integrates effectuation theory with an open innovation strategy within the platform ecosystem to understand the innovation process under resource constraint, limited knowledge, and uncertainty. Our inductive multiple-case study findings from three leading digital MSP startups show how their founding team uses the knowledge, ideas, and resources from external parties within the platform ecosystem, including agents, user communities, and supporting partner firms, along with means from the entrepreneurs' background, in the beginning to produce high growth innovation outcomes. Platform-based entrepreneurship becomes the integrating point of effectuation theory from entrepreneurship research and open innovation strategy through strategic management research. The bridge for these two areas suggests implications for platform-based entrepreneurship research in strategic entrepreneurship.

Introduction

Along with the rapid growth of digital technology, the phenomena about digital entrepreneurial firms that adopt a Multi-Sided Platform (MSP) business model, such as Alibaba.com, AirBnB, Go-Jek, Facebook, TripAdvisor.com, or Instagram, have been rising in recent years (Kenney & Zysman, 2016). MSP itself is defined as an “organization that creates value primarily by enabling direct interaction between two (or more) distinct types of affiliated customers” (Hagiu & Wright, 2015, p.185). The affiliated customers, such as users and other digital platforms that utilize MSP firms services, are also called as platform complementors (Gawer & Cusumano, 2014). As an emerging business model, strategic management and entrepreneurship scholars categorize MSP firms in two perspectives that is relevant to this study, MSP core competence perspective (Cusumano & Goeldi, 2013) and digital platform ecosystem perspective (Gawer & Cusumano, 2014). First,

the MSP core competence perspective by Cusumano and Goeldi (2013) proposes three MSP business model categorizations with different core competencies for each type. It includes voluntary User Generated Content (UGC)-based MSP business model, sharing economy business model, and freemium business model. User Generated Content-based MSP business model (ex: Facebook, Tripadvisor.com) that allow users to contribute the content in the platform has core competence in collecting valuable data from customers and turn it into revenue. Sharing economy business model (ex: AirBnB, Uber) has core competence in facilitating the transaction between multi-sided markets. Lastly, freemium business model, a business model that offers a free version for certain features and premium paid features for the upgrade version (ex: eHarmony.com), has core competence in developing superior product platforms such as sophisticated features or algorithm.

The second perspective, a perspective known as the digital platform ecosystem (Gawer & Cusumano, 2014), a perspective that positions a digital firm as a platform leader in the central of the digital platform ecosystem that

provides values for the platform complementors, differentiates the transaction platform and innovation platform. The transaction platform facilitates the transaction between two or more different parties that would be difficult to interact with each other without a platform. On the other hand, the innovation platform facilitates the external innovators (e.g., e-commerce sellers, mobile app developers) who develop complementary services by utilizing digital MSP firms technology or features. In line with the digital platform ecosystem perspective, Hsieh and Wu (2019) created the categorization based on digital MSP functionality, including transaction platform, innovation platform, and combination of transaction and innovation platform.

As seen in those studies, digital MSP business models in every proposed categorization utilize and maximize external resources in the open system. This setting regarding the digital MSP business model makes a clear difference between its practice and traditional business model practice. The digital MSP firm business models rely on the micro-entrepreneurs who are the platform agents who utilize the MSP firms for their business activities, and also another MSP firms within the digital entrepreneurial ecosystem (Sussan & Acs, 2017). The micro-entrepreneurs or another digital MSP firm contribution to the platform can be ranging from participating as either buyer or supplier in platform business operation such as Uber driver or AirBnB host to participating as the platform innovators such as application developer in Facebook platform or e-commerce seller who help to innovate the e-commerce platform through varieties products or services. Thus, the core competence needed for digital MSP firms is minimizing the transaction costs that happened in the platform ecosystem (Helfat & Raubitschek, 2018). Furthermore, from the innovation perspective, platform-based open innovation plays a significant role in new MSP firm growth since their business model is implemented in the open system (Chesbrough & Bogers, 2014).

In the pre-venturing entrepreneurship stream discussion, the rise of digital MSP firms mentioned above is closely associated with the young entrepreneurial team who found the venture; therefore, the firms can be mention as digital MSP startups (Ghezzi & Cavallo, 2020). In recent years, there is growing attention to open innovation research in the entrepreneurship area, especially in new venture contexts. For example, Greul et al. (2018) inductive study reveals the condition that triggers a new venture to adopt (or not to adopt) inbound or outbound open innovation. Eftekhari and Bogers (2015) depict how open innovation may lead to new venture survival. Even though this area of research is growing, there are still limited studies that examine the relationship between entrepreneurship and platform-based open innovation strategy that also develop the platform core com-

petencies (Hsieh & Wu, 2019). For example, while extant research has explored absorptive capacity as pre-condition of open innovation practice (West & Bogers, 2014), however, how young entrepreneurial team with limited absorptive capacity due to limited resource and experience implement open platform strategy through digital MSP business model has not yet fully understood (Patton, 2014). On the other hand, digital MSP startups often produce a nascent business model that is still unproven (Choudary et al., 2015). In this case, the effectuation approach is often used by entrepreneurs to do foresight and achieve new venture performance (Chandler et al., 2011; Djuricic & Bootz, 2018; Fisher, 2012; Read et al., 2009; Sarasvathy, 2001).

Effectuation theory scopes that include means driven, non-predictive control, leverage contingencies, and design the environment (Dew et al., 2008; Sarasvathy, 2001, 2009) has potential to explain new digital venture platform-based entrepreneurship process within open innovation strategy that maximize the roles of platform ecosystem members such as agents, users communities, and supporting partner firms (Saebi & Foss, 2015). In order to explore the paradox about how the young entrepreneurs with less experience and resource constraint can produce high growth digital MSP business model, effectuation logic provides a perspective to examine how the founding team maximizes and expand their means during innovation process (Ghezzi, 2019). The effectuation theory has been developing steadily for the last decades as the alternative theory that explains how entrepreneurs have different logic from MBA-type managers who commonly use causation logic (Sarasvathy, 2001). The causation logic tends to pre-determined the goals and accumulates the resource to achieve the goals while effectuation logic tends to start with a given set of resources and co-create the goals along with the partners or stakeholders that willing to collaborate with the entrepreneurs (Dew et al., 2009; Sarasvathy, 2009). The co-creation process in the effectuation logic, a mutual value creation process that involves different stakeholders within platform ecosystem and is expanded together through platform engagement, is often discussed in the open innovation process (Enkel et al., 2009; Ghezzi, 2019; Piller et al., 2012; West & Bogers, 2014). However, in both entrepreneurship and open innovation literature, the relationship between effectuation and open innovation strategy has yet to be proposed. Nevertheless, the importance of studying the bridges in these two theories has been discussed in several works of literature about digital entrepreneurship. (Ghezzi, 2019; Sussan & Acs, 2017).

We address the gap above by investigating how effectuation can facilitate digital MSP startups' open innovation practice to produce high innovation performance.

Hence, our main objective in this study is to examine the platform-based innovation process by integrating open innovation strategy within the platform ecosystem (Saebi & Foss, 2015) with effectuation theory (Sarasvathy 2001, 2009). The effort in this study to integrate these two theories is important since it can deny open innovation theory assumptions regarding the organization that can implement it should have the absorptive capacity with high resources and high prior experience (Davis, 1971; Sarasvathy, 2001; West & Bogers, 2014). Contrarily, the contextual gap regarding the implementation of an open innovation strategy in small and young firms with limited resources and experiences is addressed in this study (Salder et al., 2020). The effectuation process used by the digital MSP startups may develop the requirement to implement an open innovation strategy. Thus, it can complete the inadequacy open innovation theory in the digital MSP startups context as well as the inadequacy of effectuation theory for the digital MSP business model where the stakeholders can be from the entities within the ecosystem (Locke & Golden-Biddle, 1997). In order to achieve the research objective, we raise research questions, including: how do young entrepreneurial teams effectuating the development of high growth innovation outcomes for digital MSP Startups? What are the roles of the platform ecosystem in the platform-based entrepreneurship process?

The research question addresses the innovation performance and innovation strategy concepts. Specifically, it aims to investigate the process of young entrepreneurs to achieve high startups' growth as an outcome of the innovation (i.e., the innovation performance). Furthermore, this research gives emphasis on the innovation process that is a part of the innovation strategy. We investigate these research questions by using multiple case study technique that sheds lights on the platform-based open innovation practice in emerging economies context. The emerging economies contextual become important for both effectuation and platform-based open innovation research since it has high uncertainty and also has a high number of users that contribute to the MSP firm within the digital entrepreneurial ecosystem for their living or lifestyle (Hsieh & Wu, 2019).

This study offers contributions to effectuation literature as well as open innovation literature in several areas. First, it explores the phenomenon of platform-based entrepreneurship as an entrepreneurial process. This perspective integrates the open innovation strategy within the platform ecosystem with effectuation theory. While open innovation strategy in the platform ecosystem explains the network-based open business model at the ecosystem level, effectuation theory helps to understand the platform-based entrepreneurship process at the young entrepreneurial team

level. Integrating those two theories can be a respond for research agenda about "conceptual and empirical model of the moderation and interaction effect of digital governance and digital user citizenship on the path from digital entrepreneurship to digital marketplace" (Sussan & Acs, 2017, p.71) as well as "enablers and barriers to adopt the platform-based entrepreneurship strategy" (Hsieh & Wu, 2019, p. 320).

Second, as mentioned previously, our research contributes to the missing link about how young entrepreneurial teams with limited knowledge and experience are able to produce high innovation performance (Hulsink & Koek, 2014). Even more, they develop high innovation performance through open innovation strategy as well as an open business model that needs high absorptive capacity through experiences and resource stock (West & Bogers, 2014). Whereas, most innovation literature mentioned that decent knowledge is a pre-condition of any innovation outcomes (ex: Galunic & Rodan, 1998; Leiponen & Helfat, 2010; Mardani et al., 2018; Nonaka & Takeuchi, 1995; Santoro et al., 2018). The nature of effectuation theory and open innovation strategy within the platform ecosystem helps to understand this "anomaly" process. Third, this study enriches the entrepreneurship literature with research that explores the platform-based startups with digital ecosystem perspective. The study with this perspective is still limited in the entrepreneurship literature since most of the researches focuses on the individual entrepreneurs or teams as the growth driver (Daunfeldt & Halvarsson, 2015).

The structure of the article is presented as follows; we start with the literature review about the theoretical framework used in this study in the next section. Then, we explain the detail about qualitative methodology, multiple-case study, used in the research. Later, we discuss the findings from the case studies. Next, we develop the proposition based on the findings and present the conclusions, implications, as well as future research direction for platform-based entrepreneurship in both entrepreneurship and strategic management literature.

Theoretical Foundation

The theoretical foundation discussed in this study can be presented as seen in Figure 1. This study tries to integrate effectuation theory (Sarasvathy, 2001; 2009) and open innovation theory (Saebi & Foss, 2015) in the platform ecosystem context (Gawer & Cusumano, 2014). It explains the different approaches in generating innovation outcomes from young entrepreneurial teams who develop digital MSP startups compare to the established firm. In developing innovation outcome from open innovation process, the es-

established firm tends to use causation logic that defines the innovation goal in the beginning and then accumulate the resources, knowledge, or ideas from external parties (Chandler et al., 2011; Chesbrough, 2006). On the other hand, digital MSP startups use effectual logic that has open-ended goals (Ghezzi, 2019). They start with what they already have, and then the goals can be iteratively changes based on their experimentation and interaction with stakeholders. In the platform ecosystem context, the effectual logic of digital MSP startups is integrated with open innovation

and develops a process that is called platform-based entrepreneurship. In this matter, since the digital MSP startups have limited resources and prior experience, they conduct the effectuation process by leveraging the external resources (open innovation) from the stakeholders within the platform ecosystem such as platform agent, user communities, or supporting partner firms. The innovation outcome is generated iteratively from the successful experimentation in this process.

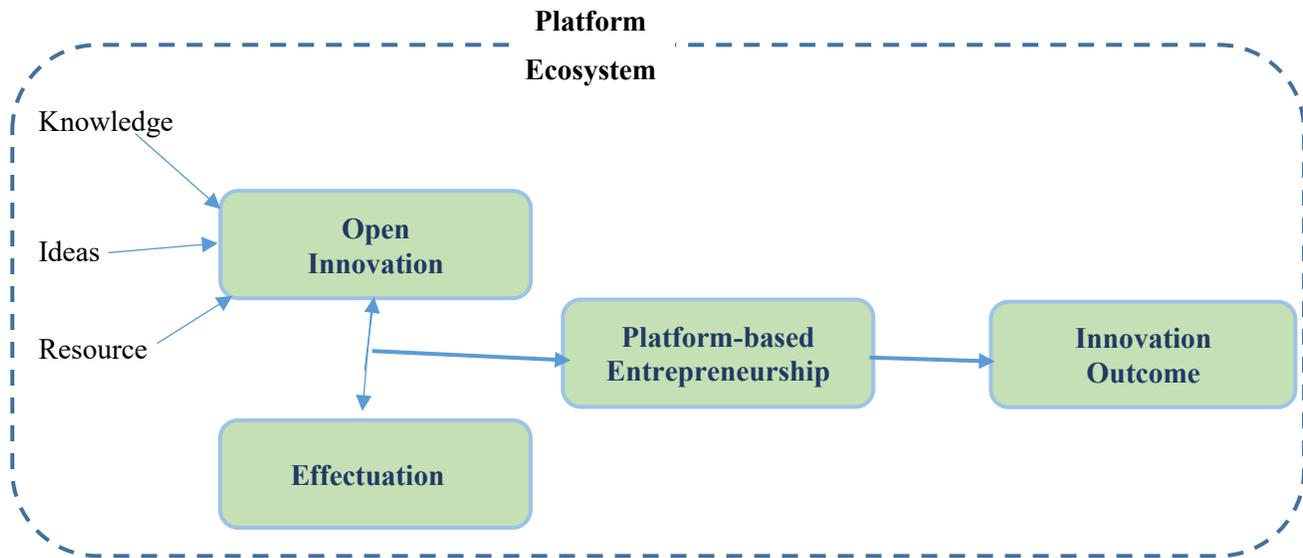


Figure 1. Platform-Based Entrepreneurship Framework

Platform-Based Entrepreneurship in Emerging Economies

MSP is defined as an ‘organization that creates value primarily by enabling direct interaction between two (or more) distinct types of affiliated customers’ (Hagiu & Wright, 2014, p.185). In the recent development of this concept, the roles of each platform ecosystem members are discussed as the actors that provide the platform growth through the digital entrepreneurial ecosystem. The digital entrepreneurial ecosystem itself is the integration concept between the digital ecosystem and entrepreneurial ecosystem that consists of the integration of agents and users within the platform (Sussan & Acs, 2017). In this case, agents are the parties that perform as “supplier-side” of the platform such as micro-entrepreneurs and small businesses, while users are the parties who use the service from the agents facilitated by the digital platform. In certain business model where the users can participate in both taking and giving intellectual property such as open-source software and social media, users can also produce innovation out-

comes within the digital platform that can be used for other users. The users often form user communities to maximize and enhance their innovation outcomes and business activities (Sims & Seidel, 2017). In the innovation platform perspective, the agents and users communities, as well as supporting partner firms, are categorized as the complementors that drive platforms’ innovation as the ecosystem-based organization (Gawer & Cusumano, 2014). In contextual perspective, emerging market such as Indonesia, where there is an enormous number of the necessity-based entrepreneur (who will take a role as agents) and Internet, is very suitable for digital MSP startups with the characteristic discussed in this section.

As an emerging market, Indonesia has remarkable growth in the past few years, including in the digital economy sector. The growth engine for this phenomenon mostly comes from digital MSP startups that maximize both of the agents and users within their platform ecosystem, such as Go-Jek, Tokopedia, Bukalapak, Midtrans, Kitabisa, OLX, tees.co.id, sribulancer, and so on. For example, in 2017 Go-Jek made 3 million transactions of ‘Martabak’ food from

its Go-Food services, a peer-to-peer (P2P) food delivery service, with an economic value around USD \$10 million (Nurbayti, 2019). In a recent study, even Go-Jek main service, P2P online transportation, can influence their users for not buying their private vehicles (Santoso et al., 2018). Another example, Tokopedia, leading Indonesian e-commerce, reach the sales of \$1 billion in 2016 (Kowanda et al., 2018). In 2017, Tokopedia just got a remarkable \$1.1 billion investment from Alibaba group thanks to its performance (Kowanda et al., 2018).

Commonly, those digital MSP startups evolved and expanded their business model over time to maintain their competitive advantage (Santoso & Wahyuni, 2018). For example, Go-Jek introduced Go-Food for the food delivery industry by leveraging its main service, P2P online transportation, and accessing the agents, the restaurant owners. Tokopedia expanded its services from retail e-commerce into a digital platform that can serve anything, including zakat, donation, and qurban, by using their existing platform after they have access to those Islamic activities providers. Those two examples show that the new innovated business model from the collaboration between digital MSP startups and the agents provides a win-to-win situation. For the digital MSP startups, it expands their business portfolio to enhance the platform performance overall with an efficient cost-to-expansion scale ratio. On the other hand, for the agents, the digital MSP startups platform expands the channel for accessing the customers as well as innovate their conventional trade-based business model into the more

advanced business model such as online zakat or qurban (Setiawan et al., 2020).

In terms of service and product variation within the platform, there are digital MSP startups that control the service offered by the agents such as Go-Jek, Uber, Ubiklan, and Grab. In this business model, the services conducted by the agents are pretty much similar since the agents commonly perform as labors. On the other hand, there are also digital MSP startups that use the open business model with more dependency on the agents' innovation such as tees.co.id that allow the crowd to design their T-Shirt and sell them to the platform user. Another example is Tokopedia, the largest e-commerce in Indonesia, that allow the user to sell anything needed for the customer. There is a trend where the nascent entrepreneurs in Indonesia adopt e-marketplace right away after they start their business (Wiradinata, 2017). Since the source of the sold goods come from the crowds, this platform enjoys the innovative inbound products that often created as the results of environmental changes. For example, when Indonesian government implements cashless payment for every highway gates, there are a bunch of sellers who offer "tongtoll" tools (a stick to put the e-toll prepaid cards) as the cheap alternative of e-Toll Pass On-Board Unit (OBU) right away after the new regulation was announced.

The open innovation process that happened in the Tokopedia MSP business model can be presented in Figure 2.

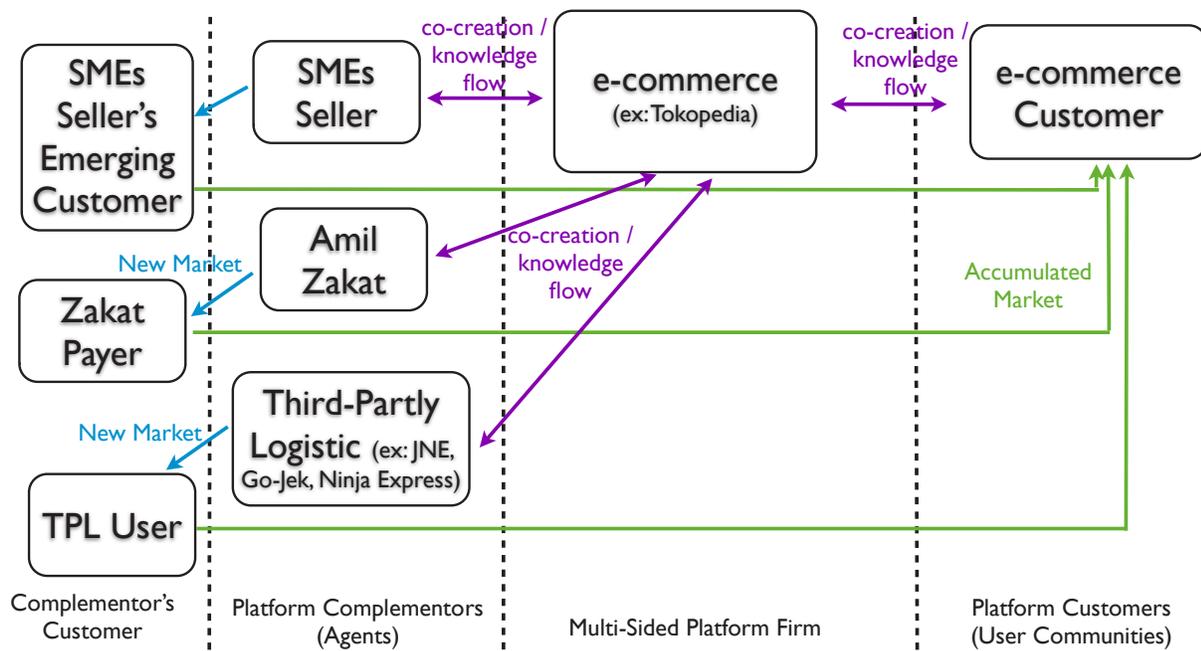


Figure 2. Example of Open Innovation Process on MSP Business Model

As the typical marketplace-based e-commerce platform, Tokopedia offers limited or no internal content to serve a certain market. Therefore, this type of MSP Firm starts with an outbound open innovation process that allows under-utilized assets or ideas to be used outside the organization by other entities for their business and market (Chesbrough & Bogers, 2014). In this open innovation process, the MSP firm produces the core infrastructures or features that enable crowds or communities to use them for their benefit. Tokopedia creates the end-to-end online platform infrastructures that allow SMEs to open their online store based on their resources with various content produced outside the MSP Firm R&D division. The online store infrastructures are very valuable for SMEs as the platform agent or user communities since it is costly to create and maintain an online store platform by themselves. On the other hand, the content creation results from the SMEs provide benefit to the MSP firm through the new market from the SMEs network. By using this method, some niche market that too small to be justified by internal R&D division also can be served through crowds or communities. As a result, these new contents and markets can increase the revenue, platform traffic, and also brand awareness in their industry. For instance, when an emerging SMEs seller start to sell new products in the platform such as used car, at the same time, they serve used car markets that haven't been served previously by the marketplace e-commerce. In another example, Amil Zakat institution, the institution who collect Islamic mandatory donation, such as Rumah Zakat or Dompot Dhuafa also use marketplace e-commerce infrastructure to serve their markets, Zakat payer, that haven't been served by marketplace e-commerce.

The new markets from the outbound open innovation process are accumulated as the MSP Firm's market within the platform ecosystem. At this point, the inbound open innovation process can happen when the innovation and knowledge from crowds or communities that create the new market flow back to the MSP Firm. Inbound open innovation process opening up the firm innovation process by involving external contributions and inputs (Chesbrough & Bogers, 2014). The accumulated different markets brought by the SMEs can be served by other SMEs in the platform with various products or services. Thus, both the economy of scale and economies of scope can be achieved within the platform (Chesbrough, 2011). In the MSP platform setting, the inbound knowledge flow is not only come from the SMEs as suppliers but also come from customers. Beside leads to some incremental innovation through data-driven insight analysis, the knowledge may also lead to business model innovation (e.g., Tokopedia) and also open

service innovation (e.g., Sejasa, Go-Jek) (Santoso & Wahyuni, 2018). The open service innovation often shifts the product functionality into the service-based offering, such as Product-Service System, where the offering is turning from product owning into the pay-per-use method (Santoso & Erdaka, 2015). This large scale of experimentation and exploration from the inbound open innovation process is something that internal MSP firm R&D division cannot do by themselves. For MSP firms with B2B or B2C business models, their open innovation practice commonly starts with the inbound process. For instance, the branded sellers and SMEs sellers provide inbound new products/services to the platform. Third-Party Logistics provides the solution to innovate the fulfillment process. The customers also provide feedback for the platform services that can be used to improve or innovate its services.

The combination between inbound open innovation process and outbound open innovation process that includes value co-creation as well as giving and taking practice between MSP Firm and its crowds or communities results in coupled open innovation process (Sims & Seidel, 2017). The co-creation activities mostly related to the user-related part of open innovation (Rayna & Striukova, 2015). In this matter, the users contribute either in product design or product manufacturing and distribution. For example, in the design marketplace, the crowds or communities can provide the design through the crowdsourcing method, then the MSP Firm does the manufacturing, packaging, and delivery of the final product to the end-user (Brabham, 2008). Thus, the MSP Firms will have an extended product portfolio that co-created together with the crowds or communities. In MSP Firm context, the crowds or communities can be a firm. Therefore, coupled IO processes can include joint ventures, strategic alliances, or consortiums that produce innovation together. For example, an e-commerce MSP Firms can work together with the logistic company to create an instant delivery service that closes the gap between online and traditional shopping in terms of the product delivery to the end-user (Santoso & Wahyuni, 2018). Tokopedia also creates a new co-created business model to facilitate the Zakat payer in making a donation with Amil Zakat institution.

These facts are consistent with the view of agents that creative (Florida, 2004) and innovative (Acs & Audretsch, 1988). From a digital entrepreneurial ecosystem perspective, these agents are the source of the digital MSP startups to do Schumpeterian innovation by optimizing the utilization and reconfiguring the digital platform into new systems and new networks as the exogenous model (Sussan & Acs, 2017). Later, as the platform manager, the digital MSP startups acquire and monetize the users through this effort. Thus, the agents' innovation role for the digital MSP startups with

an open business model has a more significant impact on the platform innovation from the routines perspective.

Open Innovation Strategy in Platform Ecosystem

The open innovation (OI) concept was coined with the focus of the new innovation process logic from external knowledge (Chesbrough, 2003). This concept opens up a new paradigm to overcome the limitations of closed innovation within the firm that assumes the boundaries of the firm is dependent on the strategic factor market acquired and internalized inside the firm organization (Barney, 1988; Peteraf, 1993). Based on this resource-based view (RBV) perspective, the OI concept expands the closed boundary of the firm with external resources utilization. Later, Chesbrough and Bogers (2014) update the definition of OI as a distributed innovation process that utilizes purposively managed knowledge flow across firm boundaries and use both monetary and non-monetary mechanisms in line with the firm's business model.

Since the digital MSP startups innovation strategy within their platform ecosystem mostly involves the platform members, the platform ecosystem is closely related to OI. For example, Apple relies on the musician and the app developers to enrich their iTunes Store in order to enhance the value of its core mobile products, iPhone, and iPad (Boudreau, 2012). Google and Yahoo also rely on partnering portfolios in their value-creation activities for their entrepreneurial firm growth (Rindova et al., 2012, 2016). In the OI perspective, the platform is an essential element for leveraging external resources of innovation in obtaining phase within the enabling/filtering category (Jeppesen & Lakhani, 2010). In the bigger picture, the key phase for profiting from external sources of innovation includes obtaining, integrating, commercializing, and interaction (West & Bogers, 2014).

In OI research, agents and users communities are considered as valuable external resources for firm collaboration (Piller & West, 2014; Von Hippel, 2005; West & Sims, 2018). They have a unique role that even though the agents and users communities are not officially the employees of the firm, the organization may depend on them as the source of innovation. The collaboration between firm and agents or users communities leverage the multiple actors that can produce knowledge and information needed to create the innovation or support the firms' open innovation strategy. The state of the art of agents or user community-based OI is categorized based on the combination of platform ecosystem concept that categorizes the actors as MSP firm and its complementors (Gawer & Cusumano, 2014) and agents and user community categorization in OI (West & Sims, 2018).

In the beginning, the coupled OI concept was influenced by the interaction within open source software (OSS) communities that common to share the source code and use the code shared by the other community member (Stallman, 1985). From the platform ecosystem perspective, the community members become the complementors of the platform since their innovation activities affect the overall platform innovation (Gawer & Cusumano, 2002, 2008, 2014). Not the only community, the crowds that detached from firms boundaries also contribute to the platform innovation (Jeppesen & Lakhani, 2010; Stanko & Henard, 2017). For these reasons, there is growing research interest on the innovation process and their outcomes within the platform that include agents or user community members interaction as well as digital MSP startups interactions (Dahlander & Wallin, 2006; Tien & Cheng, 2017).

The state-of-the-art agents or user communities based OI typically have four patterns that include crowds or communities members' motivation, their interaction within the agents and users communities as well as its outcome, strategic effect for the complementors, and the MSP firms strategy in the platform ecosystem. In these topics, the OI outcomes can provide the benefit for both MSP firms as well as the complementors. In the platform ecosystem context, the OI scholars record the motivation for platform members to participate in platform crowds or communities for both monetary and non-monetary reason that includes intrinsic motives, extrinsic motives, and social motives (Antikainen & Vaataja, 2010). They are ranging from rewards or incentives (Leimeister et al., 2009), firm recognition (Jeppesen & Frederiksen, 2006), interest in the creative process (Füller et al., 2008), enjoyment of online interaction (Wiertz & de Ruyter, 2007) perceive value learning and fun (Nambisan & Baron, 2009), peer network effects (Boudreau & Jeppesen, 2015) to "personal but shared" needs (Budhathoki & Haythornthwaite, 2013).

When the agents or users communities members join in a platform ecosystem, they will have peer interaction with another member or the MSP firms that create a certain outcome for them as the platform complementors. For example, the free and open-source (FOSS) community members sponsored by MSP firms tend to have more interaction with individuals rather than with other sponsored members and also seek the central individuals within the community (Dahlander & Wallin, 2006). Those sponsored members take a role as 'insiders' for MSP firms to get access to the community and utilize it for the firm benefit. The interaction between community members through discussion and other peer-to-peer communication forms can provide the digital MSP firm the valuable ideas and knowledge to create incremental innovations, innovations that new to the firm, and

come from the progressive refinement of existing solution (Tien & Cheng, 2017). This interaction can also drive the non-canonical community within the canonical community that can produce innovation for the firm through the working and learning process together with the peers (Brown & Duguid, 1991). Forte, Larco, and Bruckman (2009) suggest that as the community grows up, the role of a senior community member to keep self-governance mechanism by guiding the social norm and policy but utilize distributed decision-making at the same time. The OI scholars also noted the occurrences of strategic effect for complementors as a result of the interaction process with other complementors. The taking and giving of source code and help practice in the FOSS community makes the firm as community member expand the social ties, have conservative strategic posture, and have incremental innovation orientation (Sims & Seidel, 2017).

In the recent development, there are growing discussions about the business model that support OI in terms of content, structure, and governance dimension called the open business model (Saebi & Foss, 2015). These discussions are motivated by the different results of the organizations that implement open innovation strategy since the business models are not fit. Then, this study proposes the four typologies of the business model that fit with each open innovation strategy including efficiency-centric open business model for market-based innovation strategy, user-centric open business model for crowd-based innovation strategy, collaborative open business model for collaborative innovation strategy, and open platform business model for network-based innovation strategy. The ability to develop these business models that fit with each open innovation strategy depends on the digital MSP startups' integrative capabilities (Helfat & Raubitschek, 2018). The integrative capabilities contribute to digital MSP startups ability to design and transform their business model that can orchestrate the digital MSP ecosystem members, scanning/sensing the opportunities based on their core products/services and the digital ecosystem member knowledge, lower the transaction costs of outsourcing to agents, users communities, or supporting partners firms, develop positive cross-side network effect, as well as expand the boundary of digital MSP startups.

Effectuation in Platform Ecosystem

Effectuation has evolved from emerging to developed theories about new venture creation in the past decades. In the early theory development phase, effectuation is defined as a process where entrepreneurs take 'a set of means as given and focus on selecting between possible effects that

can be created with that set of means' (Sarasvathy, 2001). In effectuation theory, means consists of the entrepreneurs' relevant "What I know," "Who I am," and "Whom I know" that affect greatly on how entrepreneurs behave in the new venture creation stage (Read et al., 2009). This process enables the entrepreneurs to create a new business model that has not been implemented previously since the underlying logic is controlling the future at certain extent without predicting the future (Fisher, 2012; Reymen et al., 2017). In this case, the established new ventures also able to create new markets through cooperating with external stakeholders as well as strategic alliances as their means.

After Sarasvathy (2001) seminal work, entrepreneurship scholars start to explore the usage of effectuation, the antecedents and consequences of effectuation in a new venture context, its interplay with the causation process, as well as its relationship with other theories and concepts. Effectuation process has been found useful for new venture creation in the uncertainty and unpredictable context such as turbulent environment in transition markets (Mainela & Puhakka, 2009; Nowinski, & Rialp, 2013), robust development process (Midler & Silberzahn, 2008), international new venture (Harms & Schiele, 2012; Maine et al., 2015). Effectuation process also differentiates how entrepreneurs in the new venture and managers in established behave in their decision-making (Hayton et al., 2011; Sarasvathy, 2009). Specifically, effectuation has become the rudimentary approach for new venture creation by entrepreneurial teams such as experience entrepreneurs (Dew et al., 2008; Fiet et al., 2013; Harms & Schiele, 2012), young entrepreneurs (Hulsink & Koek, 2014; Laskovaia et al., 2017), family firms co-founders (Hayton et al., 2011; Miller et al., 2016), and also university spin-offs (Hannibal et al., 2016).

The studies about new venture show that effectuation as well as its second-order constructs that include experimentation, affordable loss, flexibility, pre-commitment, and strategic alliances, have association and consequences with new venture performance (Chandler et al., 2011; Guo et al., 2016; Read et al., 2009) as well as creativity in its new product development (Blauth et al., 2014). In order to perform effectual action and behavior, there are various conditions or antecedents for the entrepreneurial teams in new venture creation context such as entrepreneurial experience (Harms & Schiele, 2012), entrepreneurial self-efficacy (Hinz, 2017), patterns of opportunity discovery and innovativeness of opportunity (Long et al., 2017), social media interaction (Fischer & Reuber, 2011), socially supportive culture (Laskovaia et al., 2017), as well as environmental uncertainty and venture resource position (Reymen et al., 2015). However, in order to achieve sustainable new venture performance, the effectuation process alone is not

enough. Several studies reveal that the interplay between the effectuation and causation process is needed for each different purpose. For example, effectuation contributes to the new Internet venture growth through resource bundling, while causation contributes to it through stabilizing resources (Guo et al., 2016). When environmental uncertainty increase and ventures resource position decrease, the new venture scope becomes wider, and they drive effectual logic for the decision-making. On the other hand, when environmental uncertainty decrease and stakeholder pressure increase, the new ventures scope become narrower and they drive causation logic for their decision-making (Reymen et al., 2015). In the new venture business model development phase, effectual logic is used to create a viable value proposition for a certain customer segment while causal logic is used for defining business model components that related with value proposition and customer segment (Reymen et al., 2017). Thus, the processes of effectuation and causation are dynamic in the new venture creation process.

In the recent study, the underlying cognitive logic with effectuation logic shows that it plays an essential role in early stage of digital MSP new venture creation that relates with some Lean Startup Approaches (LSAs) context including resource scarcity, options, experimenting, leverage contingencies, testing, iteration, accepting change, shaping reality, proactivity, and also limiting investment (Ghezzi, 2019). LSAs are the set of methods to test the value proposition and validate the business models that consist of customer development (Blank, 2007) and lean startup development (Ries, 2011). In this context, the digital ecosystem members (customers in LSAs) have significant roles in helping the digital MSP startups to produce high innovation performance in uncertainty situations through a suitable business model. For example, the feedback from both merchant (agents) and users help the digital MSP startups to run the experiment for both markets in a local setting to develop outstanding value-added services and ensure higher penetration rate (Ghezzi & Cavallo, 2020). Another example, the interaction with agents and users are needed to perform decent matchmaking between both sides of the market as well as develop fit profit formula from them. These experiments use effectuation principle, affordable loss, called minimum viable product (MVP) in LSAs. The MVP (business model) will be iterated based on the customer feedback in such a short time-window until the digital MSP startups produce the innovation outcomes that achieve product-market fit (Blank & Dorf, 2012). Thus, these processes need agile organizations as well as a business model. When the environmental dynamism and uncertainty are high, strategic agility in early stage of digital MSP startups is more needed than operational agility (Ghezzi & Cavallo, 2020).

The implementation of effectuation theory in examining the innovation outcomes itself has been conducted in several studies. For example, Roach et al. (2016) study show that product/service innovation as the SME's innovation outcomes is determined by two effectuation principles, means, and leverage contingencies. As a result, product/service innovation generates innovation performance in this context. In the other study, effectuation also determines service innovation performance (Jisir & Maamari, 2017). Another example, Szambelan et al. (2019) study, mentions that two effectuation principles, leverage contingencies, and means, negatively associates with market-based innovation barriers that also has a negative association with innovation performance.

Comparison of Open Innovation Strategy and Effectuation in Platform Ecosystem

In order to combine two different theories above in the theoretical rigor stage, examining interactive effects as well as establishing complementary is needed (Bello & Kostova, 2012). Thus, this section focuses on presenting the differences and commonalities of open innovation strategy and effectuation in platform settings. Our article identifies the differences and commonalities in these two theories, in particular, the implementation in the platform ecosystem setting. First, both of these theories aim to achieve outstanding innovation performance as the determinant of the organization's competitive advantage by leveraging external resources. In an open innovation strategy, the determinant of innovation performance is organization knowledge breadth and/or knowledge depth (Chesbrough & Bogers, 2014). OI works of literature emphasize the valuable knowledge flow from or to external parties to accelerate innovation performance (Chesbrough, 2006; Gassman & Enkel, 2004). In this context, there are two types of external knowledge search. Breadth knowledge search such as crowdsourcing captures the diverse knowledge from external sources to provide knowledge input for the innovation activities (Amara & Landry, 2005; Leiponen & Helfat, 2010). In contrast, depth knowledge searches such as R&D alliances conduct a high intensity of external knowledge flow from external parties that deeply integrated with the firms' innovation activities (Laursen & Salter, 2006; Leiponen & Helfat, 2010). On the other hand, in effectuation theory, the innovation performance is determined by maximizing means (Whom I Know) and leveraging contingencies through experimentation or flexibility based on the co-creation, result, and feedback from the digital ecosystem members (Roach et al., 2016; Sarasvathy, 2009). The means will be expanded overtime after the entrepreneurs interact with external stakeholders.

Second, both open innovation strategy and effectuation theory coordinate the value creation with external parties. Network-based open innovation strategy with open platform business models such as Apple iPhone App Store creates the highest potential of co-creation from a multitude of different stakeholders (Saebi & Foss, 2015). In this setting, MSP firms select and integrate new business ideas and opportunities from both internal and external organizations and also set up a valuable incentive mechanism for those who contribute to the innovation (Foss et al., 2013). On the other hand, in effectuation theory, the external stakeholders are expanded through unplanned networking action and also contribute to means expansion through co-creation (Galkina & Chetty, 2015). In the platform setting, the external stakeholders can have agents, user communities, or supporting partner firms' roles. The stakeholders that fit with the digital MSP startups business model will expand the numbers of the agents, user communities, or supporting partner firms with the same category with scalable growth.

Third, both open innovation strategy and effectuation theory propose essential organization culture to achieve high innovation performance. Open innovation strategy proposed two types of essential organizational culture, avoid not-invented-here (NIH) and not-sold-here (NSH) syndrome (West & Bogers, 2014). Avoid NIH syndrome is essential for inbound open innovation practice to avoid the reluctance to use the ideas, knowledge, or even innovation from external parties. In contrast, avoid NSH syndrome is essential for outbound innovation practice to allow external parties to utilize the unused asset or internal innovation for their business activities. On the other hand, effectuation theory proposes the agile business model and high flexibility as well as social support culture to support the innovation process (Ghezzi, 2019); Laskovaia et al., 2017). During the early stage of new venture creation, the business model may

change quite often depends on the entrepreneurs' interaction with external stakeholders and how they leverage contingencies afterward (Barwinski et al., 2020)..

Fourth, both of the theories suggest an important role for digital platform ecosystem members. OI literature mentions that the firm performance measures innovation performance contributed from the innovation outcomes (Tien & Cheng, 2017). In the platform setting, most of the platform performance is contributed by the platform ecosystem member activities. Open innovation strategy suggests that the digital ecosystem members, including agents, user communities, and supporting partner firms involved in the re-organization production and distribution system as platform complementors with the formal procedure (Saebi & Foss, 2015). However, effectuation theory suggests both formal and informal external stakeholders' contributions based on their pre-commitment with an open structure toward the organization (Read et al., 2009). The co-creation process can be implemented in the informal procedure as well.

Fifth, in terms of handling uncertainties, both theories have the mechanism to be implemented. Open innovation strategy suggests a market-based innovation strategy to reduce the uncertainty (Saebi & Foss, 2015). When the innovation comes from the market that close to the end-users, the distance search activities of the platform are converted to local search activities that have less uncertainty (Afuah & Tucci, 2012). On the other hand, effectuation theory suggests handling collective uncertainty through collective experimentation that is conducted with the digital ecosystem members. This process not only helps the digital MSP startups to reduce uncertainty but also helps agents, user communities, as well as supporting platform firms to handle their uncertainty within the platform ecosystem.

The summary of the comparison in these two theories is presented in Table 1.

Table 1
A comparison of open innovation strategy and effectuation in the platform ecosystem setting

	Open Innovation Strategy in Platform Ecosystem (Saebi & Foss, 2015)	Effectuation in Platform Ecosystem (de Vasconcelos Gomes et al., 2018; Ghezzi, 2019; Read et al., 2009; Sarasvathy, 2001, 2009)
Innovation Performance Source	Knowledge breadth and/or knowledge depth	Maximizing means and leverage contingencies
Value Creation Coordination	Coordinate multiple stakeholders through the business model as the open-innovation platform	Network coordination through stakeholder co-creation
Essential Organization Culture	Avoid not-invented-here (NIH) and not-sold-here (NSH) syndrome	Socially supportive culture, agile/high flexibility
Platform Ecosystem Member Role	Involve in formal re-organization of the production and distribution system as complementors	Involve in both formal and informal platform activities based on stakeholders' pre-commitment with open structure
Uncertainty Management	Uncertainty reduction through market-based innovation strategy	Managing collective uncertainties within the platform ecosystem through collective experimentation

Our comparison shows that even though there are differences between open innovation strategy and effectuation theory within the platform ecosystem, there are also common understanding in platform ecosystem practices. Therefore, effectuation theory can complement the open innovation strategy and help to explain the anomaly of high innovation performance by less experience young digital MSP startups. The integration of these two theories helps to capture the innovation process of digital MSP startups. Finally, the next section discusses multiple-case study research that explains about this integration based on the phenomena in the Indonesian digital MSP startups context.

Method

Since there is still a limited holistic approach to understand how effectuation influences co-creation capacity development, the researcher conducts an exploratory and inductive multiple-case study (Eisenhardt, 1989; Yin, 2009). The qualitative approach is appropriate to analyze the nascent theory, such as effectuation (Edmondson & McManus, 2007; Perry et al., 2012). Furthermore, the case study approach can explore situational constraints as well as the local context that provide the holistic perspective of the phenomenon (Yin, 2009). It is also a suitable methodology for theory development (Eisenhardt, 1989; Eisenhardt & Graebner, 2007). Thus, it is relevant to the nature of this study that is not intended to test the hypothesis or proposition, but it has the objective to extend the effectuation theory toward open innovation strategy within the platform ecosystem theory.

To examine the effectuation process in the new venture that conducts the OI process above, we choose the per-

sonnel of the founding team from the digital MSP startups as respondents. Then, to avoid the bias on the innovation capability of the team that might be developed from the members' previous experience, we choose the new Internet-based MSP startups that the co-founders are the young people with a few experiences in creating ventures or managing firms. They founded the ventures with the nascent business model while they are 20s. According to Guo et al., (2016) and Milanov and Fernhaber (2009), the age of new Internet ventures are ten years or younger. Moreover, the context in this study is chosen based on the context fit with effectuation that includes a new and unproven business model (Fisher, 2012; Sarasvathy, 2001), and emerging economies (Cai et al., 2017). These contexts have very high market growth as well as high uncertainty due to environmental dynamism. Thus, exploratory learning is needed to overcome the challenge.

Based on the respondent criteria above, the researcher uses three leading local Indonesian digital MSP startups that implement OI practices with their agents, user communities, or supporting management practice as respondents. These digital MSP startups implement a nascent and unproven business model that has high uncertainty. The first digital MSP startup, P2PRentalCo., is one of the early digital MSP startups in Indonesia that uses peer-to-peer (P2P) rental business model. The second company, SocialCulinaryCo., is the first social media platform for recipe in Indonesia. The last one, SocialcrowdCo., is one of the first crowdfunding platforms for social causes in Indonesia that has promising growth up until this article is written. The author summarizes the overview of these three digital MSP startups in Table 2.

Table 2
Overview of digital MSP startups interviewed

Digital MSP Startup	Funding Stages	Age (years)	Domain	Number of Employees	Agents, User Communities, or Supporting Partner Firms
P2PRentalCo. (alias name)	Non-funding	4	P2P Renting Platform, Pre-Loved Selling Platform, Software-as-Services (SaaS)	20	Rental stuff owners, user communities, rental entrepreneurs communities
SocialcrowdCo. (alias name)	Seed	5	Crowdfunding Platform for Social Cause	50	Campaigner, beneficiary, donor, payment providers
SocialCulinaryCo (alias name)	Acquired	7	Social Media Platform for Culinary Recipe	23	User communities, food blogger

In this process, the author conducts semi-structured interviews for about one hour and three informal meetings around 30 minutes for each respondent. The respondents are aware that the interview process is recorded and transcribed afterward. To ensure the reliability of the information obtained from the interview, the researcher also collects other documentation data from the company website, online news, company social media channels, as well as the founders' speeches in seminars. Then, data triangulation is conducted by comparing the interview result and those secondary sources. During the data analysis process, the key themes are taken from the literature and the finding patterns for those key themes are described from the respondent interview and secondary data transcripts. The key themes are categorized as innovation performance source, value creation coordination, platform ecosystem member role, uncertainty management, and essential organization culture.

As a summary, the qualitative method in this research use a case study approach that tries to explain platform-based entrepreneurship phenomena as the empirical evidence of the integration between effectuation theory and open innovation theory. The findings from the case study are discussed to develop the propositions that also answer each research question. Therefore, the propositions are presented in the discussion section. These propositions fill the gap mentioned previously and can be a starting point of future research direction with the quantitative method in terms of hypothesis development for generalization purposes (Wahyuni, 2012). The summary of the case study analysis is presented in the next section.

Case Studies

P2PRentalCo.

P2PRentalCo. co-founders, a young husband and wife couple, start the business after their first daughter born. The idea about the online rental platform for baby stuff appeared when the co-founders prepare the list of baby stuff. They realize that as new parents, they need to spend a lot of money to buy expensive baby stuff, especially for those with high quality. Furthermore, baby stuff is the typical products that have relatively short-term usage. In this situation, they will have more problems to store the unused baby stuff in their home. The co-founders believe that these problems are a common problem for young parents. They hypothesized that online baby stuffs rental platforms might be a solution to help the young parents to be able to use high-quality baby stuff at affordable prices since they only need to pay for the usage rent usage and do not need to store the stuff after they do not use them anymore. After they talk a lot with young mother community members and other entrepreneurs, they

established an online platform called P2PRentalCo. that enable the user to rent high-quality baby stuff. P2PRentalCo. try to prove their hypothesis by experimenting with a simple website where they upload their baby stuffs that they have to buy and offer them to the young mother communities. After they got positive progress, they scale up the business by using an affordable Software-as-Services (SaaS) rental platform modified by using the online rental plugin. At this stage, interestingly, this startup creates a digital platform without IT experts. When the business side has been established for achieving constant growth, the co-founders start to develop a small IT team. However, the industrial engineering background from one of the co-founders also contributes to making the platform operation very efficient.

Over time, the P2PRentalCo. platform offers new products and business models mostly triggered by the users who met with the co-founders or P2PRentalCo. team. When the users talk with the P2PRentalCo. co-founders in some event about their problem in utilizing unused baby stuff, the platform comes up with the new business model, P2P renting platform. P2P renting platform business model is a result of the experimentation of extending the supply chain process from the online rental platform. The new business model enables the user to rent the baby stuffs from another user. P2PRentalCo. handle the delivery, cleaning, and the rest and got the transaction fee for these activities. This method produces a very scalable baby stuffs supply in terms of the number of products and product variation. The supply side is very critical for every rental business model since many of the rental entrepreneurs got trouble because they cannot fulfill the demand due to the limited supply. As a result, this new business model becomes the growth engine for P2PRentalCo.

One day, at their community event, the co-founders meet the users that do not want to rent their unused baby stuff, but they ask help to sell them. Then, P2PRentalCo. created another business model, Pre-loved selling platform. The pre-loved selling platform is also created based on the e-commerce operation side from the online rental platform. When the interview was being conducted, P2PRentalCo. team prepared to update their outbound open innovation outcome, a Software-as-Services (SaaS) online rental platform that enables entrepreneurs to open a rental business by using P2PRentalCo. technology. A new business model with an outbound open innovation approach, a Software-as-Services (SaaS) online rental platform, was also developed after the co-founder met an old friend, a software developer who can generalized P2PRentalCo. platform for another online rental business model. In the fourth year of their operation, these emerging business models serve as the backbone of the platform.

As a startup with a specific target market, young moth-

ers, the P2PRentalCo. perform friendly engagement with them. For example, their staffs often chat with customers who take care of their baby at midnight. In this process, P2PRentalCo. often get insight into some problems with their service from the customers directly. These stated problems help the platform to do process innovation that makes customers more satisfied. Furthermore, this startup often hires employees from its own users. As a result, the platform acquires a lot of knowledge and even resource needed to produce the fit product/service or business model for the users.

The most interesting part of this case is the highest growth of the platform is contributed by the innovation that initially comes from the users or platform ecosystem members. "Pre-loved selling platform contributed around 30% of P2PRentalCo. sales revenue after that new platform was launched for about three months. Currently, most of the inventories used by the users come from the users in P2P renting platform. Furthermore, The SaaS Online Renting Platform also gives an indirect effect to our main platform since the renting platform market becomes larger," said P2PRentalCo. co-founder. As mentioned earlier, those new business models were created as P2PRentalCo. answer to help the communities' problems that informed in the community-gathering event or during chatting with P2PRentalCo. staff.

SocialcrowdCo.

The other digital MSP startup, SocialcrowdCo., is founded by an entrepreneur who was a student activist. He had a dream to develop a social enterprise that has a real impact on society. Then, after he graduated, he worked for his professor, who expert on social entrepreneurship. From him, he learned about the Indonesian social entrepreneurship landscape and did a lot of online research. At that moment, many activities in the social media or Whatsapp groups collect the funds to help their colleagues. At the same time, there were also emerging crowdfunding platforms that raise the donation funds to support creative projects or movements in several countries. He thought that it would be an excellent social enterprise idea if he can combine these two emerging phenomena. He began to work on the ideas after he met a well-known e-commerce platform co-founder in an Indonesian youth forum. Then, he asked help to him to develop a crowdfunding platform for social causes as well as make this expert become his advisor for the new startup. When the platform established, SocialcrowdCo. co-founder brought his student activist friends to join the Startup.

Similar to P2PRentalCo., the platform keeps changing when SocialcrowdCo. co-founders or team meet with certain parties within the platform ecosystem. The platform

users at SocialcrowdCo. consist of individual campaigners who start the campaign to help collect the funds for their colleagues, NGO, as well as the donors. At the early stage, the campaign categories keep changing based on the campaign created by the users. Before the platform got enough traction to grow, SocialcrowdCo. co-founders conduct the experimentation of various crowdfunding categories of social cause. They started from the social activities that they often do when they were student activists, such as help the micro-business to revitalized their broken kiosks. However, there is still no significant growth to keep the platform sustain. The high growth was achieved when the crowdfunding for medical causes was initiated. Initially, the crowdfunding for the medical cause was not available, but after the platform receive some requests from the users, SocialcrowdCo. started to launch it. "At first, we are struggling to seek growth. We just got the significant platform growth after we open the crowdfunding for medical purposes because our users asked for that," said SocialcrowdCo. co-founder. The tipping point happened in early 2015. The word-of-mouth effect of crowdfunding for medical purposes also provides a positive network effect on the other categories that make the overall platform grow. This category becomes the critical engine growth since it contributes 40% of the total donation after the category had operated for 1 year. In Q3 2016, the platform collects donation fund for above USD \$500.000.

SocialcrowdCo. co-founders and team often do field visits for the campaigner that has reached their raising funds goals. Besides enhancing the positive engagement with the user, SocialcrowdCo. team also got some insights to offer better process innovation, such as create the campaign with Whatsapp for the urgent campaign. Typically, they have two weeks window period to see the result of whether the experimentation result is working or not through some measurable metric. For example, after they found an excellent metrics in crowdfunding for medical purposes category experimentation, SocialcrowdCo. adjust the platform feature and the organization activities to support this category, such as initiate the doctors to create their campaign for their patients. SocialcrowdCo. also launch a new business model as a crowdfunding NGO after the co-founders meet the users who have difficulties in collecting the social funds with SocialcrowdCo. platform.

The crowdfunding platform got enormous benefits from the platform ecosystem member since every campaigner initiates the word-of-mouth activities to achieve the fundraising target. As a result, SocialcrowdCo. does not need to spend a huge budget for advertising that commonly performed by startups that seek high growth to get the user for their innovation outcome. Furthermore, the campaign performance improves significantly where the public figure and famous NGO join the platform as a campaigner. The

digital MSP startups co-create the social donation campaign that provide new value creation ranging from Red-cross for blood-donor campaign, famous artists such as Dian Sastro for scholarship, Raisa for book donation in her birthday that raise USD 4000, largest media groups, Kompas, put the crowdfunding social donation link on their online news about unfortunate stories, famous mayor of Bandung city, Ridwan Kamil, for some humanity donations campaigns that reach more than USD \$400,000 (USD \$20,000 is reached just within a week) to ACT, BAZNAS, Dompet Dhuafa, Rumah Zakat and other Islamic obligation for collecting yearly obligation donation for Moslem, Zakat, with amount about 2.5% of donors total yearly earning. In 2018, SocialcrowdCo. also co-create with the largest financial technology platform in Indonesia, Go-Pay, to provide breakthrough QR-Code donation mechanisms that enable the users to make small donations by scanning QR-Code pictures through the mobile app in some public transportation or other public spaces. The campaign went viral in the last Ramadhan moment. Up until early November 2018, SocialcrowdCo. has raised the accumulative donation around USD \$30,000,000 from more than 1 million people. They have reached 6000% donation growth in just 2 years from Q3 in 2016.

As presented above, the growth of crowdfunding platforms like SocialcrowdCo. depends on the campaign created by the users. The campaigns triggered new users to create other campaigns. However, at the early stage, often, the created campaign is not resulting in significant growth of the problem. This problem also arises in another well-known crowdfunding platform that closes its business. In contrast, the engagement with users, especially when SocialcrowdCo. can fulfill the users' wish, becomes the critical moment for the platform tipping point. Sometimes there is a users' wish that leads to significant growth, but there is another users' wish that hardly provides any traffic to the crowdfunding platform. The suitable crowdfunding category for the digital ecosystem member needs to be discovered through collective experimentation with multiple users' categories. SocialcrowdCo. founder mentions that the platform has undergone 4 stages of new venture creation path until they reach high growth performance including social entrepreneur wannabe (Q3 2013 – Q1 2014), experiment (Q2 2014 – Q1 2015), customer discovery (Q2 2015 – Q4 2015), and iterate (Q1 2016 – now).

SocialCulinaryCo.

The third platform, SocialCulinaryCo. is founded by a group of young entrepreneurs who have no expertise in the culinary industry; nevertheless, they have a passion for the culinary business. Thus, in the beginning, they tried

to develop e-commerce that enables the users to sell home food products provided by the users who cook in their home. This platform won several competitions; however, the business model is not sustainable, and the growth is not enough. Then, by using the money that they receive from the startup competition, the team shifts the focus to SocialCulinaryCo, a social media platform to upload and share their cooking recipes, and that initially was developed to create online communities to support e-commerce platform. They are willing to abandon the culinary e-commerce platform that has been self-invested for more than USD \$50,000.

At the early stage, the co-founders meet with the food blogger communities who live near their home, and they ask them to contribute the content for the platform. The growth of the platform was achieved at this moment since the food bloggers produced high-quality content and shared them with their networks. As a result, more individual users join SocialCulinaryCo. as its platform ecosystem member. As a social media platform, SocialCulinaryCo. relies on the users' activities. The users easily post their recipes and the dish made by those recipes. The user engagement logic in this digital MSP Startup is that when the users see the recipes as well as the dish photo that they like, they feel challenged to create similar content and post the results in the platform again afterward. "Sometimes, there are users who modified other user's recipes by themselves and bragged the dish created by those modified recipes." said the co-founder. Moreover, for digital MSP startups, more user-generated-content developed by the users improve the platform Search Engine Optimization (SEO) that enables the website to appear on the first page of Google search when someone looks for a recipe on the Internet.

SocialCulinaryCo. team often visits their content creator home to engage them as well as get valuable information from them to sharpening the experimentation outcome. As a social Thanks to the growth and the concept, SocialCulinaryCo. also won prestigious startups competition. The competition committee introduced the co-founder of SocialCulinaryCo to the founder of Cookpad, a leading global platform with a similar business model with SocialCulinaryCo. The founder of Cookpad realized that SocialCulinaryCo. actually copy their international platform idea for the Indonesian context and have the same vision with his platform. Finally, Cookpad fully acquired SocialCulinaryCo. in Q2 2014 afterward. The co-founders of SocialCulinaryCo. learn much about the online culinary industry from this acquisition activity. This acquisition went well, and SocialCulinaryCo reaches 8.5 million monthly visitors and around 300,000 food recipes in Q1 2017. They achieved visitor growth rate for almost 600% in less than 2 years from 1.5 million monthly visitors in Q3 2015.

SocialCulinaryCo keeps the strength of the users' en-

agement by creating an official SocialCulinaryCo community as a place for the users who love to write recipes and share the dish photo that they made to enhance their cooking skill. Besides the interaction in the online platform, they have several offline activities such as gathering, cooking class, recipes competition, cooking competition, as well as cooking inspiration week. SocialCulinaryCo also forms SocialCulinaryCo Community Affiliate, specific communities within the SocialCulinaryCo ecosystem that still related to the culinary industry, such as food photography, plating, and food blogging. These particular communities are developed organically based on the users' interests. After several years operating as a newly acquired entity, the co-founders introduce a new business model by combining the knowledge from SocialCulinaryCo and the network that they create in Indonesia. This business model offers Bake-it-Yourself services to strengthen the presence in both the online and offline culinary industry. The users can register the book the bake oven, baking tools, as well as the menu at a certain schedule in the Bakeasy office. Then, the users will do baking together with other users who book at the same schedule and post the result on the SocialCulinaryCo platform.

In developing SocialCulinaryCo, the founders have learned their mistakes when developing a culinary e-commerce platform. The culinary e-commerce platform is hard to get the growth traction since there are many missing roles of digital ecosystem members. This platform does not have a clear value proposition for the home food providers as well as the supporting system such as logistic providers. However, SocialCulinaryCo has successfully developed a strong community that keeps contributing their knowledge to the platform since the entrepreneurial team uses the users' knowledge for adjusting the platform. Thus, the result of these digital MSP startups' growth is different even though the founders are the same.

Discussion and Propositions

Innovation Performance Source and Value Creation Coordination

The case studies above show that in general, digital MSP startups' agents, users communities, and supporting partner firms management practices are crucial for their growth. The majority process of platform innovation is driven by the platform ecosystem members, either end-user customers, supplier-side of the platform, or supporting partner firms. Specifically, the effectual logic of maximizes means and leverage contingencies influences the innovation process for the nascent business model with high uncertainty. In some cases, the interviewed digital MSP startups found-

ers difficult to specify the exact moment when the platform decided to create a new product, process, or business model innovation, and how the actual innovation started since it is an organic process of the new venture development. The process of maximizes the means also includes the process of increasing its means (resources) through networking. The entrepreneurs in those case studies do not write a plan or predefined the network goal like what managers in the established company do. The entrepreneurial process went effectual. They add the new contacts to the existing part of the means, 'Who I Know.' Often, the new contacts are created based on the existing contacts referral.

In the beginning, however, they are not using the "Whom I Know" part for the innovation process. They are more likely to use "What I know and who I am.". The entrepreneurs' background and previous activities influence the type of digital MSP startups that they create. Consistent with Dew et al. (2015) study, the effectual logic drives them to control what they can control rather than predict the uncertain outcomes from the nascent business model. In the early stage, the closest things that the entrepreneurs can control are the activities inside the organization. In our cases, after they start developing early-stage products or services and try to penetrate the market, they extend the control to the network relations acquired to their contact, in other words, "Whom I Know." Instead of doing comprehensive market research that commonly conducted by an established company, the founders initiate some collaboration with external stakeholders including early partners, customers, mentors, suppliers, other platforms, as well as their employees. As happened in our case studies, this action leads to co-creation that produces products or services as well as business model innovation. Mostly, these innovations are not something that the digital MSP startups founders ever think about at the beginning of new venture creation. This process explains why it seems the platform of digital MSP startups changing overtime. Furthermore, it also shows that effectuation approach in platform ecosystem (Sarasvathy et al., 2008) is consistent with open innovation strategy in term of innovation performance source since increasing means through stakeholder co-creation activities also enhance the knowledge breadth or knowledge depth (Saebi & Foss, 2015). As a result, in platform setting, the stakeholder collaborated with the platform will be involve in the platform business model that has a significant role to produce innovation outcomes (Saebi & Foss, 2015). For example, an Indonesian famous actress who collaborates with Social-crowdCo. through the co-founder's almamater network as one of its stakeholders become the leading campaigner for scholarship program through her foundation.

"It was a great opportunity to collaborate with her as

fellow alumni of our university, as an endorser, she help us in amplifying our effort in introducing our scholarship donation category and our social crowdfunding platform as a whole that bring a significant amount of traffic to our website.” – SocialcrowdCo. co-founder

This co-creation outcome also drives another campaigner to create the scholarship program campaign. More parties that operate within the digital MSP startups business model will produce more innovation outcomes for the platform. Therefore, we develop the following proposition:

Proposition 1. New digital multi-sided platform firms that maximize means (who I am, what I know, whom I know) in their innovation process are more likely to be able to accumulate external resource overtime and are consequently more likely to achieve high platform innovation performance.

Essential Organization Culture

The case study presented in the previous section is taken from the leading digital MSP startups that develop novel business models in their industry. As mentioned previously, those business models are the results from “effectuators” digital MSP startups founding team action through maximizing means and leveraging contingencies. These processes are needed since it is tough to predict the uncertainty environment faced by the nascent digital business model with a limited benchmark. The process of leveraging contingencies is dependent on the willingness of the entrepreneurs to experiment with the means that they have for some ways that not originally intended (exaptation). Often, learning from failure drives entrepreneurial restart intention with different approaches (Jeng & Hung, 2019). For example, in our case SocialCulinaryCo., a successful social media for recipe sharing platform is developed from the failure ideas and digital infrastructure of cooking e-commerce platform.

“We were failed to develop cooking e-commerce platform for some reason. However, the engagement from the social media feature was pretty high even though it didn’t convert into the transaction. Then, within a month, we changed our platform and focused on social media for the recipe. Here we are now.” – SocialCulinaryCo. co-founder

The exaptation can produce an unexpected outcome from the innovation process. To conduct this process, the digital MSP startups conduct an openness culture repeatedly from the experiment outcome that leads the organization to become socially supportive, agile, and flexible. Whenever they find the experiments do not provide an acceptable

result, they shift the experiment into another way. The openness culture is also implemented in the knowledge area as well. The digital MSP startups founding team avoid not-invented-here (NIH) and not-sold-here (NIH) syndrome. For example, P2PRentalCo. business model innovation about second-hand baby products store does not come from the firm, but it comes from the customers that want to sell their unused baby products.

“Many of our customers ask us whether it is possible to sell their unused baby products to us. So we try to improve our platform a bit that able to sell second-hand product. It was surprising that this effort contributes around 30% of our revenue.” – P2PRentalCo. co-founder

Furthermore, another business model innovation from the digital MSP startup, Supersewa, allows another rental platform to utilize the P2PRentalCo. strong renting infrastructure for their business.

“Based on our experience, we were realized that the rental business model needs different e-commerce features. When we met our old programmer friend who wants to develop digital products, we think it is a great opportunity to try this idea. Then, we generalize our rental platform infrastructure that able to be used by any rental businesses. The rental business owners accepted and subscribed to this new platform.” – P2PRentalCo. founder

These cases show that essential organization culture for open innovation strategy in the platform ecosystem (Saebi & Foss, 2015) is consistent with that with the effectuation approach (Laskovaia et al., 2017; Sarasvathy et al., 2008). Furthermore, avoiding NIH and NSH syndrome in an open innovation strategy is presented as the manifestation of socially supportive, agile, and high flexibility culture of digital MSP startups with effectual behavior that can achieve higher innovation performance. On the other hand, the market orientation approach also strengthens innovation outcomes (Leal-Rodriguez & Albert-Morant, 2016). Hence, we develop the following proposition:

Proposition 2. New digital multi-sided platform firms that leverage contingencies through experimentation or flexibility in their innovation process are more likely to be able to adaptive to their environment and are consequently more likely to achieve high platform innovation performance.

Platform Ecosystem Member Role

The case studies in the previous section also show that in most cases, the digital MSP startups founders also lever-

age the uncertainty through gathering the information from the platform ecosystem member or any potential parties that may join the platform. During the innovation process, the founders are open to unexpected outcomes from agents, users communities, and supporting partner firms management practices. The case studies show that there are various ways to do agents, users communities, or supporting management practices ranging from create official communities with frequent activities, visit the users when they conduct relevant activities, co-create initiatives, do the intense communication and analyze it afterward, invite them to digital MSP startups office, befriends with digital ecosystem members, to hire the staffs from the communities. They believe that these practices not only strengthening the ties between the digital MSP Startups and their platform ecosystem but also providing the chance for “surprises” to explore and exploit new opportunities. For example, SocialcrowdCo. founders reveal how the ideas from the user crowds during their interaction produce the innovation outcome that provides the highest contribution for the platform growth.

We were quite struggling for the first two years to bring people to our website. A lot of our crowdfunding ideas never work at that time. So, we tried to interact and meet our users quite often and tried to understand what they need from our platform. At a certain moment, our users ask us to enable a medical-related social crowdfunding category that we never pay attention in the beginning. This category survived our platform. Now, we create many specific strategies for this medical-related social crowdfunding. – SocialcrowdCo. co-founder

The same story also happened at P2PRentalCo.. The agents, users communities, or supporting partner firm management practices sustain the flow of external ideas since the practices are open up the organization boundaries with the platform ecosystem member (Langner & Seidel, 2015).

“Our customers are our friends. We think the most important interaction with our customers is when they chat us as a friend and share their parenthood feelings. Indirectly, we understand their situation and what they need in their parenthood life that we can support.” – P2PRentalCo. co-founder

Closing down the organization boundaries for carefully selecting the relation based on the pre-determined goal will limit the means as well as decrease the opportunities. In contrast, the effectual logic used by the digital MSP startups founders expand their “Who I know” to the platform ecosystem members in massively and also expand their control to overcome the uncertainty at the same time. At this stage,

the expanded means are based on both platforms and their members’ pre-commitment through both formal and informal activities. The result of this effectual approach through the agents, user communities, or supporting partner firms practices will involve one or more platform user sides as formal complementors in the re-organization for the production and distribution system. In this case, the effectuation approaches (Sarasvathy et al., 2008) in the platform ecosystem perform as the driver of the open innovation strategy in the platform ecosystem (Saebi & Foss, 2015). As a result, when the digital MSP startups have a high degree of interaction with platforms’ agents, user communities, or supporting partner firms, the innovation performance resulting from the accumulation of digital ecosystem members activities tend to be higher. Thus, we develop the following proposition:

Proposition 3a. The platforms’ agents, user communities, or supporting partner firms management practices could enhance the influence of means (who I am, what I know, whom I know) toward innovation performance.

Uncertainty Management

Setting up an unproven nascent business model in a particular context like these three digital MSP startups in our case studies makes high uncertainty since common market research cannot be used properly. In the platform setting, often times the uncertainties reach the collective uncertainties stage where both the platform and its platform ecosystem members have difficulties in predicting certain business aspects (de Vasconcelos Gomes et al., 2018). Hence, these startups conduct collective learning experiments to manage the collective uncertainties within the platform ecosystem. In this matter, agents, user communities, or supporting partner firms practices have significant roles. Commonly, in the innovation process with uncertainty situation, the platform ecosystem members do not provide ready to use ideas, resources, or knowledge. However, they bring a set of their problems and expectation that can be potential opportunities for digital MSP startups. For example, when SocialcrowdCo. founding team struggle to find a decent social donation category for their growth; some users ask the founding team to help them collect the social donation for medical purposes. In this case, both the platform and its platform ecosystem members face uncertainties. The digital MSP startups face the uncertainty in finding out the way to increase the acceptance of the platform while the users face uncertainty to solve their problem with the platform existing services. From this point, SocialcrowdCo. finally can provide innovative medical-related social donation solutions that help the platform reach significant growth after conducting mul-

tiple experiments with the users.

de Vasconcelos Gomes et al. (2018) study mention that there are at least two strategic actions that can be adopted by the entrepreneurs to solve the ecosystem uncertainties, conducting collective learning experiment by creating a network of allies, and building a common template. In our case, the digital MSP startups have limited resources in the beginning, and they tend to use the first strategy by incorporating the platform ecosystem members. When the digital MSP startups were conducting collective learning experiment strategy, they experiment with the innovation outcomes through interaction between the platform, and the user that share and combine assets and competencies to solve particular collective uncertainty. For example, in medical-related social donation case, after realizing there is high demand in this segment, SocialcrowdCo. come up with the solution for the users uncertainty to collect social donation funds. The platform creates the innovation that enables the medical doctors as well as the hospitals to initiate the crowdfunding for their patients. Furthermore, SocialcrowdCo. also build the NGO to help the campaigner with those uncertainties conduct social crowdfunding.

“After we achieve decent growth, we still keep interacting with our users or campaigners in some activities such as when the campaign has just started, and when the campaign has achieved its goal. At a certain moment, we realize a major problem for our platform growth. When we interact with the users, our users share the thoughts that some of them often have difficulties in collecting social donation funds. Our platform growth depends on the achievement of social donation created by the campaigners. To solve this problem, we experiment to extend our business line by creating the NGO that helps the campaigners to achieve their social donation target.” – SocialcrowdCo. co-founder

This case shows that uncertainty management through collective experimentation within effectuation approach (de Vasconcelos Gomes et al. (2018) leads to a market-based innovation strategy in the platform ecosystem to reduce uncertainty (Saebi & Foss, 2015). The roles of agents, user communities, or supporting management practices in this matter are substantial to enhance innovation performance through reducing the uncertainty. As a result, when the digital MSP startups have a high degree of interaction with platforms’ agents, user communities, or supporting partner firms, the innovation performance resulted from the leverage contingencies approach based on digital ecosystem members activities tends to be higher. Thus, we develop the following proposition:

Proposition 3b. The platforms’ agents, user communities, or supporting partner firms management practices could enhance the influence of leverage contingency (experimentation/flexibility) toward innovation performance.

Proposed Conceptual Framework

The discussions in the previous section show the intersections of open innovation strategy and effectuation theory in the platform ecosystem setting. In innovation performance source, value creation coordination, and platform ecosystem member role aspect, effectuation logic becomes determinant of open innovation strategy constructs. On the other hand, in essential organization culture and uncertainty management aspects, these two theories have some overlap as the manifestation of one theory into another theory. Hence, based on the discussed proposition for the platform-based entrepreneurship context, we develop the conceptual framework presented in Figure 3 as the theoretical implementation output of the integration between those two theories.

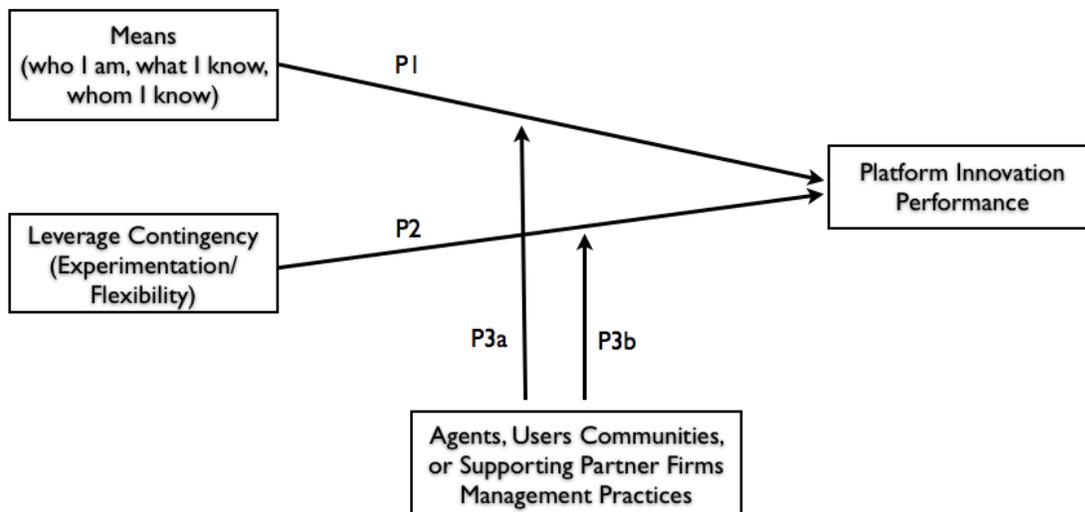


Figure 3. Conceptual Framework

Conclusions and Future Research

By integrating the open innovation strategy (Saebi & Foss, 2015) and effectuation theory (Sarasvathy, 2001, 2009) in platform ecosystem context through the central concept of platform-based entrepreneurship, this study explains the “anomaly” of innovation process conducted by less-experienced and resource constraint young entrepreneurs that result in high-growth nascent business models with open platform approach. The findings of our study answer the research question with the developed propositions and conceptual framework discussed in the previous section. For the first research question regarding young entrepreneurial teams effectuating development process to produce high growth innovation outcomes for digital MSP Startups, the findings show that high growth digital MSP startups maximize means (who I am, what I know, whom I know) in their innovation process to accumulate external resource over time. They also leverage contingencies through experimentation or flexibility in their innovation process to exaptive to their environment. These entrepreneurial actions are more likely to bring digital MSP startups to achieve high platform innovation performance.

On the other hand, for the second research question regarding the roles of the platform ecosystem in the platform-based entrepreneurship process, the findings reveal that in the platform setting, the roles of digital ecosystem members to support the digital MSP startups growth are very substantial. The decent platforms’ agents, user communities, or supporting partner firms management practices enhance the effect of maximizing means (who I am, what I know, whom I know) as well as leveraging contingency (experimentation/flexibility) within the platform ecosystem that results outstanding innovation performance. The growth of digital MSP startups depends on the positive activities of their platform ecosystem members. In our cases, the digital MSP firms rapid growth is achieved when micro-entrepreneurs or other digital MSP firms as platform agents increase in terms of the numbers as well as the business activities scale within the digital platform ecosystem. The network effects from those platform agents bring more users to utilize digital MSP firms services.

The concept of platform-based entrepreneurship is an essential bridge between those two theories since its importance in both entrepreneurship and open innovation theory (Eckhardt et al., 2018; Hsieh & Wu, 2019; Nambisan et al., 2018; Sussan & Acs, 2017). Therefore, there are some contributions as well as theoretical implications from this study in both entrepreneurship and open innovation research. First, this study explains the integration of open innovation strategy within platform ecosystem with effectuation theory as the respond to the research call of “conceptual

and empirical model of the moderation and interaction effect of digital governance and digital user citizenship on the path from digital entrepreneurship to digital marketplace” (Sussan & Acs, 2017, p.71) and “enablers and barriers to adopt the platform-based entrepreneurship strategy” (Hsieh & Wu, 2019, p. 320). This study also finds that in a theoretical perspective, effectuation theory determines the output of the open innovation as well as has overlaps in some manifestation of both theories. The result of this study and its interpretations are derived from the qualitative studies that use the analytical generation. This approach might be considered as a limitation for scholars who use positivist or post-positivists paradigm. Therefore, future research can also develop the questionnaire based on this study and conduct quantitative research and develop the hypothesis to test its robustness and generalization through a statistical approach with a larger sample.

Second, this study contributes in explaining the knowledge development of young entrepreneurial teams through utilizing platform ecosystem to fill the gap of missing link about the explanation of how young entrepreneurial teams with limited knowledge and experience can produce high innovation performance with open platform business model (Hulsink & Koek, 2014). The study shows that expansion of means, the experience in experimenting, as well as the agility to leverage contingencies with the support of platform ecosystem members develop the knowledge breadth as well as knowledge depth of the young entrepreneurs that enable them to create nascent products, services, or business model. Compared to MBA-type managers, these young entrepreneurs may have fewer abilities to perform established business models due to their lack of industrial experience. However, their developed nascent business models are still a “blue ocean” area with none or very few experts. Thus, the digital MSP startups founders are the experts in this area. Then, future research direction can explore the less developed area about knowledge management as well as open innovation strategy for the nascent business model since at the time when the startups have reached decent growth, and the innovation process may less depend from their founders (Dalmarco et al., 2017).

Third, this study enriches the entrepreneurship literature with research that explores the role of digital platform ecosystem members in helping the digital MSP startups to reach outstanding growth (Nambisan et al., 2018). The construct of agents, user communities, and supporting firm management practices help to explain the role of the ecosystem in the innovation process and the entrepreneurs’ action to involve them in this process. As presented in the case studies, the interaction of the digital entrepreneurs and the digital ecosystem members is not only happened in the online environment but also the offline environment.

Therefore, future research can explore how to integrate both online and offline innovation processes in the platform ecosystem setting to capture optimal value. It also responds to Hsieh and Wu (2019) call regarding the strategic consideration in entrepreneurship through innovation platforms. Since the digital MSP startups have various business models with the different roles of agents, users, and supporting partner firms, the future study can be done with multiple business models as different contexts. For example, as the enterprises start or have established the platform-based enterprise (Van Alstyne et al., 2016), future research can also explore the platform-based entrepreneurship in corporate entrepreneurship context.

For the practical implication, this study suggests that it is quite important for digital MSP startups to involve their agents, user communities, as well as supporting partner firms in business model development. These digital ecosystem members can help the platform to cope with the main challenges of the MSP business model, creating a positive network effect. Most of the inputs of the digital ecosystem members are not ready to use ideas or innovation. Instead, they are the agents or users problems that can be converted into opportunities for the platform. Sometimes, these agents or users have not become platform ecosystem members yet. Once the digital MSP startups come up with a suitable business model that solves the digital ecosystem members' problem, the identic or similar categories of agents or users that have common problems will join the platform on a significant scale. Thus, the digital MSP startups need less effort in searching or creation opportunities since they come from the platform ecosystem. Furthermore, in the problem-solving process, the multiple scales of digital ecosystem members are the most valid and reliable respondents for experimentation. The involved supporting partner firms such as other platforms with the relevant product, services, or business models can also provide new value creation for both agents or users through the co-creation process. Furthermore, in the digital platform landscape, digital MSP startups can also serve the supporting partner firms' digital ecosystem members.

At this stage, we can say that digital MSP startups have achieved outstanding innovation performance. Some scholars mention that by its potential, the platform always wins over the product with pure pipeline business (Tan & Morales-Arroyo, 2014; Van Alstyne et al., 2016). However, the advantage only can be realized when the platform manager conducts proper agents, user communities, or supporting partner management practices to create sustainable external ideas flow from the user to the platform (Langner & Seidel, 2015). Also, this research finding regarding platform-based entrepreneurship is important to be understood by the po-

tential investors who will invest in a large sum of investment funds to ensure the digital MSP startups survival.

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