3 Entrepreneurship, Start-Ups and Small Business AND
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Social media and innovation management in developing economies' SMEs:

A conceptual framework

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Abstract: *Innovation management research has primarily been concerned with the context, strategy, and practice of resources and capabilities deployment and configuration in large enterprises in developed economies. The study of innovation management in SMEs is limited in developed countries, particularly on the use of social media to support innovation. There is, therefore, a need for research on innovation management as it applies to SMEs in developing economies, and this is particularly important in Indonesia where SMEs are the driving force in economic development and there is extensive use of social media. This paper addresses this gap by developing a framework that focuses on how developing economy SMEs manage innovation, and particularly on how social media is used to support innovation.*

Keywords: Innovation, SMEs, information technology, process innovation

INTRODUCTION

Small to medium size enterprises (henceforth SMEs) are a key growth sector for economic development in both developed and developing countries (OECD, 2004; Ongori & Migiro, 2010; Tambunan, 2008; Verheyden & Goeman, 2013). In a developing country such as Indonesia, SMEs' contribute over 60% of national GDP and provide over 90% of total employment, amounting to over 114 million people (MCSME, 2014). Furthermore, Indonesian SMEs not only contribute to national income, they also assisted economic recovery when the Asian economic crisis hit in 1997 (Hill, 2001; Tambunan, 2008).

As in other firms, innovation is crucial for SMEs when facing a dynamic market. Both large firms and SMEs spend considerable attention and resources to foster innovation and gain profit from it (Rogers, 2000; Teece, 1986). However, SMEs in both developed and developing countries face challenges that hamper their development and innovation, such as workforce restrictions (Susman, Warren, Ding, & Stites, 2006), limited financial resources (Susman et al., 2006; Vermeulen, 2005; Yap, Chai, & Lemaire, 2005), and inadequate access to knowledge (Bosua, Evans, & Sawyer, 2013). Similar to their developed country counterparts, Indonesian SMEs face four challenges: they lack technological, marketing and managerial knowledge, and generally have poor access to formal

financial sources (Kementerian-KUKM & BPS, 2004; Urata & Jigyōdan, 2000). These challenges, and other characteristics of SMEs can influence SMEs innovation capabilities.

While SMEs might face challenges not faced by large organisations, the use of social media for business purposes can help SMEs to overcome some of these challenges, e.g. through wider access to external assets required for innovation. Characteristics of social media, such as connectivity and collaboration (Van Dijck & Poell, 2013), enable SMEs to improve their internal knowledge and absorptive capacity. Nonetheless, challenges faced by SMEs have hampered the effective use of social media to support innovation due to their lack of capabilities.

Capabilities and knowledge scarcity can affect innovation management in SMEs. While innovation management studies have received considerable attention from scholars, research on innovation management primarily focussed on the context, strategy and practice of resources and capabilities deployment and configuration in large enterprises in developed economies (Dodgson, Gann, & Phillips, 2014). Efforts to expand innovation management into the SME context, particularly on the use of social media to support innovation, are limited (e.g. Bharati, Zhang, & Chaudhury, 2014; Bosua et al., 2013). While one prior study indicates that social media enabled SMEs to communicate effectively and efficiently, and with lower levels of bureaucracy (Michaelidou, Siamagka, & Christodoulides, 2011), thus being able to acquire and transform new knowledge to increase their competitive advantage, there is limited research on social media and innovation in SMEs.

The comparative lack of development of skills and capabilities, as well as general business infrastructure in SMEs in developing economies is very scarce in innovation management literature. There is a need, however, to study innovation management as it applies to SMEs in developing economies in countries such as Indonesia where social media is widely used and SMEs are the driving sectors in economic development. Hence, this paper aims to begin to address this gap in the body of knowledge by proposing a conceptual framework based on the interrelationships of complementary assets, absorptive capacity and social media to support innovation in Indonesian SMEs.

LITERATURE REVIEW

Innovation in SMEs

Small-medium scale enterprises have been acknowledged as playing an important role in innovation (e.g., Vossen, 1998; Nooteboom, 1994; and, more recently, Rosenbusch et al. 2011). The characteristics of SMEs in both developed and developing countries benefits these firms to innovation. Such characteristics are flexible, willing to take risks, have a high learning ability, and able to decide quickly in uncertain situations (Vossen, 1998; Nooteboom, 1994). Vossen (1998) argues that because of their small size, flexibility, and close relationships with customers, innovation in SMEs is more likely to occur in niche markets with a small-scale effect. In addition, SMEs' proximity to their customers enables these firms to modify their service or product to fit customers' demand. Ability to learn and listen to customers' need enables these firms to offer a more unique product or service and reduce price significantly (Rosenbusch, Brinckmann, & Bausch, 2011). In contrast, there are some characteristics that can hamper an SME's innovation ability, such as limited number of employees (Yap et al., 2005), limited financial resources (Susman et al., 2006), constrained access to networks and potential partners (Rothwell & Dodgson, 1991; Vossen, 1998), incomplete new product development processes (Huang, Soutar, & Brown, 2002; Woodcock, Mosey, & Wood, 2000), and ill-defined learning process documentation (Kogut & Zander, 1992; Susman et al., 2006; Woodcock et al., 2000).

Innovation in SMEs in developing countries is different with their counterparts in developed economies. Some factors that cause such difference may include cultural context, national innovation system and organisation challenges (Li & Kozhikode, 2008; Nishimura & Okada, 2014; Pandya, 2012; Rosenbusch et al., 2011). Rosenbusch (2012) argues that innovation in Asian countries which have high level of collectivism is greater than countries with high level of individualism such as the U.S, because individualism can hamper teamwork and social interaction. In addition, empirical findings from emerging countries, such as China, India, as well as developed countries, such as Japan, show that cultural aspect affects the learning process and how firms catch up new know-how. For example, Li and Kozhikode (2008) find that, in the country where intellectual property law is weak, the process of catching up by local firms is slower than in the country where IP protection is strong.

Innovation management and SMEs

An innovative firm is determined by its ability to search, select, configure and deploy its resources and assets (Dodgson, Gann, & Salter, 2008). Innovation management concerns the practice, process and strategy to manage, control, respond, and use the source, nature and outcome of innovation (Dodgson et al., 2014; Raisch, Birkinshaw, Probst, & Tushman, 2009; Tushman & O'Reilly III, 2006). It encompasses the connections between the context, strategy and practice of innovation and focus on "how resources and capabilities are deployed and value is created through the introduction of new ideas" (Dodgson et al., 2014, pp. 10-11).

In this paper, firm's ability will be viewed from two key concepts in innovation management studies, namely complementary assets from the profiting from innovation framework (Teece, 1986) and the concept of absorptive capacity (Cohen & Levinthal, 1990). These concepts represent the external conditions of a firm and the internal process of configuring and deploying firms' resources and capabilities. In the SMEs' context, these concepts show a reciprocal relationship between the internal ability and the external condition of firms. By focusing on internal resources and capabilities, an effective analytical framework will be drawn to capture the key factors that influence their development and application.

Complementary assets

In brief, complementary assets concept is one of the three building blocks of profiting from innovation's framework (Teece, 1986). In his work, Teece (1986) propose three building blocks to analyse how firms can profit from innovation, namely appropriability regime, dominant design paradigm and complementary assets. Appropriability regime is the environmental aspects that support the commercialisation of innovation such as patent or intellectual property protection; while dominant design paradigm is the process of acceptance and/or rejection of a new design to become dominant in the marketplace (Teece. 1986). Furthermore, complementary assets refer to all tangible and intangible assets used and required to commercialise innovation (Teece, 1986). Complementary assets may include, among others: marketing, sales, human resource management, office space, information technology, transportation, manufacturing, distribution channels, reputation, strategic alliances,

customer relationships, and licensing agreements. They can be generic, specialized or co-specialized and the use of these assets is depend on the agreement prior to use, after either renting or buying such assets. Along with appropriability regime and dominant design paradigm, the availability of complementary assets will determine who gets what or how much from innovation.

Insert figure 1 about here

Previous studies have found the role of complementary assets in the commercialisation of innovation (Taylor & Lowe, 1997) in various industries (Chiu, Lai, Lee, & Liaw, 2008) ranging from the typesetter industry (Tripsas, 1997), pharmaceutical industry (Rothaermel, 2001), video consoles (Park, Chen, & Gallagher, 2002), and software or operating systems and IT service platforms (Dedrick & West, 2003; Rosemann, Anderson, & Lind, 2011). For example, Dedrick and West's (2003) study indicates that information technology, as a complementary asset, plays an important role to support commercialisation.

These studies show that complementary assets are not only important as a complement to commercialise innovation, but also serve as an important part in firms' development. However, prior research has found that managing innovation requires substantial resources including complementary assets, which may not available in SMEs (Van de Ven, 1986). For example, the small size of SMEs, in terms of employee numbers, may result in difficulty for SMEs to appreciate the latest information about relevant technologies or to assign employees to new projects due to high workloads (Vermeulen, 2005). While large firms can create a specific division or assign their staff to interact with customers via social media, many SMEs are unable to do so due to lack of capabilities or limited number of employees. In addition to limited resources and capabilities, adopting innovation means increasing uncertainty and risk (Eisenhardt & Martin, 2000). SMEs' potential failure to cope with such effects is higher than their larger counterparts that have better knowledge, financial and human resources (Nohria & Gulati, 1996). Consequently, SMEs become more cautious about adopting innovations to avoid risks and failure.

In conclusion, availability of external assets and resources is crucial for innovation management. Although SMEs in both developed and developing countries have similar characteristics, managing innovation for SMEs in developing countries are more complex than in

developed ones. Cultural differences and poor law enforcement influence SMEs innovation management in developing countries. Therefore, it is important to analyze how SMEs manage innovation in such limited resources.

Absorptive capacity

Absorptive capacity refers to the ability to recognise or acquire new knowledge, and assimilate and apply it to commercial ends (Cohen & Levinthal, 1989, 1990). Cohen and Levinthal (1990) emphasize the role of prior related knowledge in absorptive capacity because it enables the assimilation and the exploitation of new knowledge and will determine a firm's ability to search, store, and use new knowledge whenever required (Cohen & Levinthal, 1990, p. 128).

There are four dimensions of absorptive capacity: acquisition, assimilation, transformation and exploitation (Zahra & George 2002). Acquisition is the ability to determine, search and comprehend the significant of external knowledge to their daily operations (Lane & Lubatkin, 1998; Zahra & George, 2002). Assimilation refers to firms' ability to incorporate external knowledge to analyse, interpret and understand externally obtained information (Zahra & George, 2002; Szulanski, 1996). By transformation, Zahra and George (2002) refer to firms' capability to develop and refine the routines that facilitate combining existing knowledge and the newly acquired and assimilate knowledge (Zahra & George, 2002). Adding or suppressing new knowledge, or reinterpreting existing ones can achieve transformation. Exploitation describes firms' ability to apply new knowledge by refining, extending and leveraging extant knowledge, or developing new knowledge by integrating acquired and transformed knowledge into their operations (del Carmen Haro-Domínguez, Arias-Aranda, Lloréns-Montes, & Moreno, 2007; Zahra & George, 2002).

Insert figure 2 about here

Reviews on absorptive capacity show that while some research area overlook absorptive capacity on certain research stream such as organisational learning (Nooteboom, 2000; Tsai, 2001; Van Den Bosch, Volberda, & De Boer, 1999), other streams still need more attentions and findings to build this concept into more applicable theory (Lane, Koka, & Pathak, 2006; Volberda, Foss, & Lyles,

2010). The role of technology, particularly digital technology such as social media, in improving absorptive capacity (Bosua et al., 2013; Deeds, 2001; Hu & Schlagwein, 2013; Keller, 1996; Kinoshita, 2000; Peltola & Mäkinen, 2014; Stock, Greis, & Fischer, 2001) is one of the emerging streams in absorptive capacity research. However, most of this research was done in developed countries where resources are available (for example; de Jong & Freel, 2010; Gray, 2006; Liao, Welsch, & Stoica, 2003). Therefore, such assumption may not applicable in the context of small firms in developing countries, due to differences in the cultural context, the availability of resources and access to such resources, as well as legal protection mechanism. Consequently, there is a gap in both conceptual understanding and practical application of SMEs' absorptive capacity in developing countries.

Social media use in SMEs

Digital innovation, particularly use of social media, can overcome some of SMEs' challenges. Social media offer interactive Internet-based applications that enable information sharing, user participation, interaction and modification (Boyd & Ellison, 2007; Kaplan & Haenlein, 2010; Kietzmann, Hermkens, McCarthy, & Silvestre, 2011; Safko & Brake, 2009). Such application is valuable for resource-scarce small firms to support innovation, particularly those with limited access to complementary assets. Studies have shown that social media are used to enhance engagements between the customer and the firms (Smith & Zook, 2011), to improve organisational performance (DiStaso, McCorkindale, & Wright, 2011; Zyl, 2009), to develop tools for idea generation and diffusion in organisations (He & Wang, 2015; Kastelle & Ohr, 2013; Lindegaard, 2014; Ooms, Bell, & Kok, 2015), and to communicate (Verheyden & Goeman, 2013). Social media also enable businesses to obtain access to resources that might not otherwise be available to them (Jagongo & Kinyua, 2013). Social media can help SMEs to market their products and services because it reaches a wide market (Andzulis, Panagopoulos, & Rapp, 2012; de Vries, Gensler, & Leeflang, 2012; Kim & Ko, 2012). The characteristic of social media, such as connectivity and collaboration (Van Dijck & Poell, 2013) can provide SMEs with the initiative to gather ideas from their users (von Hippel, 2005).

This is in line with Kastelle and Ohr (2013) study that social media improve consumers' access and potential to contribute to substantial innovation in organisation.

The emergence of digital technology and services (i.e., the Internet and social media platforms) has changed the way firms collect, select and use new knowledge for innovation, thus affect their innovation. Nonetheless, while many firms are racing to use social media, some SMEs are still stuttering (Bosua et al., 2013; Simes et al., 2015). Simes et al. (2015) show that social media adoption rate by Indonesia SMEs is low. Inhibitors may come from SMEs characteristics such as limited knowledge on how to optimize social media use.

In conclusion, three points here are important: first, social media provide SMEs that are likely to lack resources with the means to support innovation. Second, access to complementary assets can overcome many of the bottlenecks preventing SMEs from applying their ideas successfully (Dodgson, 2014). And third, firms with sufficient prior knowledge are able to profit from these services and technology because social media can become the means to select which new knowledge applies to innovation.

CONCEPTUAL FRAMEWORK

Based on the literature review, a conceptual framework is developed below (Figure 3).

Insert figure 3 about here

In this framework, external and internal enhancement of resources and capabilities is shown from the intersections of the complementary assets availability and absorptive capacity, the use of social media, and the country specific context. As mentioned earlier, social media enables SMEs to obtain access to assets required for innovation. For SMEs in developing economies where resources and capabilities are limited, social media enables wider access to assets required for innovation by connecting these firms with their clients or users, providing information related to knowledge or other capacity building activities, and extending access to potential network of partners or alliances. Complementary assets required for innovation are also determined by legal protection mechanism in these countries. However, it is important to note that such protection might be low due to poor law enforcement or cultural context. Therefore, analysing the regime of appropriability is crucial to understand how SMEs manage complementary assets through the use of social media.

As mentioned earlier, in order to optimize the of social media, internal ability to recognize the advantages of new external knowledge is essential. Therefore, an SME should have a stock of prior related knowledge. Such knowledge will determine decision making process to use or to not use social media, thus will affect this firm's innovation. Acquiring new external knowledge, such as social media, will also influence firm's ability to search potential assets required for innovation, such potential network of partners, ideas, or financial sources. Not only the ability to recognize new knowledge, ability to apply and to exploit this knowledge is also important for SMEs that can improve their innovation. Social media provides many channels to help SMEs to improve their knowledge and to disseminate their ideas to a wider audience. However, it is important to note that social media use in developing countries may face challenges, such as poor internet connection, which may cause SMEs reluctance to use social media.

CONCLUSION

This paper has suggested a conceptual social media use for SMEs' innovation management framework, which aim at addressing the current gaps in innovation management research. This framework can be used as practical guide for developing innovation management policies in developing countries. In addition, the framework also identifies some dimensions affecting innovation management in SMEs in developing countries, particularly on the use of social media to support innovation. These dimensions are the availability of external resources and assets (or complementary assets) and internal ability required for innovation (absorptive capacity). In line with Cohen and Levinthal (1990) suggestion that it is necessary to do more research on the decision process of organization's investment in absorptive capacity, future research is suggested to test the framework in other developing countries than Indonesia. Such research can revise the framework to ensure its generalisation.

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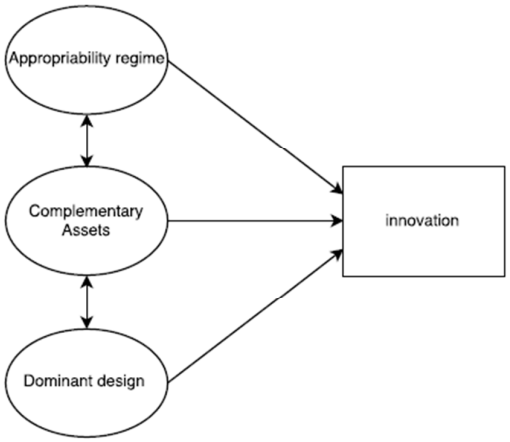
Appendix

Figure 1. Profiting from innovation framework



Source: Adapted from Teece, D. J. (1986). Profiting from technological innovation: Implications for integration, collaboration, licensing and public policy. *Research policy, 15*(6), 285-305.

Figure 2. Absorptive capacity framework

Source: Zahra and George, 2002, p 192.

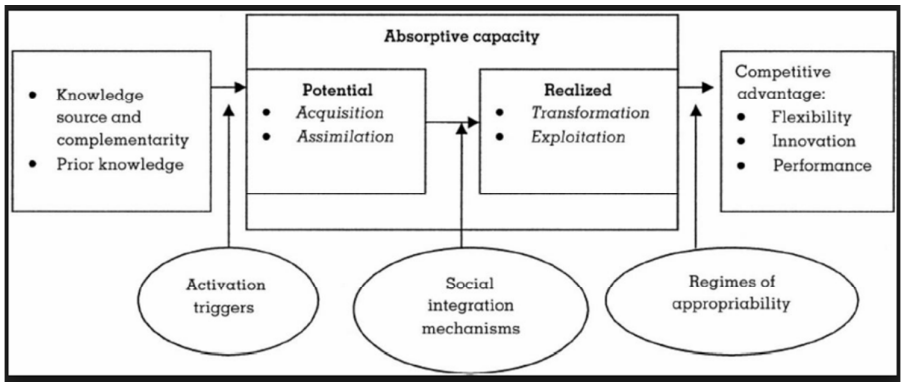


Figure 3: Innovation management framework in developing economies' SMEs