

The determinants of innovative performance : a study of SMEs in a developing country

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The Determinants of Innovative Performance:

A study of SMEs in a developing country

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**The Determinants of Innovative
Performance:
A study of SMEs in a developing country**

PROEFSCHRIFT

ter verkrijging van de graad van doctor aan de
Technische Universiteit Eindhoven,
op gezag van de rector magnificus prof.dr.ir. C.J. van Duijn,
voor een commissie aangewezen door het College voor Promoties,
in het openbaar te verdedigen op dinsdag 17 maart 2015 om 16:00 uur

door

Theresia Gunawan

geboren te Tarutung, Indonesië

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Theresia Gunawan
Tilburg, 2015

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CHAPTER 1

INTRODUCTION TO THE STUDY

1.1 Introduction

It is undeniable that Small and Medium- sized Enterprises (SMEs) have played a fundamental role in the economic growth of both developing and developed countries. Proof of their significance can be found in their contribution to Gross Domestic Product (GDP) and ability to provide employment. SMEs account for 16% of GDP in low-income countries and 51% in high-income countries and provide 78% of the employment in low-income countries, versus 66% in high-income countries (Dalberg, 2011). In developing countries, SMEs are also recognized as important business organs for grassroots economic development and poverty alleviation (Tambunan, 2008) and engines of national economic growth and job creation (Mubaraki & Aruna, 2013). The important role SMEs play in such markets is highlighted by the statistics shown in Table 1.1. To emphasize the importance of SMEs around the Asian countries, Figure 1.1 shows how SMEs from 85 countries contribute to job creation. These facts prove that SMEs are a driving force for economic and social stability due to both their quantitative impact on the national economy and the empirical effect of creating jobs. Moreover, they foster a competitive business environment and expand a country's industrial base (Shinozaki, 2012).

Table 1.1: Percentage of SMEs among total enterprises and contribution to employment in developing countries

	Number of Enterprises (% of total)	Number of Employees (% of total)	Contribution to GDP
East Asia			
Japan	99.7 (06)	69.4 (06)	47.7 (08)
Korea	99.9 (09)	87.7 (09)	47.6 (09)
China	99.0 (08)	75.0 (08)	58.5 (08)
Southeast Asia			
Brunei Darussalam	98.4 (08)	58.0 (09)	22.0 (09)
Cambodia	98.5 (09)	-	85.0 (08)
Indonesia	99.9 (09)	97.0 (09)	56.5 (09)
Lao PDR	99.8 (06)	83.3 (06)	-
Malaysia	99.2 (10)	59.0 (10)	31.9 (10)
Myanmar	92.0 (07)	-	
Philippines	99.6 (09)	63.2 (09)	35.7 (09)
Singapore	99.4 (05)	62.3 (05)	46.3 (05)
Thailand	99.8 (10)	78.2 (09)	36.7 (10)
Vietnam	97.4 (07)	77.3 (02)	26.0 (07)

()= year of latest available data, data was collected from ADB; ABDI; ASEAN Secretariat; ASMED (Vietnam); DTI (Philippines); JODC (Japan); JSBRI (Japan); NSDC (Malaysia); SBC (Republic of Korea); SMBA (Republic of Korea); and SMRJ (Japan). **Source: Asian Development Bank (Shinozaki, 2012)**

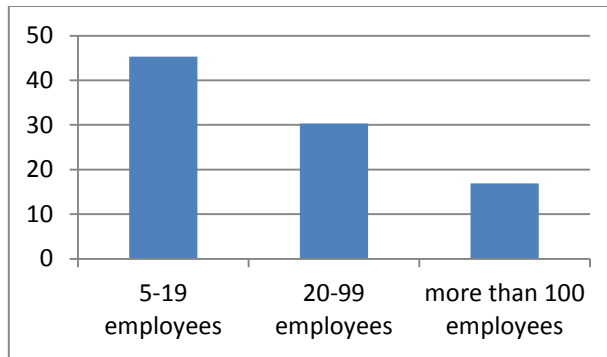


Figure 1.1. Contribution to job creation in 85 countries by SME size. Source: World Bank Development Research Group (Ayyagari, Demirguc-Kunt, & Maksimovic, 2011)

Furthermore, SMEs in developing countries are found to have greater resilience in terms of responding to changing economic circumstances (Berry, Rodriguez, & Sandee, 2001), though many have been hit hard by the latest economic crisis. While there has been an overall steady rise in manufacturing SMEs, this may be reaching a peak, and the number of failures among SMEs is also high (Bartelsman, Scarpetta, & Schivardi, 2005). SMEs are being forced to increase their competitiveness in the face of intensified competition from both large and new firms and global competitors. While price remains an important factor for sustaining success in today's competitive environment, it is no longer sufficient to rely on that alone. Instead, firms' prospects are increasingly driven by their 1) capability to meet global product and process standards; 2) flexibility and innovation; 3) design and differentiation; 4) reliability of timelines; and 5) networking and capacity to collaborate (ESCAP, 2009).

Innovation is thus essential for all parties – large and small firms in both developed and developing countries – in dealing with the changing business environment, fluctuating market trends and technologies, and

shorter product life cycles (Langerak, Hultink, & Robben, 2004), and its importance has sparked great interest on the part of social scientists and practitioners, who have scrutinized this topic from many perspectives (Scott & Bruce, 1994). Several studies have shown a strong, positive relationship between innovation and firm growth (Auken, Madrid-Guijarro, & Garcia-Perez-de-Lema, 2008; Roper, 1997; Roper, Ashcroft, & Love, 1996). Innovative firms have also been found to have higher productivity and sales growth than other companies (Cainelli, Evangelista, & Savona, 2004; Regev, 1998). Moreover, innovation enables SMEs to survive in tight competition, compete with large firms, and respond easily to market shifts and needs (Fritz, 1989). Stimulating innovation in SMEs is very important for economic growth, since it can lead to the discovery of crucial factors that will contribute to their overall success (Keizer, Dijkstra, & Halman, 2002).

In today's competitive environment, SMEs face unrelenting pressure from customers and competitors to lower their prices and are forced to accept shrinking profit margins (Mubaraki & Aruna, 2013). In response to this pressure, they have started adopting differentiation strategies by creating innovative products. In that sense, innovation may even be more important for SMEs than it is for large firms (Radas & Božić, 2009). Despite this importance, though, studies on the innovativeness of SMEs in emerging markets have not been as prevalent as in advanced countries. Despite the fact that the characteristics of SMEs and the business environment in developed countries are not exactly the same as those in developing countries, the findings and policies from developed countries cannot be generalized and applied to developing countries (Radas & Božić, 2009). This may lead to biased policy and ineffective strategy. As Berry et al. (2001) have stated, even though the number of SMEs is increasing overall, the rate of failure among SMEs remains high in developing

countries because many of them cannot compete with the large firms, which benefit from economies of scale. This thus raises a big question:

What are the fundamental factors influencing SME innovative performance and what mechanisms are at work?

Reviewing prior studies and the circumstances for SMEs, we think it is critical to find the important resources being leveraged in SME innovative performance. We intend, therefore, with this academic effort, to provide a theoretical and empirical answer to this main research question, since the antecedents by which SMEs undertake innovation remain unclear (Keizer et al., 2002; Radas & Božić, 2009), particularly in the context of developing countries. This lack of research on the innovativeness of SMEs in such regions impels us to excavate the driving forces at work.

The focus of this study is to find out the fundamental factors that leverage the innovative performance of SMEs and to discover the mechanisms at work. We conducted three empirical studies to find answers to these main research questions and to contribute to this field of research. Essentially, the three empirical studies focused on two main aspects: the performance implications and the determinants of SMEs' innovative performance.

When the studies were designed, we considered making three independent studies, so that no single study was an antecedent of any other. Departing from this initial approach, we decided to examine some constructs to be applied in all three studies. Although we identified some similar constructs, each of the three studies is independent and addresses a different method of enhancing innovative performance. In our perspective, examining the some similar constructs from many different perspectives will enhance our understanding on those subjects.

In study 1, we try to see how EO, BACAP and EXCAP can be driving forces in SMEs' innovative performance. Study 2 focuses on how SMEs might utilize network ties as a source of knowledge and information and how the proactive and risk-taking behaviors associated with EO can support those network ties in boosting innovation. Finally, in study 3, we learn about sustainable innovation and firm long-term survival by investigating whether ambidexterity, EO, and ECTs/ICTs can enhance SMEs' innovative performance. In these studies, the main constructs are defined as follow:

Innovative performance

'Innovative performance' in this study refers to the number of innovative products that a firm has introduced onto the market.

ACAP

We define 'absorptive capacity', or ACAP, as a competency that enables a firm to recognize the value of information, assimilate it, and apply it to commercial ends (Cohen & Levinthal, 1990).

BACAP

In this study we define 'basic absorptive capacity', or BACAP, as a firm's basic capability to understand and value the new knowledge.

EXCAP

Meanwhile, we define 'extended absorptive capacity', or EXCAP, as a firm's ability to acquire, assimilate, and implement the new knowledge.

ICTs

In this study we define 'intra-cluster ties', or ICTs, as a clustered firm's network ties to others firms operating in the same geographical industry (Giuliani, 2005).

ECTs

Meanwhile, we define 'extra-cluster ties', or ECTs, as a clustered firm's network ties to other affiliated firms outside the geographic concentration (Giuliani, 2005).

Proactiveness

'Proactiveness' represents a firm's 'first mover' orientation, encapsulating its ability to stay ahead of its competitors in anticipating future changes.

Risk-taking

A 'risk-taking' orientation reflects a firm's 'tolerance of uncertainty' and its willingness to engage in and make risky investments.

Entrepreneurial orientation

In this study we define 'entrepreneurial orientation', or EO, as the degree to which top managers are inclined to take business-related risks, seek opportunities, and adopt a forward-looking perspective in anticipation of future demand (Covin & Slevin, 1991; Dess & Lumpkin, 2005; Miller, 1983).

Ambidexterity

In line with the study by Walrave, van Oorschot, and Romme (2011), we define 'ambidexterity' as a firm's dynamic capabilities in terms of exploiting current offerings (short-term success) and exploring new offerings (long-term success).

Because this study is part of a World Bank programme to enhance the competitiveness of SMEs in Indonesia, one of the requirements was that it be conducted on an SME case in Indonesia. The World Bank Institute has determined that there is little systematic research/data informing the various policies in support of SMEs, especially in developing countries (Ayyagari et al., 2011). SMEs in developing countries often drive the local economies through cluster formation (Berry, Rodriguez, & Sandee, 2002). Clusters have been seen as advantageous structures that may stimulate competition and provide access efficiently to raw materials, suppliers, skilled workers, trade partners, and financial institutions (Shinozaki, 2012).

Literature studies and our observations show that many of the SMEs in Indonesia are grouped in clusters and work in cluster areas (Sandee, 1995). The object of our studies, the Cibaduyut cluster, is known as one of the biggest, most famous SME clusters in Indonesia. We chose it because it is

an important icon of the SME manufacturing industry in Indonesia. This section of the footwear industry is fit for the purposes of the study because business survival in it is predicated on innovation. Furthermore, the problems and characteristics inherent to Cibaduyut are quite similar to those of other SMEs in the rest of Indonesia and in other developing countries. To collect the data, we conducted a questionnaire survey of 120 manufacturing firms in Cibaduyut. The data were collected by 4 student assistants, 1 government officer, and myself. To enhance the rigour of the research, we also conducted a small interview survey of the firms enquiring whether or not they confirmed the results of the studies.

In an effort to enhance the property of data sources and re-affirm the results of our studies, we conducted follow-up interviews with the managers and owners of some of the businesses operating in the Cibaduyut footwear manufacturing industry that had responded to our initial survey. The interviews were aimed at validating the results of the studies; in other words, to what degree do those results truly reflect the situation in the field?

We conducted a total of 15 interviews, with questions designed to discover the fundamental factors being leveraged in SME innovative performance, along with the mechanisms at work. The owners and managers were chosen from the list of the respondents in our previous study. We selected them using convenience sampling, based on recommendations from an executive at the footwear association in Cibaduyut. The candidates were contacted by phone and asked whether they would be willing to give us their opinions to supplement the findings of the study. If they said yes, we set up an appointment to conduct the interview, which was also transcribed. To allow the interviews to be somewhat interactive but still keep on track, we opted for a semi-structured interview that lasted 30-45 minutes on average.

The entire process took about one month, because we had to accommodate all the interviewees' schedules.

Because of the limited amount of time and financing for data collection, the quantitative data processed in these three studies all came from the same source. However, each study is itself independent, with its own particular amplification in terms of how innovation is pursued. Taken as a whole, the three studies do share the same main purpose and that is to answer the following questions: "*What are the fundamental factors influencing in SMEs' innovative performance and what mechanisms are at work?*" . To give a clearer picture of studies 1, 2 and 3, the following sections describe our multi-pronged approach and elaborate on each of the three studies, which together help provide an answer to the research question.

1.2 Study 1: Returns on Entrepreneurial Orientation and the Moderating Effects of Basic and Extended Absorptive Capacity: SME Innovative Performance

The first empirical chapter focuses on the role played by entrepreneurial orientation (EO) and absorptive capacity (ACAP) in a firm's innovative performance. EO is a strategic posture referring to the extent to which firms are inclined to take business-related risks and seek opportunities in anticipation of future demand and their willingness to support and implement new ideas and products and enter new markets (Covin & Slevin, 1991; Lumpkin & Dess, 1996; Richard, Barnett, Dwyer, & Chadwick, 2004). EO is multifaceted, reflecting: a firm's ability to capitalize on its resources and capabilities (Lipparini & Sobrero, 1994); an entrepreneurial behavior that pervades the organization at all levels (Covin & Slevin, 1991); a driver of performance outcome (Wales, Monsen, & McKelvie, 2011); an organizational resource that provides sustainable

competitive advantage (Zahra, Nielsen, & Bogner, 1999); and a behavior of environmental scanning and monitoring (Keh, Nguyen, & Ng, 2007). Those EO competencies are important for the innovativeness of firms because EO is associated with a process of experimenting with new things, a willingness to seize new products, new markets, and new opportunities, and a firm's propensity for undertaking risky ventures (Lumpkin & Dess, 1996).

Despite the many approaches to EO concepts, there is general agreement that the degree of EO at the firm level is equivalent to a willingness to proactively act, take risk, and innovate (Covin & Slevin, 1989; Rauch, Wiklund, Frese, & Lumpkin, 2004). Despite this agreement on the part of scholars, studies have found that not all of the impact from EO is significant in terms of improving performance (Wiklund & Shepherd, 2005). The level of performance associated with EO is context-specific, in terms of both environment and timeliness (Lumpkin & Dess, 1996; Tang, Tang, Marino, Zhang, & Li, 2008; Walter, Auer, & Ritter, 2006). Its benefits may take years to come to fruition (Madsen, 2007; Zahra & Covin, 1995), depending on the circumstances under which it occurs (Wiklund & Shepherd, 2005). In the case of SMEs, we postulate that the effect of of EO on innovative performance might be non-linear.

In this study, we also address the importance of ACAP in generating an SME's external knowledge. Due to the limited resources SMEs have for developing knowledge in-house, access to external knowledge can be a very beneficial source of innovativeness. ACAP is thought to be an important competency for valuing, acquiring, and assimilating knowledge and information and eventually transforming it into new products or processes (Nonaka & Takeuchi, 1995; Todorova & Durisin, 2007; Wesley & Levinthal, 1990).

Todorova and Durisin (2007) have emphasized that ACAP may enhance innovative capabilities through a firm's ability to engage prior knowledge in combination with new knowledge. In the hopes of enriching the field of ACAP studies, we propose, rather, that prior knowledge relates to a firm's ability to recognize and value knowledge as a "basic absorptive capacity" (BACAP). Then, we define a firm's ability to acquire, assimilate, and implement the new knowledge as "extended capacity" (EXCAP). It is important to distinguish between BACAP and EXCAP because it helps us to clearly notice the particular benefit of each capability to firms' innovative performance. The authors' believe that firms can fail to obtain the optimum benefits of knowledge and information due to a lack of attention to either BACAP or EXCAP, thus the distinction between the two could help firms to recognize the importance of both capabilities.

In this study, we also argue that the relationship between EO and innovative performance becomes more substantial when the levels of BACAP and EXCAP are high. Thus, the combination of EO, BACAP, and EXCAP has a synergetic effect in terms of enhancing SME innovative performance. Surprisingly, even though the EO concept and ACAP have received a great deal of scholarly attention recently, little research has gone into approaching the interaction between the two.

1.3 Study 2: Network Ties and Entrepreneurial Orientation: Innovative Performance of SMEs in Developing Countries

The first study highlights the important collaboration of EO, BACAP and EXCAP to enhance innovative performance for SMEs in developing countries; it is equally interesting to investigate network ties as a source of knowledge and information. As explained in the study 1, even though SMEs have limited capital and human resources, they can still use their knowledge

to leverage their resources and advantages. Knowledge is a powerful feature of a firm's success because embedded in it are know-how, expertise, ideas, intuition, skill, and insight (Desouza & Awazu, 2006). A lack of relevant, up-to-date knowledge and information can be a serious problem for firm sustainability. Prior studies have hypothesized that the success of SMEs can be linked to how adeptly they obtain and utilize their knowledge (Brush, 1992). Since most SMEs in developing countries have limited finances and resources, it is difficult for them to create knowledge by their own resources. Then, in the study 2, we investigate how the SMEs may utilize their network ties as a source of knowledge, as they should obtain knowledge in effective and efficient manners (Desouza & Awazu, 2006).

According to several studies, firms located in geographical clusters can obtain local knowledge freely and easily (Gilbert, McDougall, & Audretsch, 2008; Giuliani, 2005; Kesidou & Romijn, 2008). The free exchange of information enhance the knowledge and competencies of the cluster member. Clusters are therefore good for innovation and technological advancement (Navickas & Malakauskaiteb, 2009). Some studies have singled out clusters and collaborative networks as being efficient instruments for boosting the ability of SMEs to overcome size limitations (Berry et al., 2001; Karaev, Koh, & Szamosi, 2007; Keeble, 1997). Moreover, many studies have identified firms that have been successful in terms of both innovation and profitability as being part of a regional cluster (Caniels & Romijn, 2005; Oerlemans, Meeus, & Boekema, 2001; Schoales, 2006; Simmie, 2004).

Nevertheless, relying exclusively on cluster ties, including intra-cluster ties (ICTs), is not considered sufficient for competing in today's business environment. Basically, the flow of knowledge in the cluster cannot keep pace with the changing environment. Without an injection of new insights

and information, knowledge within ICTs can be obsolete. Thus, many studies suggest the importance of extra-cluster ties (ECTs) as a complementary resource for introducing knowledge diversity. It has long been acknowledged that heterogeneity of knowledge is a source of competitive advantage (Wales et al., 2011). Moreover, ECTs are particularly crucial for SMEs that operate in lagging technology clusters, where local knowledge and competency are insufficient (Bell & Albu, 1999; Fontes, 2005).

Hence, ICTs and ECTs are both advantageous for the distinct types of knowledge. While ICTs provide know-how, cooperation, collective learning, and knowledge sharing, ECTs support the SME with new, heterogeneous, and advanced knowledge (Andersson, Forsgren, & Holm, 2002; Belderbos, Gilsing, & Jacob, 2011; de Man & Duysters, 2005).

It is not easy for SMEs to establish and maintain their ICTs and ECTs, however. Maintaining diverse ties requires firms to expend more effort on communication and commitment and is time-consuming (Dahlander & Gann, 2010; Aija Leiponen & Helfat, 2010). Firms must inevitably devote extra effort to establishing and looking after ties because of the inherent discrepancies in knowledge, language, and culture between diverse parties. A firm's commitment can be reflected in its EO capabilities for taking business-related risks and seeking opportunities in anticipation of future demand (Covin & Slevin, 1988, 1991; Miller, 1983). The proactiveness associated with EO refers to the active search for new opportunities and to devising strategies for exploiting that potential (Lumpkin & Dess, 1996). We argue that a firm that is highly proactive in its orientation will be more adept at forging new ties because it seeks out resources that will add value to the firm. Such firms accordingly seek out network ties more actively in order to access resources that will help it meet expected challenges and

opportunities. On the other hand, the establishment of network ties is no guarantee that a firm will not suffer losses or detrimental effects from those ties. Such commitments carry an inherent risk, despite the promise of great benefits. This suggests that some level of risk-taking is essential for reinforcing firms' innovativeness with engagement in ICTs and ECTs.

As part of a firm's processes, methods, and decision-making style (Lumpkin & Dess, 1996; Wiklund & Shepherd, 2005), EO behavior can shape the attitudes of a firm's members (Covin & Slevin, 1989; Kollmann & Stöckmann, 2012). A high degree of proactiveness and risk-taking is required to support the establishment of ICTs and ECTs, because such idiosyncrasy can be a strong foundation that enables firms to deploy the different resources from its ties advantageously.

In fact, most social network studies overlook the role of EO (Stam & Elfring, 2008), they particularly neglect the role of EO's behaviors in terms of augmenting the benefits of cluster ties. However, a growing body of literature in regional studies has demonstrated the positive impact of cluster ties on innovation. In the effort to relate both studies above, we posit that proactiveness is an antecedent of both ICTs and ECTs and a greater propensity to take risks has a positive effect on the impact of ICTs and ECTs on innovation.

1.4 Study 3: Extra-cluster Ties, Entrepreneurial Orientation, and Innovative Performance: The Mediating Role of Ambidexterity

Following on from the research focus on the innovativeness of SMEs in Studies 1 and 2, we continue by examining the aspects that enhance the sustainability of innovativeness. Since today's strength can become tomorrow's weakness (D'Aveni, 1994), it is critical that companies create a

series of advantages from innovation. Besides pursuing future innovations, they must also pay attention to their current products if they are to remain sustainable. Cash flow from current success is important for building future competencies. Conversely, as global competition becomes tougher, firms are required to not only sustain their existing success, but also develop future innovative competencies for long-term success. Regarding the importance of current and future innovative competencies, prior studies have highlighted ambidexterity as a trait that helps firms avoid becoming obsolete through an overreliance on exploitation, as well as avoid poor returns from new knowledge generation through an overreliance on exploration (Russo & Vurro, 2010). For our purposes, we define ambidexterity as an organization's efforts to pursue exploitation activities (refinement, production, efficiency, selection, and implementation) and exploration activities (risk-taking, experimentation, innovation, flexibility, and discovery) simultaneously (March, 1991).

Tushman and O'Reilly (1996) have argued that with this combination, ambidextrous firms are likely to have better innovative performance than firms that focus on a single competency. Ambidexterity is thus clearly worthwhile, but it may require a large pool of resources (He & Wong, 2004). Exploitation and exploration require different strategies, structures, processes, capabilities, and innovative attitudes. Exploitation is associated with mechanistic structures; routine, bureaucracy, control, tightly coupled systems, and stable markets, whereas exploration involves; organic structures, autonomy, loosely coupled systems, improvisation, and chaos. The two concepts, therefore, require disparate forms of devotion.

It is difficult for SMEs in emerging countries to pursue ambidexterity by themselves. As Cao et al. (2009) have stated, simultaneous exploitation and exploration generally requires access to resources, but SMEs have less

discretion in this regard. Large firms can establish separate sub-units for pursuing the exploitation and exploration strategies simultaneously, but SMEs do not usually have that option. How, then, can a firm pursue this strategy if it has limited resources? When resources are limited, SMEs must remain alert for windows of opportunities. They can compensate by relying on their network ties (Hewitt-Dundas, 2006), which may provide them with additional resources. As we explained before, network ties provide access to a diversity of new ideas, referrals, knowledge, and information. Firms' ties serve a "radar function" in seeking and collecting relevant information for current strategies and future planning (de Man & Duysters, 2005). When a firm is pursuing experimentation, efficiency, refinement, and innovation, it can benefit greatly from the insight found through the ECTs/ICTs. We designate the position of ECTs relative to ICTs because we expect ECTs are more critical to pursue new knowledge and information—a crucial ingredient for innovation. On the other hand, we also conceive the intra cluster ties (ICTs) as the base where clusters SMEs located, we therefore set the function of ECTs are relative to ICTs. These can be a source of competitive advantage for organizations through the infusion of outside resources, such as knowledge, financial resources, legitimacy, and market power. In this sense, having heterogeneous network ties, such as ECTs/ICTs, are critical for ambidextrous SMEs.

The pursuit of these two opposite strategies, however, is clearly more difficult than pursuing a single strategy. A firm must be strongly committed to doing so. Without strong commitment, it will usually fall back on an easy strategy, and that will prevent it from attaining the best result. Ambidextrous firms need to not only maintain their products and technologies to satisfy their existing market, but also explore new ideas, products, and technologies to seize potential markets. While the complexity of these activities is high,

EO characteristics can help firms unify the input from many different resources (Zhou, Yim, & Tse, 2005). EO enables a firm to leverage internal and external capabilities and bolsters its commitment to developing heterogeneity, creativity, and experimentation. It also helps determining a firm's values, beliefs, and principles, which are the foundations for pursuing opposite goals, such as exploitation and exploration (Kollmann & Stöckmann, 2012). As a "driving power," EO also secures the involvement and commitment of all the members in an organization in executing an ambidextrous strategy (Covin & Wales, 2012). Thus, it provides the necessary commitment to exploitation and exploration activities. In line with these views, EO can be seen as an antecedent, precondition, and basis of support for a firm adopting exploitation and exploration strategies and an important motivator in pursuing its short-term and long-term goals.

Given the importance and interconnections between these studies, we see that EO, network ties, and ambidexterity are intertwined, and they should not be studied in isolation but explored together. Surprisingly, there has been no effort to date to integrate these streams of research. To bridge that gap, we take an empirical and theoretical approach to learning about the impact of EO, ambidexterity, and intra- and extra-cluster ties on innovation. In our study, we build conceptually on the academic framework regarding firms' organizational behavior and network ties, examine the mechanisms behind of their links, and provide a clear road map to how SMEs can develop innovative performance. Furthermore, we argue that strong EO and ECTs/ICTs are the antecedents of ambidexterity for SMEs, meaning that the positive effects on innovative performance of a firm's EO and ECTs/ICTs are mediated by its ambidexterity. This suggests that ECTs/ICTs compensate for resource scarcity among SMEs and EO acts as a key driving force of ambidexterity in pursuing innovative performance.

1.5 Overall Contribution

The study of innovative performance has been one of the primary concerns in enhancing firms' competitiveness and survivability (Caniels & Romijn, 2005; Oerlemans et al., 2001; Schoales, 2006). Much of the research conducted aims to aid in the development of relevant policy for encouraging firms to be more innovative, since innovation is perceived to be a key factor in SME development (Robson, Haugh, & Obeng, 2009). However, the majority of innovation research has been in developed countries, with a lack of focus on SMEs in developing countries (Hadjimanolis, 1999). Policy to stimulate innovation depends on a clear understanding of the factors that enhance innovation and whether these differ in terms of their impact on innovative performance (Hewitt-Dundas, 2006). In our study, therefore, we have taken the initiative and expanded the study of innovation to developing countries in the hopes of answering the following question: *“What are the fundamental factors influencing SME innovative performance and what mechanisms are at work?”*

In its effort to answer this main research question, our study contributes to the growing body of literature on SMEs' innovativeness in several ways. The first is related to our exploration of the impact of EO. Practitioners and researchers have found EO to be a highly relevant instrument in determining innovative performance (Avlonitis & Salavou, 2007; Boso, Cadogan, & Story, 2012; Covin & Slevin, 1991; Miller, 1983; Pérez-Luño, Wiklund, & Cabrera, 2011). Even though there have been numerous studies in this area, most of them were conducted in the developed world (Stam & Elfring, 2008; Van Doorn, Jansen, Bosch, & Volberda, 2013; Wiklund & Shepherd, 2005). Our study investigates EO performance in the context of SMEs in developing countries. We do not only combine EO with ACAP, but also advance the research on ACAP by empirically examining the distinction

between BACAP and EXCAP. In fact, no studies have been developed to date for relating EO and absorptive capacity. Since this configuration has not been tested empirically, doing so might give us a richer understanding of the relationship between EO, BACAP, EXCAP, and firms' innovative performance.

The second contribution to the literature, we study on SMEs' access to resources. As previously stated, compared to large firms, SMEs have limited pockets in terms of their human resources, capital, or land (Desouza & Awazu, 2006). Still, they are not necessarily confined to their own resources because knowledge and other resources are bountiful outside. These can be accessed through a firm's network ties, such as ICTs and ECTs. An underlying criterion, however, is having a high degree of proactiveness and risk-taking for sustaining the firm's commitment to maintaining its network ties. In this study, we integrate the theories related to geographical clusters that emphasize the importance of ICTs and ECTs (Giuliani & Bell, 2005) with the literature on proactiveness and risk taking that stress the role of an organization's entrepreneurial culture for successful outcomes (Rhee, Park, & Lee, 2010). Since prior studies have failed to consider the specific behavior of SMEs in network utilization, this study can be seen as an effort to learn the effectiveness of entrepreneurial SMEs seeking information through their network ties.

Thirdly, we address the issue of how SMEs in developing countries become ambidextrous firms. Prior studies on ambidexterity tended to focus on high-tech firms (Cao et al., 2009; Fernhaber & Patel, 2012; He & Wong, 2004; Lavie, Kang, & Rosenkopf, 2011) or large firms (Gibson & Birkinshaw, 2004; Kouropalatis, Hughes, & Morgan, 2012; Wu & Shanley, 2009). Despite the richness of ambidexterity literature in the context of developed countries (which surprisingly, for the most part, ignores the roles

of cluster ties and EO), most of these studies were conducted separately. We feel it is important to integrate all these streams of research, since innovative performance is not built on a single factor. In real life, any one social aspect is related to other aspects, and one needs a keen overview to unravel and understand the interplay between and position of each study. In any event, the issue of how EO and firm ties theoretically enhance ambidexterity as a way of achieving innovation remains unresolved. Thus, an in-depth, comprehensive study will enrich the existing literature both theoretically and empirically, describing how these three different streams can work together and create synergy.

Our study thus unlocks the black box of how SMEs in developing countries pursue innovation. Indeed, we contribute to the research from both an empirical and a conceptual perspective by investigating the fusion of EO, absorptive capacity, firm ties, and ambidexterity. Since our overall aim is to enrich literature of SME's innovativeness in developing countries, in this academic effort, we explore innovation in the context of low-technology SMEs in a developing country. To answer the questions raised above, we chose to conduct this study in the Indonesian footwear industry. We decided that Indonesia was an appropriate emerging market setting because manufacturing SMEs there have similar characteristics to those in other developing countries, such as Vietnam, the Philippines, and Thailand (UNCTAD, 2005). It is also worth noting that the footwear manufacturing companies studied in the Cibaduyut cluster are required to consistently produce innovative products; without such products, it is difficult for them to survive and get orders from distributors.

1.6 Outline of the Study

We attempt to answer the research questions and fill in the gap of previous studies with our research, which is outlined in this dissertation. The first chapter is the introduction of three empirical studies. In the second chapter, we delineate the pattern of the impact of EO on the innovative performance of SMEs in a developing country. This part of the discussion will provide more insight into the ongoing controversies of EO studies. It will also enrich the line of EO studies by tracking the potential curvilinear relationship between EO and innovation and the consequence of EO in SME strategy and highlight the importance of BACAP and EXCAP in combination with EO.

In the third chapter of this study, we examine the attributes of EO that can be used to leverage intra- and extra-cluster ties to boost innovation. This part of the paper contributes empirically to the existing literature by distinguishing between the two well-known traits of EO – proactiveness and risk-taking – and examining their specific roles in generating innovative gains through ICTs and ECTs.

In the fourth chapter of this dissertation, we will study ambidextrous SMEs in terms of their impact on innovative performance. We found that many ambidexterity studies were performed on high-tech and large firms but very little research has been done on ambidextrous SMEs. By contrast, this section provides an empirical study of low-tech SMEs' ambidexterity in a developing country. Furthermore, we will uncover the mechanisms behind successful ambidextrous SMEs and the combination of cluster ties, EO, and ambidexterity that enhances innovation. This chapter enriches the literature on ambidexterity, and we consider this study to be the first attempt to dissect the success of ambidextrous SMEs in developing countries, such as Indonesia.

In the conclusion (the fifth chapter), we discuss and reflect on the outcomes of our research questions and tested hypotheses. We also summarize the limitations of our study and give directions for future study.

CHAPTER 2

RETURNS ON ENTREPRENEURIAL ORIENTATION AND THE MODERATING EFFECTS OF BASIC AND EXTENDED ABSORPTIVE CAPACITY: SME INNOVATIVE PERFORMANCE

2.1 Introduction

Innovation is recognized as one of the most vital competitive strategies for both small and large firms (Kaufmann & Tödting, 2002). Firms in highly competitive markets must continuously differentiate their products. They should therefore be constantly innovating all their processes and products (Popadiuk & Choo, 2006). In dynamic, competitive, hostile, and globalized environments, such innovation is critical to long-term business survival (Boso et al., 2012; Langerak et al., 2004). In studying these changing and competitive environments, practitioners and researchers have put extensive effort into determining the antecedents of innovative performance. EO, which equates to a firm's strategic posture in terms of proactiveness, risk-taking, and innovativeness, is considered to be of instrumental importance (Covin & Slevin, 1991; Miller, 1983). That posture encompasses all of a firm's strategies, processes, activities, philosophies,

and decision-making that could lead it to enhance its innovative performance and competitive advantage (Lumpkin & Dess, 2001; Rauch & Frese, 2009; Wiklund & Shepherd, 2005).

Recognizing the importance of EO in promoting and sustaining corporate competitiveness, many researchers have examined its specific contributions (Covin & Miles, 1999; Lumpkin & Dess, 1996; Stam & Elfring, 2008). Some studies have demonstrated that EO is a positive determinant of product innovation (Avlonitis & Salavou, 2007; Boso et al., 2012; Pérez-Luño et al., 2011). Ireland and Webb (2007) add that it manifests itself in product and process innovation, and this performance may translate into more profit, higher growth, and even non-financial benefits, such as stakeholder satisfaction (Kollmann & Stöckmann, 2012). In this study, we define EO as ‘the degree to which top managers are inclined to take business-related risks, seek opportunity, and adopt a forward-looking perspective in anticipation of future demand’ (Covin & Slevin, 1991; Dess & Lumpkin, 2005; Miller, 1983).

Studies also show, however, that the performance benefits of EO are not uniform (Rauch, Wiklund, Lumpkin, & Frese, 2009). While some have found that firms with attention greater EO perform better, others failed to establish a positive relationship (Tang et al., 2008; Wiklund & Shepherd, 2005). The presumption in the latter group of studies is that EO performance depends on the context in which it occurs. In this regard, Tang et al. (2008) point out that the different business environments examined contributed to inconsistent results on the impact of EO. Thus, further research is needed to understand the dynamics of EO performance in different cultural, business, and political environments (Rauch & Frese, 2009; Walter et al., 2006; Wiklund & Shepherd, 2005).

Given how widespread the notion is about the importance of EO, surprisingly little has been given to its role in SMEs in developing countries. Even though numerous EO studies have been conducted, most of them were in developed countries (Stam & Elfring, 2008; Van Doorn et al., 2013; Wiklund & Shepherd, 2005). In fact, SMEs in developing countries have been a driving force behind the growth of national economies (Brixiova, 2013). Even as businesses linked to the global economy were severely hit by the widespread economic crises, the SMEs in developing countries have shown surprising resilience and continued to support and contribute to their economies (Berry et al., 2001). Hence, the dynamics of EO in developing countries is an interesting and relevant field of research that has received little empirical attention.

Moreover, while the existing stream of EO studies provides ample theoretical elaboration on social networks (Lee, Lee, & Pennings, 2001; Stam & Elfring, 2008), marketing orientation (Boso et al., 2012), organizational structure (Covin & Slevin, 1988; Green, Covin, & Slevin, 2008), and internal knowledge-sharing (De Clercq, Dimov, & Thongpapanl, 2013), no studies have been conducted as yet specifically in relation to EO and absorptive capacity. SMEs in developing countries generally lack one of the things considered most important in the existing literature: absorptive capacity (ACAP)..We define ‘absorptive capacity’, or ACAP, as a competency that enables a firm to recognize the value of information, assimilate it, and apply it to commercial ends (Cohen & Levinthal, 1990). The lack of it can be raised as one of the key inhibiting factors for innovation in developing countries. Accordingly, some studies have determined that a firm’s ability to generate new knowledge is crucial for the development of innovative performance. In today’s turbulent environment, knowledge has become a source of competitive advantage. External

knowledge flow is recognized as a fundamental resource for innovative performance. In the last two decades, particularly, knowledge generation has been shifting from in-house research to external idea utilization (Escribano, Fosfuri, & Tribó, 2009). Firms increasingly depend on external sources to promote innovation and improve business performance (Kostopoulos, Papalexandris, Papachroni, & Ioannou, 2011) because they can benefit greatly from external knowledge. This is especially true for SMEs, which have difficulty generating knowledge on their own because of their limited resources and capabilities.

The fact that the external knowledge is abundant does not necessarily mean it is ready to be used; a firm still needs to recognize, assimilate, and utilize that knowledge for commercial purposes (Cohen & Levinthal, 1990). This requires ACAP, the ability to acquire and assimilate new and existing knowledge and ideas and transform them into products or processes (Nonaka & Takeuchi, 1995; Wesley & Levinthal, 1990). A firm's learning or absorptive capacity (Lane, Koka, & Pathak, 2006) is related to its existing knowledge base and the intensity of its development efforts (Kim, 2001). Differences in learning ability affect the speed and quality of the innovative performance (Kim, 2001). Firms that operate in the same sector, are located in geographic proximity, and have the same amount of knowledge inflow can still vary in their ability to identify and exploit that knowledge (Escribano et al., 2009).

Recent studies of ACAP have focused on how to manage it (Jansen, Bosch, & Volberda, 2005), its antecedents (Lane et al., 2006), or how it develops (Jansen et al., 2005; Todorova & Durisin, 2007; Wesley & Levinthal, 1990; Zahra & George, 2002). In the effort to enrich the existing ACAP studies, we aim to reconstruct and empirically examine the ACAP concept. Following the original construct of Wesley and Levinthal (1990),

we define ACAP as a firm's ability to "recognize the value of new external information, assimilate it, and apply it to commercial ends." This concept is expanded by Zahra and George (2002), who further distinguish between potential and realized capabilities in a firm's ACAP. In their study, they designate knowledge acquisition and assimilation capabilities as being "potential capabilities," and they relate knowledge transformation and exploitation to "realized capabilities." That study, in turn, was criticized and enhanced upon by Todorova and Durisin (2007), who defined the elements of ACAP as being a firm's ability to recognize, acquire, assimilate, and exploit knowledge. In an effort to enrich the field of ACAP studies, we use these prior ACAP elements but have devised new affiliations for these ACAP components.

For the purposes of our study, we divide ACAP into two categories: "basic" absorptive capacity (BACAP) and "extended" absorptive capacity (EXCAP). In this study we define 'basic absorptive capacity', or BACAP, as a firm's basic capability to understand and value new knowledge. Meanwhile, we define 'extended absorptive capacity', or EXCAP, as a firm's ability to acquire, assimilate, and implement the new knowledge. It is important to differentiate between education, experience, and technological capabilities (BACAP) and the ability to acquire, assimilate, and implement knowledge (EXCAP), because it allows us to evaluate the unique contribution of each element to a firm's innovative performance. This distinction in ACAP capabilities will help us to explain why certain firms are more successful than others in using ACAP (Zahra & George, 2002). A lack of attention to either BACAP or EXCAP can fail to bring the optimum benefits in terms of innovative performance, thus this differentiation between the two could help firms recognize the importance of both components of ACAP.

Although the EO and ACAP concepts have received a great deal of scholarly attention recently, surprisingly little research has gone into understanding the interaction between the two. Yet, this is an important part of understanding their implications in the drive to enhance innovative performance. Previous work has extended ACAP study design to incorporate ACAP's role as a mediator variable (Kostopoulos et al., 2011; Todorova & Durisin, 2007); our current work further extends those studies by assigning BACAP and EXCAP as moderator variables in the relationship between EO and innovative performance.

In addressing the above subjects, we therefore aim to advance the prior studies with several contributions. Firstly, we examine the relative performance of EO on innovative performance in the context of SMEs in developing countries. The lack of a universal outcome for entrepreneurial strategic posture (Kreiser, Marino, Kuratko, & Weaver, 2013; Walter et al., 2006) prompts us to return for this theory to a basic study of EO performance. Secondly, in addition to extending the ACAP construct, we also advance the research on ACAP by empirically validating the distinction between BACAP and EXCAP. Further study can enhance a substantial contribution to the organizational studies by validating ACAP and replicating its basic theoretical assumptions in diverse technological, economic, and cultural conditions (Kostopoulos et al., 2011; Tsang & Kwan, 1999). Thirdly, we further examine the theoretical elaboration of ACAP and EO by highlighting their configuration in terms of their effect on innovative performance. This approach suggests the importance of how certain elements of strategy, structure, process, and environment connect together and form synergy (Meyer, Tsui, & Hinings, 1993). Greater performance and effectiveness can result from the fit and congruence of structural, strategic, and contextual factors (Wiklund & Shepherd, 2005). Since this approach has

not been tested empirically, it might give us a richer understanding of the relationship between EO, BACAP, EXCAP, and firms' innovative performance.

2.2 Theoretical Background and Hypothesis

2.2.1 EO and Innovative Performance

Scholars in the field of entrepreneurial studies have long studied the methods, practices, and decision-making styles of EO in terms of how firms achieve innovative performance. EO is perceived as a strategic process that helps firms obtain competitive advantages (Rauch & Frese, 2009) and is widely accepted as the driving force of innovative performance (Avlonitis & Salavou, 2007; Kollmann & Stöckmann, 2012). EO characteristics are also considered an important resource for building competitive advantage (Covin & Miles, 1999; Covin & Slevin, 1991; Lumpkin & Dess, 1996; Wiklund & Shepherd, 2005).

Furthermore, EO has been recognized as a vehicle for success in globalized and highly competitive markets (Covin & Slevin, 1991; Li, Zhang, & Chan, 2005). Several studies have found that under such conditions, firms that employ an active EO strategy perform better than those that do not (Avlonitis & Salavou, 2007; Wiklund & Shepherd, 2005). These findings are not uniform, however. A study by Walter et al. (2006) yielded the surprising result that EO exerted no significant impact on productivity or profit. Then, Tang et al. (2008) found that EO does not have a linear effect. They stated that EO performance depended on the context in which it occurred. Having an understanding of the impact of EO on innovation in different cultural, business, and political environments would

therefore seem worthwhile, but this requires further study (Rauch & Frese, 2009). It cannot be taken for granted that a growth in EO has a clear positive impact in every business setting (Tang et al., 2008; Walter et al., 2006); we therefore studied the patterns of EO to elicit findings for the context of SMEs in a developing country.

It would seem a given, in any event, that EO is crucial for the survival of SMEs (Brush, 1992). As business circumstances change, EO helps firms adjust in order to maintain their growth and viability. Specific characteristics of EO, such as proactiveness, can help firms seek possible business opportunities, such as new niches and markets (Rauch & Frese, 2009), and elude threats, by seeking more resources and opportunities before their competitors do. Proactiveness refers to a firm's activities in terms of finding, identifying, and assessing new opportunities and devising strategies for exploiting the potential of those opportunities (Kreiser et al., 2013; Lumpkin & Dess, 1996; Wiklund & Shepherd, 2005). Being proactive is particularly important in pioneering new procedures, technologies, and products or services – abilities which can determine a firm's long-term success (Christensen, 1997; Covin & Covin, 1990).

In addition, risk-taking characteristics help firms make decisions in uncertain situations and react to their gut feelings as they venture into unknown situations, capitalizing on access to greater resources (Rauch & Frese, 2009). Risk-taking is a component of EO that delineates a firm's willingness to invest in unpredictable business ventures.

These EO characteristics cannot be bought from the market, however, because they require time and dedication to develop (Lee et al., 2001), along with a substantial, and consistent, commitment of resources (Covin & Slevin, 1991). Building EO processes, structures, and behaviors is thus generally considered a long-term process (Lechner & Gudmundsson, 2014). Indeed,

prior studies suggest that the implementation and effects of EO are not short-lived but long-term (Wiklund, 1999).

It is understandable that SMEs have resource constraints: they tend to lack the deep pockets needed for labor and capital expenditures (Desouza & Awazu, 2006). In developing countries, in particular, SMEs are generally characterized by modest levels of human resources and management skills and expertise (Radas & Božić, 2009). With less human capital in terms of numbers and proficiency, SMEs in developing countries require even more time and commitment to benefit from EO. Thus, the relationship between EO and the innovation performance of SMEs in developing countries can best be characterized as non-linear. Our propositions regarding how SMEs apply EO in effectuating innovative performance and how this is modeled in a U-shaped curve are based on delineations used by Kreiser et al. (2013). It is worth bearing in mind, however, that there are costs associated with developing EO capabilities, in terms of up-front investment. That means that firms are likely to experience a negative return when the level of EO ranges from low to moderate: that is, the costs of EO outweigh its benefits. In line with the explanation presented above, we see that as a 'strategic posture' (Rauch et al., 2009) for an organization, EO can bring a host of benefits, but also costs. While it enables firms to meet changing customer needs, it may also drain their 'other resources' (Kreiser et al., 2013). Concomitantly, firms are likely to experience benefits when EO is high. In Figure 2.1 we present a graph that clearly illustrates this U-shaped model.

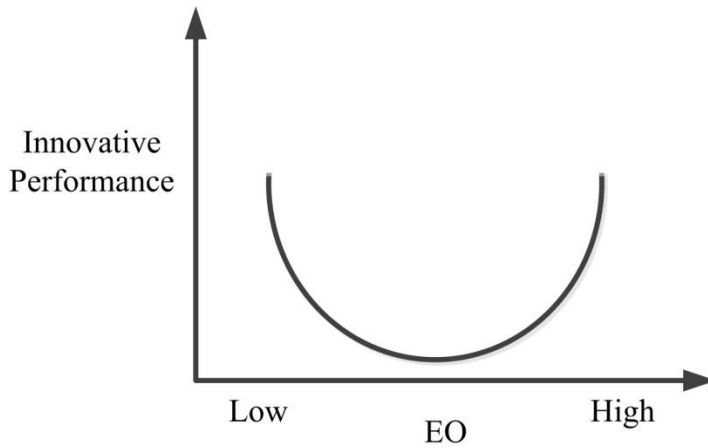


Figure 2.1 U-shaped curve of relationship between EO and innovative performance for SMEs in a developing country

Besides that, most of entrepreneurial firms ('strong' EO) will seek the first position in anticipating changes in marker demand, take an active role in shaping future conditions, dare to capitalize on opportunities, and may even be able to set the rules of the game (Lumpkin & Dess, 2001). Conversely, conservative firms ('low' EO) may lose out on the best opportunities because they respond slowly to changing market conditions. This suggests that the potential benefits are maximized at higher levels of EO, while firms with a low EO fall behind their competitors because of difficulties catching up strategically (Kreiser et al., 2013). It is understandable that in markets subject to rapid change and severe competition, low and mediocre efforts on the part of individuals or firms are not sufficient for achieving extraordinary performance. Thus, we hypothesize that:

Hypothesis 2.1: *The relationship between EO and innovation is curvilinear (firms are likely to experience a negative return when the level of EO ranges from low to moderate but experience benefits when it is high).*

2.2.2 Reinforcing Effects of Absorptive Capacity

Prior studies have defined ACAP variously as: a firm's ability to adjust to technological change (Kedia & Bhagat, 1988); a firm's skill in understanding external knowledge and then tacitly applying it internally according to need (Mowery & Oxley, 1995); a combination of prior knowledge base and concentrated effort in solving a particular problem (Kim, 1998); a firm's effectiveness in utilizing external knowledge (Koza & Lewin, 1998); or a firm's ability to acquire, assimilate, transform, and exploit knowledge (Zahra & George, 2002). We, however, decided to adopt the definition offered by Cohen and Levinthal (1990) and Todorova and Durisin (2007), which is most frequently cited in ACAP studies, under which ACAP is defined as a firm's ability to value new knowledge and information and assimilate and utilize it to improve innovative performance.

2.2.3 The Moderating Effect of Basic Absorptive Capacity

The authors agree with Wiklund and Shepherd (2005) that EO allows firms to create competitive advantage by finding and exploring new opportunities that provide added value. However, EO alone is not sufficient to successfully enhance innovation while achieving optimal performance because it might not be able to absorb external knowledge through which heterogeneous knowledge and essential information on new trends, processes, and technologies can be acquired. The EO-related propensities

for being an early adopter (versus competitors), anticipating future demands in the marketplace, and committing to new investments (Wiklund & Shepherd, 2005) are not necessarily able to absorb an abundance of external knowledge efficiently and effectively. Entrepreneurial firms are more likely to gravitate toward new things, new ideas, and differentiation, such as seeking new capital access, new technology, new knowledge, and new markets (Lumpkin & Dess, 1996). Nevertheless, a firm's willingness to pursue new opportunities is different than having the ability to understand and exploit the knowledge acquired. It takes a particular form of understanding and specific capabilities to successfully engage in external knowledge.

Consequently, EO needs to be supported by another competency, namely absorptive capacity. The value and potential of opportunities are optimized by a firm's ability to engage in knowledge understanding, acquisition, assimilation, and implementation. ACAP in and of itself is not a goal, but it can enhance vital business outcomes (Fosfuri & Tribó, 2008). Without it, it is difficult for a firm to know what kind of knowledge is relevant and feasible and has the potential to improve competitiveness. It is generally acknowledged that ACAP enables them to utilize external knowledge efficiently and effectively.

The ACAP concept has become one of the most significant constructs in the last thirty years, ever since Cohen and Levinthal (1990) first identified it, defining it as a firm's ability to value, assimilate, and apply knowledge for commercial ends. Numerous studies have been developed based on this concept. Zahra and George (2002) further expanded on the concept by delineating two different aspects of it: potential and realized absorptive capacity. Potential capacity comprises knowledge acquisition and assimilation capabilities, and realized capacity refers to knowledge

transformation and exploitation capabilities. This concept goes on to be applied in many ACAP studies (Camisón & Forés, 2010; Jansen et al., 2005; Jiménez, García-Morales, & Molina, 2011).

Zahra and George (2002) introduced the notion of transformational ability as part of the ACAP concept. Transformational capabilities involve an ability that firms develop new perceptual schemes and change previous processes (Zahra & George, 2002). Zahra and George also identified the concept of assimilation ability, whereby an organization can understand and comprehend new knowledge within its existing cognitive structures. This new knowledge lies within the firm's search zone and is compatible within the existing context, close to prior knowledge. When the new idea aligns with the existing cognitive schema, it will be slightly altered to improve the fit and then incorporated into the existing cognitive structure (Todorova & Durisin, 2007). However, firms often fail to adopt new external knowledge because they are constricted by their embedded knowledge base, rigid capabilities, and path-dependent managerial cognition. In it, situations and ideas initially perceived as irreconcilable with the current frames of reference then transformation is an alternative process to assimilation (Koestler, 1966; Todorova & Durisin, 2007). Normally, it is only after a firm fails to assimilate new knowledge that they are willing to move to the transformational process and change their cognitive structure (Tripsas & Gavetti, 2000). In light of these viewpoints, we prefer to adopt the original concept from Cohen and Levinthal (1990), whereby ACAP refers to a firm's ability to value, assimilate, and apply knowledge.

Despite the tremendous growth in ACAP studies, certain important gaps remain, such as the construct of ACAP and its validation (Camisón & Forés, 2010; Lane et al., 2006). There is a lack of consensus about the number of dimensions to ACAP, and there is a need for validating the

instruments used to measure it (Jiménez et al., 2011). Given the foregoing limitations, we are interested in enriching the existing literature on ACAP. In reviewing the prior research, we noticed that something was missing from the concept. Most ACAP studies ignore the importance of BACAP's dimensions— education, experience, and technological capabilities. Without BACAP, firms will hardly be able to develop the capabilities of knowledge acquisition, assimilation, transformation, and exploration. Can a firm assess the knowledge without having the basic capabilities to understand the required knowledge and information? This rationale led us to incorporate BACAP as playing a significant role in enhancing innovative performance: a lack of it could lead to inefficiency, resulting in garbage in, garbage out.

We therefore decided to refine and extend the construct of ACAP to include both BACAP and EXCAP. We define BACAP as a firm's "basic" capability to understand and value external knowledge, which is associated with its education, experience, and technological capabilities. Experience, education, and technological capabilities are major prerequisites for firms competing in knowledge-intensive industries. The literature on knowledge management highlights these three factors as crucial for investigating the relative success of firms' innovative performance (Madsen, Neergaard, & Ulhøi, 2008). A well-developed BACAP base provides an essential foundation for innovative activities.

In the organizational learning, individual and organizational cognitive structures require prior knowledge as a basis for evaluating new knowledge (Cohen & Levinthal, 1990). Failures at this stage will lead firms to adopt ineffective and inefficient strategies. Todorova and Durisin (2007) emphasize the importance of valuing the potential knowledge as the building block of absorptive capacity. The absence of BACAP can be harmful for innovative performance. Researchers agree that the failure to

identify the value of new external knowledge stems from a limited embedded knowledge base, rigid capabilities, and weak managerial cognition (Todorova & Durisin, 2007).

Meanwhile, experience leads to a rigorous alertness on related business ventures (Heimeriks & Duysters, 2007). Education and experience carry abilities to assess and understand knowledge (Honig, 1998), which enables firms to process information efficiently and consequently enables them to react quickly (Heimeriks & Duysters, 2007; Madsen et al., 2008). The other critical component of BACAP is a firm's technological capabilities, because some kinds of information are associated with sophisticated production techniques. Integrating such complex technological knowledge requires certain basic technological capabilities. Christensen and Bower (1996) defined technological capabilities as a firm's ability to transform labor, capital, and materials into products and services. Technological capabilities are substantial for manufacturing firms and help firms better distinguish the benefits and weaknesses of new technologies compared to old ones. Technological capabilities also provide firms with a strong foundation for valuing and exploiting new information relevant to a particular product market (Wesley & Levinthal, 1990). Considering those salient BACAP roles, we therefore posit the following hypothesis:

Hypothesis 2.2: *BACAP (education, experience, and technological capabilities) positively moderates the relationship between EO and innovative performance, such that a higher level of BACAP will increase the impact of EO on innovative performance.*

2.2.4 Extended Absorptive Capacity for Benefitting from External Knowledge

As external knowledge flows have grown in importance over the last two decades, firms have gradually realized that generating knowledge internally is no longer sufficient for catching up to the changing environment (Escribano et al., 2009). Accordingly, there is also a recognition of the importance of ACAP competencies, such as knowledge acquisition, assimilation, and implementation, for utilizing that external knowledge (Cohen & Levinthal, 1990). Borrowing these ACAP constructs, we define these capabilities as “extended capabilities,” or EXCAP.

Firms’ ability to gain new knowledge is crucial for enhancing their innovative performance; this forms the acquisition dimension (Kim, 1998; Mowery & Oxley, 1995). Acquisition refers to a firm’s ability to access and obtain critical external knowledge (Zahra & George, 2002). The greater this effort, the more knowledge and information will be gathered.

Nevertheless, the fact that the knowledge has been nominally acquired does not necessarily mean that it will immediately fit in with the firm’s needs. The firm’s ability to sort through that knowledge and assimilate it is critical to the success of commercial ends. Hence, processing the knowledge gained must include a stage of assimilation or a modification dimension (Cohen & Levinthal, 1990; Kim, 1998). There is, thus, a bisociation process where a firm tries to assimilate the new external knowledge into its existing knowledge. (Todorova & Durisin, 2007; Zahra & George, 2002). When the new idea or knowledge can be fit within an existing cognitive frame of reference, the new idea can be incorporated into cognitive structures (Todorova & Durisin, 2007). This learning stage involves some degree of modification to the new knowledge and reframing it with prior knowledge.

At the same time, the demand for new knowledge stems not only from company dynamics, but also customer expectations. The exploitation of new knowledge will not bring much added value if it does not meet customer needs (Clayton Christensen & Bower, 1996). Thus, the ability to implement the knowledge to serve customer demand is another key facet of enhancing the value of absorptive capacity. It is not easy, though, for SMEs to implement new knowledge and information for commercial purposes. Only a limited number of firms have this ability (Todorova & Durisin, 2007), because transforming the knowledge into products or processes requires financial resources and certain commercial skills. Ideas, knowledge, and information can go unrealized due to a firm's inability to embed them into their products or processes. However, when firms successfully execute this process, it can provide them with economic benefits. Given the importance of these EXCAP constructs, we posit the following hypothesis:

***Hypothesis 2.3:** EXCAP (acquisition, assimilation, and implementation of knowledge) positively moderates the relationship between EO and innovative performance, such that a higher level of EXCAP will increase the impact of EO on innovative performance.*

2.2.5 Complementarity of BACAP and EXCAP

BACAP (education, experience, and technological capability) is a basic skill that makes understanding new knowledge easier and faster. Education, experience, and technological capabilities enhance a firm's advantage in terms of effectively identifying knowledge and information (Baker, Miner, & Eesley, 2003).

However, the fact that firms are able to understand and value external knowledge does not mean they will be able to successfully exploit it. While BACAP is valuable to some extent for enhancing innovation, it is not sufficient without EXCAP, because new knowledge needs to be acquired, assimilated, and implemented. Merely relying on BACAP will trap a firm in its own knowledge, which can easily become obsolete. Therefore, having a high level of BACAP does not necessarily equate to higher innovative performance; it must be complemented with EXCAP for processing external knowledge.

On the other hand, it is difficult for firms to acquire, assimilate, and apply new knowledge for commercial ends without sufficient education, experience, and technological skill. Cohen and Levinthal (1990) argue that the ability to evaluate and utilize the knowledge is largely related with prior knowledge. Thus, different aspects of BACAP and EXCAP create synergy for absorbing knowledge efficiently and effectively, because the two capabilities complement each other. Given that prior knowledge and new knowledge are both keys to innovative performance (De Leeuw, Lokshin, & Duysters, 2013; Gilsing, Nooteboom, Vanhaverbeke, Duysters, & van den Oord, 2008; Jacob, Belderbos, & Gilsing, 2013), the development of BACAP and EXCAP will create strong ACAP. We therefore consider BACAP and EXCAP to be important for leveraging the impact of EO on innovative performance. Thus, we hypothesize that:

***Hypothesis 2.4:** The moderation effect of BACAP and EXCAP strengthens the relationship between EO and innovative performance more than the individual moderation effect of BACAP or EXCAP.*

2.2.6 Hypothesized research model

Figure 2.2 shows the conceptual framework that explains the relationships proposed in our hypotheses, depicting how the interplay between EO, BACAP, and EXCAP taking affects innovative performance.

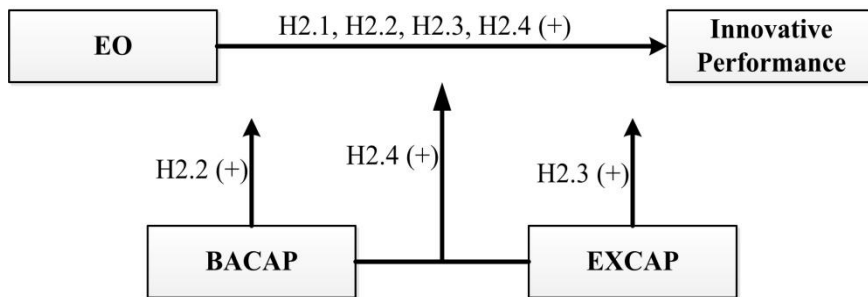


Figure 2.2 Conceptual framework of the relationship between EO, BACAP, EXCAP, and innovative performance

2.3 Research Method

2.3.1 Sample and Data Collection

We chose Indonesian SMEs as the setting for our study because Indonesia is an emerging economy whose market is representative of manufacturing SMEs in developing countries (UNCTAD, 2005). Thus, understanding how EO contributes to innovation in the Indonesian context provides a good depiction of how it works under developing-world conditions in general.

The object of this study is the Indonesian footwear manufacturing cluster in Cibaduyut, West Java. The Cibaduyut cluster was selected because the Indonesian government has singled out some of its footwear manufacturers as being innovative. For our research, we asked the managers

and owners of the firms within the cluster to be respondents in a survey we conducted. We chose managers and owners for our sample because they are the decision-makers at the companies and their decisions influence their firms' strategies. An organization's absorptive capacity depends on its individual members (Cohen & Levinthal, 1990). In the case of SMEs, the owners and managers are the soul of the organization. Therefore, their ability to absorb knowledge represents the firms' absorptive capacity.

There are approximately 800 footwear manufacturers in the Cibaduyut cluster, but there is no exact data on them: most of the firms' names and addresses are not available, and most of these SME are not registered with the government. Therefore, since the Cibaduyut cluster is divided into four regions – Kebonlega, Cibaduyut, Cibaduyut Wetan, and Cibaduyut Kidul – we visited every footwear manufacturing firm we found in those four areas. We found 120 firms in the city blocks of those regions and collected the data by conducting the survey in-person, asking them the questions from the questionnaire one-by-one. To make sure we did not miss any answers, we asked them and filled out the questionnaire ourselves. We adopted multi-stage and snowball sampling methods.

2.3.2 Dependent Variable: Innovative Performance

For the purposes of our study, we used firms' ability to create new products as the dependent variable. The ability to create a new product was defined as a firm's creation in the form of a product design (Katila & Ahuja, 2002). Product introductions are considered an element of firm innovation, along with R&D investment, knowledge, and patent filings. In this study, we chose to focus on product introductions because a new product is recognized as a mechanism that leads to differentiation for the firm and

reflects its efforts at adaptation and reinvention in the face of market and technology changes (Schoonhoven, Eisenhardt, & Lyman, 1990). To measure the dependent variable, we asked firms about the number of innovations they had introduced onto the market, in terms of changes in product design and whether existing products differed from previous products (Katila & Ahuja, 2002). Using the OECD (2005) manual we defined innovation here as encompassing changes in materials, features, and design, but not changes in color and size.

2.3.3 Independent Variable: EO

We considered two features of EO in this study: namely, proactiveness and the propensity for risk-taking (Hult, Hurley, & Knight, 2004; Pérez-Luño et al., 2011; Rhee et al., 2010). Prior studies have associated EO with proactiveness, risk-taking, and innovativeness (Miller, 1983; Stam & Elfring, 2008). To avoid tautology, we follow Rhee et al. (2010) and Hult et al. (2004) in excluding “innovativeness orientation” in analyzing the effect of EO on product innovativeness. In this study, we denote innovation as being shaped by the other two factors. Innovativeness is defined as the tendencies and behaviors that contribute to innovation by supporting new ideas, experimentation, and creative processes (De Clercq et al., 2013; Wiklund & Shepherd, 2005). Briefly, innovativeness refers to a firm’s capacity for engaging in the practice of innovation (Covin & Lumpkin, 2011; Dai, Maksimov, Gilbert, & Fernhaber, 2014; Hult et al., 2004). Thus, there is a close overlap between innovativeness and innovation. It has also been established that proactiveness and risk-taking are antecedents of innovativeness (Hult et al., 2004; Pérez-Luño et al., 2011; Rhee et al., 2010).

Given these findings, we consider the proactiveness and risk-taking behaviors that are the antecedents of innovation as constituting EO.

Miller and Friesen (1983) define “risk-taking” as the degree to which owners and managers are willing to make large and risky resource commitments. When uncertainty and the risk of potential losses are higher, success usually produces higher returns, but most organizations tend to be risk-averse (Memili, Lumpkin, & Dess, 2010). However, risk can be managed and controlled (risk management) by modifying a firm’s strategy, which is more beneficial than simply accepting the risk. Dess & Lumpkin (2005) added that conducting research and evaluating the risks are useful techniques for dealing with risk and lessening its impact. When competition grows, risk-taking is required to make the most of opportunities and achieve success. Therefore, owners and managers who dare to take more risks have a higher potential for improving their firms’ performance (Okpara, 2009).

Meanwhile, “proactiveness” is exemplified by a firm’s initiative in actively seeking new opportunities and anticipating future demand. It also includes identifying new market trends and available niches in the market, assessing the strengths and weaknesses of opportunities, and forming qualified teams to exploit those opportunities (Lumpkin & Dess, 1996). Other researchers have found that firms that tend to be pioneers in the development and introduction of new procedures, technologies, and innovative products or services are likely to achieve success (Covin & Slevin, 1989).

We used the questionnaire developed by Covin & Slevin (1989) to measure the EO of the firms studied. Each respondent was either the manager or owner of a footwear manufacturing company. They were asked to indicate the extent to which the items represented their firm’s proactive behavior in relation to its: (1) initiative to be the first mover in dealing with

competition, (2) tendency to scan, observe and adopt the best business practices, and (3) efforts to seeking out new opportunities. Then, indicates a firm's risk-taking behavior in terms of a preference for: (1) high-risk projects (with chances of high return), (2) risk-taking when confronted with uncertainty, (3) adopting a firm strategy with a strong tendency to take risks.

The format of the questions used a five-point Likert scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree". Furthermore, we constructed EO by averaging the six items and checked the reliability of the questions by obtaining the Cronbach Alpha value. We found an overall reliability for the items of $\alpha = 0.80$, and all inter-item correlations were above 0.3, which means the study has internal consistency in measuring EO (Field, 2013).

Furthermore, we conducted confirmatory factor analysis for EO: (1) using the three dimensions of EO namely proactive, risk taking and innovative behaviors; (2) using two dimensions of EO, namely proactiveness and risk-taking behavior. A comparison of simulation 1 ($\chi^2= 302.34$, $df= 28$) and simulation 2 ($\chi^2= 99.11$, $df= 10$) shows that simulation 2 is the better-fitting model because it has a lower chi-square relative to the degrees of freedom. Thus, the two dimensions underlying the EO empirically provide more support for the EO construct. Moreover, we continued our test with the average extracted variance (AEV) for EO measure was 0.72 which is above the recommended threshold level of 0.50 and the composite reliabilities (CR) is 0.93. which exceed the 0.70 threshold level for acceptable CR (Bagozzi & Yi, 1988; Wales, Patel, Parida, & Kreiser, 2013).

2.3.4 Moderating Variables: BACAP and EXCAP

In the survey, firms indicated their BACAP and EXCAP by responding to several questions. To recap, BACAP refers to a firm's basic capability to understand and value external knowledge and it is determined in terms of that firm's education, experience, and technological capabilities. Thus, to identify BACAP, firms were asked what level of education their owners and managers had achieved: (1) primary school, (2) junior high school, (3) high school, (4) undergraduate degree, or (5) graduate degree. We also measured their prior experience with a dummy indicator (whether they had been working in the footwear manufacturing or non-footwear manufacturing sector in the previous five years). For technological capabilities, we asked them to answer on a five-point Likert scale, ranging from 1 = "strongly disagree" to 5 = "strongly agree", whether the firm had a great deal of technological expertise or strong technological skills in the footwear industry. Due to limitations in instrument design, we integrated all the components of BACAP and applied a median cut-off for separating them into the high and low categories.

Then, we measured EXCAP, the firms' ability to absorb, assimilate, and implement the knowledge. We used a dummy variable to identify whether the firm's actions with regard to acquiring knowledge from its partners were active or inactive. Similarly, we used a dummy indicator to measure whether a firm had high or low capabilities for assimilating knowledge. We valued this at 0 if it was low and 1 if it was high. This is a common method for categorizing data: for example, continuous data (e.g., income) is generally transformed into low and high groups (categorical data).

To measure a firm's knowledge implementation, we asked respondents whether their firm undertook activities to enhance the use of knowledge for fulfilling customer demand. Once again, we applied a Likert scale with a

range from 1 for “strongly disagree” to 5 for “strongly agree”. We then integrated the questions on BACAP and EXCAP by splitting our sample firms into groups based on their levels of BACAP and EXCAP, high and low. Following the methods of Duysters, Heimeriks, Lokshin, Meijer, and Sabidussi (2012), we took the step to differentiate the data into high and low groups and have BACAP and EXCAP as categorical data. To accommodate the instrument design, we incorporated all the components of EXCAP and applied a median cut-off for separating them into the high and low categories. In integrating BACAP, EXCAP, and EO, we used commonly accepted procedures to mean-centre the data and multiply the data for the variables. Due to the limitations of our data, we don’t apply confirmatory factor analysis (CFA) to BACAP or EXCAP because different types of item measurements were used in forming these variables. The results of the CFA would therefore probably not be very meaningful.

2.3.5 Control Variables

The characteristics of SMEs can vary according to their size. Larger SMEs have more resources and may have more skilled human resources, be more knowledgeable, have more access to knowledge, and have appropriate technology (Damanpour, 1996). We therefore included firm size as a control variable, using a five-point Likert scale to define the number of employees, with 1 = Fewer than 5; 2 = 5 to 20; 3 = 21 to 50; 4 = 50 to 100; and 5 = 100 to 200. Moreover, we included a variable to account for the age of the owners and managers as the control variable. Older owners and managers can be trapped in operational systems that prevent them from exploring new opportunities because of the risk involved. They might be slow to adopt new trends, resulting in slower absorption of new knowledge (Wesley &

Levinthal, 1990). Meanwhile, young owners and managers are likely to be more flexible with new ideas, resources, and opportunities. We measured the ages of the owner and manager respondents by asking them how old they were, whereby 1 = Under 30; 2 = 31 to 40; 3 = 41 to 50; and 4 = Over 50. Definitions for all of the variables measured are presented in Table 2.1.

Table 2.1 Description of Variables

Variable	Description
Innovative Performance	Number of product innovations firm has introduced onto the market (appendix A, no. 19, year 2010)
Firm Size	Number of employees: 1 = Fewer than 5; 2 = 5-20; 3 = 21-50; 4 = 50-100; 5 = 100-200 (appendix A, no. 5)
Age of Owner/Manager	Age of the owner/manager (in years): 1 = Under 30; 2 = 31-40; 3 = 41-50; 4 = Over 50 (appendix A, no. 5)
Entrepreneurial Orientation	<p>Respondents were asked multiple questions about how proactive they were in seeking new opportunities:</p> <p>(1) Initiative in being the first mover in dealing with competition</p> <p>(2) Tendency to scan, observe, and adopt the best business practices</p> <p>(3) Efforts to seek out new opportunities</p> <p>And also about their risk-taking behaviors in terms of:</p> <p>(1) High-risk projects (with chances of high return)</p> <p>(2) Risk-taking when confronted with uncertainty</p> <p>(3) Adopting a firm strategy with a strong tendency to take risks</p> <p>Answers were scored on a scale of 1 (“Strongly disagree”) to 5 (“Strongly agree”) (appendix A, no.25)</p>
BACAP: Education	The level of education achieved by the owner and/or manager: 1 = Primary school; 2 = Junior high school; 3 = High school; 4 = Undergraduate degree; 5 = Graduate degree (appendix A,no.1)
BACAP: Experience	The amount of previous business experience possessed by the manager/owner for the past 5 years: value = 1 if they had

CHAPTER 2. RETURNS ON ENTREPRENEURIAL ORIENTATION AND
THE MODERATING EFFECTS OF BASIC AND EXTENDED ABSORPTIVE
CAPACITY: SME INNOVATIVE PERFORMANCE

Variable	Description
	footwear industry experience; otherwise = 0 (appendix A,no.6)
BACAP: Technological Capabilities	Firms were asked whether they had a strong technological skill or a great deal of technological expertise in the footwear industry, ranging from 1 = “Strongly disagree” to 5 = “Strongly agree” (appendix A,no.22)
EXCAP: Knowledge Acquisition	How active is a firm in acquiring knowledge from its partner? Value of 0 = Low; 1= High (appendix A,no.13)
EXCAP: Knowledge Assimilation	How active is a firm in assimilating the knowledge acquired? Value of 0 = Low; 1= High (appendix A, no. 13)
EXCAP: Knowledge Implementation	Does the firm use that knowledge to meet customer demand? Ranging from 1 for “Strongly disagree” to 5 for “Strongly agree” (appendix A,no.13)

2.3.6 Statistical Method

We followed several recommended procedures for evaluating and attenuating the potential of common method biases (CMB) proposed by Podsakoff, MacKenzie, Lee, and Podsakoff (2003). First, we performed Harman's one-factor test (Podsakoff et al., 2003) to test for the presence of method bias in our measurements. This test may provide an indication of whether a single factor accounts for all of the covariances among the items. All of the variables were entered into an exploratory factor analysis. If only one factor emerges from that factor analysis and this factor accounts for all the variance items, common method variance could possibly be a major problem. Our test showed the presence of three distinct factors with eigenvalues of greater than 1.0, rather than any single factor. Together, these three factors accounted for 65% of the total variance, but the first (and largest) factor did not account for a majority of it (it was 33%). Thus,

common method variance is not a great concern and is unlikely to have confounded interpretation of the results, since no single factor emerged from factor analysis as having an inordinate impact, nor did any one factor account for the majority of covariance among variables (Podsakoff et al., 2003).

Second, in an effort to avoid subjective judgment methods, which are highly likely to produce method bias (Lee et al., 2001), we tried to add objective measures whenever possible. We measured innovative performance by asking objective questions about the number of new products introduced onto the marketplace rather than their subjective judgment.

Third, one of the major factors that causes common method variance is having the measures for both predictor and criterion variables from the same rater and source. Following the technique of Podsakoff et al. (2003) for controlling this common method variance, we methodologically separated the measures by asking respondents to answer questions pertaining to the predictor variable under circumstances that were different from those for questions pertaining to the criterion variable. We used different response formats, such as Likert scale, open question, paper and pencil, and face-to-face interviews, to measure the predictor and criterion variables (Podsakoff et al., 2003).

With regard to the precautionary measures taken in developing and administering the survey, we followed the procedures from Langerak et al. (2004). All of the items for measuring each of the constructs were generated using literature research and interviews with academics and practitioners. We pre-tested the items in two phases. First, we did a pre-survey study by conducting a small survey using the questionnaire. This was aimed at checking the reliability of the measurement instruments and identifying

whether there were any confusing items. No problems were encountered. In the second phase, we re-adjusted the questions based on the findings from the small survey. Before we finalized the questionnaire and administered it, we reported the pre-testing results to practitioners and academicians, and they reported no concerns (Langerak et al., 2004).

Since our independent variable comprised continuous data and we had a sufficient number of respondents (120), we employed the ordinary least square (OLS) method to examine the hypothesis. We also checked the standardized residuals and found a robust result. Furthermore, we found that the tolerance values for the multicollinearity statistics were all well above 0.2 and close to 1 (Field, 2013) and the VIF values were under 3 (Barrow, 2009). These results indicate an absence of multicollinearity. In this study, we also performed a Durbin-Watson test and found a value of greater than 1 (closer to 2), indicating that the residuals from this study are independent (Burgelman, 1983).

In order to examine the additive effects of interaction between EO, BACAP, and EXCAP, we ran various models sequentially. These helped us see the several configurations of variables, which was beneficial from both a theoretical and practical perspective. To eliminate multicollinearity as an issue, we ensured that all interaction variables were “mean centered” (Aiken & West, 1991).

2.4 Results

In Table 2.2, we display the means, standard deviations, and correlations of the variables. The overall correlations among the variables are relatively modest, ranging from -0.33 to 0.43. There are thus no extremes or excessively high values among the correlated variables. To test

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the hypothesis, we employed OLS, the results of which are reported in Table 2.3.

Table 2.2 Mean, Standard Deviation, and Correlation

Variable	Mean	S.D.	1	2	3	4	5
1. Innovative Performance	10.11	8.16					
2. Firm Size	1.57	0.51	0.13				
3. Age of Owner/ Manager	2.49	0.71	0.04	0.24**			
4. Entrepreneurial Orientation	2.71	0.43	0.33**	0.43**	0.18*		
5. BACAP	1.12	0.31	0.41**	0.19	-0.09	0.32**	
6. EXCAP	1.57	0.49	-0.11	-0.08	0.06	-0.33**	-0.24**

n = 120, *p < 0.05, **p < 0.01 (two-tailed tests)

Table 2.3 Regression Estimation of Innovative Performance^{a)}

Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Firm Size	0.03	0.05	0.02	0.04	0.08
Age of Owner/ Manager	-0.01	-0.17	0.02	-0.01	-0.02*
EO	-2.25**	-	-	-	-
EO Square	2.50**	0.26*	0.28**	0.24**	0.19**
BACAP	0.31***	0.10	0.36§	0.10	0.39***
EXCAP	0.05	0.04	0.05	0.08	0.03
Two-way Interaction					
EO x BACAP		0.41***		0.45***	0.58***
EO x EXCAP			0.16*	0.22**	0.12*

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Variables	Model 1	Model 2	Model 3	Model 4	Model 5
Three-way Interaction					
EO x BACAP x EXCAP					0.60***
ΔR^2	0.27***	0.06***	0.08***	0.13***	0.19***
R^2	0.27	0.33	0.25	0.38	0.57
Adjusted R^2	0.23	0.30	0.22	0.34	0.54
F	7.16***	9.38***	6.46***	9.70***	18.57***
N	120	120	120	120	120

^{a)} Standardized coefficients are reported; [†] $p < 0.10$; ^{*} $p < 0.05$; ^{**} $p < 0.01$; ^{***} $p < 0.001$

Firstly, we address the universal influence of EO, its square term, and control variables on SME innovative performance. In keeping with **Hypothesis 2.1**, the results from Model 1 show that the coefficient for the EO measure is negative and statistically significant ($\beta = -2.25$, $p < 0.01$), while the EO square is positive and statistically significant ($\beta = 2.50$, $p < 0.01$). This suggests that the relationship between EO and innovative performance is curvilinear (U-shaped relationship). In addition, BACAP has a positive and significant relationship with innovative performance ($\beta = 0.31$, $p < 0.001$), but EXCAP showed no significant direct relationship with innovative performance ($\beta = 0.05$, n.s.). Hence, the EO, EO squared term, and control variables explain 27% of the variation in innovative performance ($\Delta R^2 = 0.27$, $p < 0.001$). The empirical findings in Model 1 support **Hypothesis 2.1**. In the next step, Model 2, we inserted the two-way interaction term to test **Hypothesis 2.2**. The contingency model shows significant and positive interaction between EO and BACAP ($\beta = 0.41$, $p < 0.001$). This suggests a configuration of EO and BACAP that supports **Hypothesis 2.2**. Furthermore, Model 3 shows that the interaction between EO and EXCAP is significantly positive ($\beta = 0.16$, $p < 0.05$). This latter

model provides support for **Hypothesis 2.3**. In addition, we also checked the consistency of these interactions by adding a test in Model 4. Both of the interactions between BACAP and EXCAP, respectively, and EO remain positive and significant ($\beta = 0.45, p < 0.001$; $\beta = 0.22, p < 0.01$). Model 4 also shows that the inclusion of the two-way interaction significantly increases the explained variance ($\Delta R^2 = 0.13, P < .001$). In the next step, we added a three-way interaction term to examine **Hypothesis 2.4**. The result in Model 5 shows that the interaction of EO, BACAP, and EXCAP is statistically significant ($\beta = 0.60, p < 0.001$). The addition of the three-way interaction term, displayed in Model 5, significantly increases explained variance ($\Delta R^2 = 0.19, P < .001$). This suggests a configuration of EO, BACAP, and EXCAP that supports **Hypothesis 2.4**.

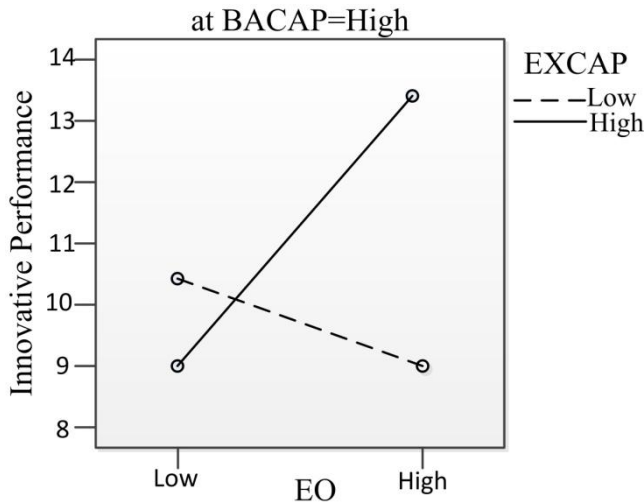


Figure 2.3 Moderating effects of high BACAP and EXCAP on the relationship between EO and innovative performance

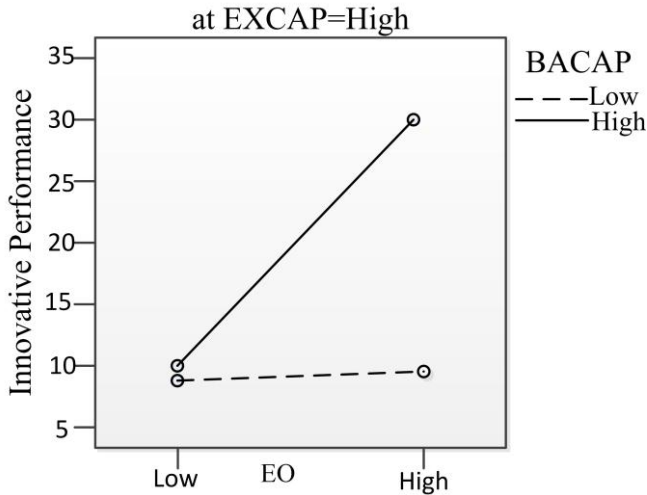


Figure 2.4 Moderating effects of BACAP and high EXCAP on the relationship between EO and innovative performance

To interpret the interactions in greater detail, we needed to consider higher and lower order interactions together (Aiken & West, 1991; Wiklund & Shepherd, 2005). As shown in Figure 2.3, the nature of the interaction indicates that with a high degree of EO and BACAP, a firm with high EXCAP performs better than one with low EXCAP. In line with these results, Figure 2.4 shows that at high levels of EO and EXCAP, firms with high BACAP experience greater innovative performance, as opposed to those with low BACAP. This confirms our hypothesis that a configuration of high EO combined with high BACAP and EXCAP provides the greatest innovation performance (**Hypothesis 2.4** is supported).

To advance further interpretations, we plotted a simple slope test (Aiken & West, 1991). For the interaction effects of EO and BACAP, we apply minus one standard deviation from the mean and plus one standard deviation from the mean. We plotted the relationship between EO and

BACAP for low and high levels. We performed a simple slope analysis (Aiken & West, 1991) for regression line to test whether its slope was significantly different from zero. The test showed that the relationship between EO and innovative performance was significantly positive when BACAP was high ($b = 24.99$, $t = 3.59$, $p < 0.001$) but not significant when BACAP was low ($b = 2.197$, $t = 1.60$, n.s.). We did the same test for the two interaction effects of EO and EXCAP. The test showed that the relationship between EO and innovative performance was not significant when EXCAP was high ($b = 1.40$, $t = 0.25$, $p = ns$) and also not significant when EXCAP was low ($b = -1.25$, $t = -0.80$, n.s.). This analysis supports the prediction that the relationship between EO and performance was significantly stronger when BACAP was high (**Hypothesis 2.2**).

We also plotted the interaction effects of BACAP and EXCAP, we employed a slope difference test (Dawson & Richter, 2006) that examines whether differences between pairs of slopes are significantly different from zero. This analysis supported the prediction that the relationship between EO and innovative performance was significantly stronger when BACAP and EXCAP were both high ($b = 16.13$, $t \text{ value} = 10.47$, $p < 0.001$) and significantly weaker when BACAP was low and EXCAP was high ($b = -6.59$, $t \text{ value} = -10.27$, $p < 0.001$), and furthermore it is also weaker when BACAP was low and EXCAP was low ($b = -7.45$, $t \text{ value} = -7.49$, $p < 0.001$). Thus this result supports **Hypothesis 2.4**.

2.5 Discussion

Since this study was formulated to achieve several goals, we will discuss in this section whether that was accomplished. Firstly, the aim of this paper was to examine the universal effect of EO on innovative

performance in the context of SMEs in developing countries. Because the effect of EO on innovative performance depends on the context in which it occurs (Lumpkin & Dess, 1996; Wiklund & Shepherd, 2005), a close reexamination of the effect of the universal EO model will enhance our understanding of the implications of EO in specific contexts. Secondly, we set out to theoretically and empirically examine the two separate concepts of BACAP and EXCAP by distinguishing their roles and implications on innovative performance. Thirdly, this study aimed to theoretically and practically examine optimum configurations for innovative performance, which in this case constituted our EO, BACAP, and EXCAP approaches.

With regard to the influence of EO on innovative performance, the results reveal a curvilinear (U-shaped) relationship. This result implies that more investing in EO will provide a firm better performance. Our study emphasizes that high EO can contribute to high innovative performance. In line with these findings, we found that all of the owners and managers interviewed gave positive responses. To quote one of them:

‘Entrepreneurial behaviors are really important for innovation because without those behaviors, the firms will not grow. A lack of entrepreneurial behavior will make firms suffer in terms of revenue, innovation, product quantity and quality; it will be difficult for them to move forward and get a step ahead of their competitors.’

Hence, the distinction between BACAP and EXCAP provides clear guidance for utilizing external knowledge. BACAP is the basic foundation for absorptive capacity and an important model for developing competencies to deal with external knowledge. As expected, it significantly affects innovative performance. With regard to this finding, most of the managers and owners also agreed. Here are two examples:

‘Yes, they are the basic competencies for supporting innovation. Without them, it would be difficult to develop innovation. Courage without basic competencies will not be effective.’

‘Education, experience and technical capabilities help firms capture opportunities and calculate risk. For example, in making a shoe pattern, how can a firm draw a pattern for a new shoe design without having the basic knowledge of how to do it?’

But two of them had a different view about education, saying:

‘Education is not really necessarily important for our business; it is more important to work hard and learn about this industry in an actual workshop.’

Surprisingly, we found that EXCAP by itself has no direct effect on innovative performance. This might be explained by the fact that it is not easy for SMEs to have higher EXCAP, and only a few exceptional firms have such capabilities. In line with our findings, Todorova and Durisin (2007) mention that capabilities such as acquiring and assimilating knowledge and implementing it into a product or process require relatively high costs and specific skills. Thus, for SMEs in developing countries, actualizing EXCAP is even more complicated. Regarding this finding, the owners and managers mostly gave comments along the lines of:

‘Dealing with new knowledge is no simple effort, nor does it produce instant results, but it is doable and it may improve a firm’s know-how. However, acquiring, transforming and implementing existing knowledge from advanced firms is important, because they have a formula that has been successfully proved in the marketplace.’

On the other hand, four of them did not fully support this finding. To quote their statements:

‘This capability requires a huge amount of time and investment. Perhaps we can improve these capabilities when our firm is more settled.’

However, as Todorova and Durisin (2007) have also stated, innovative capabilities reflect a firm's prior knowledge and ability to engage with new knowledge. It seems, therefore, that organizations should enhance their learning processes with regard to both BACAP and EXCAP. Organizations can be viewed as information processing systems (Miller & Friesen, 1983) whose viability depends on their BACAP and EXCAP. Furthermore, the outcomes of this study also demonstrate that the interaction of BACAP and EXCAP has an intensifying effect on EO and thus a greater impact on the ultimate success of the firms than the individual effect of any single variable.

The relationship between EO and innovative performance becomes more substantial as the levels of BACAP and EXCAP increase. EO – perceived as a commitment and willingness to create competitive advantage by finding and exploring new opportunities and investing resources in unpredictable opportunities (Wiklund & Shepherd, 2005) – has a greater impact on innovation when combined with BACAP and EXCAP. A firm's propensity to be an early adopter – that is, to anticipate future demands in the marketplace and commit to new investments – should be strengthened by its ability to engage in knowledge understanding, acquisition, assimilation, and implementation. Hence, the process of exploring and investing in new ventures requires a sufficient level of knowledge and information (Wiklund & Shepherd, 2003), otherwise there is a chance that the advantages associated with a high EO will be truncated. The views of the managers and owners interviewed also support this result:

'The owner and manager should have these capabilities more than their employees, because they are the motor of the firm.'

The findings of this study also make several theoretical and practical contributions to boosting the innovativeness of SMEs in a developing

country. Firstly, we have significantly extended the understanding of the streams of EO studies for developing countries by revealing that the relationship between EO and innovative performance is non-linear (U-shaped). The U-shaped result implies that SMEs are likely to experience a negative return on innovation when levels of EO are low, but positive returns as EO reaches higher levels. SMEs are likely to reach a break-even point where the benefits of EO begin to outweigh the up-front costs (Kreiser et al., 2013). This suggests that moderate to high levels of EO are associated with higher innovative performance on the part of SMEs.

On the other hand, Tang et al. (2008) found, in the context of China, that EO initially enhanced firms' performance, but beyond a threshold level, it exerted a negative impact, indicating an inverted U-shaped relationship between EO and performance. The limited freedom in China caused EO to have only a limited influence on firm performance. Compared to previous EO studies, this suggests that different country characteristics may result in different degrees of benefits from EO. In terms of SMEs in developing countries such as Indonesia, we found that firms with a high level of EO possessed all the hallmarks of entrepreneurship: they proactively approached market opportunities, in order to be a step ahead of competitors, and anticipated emerging market opportunities (Lee et al., 2001). They also typically exhibited a propensity to take risks, being more willing to commit to high risks and high-return business activities in uncertain environments (Lumpkin & Dess, 1996). This involves different ways of thinking: firms with a high level of EO might see a situation in a changing environment as an opportunity and act on their gut feeling to take advantage of it, whereas pessimistic firms would see the same situation as a threat. A propensity for being proactive and taking risks brings about high innovative performance by allowing a firm to exploit asymmetries in the marketplace.

Secondly, our study suggests that for external knowledge to be effectively accessed, BACAP and EXCAP must be configured together. We found a high complementarity effect for ACAP on innovation when a firm had both BACAP and EXCAP. To succeed in the competition to innovate, then, organizations must be able to benefit from external knowledge (Duysters et al., 2012; Jacob et al., 2013). And, as we clearly demonstrate, BACAP and EXCAP figure prominently in the utilization of knowledge. In relation to this finding, the views of managers and owners can be summarized by the following comment:

'To win the market competition, more resources and capabilities will give you more power to leverage. Excelling in capabilities for learning knowledge will be a powerful instrument for obtaining better performance; however it requires a time investment.'

Thirdly, we obtain a greater understanding by viewing the concomitant effect of EO, BACAP, and EXCAP. There is much more to understanding the innovative performance of SMEs than looking at a single relationship. Prior studies have neglected the moderating effect of BACAP and EXCAP in models that analyze the relationship between EO and innovative performance, overlooking the fact that congruent strategic and contextual factors are important for innovative performance and effective results (Wiklund & Shepherd, 2005).

Firms with high EO are able to find and/or discover new opportunities that can differentiate them from other firms (Wiklund & Shepherd, 2005). EO in and of itself, however, is not enough for SMEs to enjoy superior performance in the innovation battle, since they may very likely be deficient in complementary resources (Lee et al., 2001). Accordingly, higher levels of BACAP and EXCAP help entrepreneurial firms create more value by

allowing them to synergize their internal capabilities and potential external resources.

Furthermore, the findings from this study yield two primary managerial implications. First, firms should allow space for enhancing their levels of EO. EO is not something they can purchase from the market; instead, they must invest time and effort in cultivating it internally to reap its benefits (Lee et al., 2001). This does not occur overnight. The payoffs for firms in adopting EO, however, such as learning to proactively seek opportunities and engaging in new business ventures, will greatly enhance their innovativeness and set them apart from competitors. The second implication involves a firm's absorptive capacity: it is difficult to reach and maximize external knowledge through EXCAP alone, without support from EO and BACAP. EXCAP is widely recognized as a way to gain external knowledge, but firms should not neglect the basic knowledge from BACAP and commitment from EO that are needed.

2.6 Limitations and Future Research

Despite the evident contribution made to this stream of research with respect to the EO and absorptive capacity concepts, this study is just one step forward in understanding the processes and antecedents of innovative performance. There is still much room for improving innovation research as a whole. First, the focus of this study is on a single innovative component. Future studies could embark on a more comprehensive exploration of the impact of EO, BACAP, and EXCAP on the diversity of innovative practices, for instance radical and incremental innovation. Second, due to the limitations of the data, we cannot prove that our method is better than existing ones. The purpose of this study is to replenish the things that we

think are important for ACAP and its interactions. Future study may further investigate this method and the existing ones.

Third, this study was conducted in the context of Indonesian SMEs and might not be generalizable to other countries. However, since the characteristics of SMEs in developing countries are quite similar, it does provide an approximate overview of how EO, BACAP, and EXCAP work in synergy to enhance the innovative performance of SMEs. Accordingly, future research could benefit from incorporating BACAP and EXCAP into its models to fortify these constructs.

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CHAPTER 3

NETWORK TIES AND ENTREPRENEURIAL ORIENTATION: INNOVATIVE PERFORMANCE OF SMES IN A DEVELOPING COUNTRY *

3.1 Introduction

A growing body of literature in regional economic geography has demonstrated the positive impact of networks within a regional cluster on innovation (Gilbert et al., 2008). Clusters are generally perceived as the loci where knowledge, especially tacit knowledge, can be easily diffused. Particularly for emerging-economy SMEs that are often constrained by limited resources, it is difficult to generate resources and knowledge by themselves. Therefore, they should obtain resources and knowledge in another effective and efficient manner (Desouza & Awazu, 2006).

In this regard, a firm located in a geographical cluster could attain that local knowledge freely and easily (Gilbert et al., 2008; Giuliani, 2005;

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Kesidou & Romijn, 2008). Free exchange of information and the availability of comparative techniques and results will spur each member to improve their knowledge and competencies (Bathelt, Malmberg, & Maskell, 2004). Therefore, clusters are widely seen as an efficient platform for low-cost exchange of knowledge (Navickas & Malakauskaiteb, 2009).

The local knowledge, described also as “buzz”, is more or less is automatically received by cluster members through their face to face interaction, co-presence and co-location (Bathelt, 2004; Bathelt et al., 2004). Cooperation within a regional cluster, so-called intra-cluster ties (ICTs), encourage cooperation, trust, collective learning, and smooth exchange of knowledge which plays an important role in compensating for resource constraints and in spurring innovation and growth (Tsui-Auch, 2003). In this study we define ‘intra-cluster ties’, or ICTs, as a clustered firm’s network ties to others firms operating in the same geographical industry (Giuliani, 2005).

Although being part of a geographically localized cluster is advantageous, in order to access new knowledge a firm needs to establish linkages beyond its local cluster (Mesquita & Lazzarini, 2008). Research has shown that ties that extend beyond a firm’s cluster—extra-cluster ties (ECTs)—are important gateways of critical knowledge and information (Giuliani & Bell, 2005). External sources of knowledge are important to trigger new ideas and innovation (Bathelt et al., 2004). Meanwhile, we define ‘extra-cluster ties’, or ECTs, as a clustered firm’s network ties to other affiliated firms outside the geographic concentration (Giuliani, 2005).

Both ICTs and ECTs are advantageous for the existence of SMEs’ divergent knowledge pools. While ICTs enhance cooperation, collective learning, and sharing of knowledge, ECTs may provide the SME with access to potentially greater varieties of knowledge (Andersson et al., 2002;

Belderbos et al., 2011; Cross & Jonathon, 2004; de Man & Duysters, 2005). In fact, although many studies in economic geography underscore the importance of local networking, relatively few empirical studies provide convincing evidence on the superiority of non-local network ties (Bathelt, 2004). In this study we explore the effectiveness of knowledge obtained through ICTs and ECTs for innovative performance. Focusing on ICTs alone may not give a comprehensive understanding of the relative importance of these two types of ties. We furthermore explore the manner in which entrepreneurial orientation, about which we discuss later, interacts with these two types of ties.

While there have been many studies on the impact of network ties on innovative performance (Larrañeta, Zahra, & González, 2012; Zaheer & Bell, 2005; Zeng, Xie, & Tam, 2010) only a handful of these focus on SMEs in a developing country context, but the attention to this subject is increasing (Rooks, Szirmai & Sserwanga, 2012) . In fact, SMEs have been shown to potentially be a major driving force for growth, structural change, and employment in developing economies (Brixiova, 2013). Our study assumes particular significance because the characteristics of SMEs and the environments they operate in are quite different between developing and developed countries, so the findings and policy conclusions from the latter context cannot be generalized and applied to the former (Radas & Božić, 2009). In particular, unlike most Western societies, Indonesia is a collectivistic society, with strong social interactions (Berry et al., 2002).

A study in the context of Indonesia is also an appropriate setting for drawing conclusions for other developing countries with quite similar characteristics to Indonesia such as, for example, Vietnam, the Philippines, and Thailand (UNCTAD 2005). In sum, SMEs in developing countries, compared to their Western counterparts, operate in a radically different

cultural and economic context and exhibit different behavioural and entrepreneurial traits that underlie their social interactions within and outside clusters. These differences suggest that potentially different processes underlie innovation in these economies. Although studying innovation processes in regional clusters in developing countries is therefore an interesting and relevant field of research, little empirical insights exist presently. Our research on SMEs operating in an Indonesian manufacturing cluster aims to fill this important gap.

However, it is not easy for SMEs in developing countries to establish and maintain their ICTs and ECTs. Maintaining both types of ties requires firms to spend substantial amounts of time and resources on communication, commitment and management of these ties. Due to possible discrepancies in knowledge, background, language, and culture encompassing these ties, they require extra effort and commitment. Where does the commitment come from? The firm's commitment can be gained through their entrepreneurial orientation (EO) because it may reflect the organizational processes, methods and decision making-style (Lumpkin & Dess, 1996; Wiklund & Shepherd, 2005).

EO is often viewed as the degree to which a firm acts proactively, takes risk, and innovates (Covin & Slevin, 1989; Rauch et al., 2004). EO serves multi-pronged roles, such as influencing a firm's ongoing process and corporate culture (Dess & Lumpkin, 2005) and uniting a firm's internal capabilities with external resources (Lipparini & Sobrero, 1994). It is also often seen as a crucial determinant of competitive advantage (Covin & Miles, 1999; Covin & Slevin, 1991; Lumpkin & Dess, 1996; Wiklund & Shepherd, 2005), particularly through enhancing innovative performance (Avlonitis & Salavou, 2007; Boso et al., 2012; Pérez-Luño et al., 2011).

Despite the important role of EO in organizational processes, methods, and decision-making styles (Wiklund & Shepherd, 2005), its particular role in the implementation and utilization of ICTs and ECTs has not been explored before. It is not yet clear how effective the approach of entrepreneurial firms with network ties in intra- and extra-clusters will be. Boso et al. (2013) also emphasize that EO and network ties are typically modeled as the antecedents of performance, but they have also been studied separately.

We develop conceptual arguments advocating that the two well-known traits of EO—proactiveness and risk taking—have their specific roles in generating innovation gains through ICTs and ECTs. ‘Proactiveness’ represents a firm’s ‘first mover’ orientation, encapsulating its ability to stay ahead of its competitors in anticipating future changes. A ‘risk-taking’ orientation reflects a firm’s ‘tolerance of uncertainty’ and its willingness to engage in and make risky investments. Building on some recent studies (Kreiser, 2011; Lee et al., 2001; Stam & Elfring, 2008; Wiklund & Shepherd, 2003; Zinga, Coelho, & Carvalho, 2013), we conceptualize these two EO traits as serving distinct functions in relation to a firm’s network ties. We propose that proactiveness exerts only an indirect effect on innovation through ICTs and ECTs, while risk taking affects innovation both directly and by reinforcing the positive innovation effect of a firm’s network ties.

Our paper contributes to the literature on innovation processes in SMEs by integrating studies in the economic geography tradition that stress the role of ICTs and ECTs with studies that emphasize the importance of entrepreneurial orientation. Differently from previous studies, we examine the extent to which high proactiveness and risk-taking are required for establishing and pursuing ICTs and ECTs. We believe the impact of boundary conditions in joining together firms’ strategic orientations is an

under-researched area. Prior evidence suggests that network ties do matter in developing countries; however the extant studies have only examined the direct effect of such ties on performance (Sheng, Zhou, & Li, 2011). The integrated topic has also been under-researched (Boso et al., 2013). It is even less clear how the joint dynamics of risk-taking and proactiveness with intra-/extra-cluster ties may shape successful innovation. Network ties are considered an important potential contingency factor in the link between strategic orientation and performance in less-developed countries because such markets are intensely dominated by collectivistic social relations and institutional frameworks that considerably shape business activities (Boso et al., 2013; Viswanathan, Sridharan, & Ritchie, 2010).

By focusing on this topic, we clearly fill a void in the existing literature: to the best of our knowledge, this is the first study to look into the specific roles of proactiveness and risk-taking in relation to a firm's ICTs and ECTs. Our paper also extends the line of research on network ties and EO into the specific context of a low-tech manufacturing cluster in a developing country—the footwear industry in Cibaduyut, Indonesia. Most geographical cluster and EO studies on innovative performance have been conducted separately, mainly in developed countries, particularly in the context of high-tech industries (Boso et al., 2013; Stam & Elfring, 2008).

3.2 Theoretical background

3.2.1 Role of clusters for innovation in SMEs: Intra- and extra-cluster ties

An extensive body of research has highlighted that interactions within a regional cluster provide an effective platform for learning and innovation (Feldman, 1993; Gilbert et al., 2008; McCann & Folta, 2011). The

geographic scope of a cluster can range from a single city, a state, a country or even a group of neighbouring countries (Bathelt, 2004; Bathelt et al., 2004). Firms within a cluster are usually a close-knit group that may include competitors, producers, suppliers, and distributors. Given their geographic proximity, these firms exhibit a high degree of interconnectedness between themselves and with local institutions such as government agencies, research institutes and universities (Porter, 2000). They benefit from the economies of agglomeration and joint action, giving them collective efficiency and therefore a competitive advantage over firms that are not co-located within a cluster (Schmitz, 1995). Scholars have increasingly emphasized that being part of a geographically concentrated cluster enables a firm easy access to new ideas partly due to the localized nature of knowledge spillovers (McCann & Folta, 2011). This follows the Schumpeterian view in which knowledge creation is conceptualized as a process of knowledge sharing within an actor's network. This view that knowledge is tacit and embodied in individuals has inspired research into the specific features of knowledge sharing through face-to-face interactions in regional clusters (Nonaka & Takeuchi, 1995; Polanyi, 1966). Research in this tradition reveals that the nature of knowledge transfer in a cluster is spontaneous and fluid and that there may be several modes of communication ranging from chatting and gossiping to brainstorming, problem analysis and in-depth discussion (Bathelt, 2004; Bathelt et al., 2004).

A cluster forms an ideal platform for knowledge sharing in that it ensures trust and cooperation that facilitates collective learning, synergies and smooth exchange of knowledge. It therefore creates an informal network of organizations as proximity increases visibility and firms may easily get referrals from their existing partners to help form new

partnerships (Gilsing et al., 2008). A common cultural background, shared values and experiences, and frequent meetings are generally seen to enhance trust in the cluster (Rodríguez-Pose & Storper, 2006; Storper, 2005). The degree of trust these informal ties provide is so high that it is common for firms in a cluster to visit their competitors' factories in order to gain know-how and new insights (Nadvi, 1999). These benefits are not so easily accessed by firms that are located further away from the cluster. Clusters are therefore a significant locus of local economic development, innovation and growth (Bathelt et al., 2004; Giuliani, 2002).

Empirical research has shown that firms that are part of a regional cluster are more successful, in terms of both innovation and profit, compared to similar firms that are not part of a cluster (Caniels & Romijn, 2005; Oerlemans et al., 2001; Schoales, 2006; Simmie, 2004). Caniels & Romijn (2005) show that ICTs expedite the flow of knowledge between the participating firms, enhancing their innovative capabilities. Creative clusters are shown to contribute to local economic development by enhancing firm productivity, thereby supporting high local wages (Schoales, 2006). Almeida & Kogut (1999) found that the development of clusters in the U.S. computer industry in the 1980s led to increased innovation and industry rejuvenation. Gemser & Wijnberg (1996) demonstrated that continuous improvement and product differentiation in the Italian furniture industry derived from the networks of SMEs and loosely organized families within industrial districts. Studies in the context of emerging economies are far fewer, but they too suggest that clusters enhance the competitive advantage of SMEs (Caniels & Romijn, 2003; Schmitz & Nadvi, 1999; Zinga et al., 2013).

While research on clusters has traditionally focused on ICTs, scholars have increasingly recognized that knowledge trapped within a cluster can

decay and become obsolete (Boschma, 2005; Cantwell & Iammarino, 2003; Giuliani & Bell, 2005). Shared experiences and solving the same problem based on a similar basic understanding and a similar technology paradigm is likely to lead to increased convergence of knowledge, competencies, language, attitude and the like (Bathelt et al., 2004). However, market trends and technologies change rapidly and continuously, while intra-cluster knowledge flows may not be keeping pace with these changes. Close collaboration in the same community for a long period of time may foster too much “local search” and inhibit firms from acquiring fresh insights from outside the cluster. On going collaboration and knowledge exchange within the cluster will lead to more commonalities among firms in terms of knowledge and information. This leads to a decreasing learning potential within this cluster. To cope with this predicament, several studies suggest the importance of ECTs because ECTs are pipelines or channels that may provide firms with new and different ideas, knowledge, knowhow and information (Bathelt, 2004; Bathelt et al., 2004; Laursen & Salter, 2006; Aija Leiponen & Helfat, 2010). The external ties are likely to bring heterogeneous knowledge and ideas as compared to internal ties (Dahlander & Gann, 2010). The highly concentrated search in the cluster may give a firm homogeneous knowledge but search through external ties provide a firm with different kinds of knowledge as illustrated in Figure 3.1.

Furthermore, in their study Dahlander et al. (2013) stated that successful inventors are found to have high degrees of interaction with external agents. In vibrant and competitive environments, extending a firm’s network beyond the cluster in which it is located is vital; ECTs allow a firm to absorb knowledge that is not sufficiently well developed in the firm’s region.

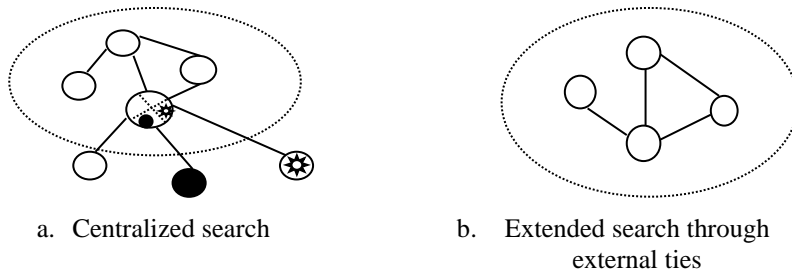


Figure 3. 1 Homogeneous and heterogeneous knowledge searching

However, establishing the pipeline to new external partners requires time and financial investments and it is not easy for firms to tap into the knowledge bases of new partners with different cultures, values and languages (Bathelt, 2004; Bathelt et al., 2004). To some extent, searching external ties can bring about diminishing returns. Excessive attention to searching ECTs can be costly and detrimental (Laursen & Salter, 2006; Aija Leiponen & Helfat, 2010). A firm's capability and time to screen, value, choose, learn, integrate and implement the knowledge is limited. When too much new and diverse information come in, the firm can be overwhelmed and confused and may become unproductive in managing all the inputs. This may reduce the firm's focus and time in utilizing the core knowledge and might lead to failure in terms of integrating the acquired knowledge with their internal knowledge. As Dahlander et al. (2010) add, gathering excessive knowledge can lead to wasted resources.

Even though too much ICT and ECTs may lead into diminishing return, ICTs and ECTs are generally considered to be contributing to innovative performance. In addition, network ties provide legitimacy, increasing a firm's odds of forming partnerships with highly valuable potential partners

(Eisenhardt & Schoonhoven, 1996). Together ICTs and ECTs can generate large bundles of resources that can enhance a firm's ability to create new combinations of knowledge, thereby enhancing its competitive advantage (Wernerfelt, 1984). Such a recombinational ability is particularly relevant when firms are confronted with a high degree of competition—a feature typical of a small- and medium sized manufacturing sector in emerging economies. Simultaneous access to resources, both internal and external to the cluster, gives a firm the opportunity to combine and recombine diverse knowledge elements, thereby increasing the chances for successful innovative outcomes.

Research has demonstrated that firms that maintain ECTs are looked upon for advice and up to date knowledge by fellow firms who do not maintain such ties (Giuliani, 2005). Here, the more knowledgeable actors act as bridges for knowledge (Rodríguez-Pose & Storper, 2006). Such ties are particularly important to achieve sustained competitive advantage for firms which operate in lagging technology clusters in developing countries where local knowledge and competency are insufficient (Bell & Albu, 1999; Fontes, 2005).

However, firms tend to be prone to ignoring knowledge that is novel, particularly if they are provided by those outside of its immediate location—a feature often characterized as the “not-invented–here syndrome” (Maskell et al. 2006). This is a particularly serious challenge to overcome as it may require the creation of new mental maps for interactions and knowledge exchange through ECTs. Therefore, while these two sets of ties in a firm's network are vital for innovation, as we argue below, a fine-grained understanding of their effect on innovation requires taking into account certain entrepreneurial qualities of the firm that shape and influence the efficacy of the firm's linkages.

3.2.2 Interplay of ICTs and ECTs with entrepreneurial orientation

While both ICTs and ECTs are important for a firm's innovation, each partner type requires different forms of exchange (Dahlander et al., 2013). Cultivating diverse sources of knowledge can be costly and take significant effort. Given the nature of EO, some scholars have concluded that EO capabilities may help firms deal with uncertainties and access potential resources, both of which are associated with the entrepreneurial process (Boso et al., 2013; Hughes, Hughes, & Morgan, 2007). Nowadays, it is more widely acknowledged that resource flows to entrepreneurs who are somehow better connected (Stam, Arzlanian, & Elfring, 2014). A firm's ability to build its network ties is contingent upon its commitment to searching out, evaluating, and executing the potential ties. This commitment is reflected in the firm's EO capabilities, defined as the extent to which top managers are inclined to take business-related risks and seek opportunities in anticipation of future demand (Covin & Slevin, 1991 ; Miller, 1983). This definition captures the two key characteristics of EO that we focus on in this paper in relation to a firm's ties: risk-taking and proactiveness, respectively (George & Marino, 2011; Kreiser, Marino, Dickson, & Weaver, 2010; Pérez-Luño et al., 2011).

Following Rhee et al. (2010) and Hult et al. (2004), we disentangle innovative orientation from EO. The former is defined as the tendency and the behavior that contribute to innovation by supporting new ideas, experimentation and creative processes (De Clercq et al., 2013; Wiklund & Shepherd, 2005). Innovativeness is a behavior-based construct explaining outcomes such as new product, new process and new market (Rhee et al., 2010). Briefly innovativeness refers to a firm's capacity to be willing to innovate (Li, Huang, & Tsai, 2009; Lumpkin & Dess, 1996; Wiklund & Shepherd, 2005), and to engage in the practice of innovation (Covin &

Lumpkin, 2011; Dai et al., 2014). Several studies have emphasised this close overlap between innovativeness and innovation (the performance variable in this study), and also found that proactiveness and risk-taking are the antecedents of innovativeness (Hult et al., 2004; Pérez-Luño et al., 2011; Rhee et al., 2010). Drawing on these insights, we formulate a framework in which proactiveness and risk-taking constitute EO which in turn interacts in important ways with ICTs and ECTs to generate innovative outcomes.

Accordingly, proactiveness refers to the active search for new opportunities, identifying them, assessing their potentials, and devising strategies for exploiting these potentials (Kreiser et al., 2013; Lumpkin & Dess, 1996; Wiklund & Shepherd, 2005). This is a particularly important trait in order to be able to pioneer new procedures, technologies, and products or services—an ability on which hinges the long term success of a firm (Christensen, 1997; Covin & Covin, 1990). Risk taking is a complementary EO characteristic that reflects the commitment to high-risk investment or the willingness to invest resources in unpredictable opportunities. Being an entrepreneurial firm requires a certain degree of risk-taking behavior in taking bold actions such as stepping into unknown market or committing vast amounts of resources for potentially rewarding opportunities with uncertain outcomes (Zinga et al., 2013). The process of external knowledge acquisition requires significant efforts not only for identification and selection of partners but also for interaction and therefore can be costly (Maskell et al. 2006; Rhee et al. 2010). Importantly, there is no guaranty that all the exchange partners will bring economic value, while some exchange relationships may not be reciprocal, resulting in sunk investments being wasted and lost.¹ Misunderstandings and conflicts, and

¹ We thank an anonymous referee for some arguments herein on the dangers posed by network ties.

incompetent and uncommitted partners could degrade the benefits of partnerships. Establishing and maintaining inter-firm partnerships, especially in an unfamiliar terrain such as outside of a firm's local cluster, is therefore fraught with high risks. In spite of these challenges, as we discussed above, interacting with exchange partners represents a pipeline that is necessary for accessing novel knowledge.(Maskell et al. 2006).

Studies affirm that a successful entrepreneur makes calculated risks for potentially rewarding future benefits (Low & Abrahamson, 1997). In short, proactiveness and risk taking are two important features that shape how a firm acquires and utilizes its resources, especially network resources, for achieving success in the long run. EO may enhance a firm's ability to benefit from extensive and high quality knowledge exchange in the firm's network (De Clercq et al., 2013) through, for example, optimizing the variability of network ties (Park, Shin, & Kim, 2010). Given that network ties represent a critical resource for SMEs, particularly in emerging economies, it is important to understand the interplay between EO and a firm's network ties and how they contribute to its innovative performance.

In this study, we argue that an innovative firms seeks to improve their competencies, on the one hand by establishing new network ties (Low & Abrahamson, 1997), and on the other by tapping resources from their existing ties (Lipparini & Sobrero, 1994). EO is particularly crucial for ECTs because assimilating knowledge elements from non-local partners requires distinct commitment to those required for assimilating knowledge from partners within a firm's own cluster. The former category of partners may exhibit greater differences not only in knowledge and expertise, but also in attitudes and cultures compared to the latter category of partners. Therefore a strong entrepreneurial commitment is required to establish and maintain ECTs, to take chances with these ties, and to proactively uncover

new opportunities (Covin & Miles, 1999). A firm with a high EO is therefore more able to actively pursue knowledge and information available through its existing and new network ties. Below we discuss how the specific EO traits of proactiveness and risk taking bear themselves on a firm's network ties and shape its innovative performance.

3.2.3 Proactiveness and innovation: The mediating roles of ICTs and ECTs

The ability to discover and anticipate changes in their environment is an eminent trait of entrepreneurial firms (Urbano & Turró, 2013). To be able to maintain their presence in a competitive market place, firms must proactively identify new opportunities (Dai et al., 2014). Proactive behavior may drive a firm to be more sensitive to such opportunities by intentionally skimming their environment and finding the necessary resources to exploit the opportunities. Firms with high levels of proactiveness find opportunities, anticipate future developments, and identify new trends and available niches faster than their competitors (Lumpkin & Dess, 1996; Pérez-Luño et al., 2011; Wiklund & Shepherd, 2011). In this sense, a firm with a high proactiveness orientation may be particularly adept at leveraging their existing ties to forge new ties because such a firm seeks out resources that would add value to the firm both in the present and in the future. A proactive firm therefore may expand its network beyond its specific location so as to draw on the resources of organizations that may have different knowledge and practices (Rodan & Galunic, 2004). Highly proactive firms accordingly seek out network ties more actively for accessing resources that are geared towards meeting the expected challenges and opportunities. However, less proactive firms may lack the intentionality to enhance their market knowledge from network ties (De Clercq et al., 2013) and this may

render them less swift and efficient to identify new opportunities. It leaves them ill-prepared to compete against highly proactive counterparts (Pérez-Luño et al., 2011).

By focusing on the specific EO trait of proactive orientation, we refine prior research which has shown that EO, in general, plays an important role in establishing inter-organizational networks that glue a firm's internal expertise with externally acquired resources (Lipparini & Sobrero, 1994). We suggest that proactive behavior ensures that a firm is able to seek out referrals and leverage its visibility (Gulati, 1999) in its existing networks such that it forms new partnerships in response to changes in external environments faster than firms lacking such abilities. Thus, we argue that proactiveness acts as an antecedent of a firm's ICTs and ECTs, enhancing the firm's innovative performance by helping create ICTs and ECTs:

***Hypothesis 3.1a:** The effect of a firm's proactiveness on innovative performance is mediated by its intra-cluster ties.*

***Hypothesis 3.1b:** The effect of a firm's proactiveness on innovative performance is mediated by its extra-cluster ties.*

3.2.4 Moderating role of risk taking on the effect ICTs and ECTS on innovative performance

Establishing network ties do not guarantee that a firm is fully tapping into the resources available to it through such ties. The underlying relationships are reciprocal so the extent to which a firm can access resources hinges partly on the extent to which it is willing to commit its own resources. However, such commitments carry an inherent risk. In the first place partners may renege on their promises so the firm may stand to lose the resources it has committed. Even if a firm's network partners reciprocate in line with the firm's expectations, knowledge exchanges may not generate

valuable innovative outcomes; technological uncertainties may prevent exchange relationships from yielding the desired results. In spite of these risks, a firm that nurtures its ties through the necessary investments in relationship building and knowledge sharing might stand to benefit significantly more from its linkages than a firm that makes little investments in its ECTs. While both ICTs and ECTs carry risks, the risks associated with the latter are likely to be higher due to the relatively higher differences in business practices, norms and such like between the extra-cluster partners.

As regards an acceptable level of risk, psychologists posit that this level may be chosen as a compromise between the desire for success and the desire to avoid risk (Mandel, 2003). Too low a risk tolerance will prevent a firm from making progress (Naldi, Nordqvist, Sjoberg, & Wiklund, 2007). As observed by Ward (1997, p. 323) “without risk taking ... the prospects for business growth wane”. This suggests that some level of risk taking is essential for effective use of firms’ ICTs and ECTs, and when ICTs and ECTs are supported by an adequate degree of risk-taking though investment of time, money, and effort, the rate of innovation will increase. Nevertheless, we suggest that the extent to which risk taking is essential can vary for ICTs and ECTs. Within-cluster ties are characterized by repeated interactions that spawn a high degree of trust between partners (e.g. Gordon, Kogut, & Shan, 1997; Gulati & Gargiulo, 1999; Uzzi, 1997). Intensive knowledge sharing or regular meeting enhances a firm’s perception of a diminished risk that partners will behave opportunistically (De Clercq et al., 2013).

Firms within a cluster are mutually interdependent and therefore need to honour their commitments, or else they may face sanctions from others within the cluster. Firms operating in a cluster may receive certain advantages, such as advance notice of impending government policies and dealing with less opportunistic partners, since news spreads rapidly in such a

network (Boso et al., 2013). At the same time, the process of establishing ECTs involves a conscious effort to build trust and a substantial investment of time and resources (Bathelt, 2004). Trusting an external partner does not necessarily reflect ‘true’ trust but a firm’s willingness to render itself vulnerable to the actions of its partner (De Clercq et al., 2013). Accordingly, the greater trust and threat of sanctions in ICTs can make risk-taking less salient compared to ECTs. We therefore argue that the risk-taking pay-offs might also be higher in respect to ECTs, given the potentially novel and non-redundant information that such ties bring about, and propose the following two related hypotheses.

***Hypothesis 3.2a:** A firm’s risk-taking orientation positively moderates the positive impact of its network ties (both ICTs and ECTs) on innovative performance.*

***Hypothesis 3.2b:** A firm’s risk-taking orientation has a greater moderating effect on the impact of its ECTs, compared to that effect of its ICTs, on innovative performance.*

3.2.5 Hypothesized research model

Figure 3.2 shows the conceptual framework that explains the relationships proposed in our hypotheses, depicting how the interplay between ICTs, ECTs, proactiveness and risk taking affects innovative performance.

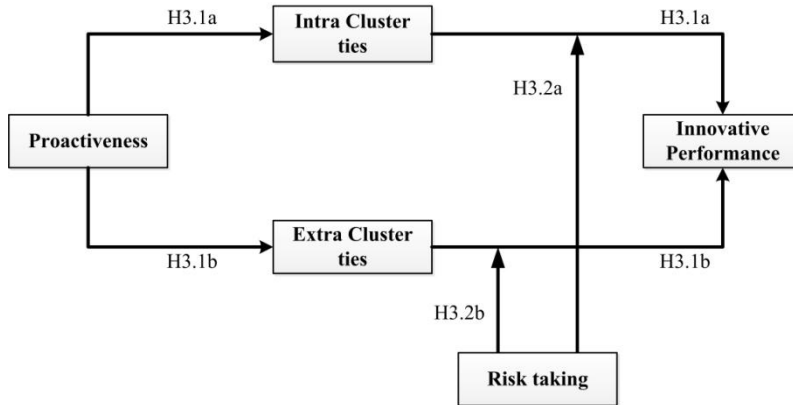


Figure 3.2 Innovative performance and the interplay between ICTs, ECTs, proactiveness and risk-taking

3.3 Research setting

While many studies on SME clusters have been conducted in high-tech industries in developed countries (Stam & Elfring, 2008), our study is carried out in the context of a creative industry with low to intermediate technology—a footwear industry in the Cibaduyut manufacturing cluster in Indonesia.

We chose Indonesia because its manufacturing SMEs are representative of those in other emerging countries on which few studies exist. The Cibaduyut footwear industry cluster is located in West Java. This cluster consists of shoe manufacturers, distributors, and retailers. According to the data from the Cibaduyut Industrial Department, in 2012 the number of footwear manufacturers was 845 units, showrooms 152, commercial centres 4, raw and auxiliary material stores 38, shoelace manufactures 8, equipment and spare parts manufactures 3, and packaging companies 15. The total workforce is 6,045 workers with a total production capacity of 8,530,000 pairs per year in 2012 (Purnomo, 2014). On average the size of firms in terms of number of employees in the Cibaduyut footwear industry ranges

from 5 to 20 employees. The focus of these SMEs is primarily the local and national market.

All our focal firms are located in this cluster, which has a clear geographical boundary, and operate similar technologies. This research setting is interesting for at least two reasons. First, this is a highly competitive footwear cluster so firms are compelled to produce innovative products. Without such products it is difficult to get orders from distributors (Gunawan, 2011). Second, firms possess limited internal resources so ICTs and ECTs constitute key resources for the firms (Biggs & Messerschmidt, 2005).

3.3.1 Research design and data collection

We collected the data in 2012 based on an extensive survey in this cluster, using questionnaires and interviews among owners and managers of the companies. We choose the owner and manager as the respondents of this study because the manager/ owner of the a firm is the soul of the small organization and their 'rational analysis' and 'creative intuition' will directly reflect the SMEs' decisions (Smith, 2004). In the context of SMEs, the owner /manager's decisions reflect a firm's decision and impacts the performance of SMEs (Smith, 2004; Van Gils, 2005) .

Our sample comprises 120 owners/managers representing 120 footwear firms in Cibaduyut. As is typical in emerging economies there only exists limited information about footwear producers in this cluster; the official database of company addresses is at best incomplete. We combed through every area in Cibaduyut and compiled contact addresses. We then distributed questionnaires to all footwear producers that we found, and we followed this up with interviews. The resulting data set presents a near complete representation of firms in this cluster.

3.3.2 Measures and validation

3.3.2.1 Innovative performance

Innovation is traditionally understood to mean the introduction of new goods, the use of new materials, the development of new methods of production, the opening of new markets, or the implementation of a new approach to organization (Schumpeter, 1934). In this paper, we considered the ability of firms to develop new products as a measure of innovative performance. New products are an important indicator of innovative performance (Katila & Ahuja, 2002) because they reflect a firm's ability to adapt to changes in markets and technologies (Schoonhoven et al., 1990) and they exert a significant impact on market share, market value, and firm survival (Banbury & Mitchell, 1995). Product innovation, which underlies new products, may include improvements in features, materials, and components, the development of new software, enhanced user friendliness, and other aspects (OECD, 2005). It is in the context of a relevant group, or niche and environment, that the product needs be new (Zinga et al., 2013). Even if the product innovation is inspired by advanced shoe firms, they would need adaptation to meet local preferences. Thus we define novelty as specific to the context in which the SMEs are operating.

For the SMEs' innovative performance, we define product innovation in terms of changes in materials, features, and design; thus we did not consider changes in colour and size as representing an innovation. We then used the number of new products introduced onto the market-by Cibaduyut SMEs over the course of 2011 for our data on innovative performance.

3.3.2.2 Intra/extra-cluster ties

We map ICTs and ECTs by determining the number of partners with which the producers interact respectively within and outside the cluster (Giuliani & Bell, 2005). The boundary of the Cibaduyut cluster is clear, enabling us to easily differentiate between intra- and extra-cluster ties. We constructed ICTs and ECTs variables as the number of a firm's diverse set of partners, such as suppliers, distributors, competitors, research centres and universities, within and outside its cluster respectively. Both variables are expressed in logarithms (Leiponen & Helfat, 2011).

3.3.2.3 Proactiveness and risk-taking

We followed the widely-used approach of Covin and Slevin (1989) to measure proactiveness and risk taking, as they have been used widely in EO studies (Kreiser et al., 2010; Marino, Strandholm, Steensma, & Weaver, 2002). Respondents were asked multiple questions about their firms' proactive-orientation and risk-taking behaviors on a scale of 1 (strongly disagree), to 5 (strongly agree). The responses to these questions were averaged to derive measures of proactiveness and risk taking. We confirmed the reliability of these indicators by computing the Cronbach-alpha coefficient, which was respectively 0.80 for proactiveness and 0.78 for risk taking—well above the minimum accepted value of 0.70 (Field, 2013). We further verified the composite reliability and convergent validity of *proactiveness and risk taking*, using CFA and we found average extracted variance for proactiveness measure is 0.69 and for risk-taking is 0.79 which is above the recommended threshold level of 0.50 and the composite reliabilities (CR) 0.86 for proactiveness and 0.92 for risk taking which exceed the 0.70 threshold level for acceptable CR (Bagozzi & Yi, 1988).

3.3.2.4 Control variables

We use a number of variables as controls. We use the age of the owner or manager to control for the effect of main variables on innovative performance. Older owners or managers can be slow to adapt new developments, resulting in slower absorption of new knowledge (Wesley & Levinthal, 1990). On the other hand, young owners and managers are less likely to have established routines and may engage with a flexible network of partners, making them more open to new ideas, resources, and opportunities. We also included the education level of owner/ manager to control for differences in the ability to absorb and manage information.

Better educated owners/managers may be more capable of obtaining new knowledge, and of adapting to changing technologies and market signals. We used the number of employees to account for the effect of differences in the size of the firm. Although small organizations may be more flexible, possessing a greater ability to adapt to changing environments, they may be constrained by limited technological and financial resources. Larger firms on the other hand may possess more skilled human resources, and have the appropriate technology or the ability to acquire it (Damanpour, 1996). However, larger firms may suffer from organizational inertia that can hamper innovation (Hitt, Hoskisson, & Ireland, 1990). A summary of the measurement of variables are presented in Table 3.1.

Table 3.1 Description of the variables

Variable	Description
Innovative Performance	Indicates the number of innovative products that a firm has introduced onto the market. (appendix A, no. 19, year 2011)

Variable	Description
ICTs	Indicates the number of a firm's network ties inside its cluster area with the following partners: suppliers, competitors, customers, universities, research centres, government bodies, industry associations, group discussion forums, financial institutions, law firms, and consultants. (appendix A, no. 9)
ECTs	Indicates the number of a firm's network ties outside its cluster area with the following partners: suppliers, competitors, customers, universities, research centres, government bodies, industry associations, group discussion forums, financial institutions, law firms, and consultants. (appendix A, no. 9)
Proactive Orientation	Indicates a firm's proactive behavior in relation to its: (1) initiative to be the first mover in dealing with competition, (2) tendency to scan, observe, and adopt the best business practices, and (3) efforts at seeking out new opportunities. The question is designed on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). (appendix A, no. 25)
Risk-taking Orientation	Indicates a firm's risk-taking behavior in terms of a preference for: (1) high-risk projects (with chances of high return), (2) risk-taking when confronted with uncertainty, and (3) adopting a firm strategy with a strong tendency to take risks. The question is designed on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). (appendix A, no. 25)
Age of Owner/Manager	The age of the owner/manager: (1) Under 30, (2) 31-40, (3) 41-50, (4) Over 50. (appendix A, no.1)
Education of Owner/Manager	The level of owner's/manager's education: (1) primary school, (2) junior high school, (3) high school, (4) undergraduate, (5) graduate. (appendix A, no. 2)
Firm Size	Number of the employees: (1) Fewer than 5, (2) 5-20, (3) 21-50, (4) 50-100, (5) 100-200. (appendix A, no.5)

3.3.2.5 Analytical approach

We employ an ordinary least squares (OSL) estimation method. The dependent variable follows a normal distribution: the skewness and kurtosis values were less than 1.5—below the acceptable limit for normal

distribution of ± 2 (George & Mallery, 2011)—indicating that the data are close to normal. We employed a hierarchical regression analysis, with alternative models with and without interaction terms. We ensured that there was no serious multicollinearity between the variables: the variance inflation factor was below three, and the tolerance values were close to one (Barrow, 2009). As recommended by Aiken and West (1991), we applied mean centering to the variables used for creating interaction terms.

In testing the psychometric properties with Principal Component Analysis (PCA), we found that the suitability of the data for doing factor analysis was sufficient. The correlation matrix revealed the presence of many coefficients of 0.3 and above. The Kaiser Meyer-Olkin test was 0.70, exceeding the recommended value and Bartlett's Test of Sphericity reached statistical significance. PCA revealed the presence of two components with eigenvalues exceeding 1, explaining 51.96% and 19.97% of the variance respectively. The correlation between the items was positive ($r= 0.41$) and significant ($p<0.01$). We also did Monte Carlo parallel analysis by comparing the value of eigenvalue from PCA to the random value result from parallel analysis and found that the value from the two components of PCA was larger than criterion values from parallel analysis (Watkins, 2006). This means we can retain the variables.

3.4 Results

Table 3.2 shows the descriptive statistics of and the correlations between the variables used in the econometric model. The average number of innovative products is about 7, with a maximum of 16 and a minimum of 2. The average number of ICTs is about 69 (4.2 in logarithmic scale), while that of ECTs is much smaller at about 5. Correlation coefficients are all within acceptable limits, further confirming the absence of multicollinearity.

CHAPTER 3. NETWORK TIES AND ENTREPRENEURIAL ORIENTATION:
INNOVATIVE PERFORMANCE OF SMES IN A DEVELOPING COUNTRY

Table 3.2 Descriptive statistics and correlations ^{a)}

Variable	Me- an	s.d.	Min	Max	1	2	3	4	5	6	7
1. Num- ber of new pro- ducts	7.47	2.99	2	16							
2. ICT ^{b)}	4.23	1.76	1	91	0.11						
3. ECT ^{b)}	1.64	1.95	0	17	0.35 [#]	0.36 [#]					
4. Proac- tive orien- tation	3.36	1.76	2.6	5	0.30 [#]	0.29 [#]	0.54 [#]				
5. Risk- taking orien- tation	2.01	1.22	1.33	3	0.30 [#]	0.29 [#]	0.39 [#]	0.47 [#]			
6. Age of owner/ mana- ger	2.49	0.71	<30	>50	0.01	0.20	0.30 [#]	0.26 [#]	0.01		
7. Educa- tion of owner/ mana- ger	2.85	0.53	2	4	0.29 [#]	0.04	0.13	0.27 [#]	0.18 [*]	-0.18 [*]	
8. Firm size	1.57	0.51	<5	21- 50	0.09	0.40 [#]	0.45 [#]	0.46 [#]	0.25 [#]	0.24 [#]	0.13

^{a)} n=120, ^{b)} Log-transformed, *p < 0.05, #p < 0.01 (Two-tailed tests)

Table 3.3 OLS regression analysis of firms' innovative performance

	Model 1 Innov	Model 2 ICT	Model 3 ECT	Model 4 Innov	Model 5 Innov
Controls					
Age of owner/ manager	0.01	-0.11	0.17 [*]	-0.04	-0.06
Education of owner/ manager	0.22 ^{**}	-0.08	0.01	0.21 [*]	0.18 [*]
Firm Size	-0.78	0.35 ^{***}	0.21 ^{**}	-0.14	-0.17 ⁺
Risk taking	0.19 [*]	0.17 ⁺	0.19 [*]	0.14	0.21 [*]

CHAPTER 3. NETWORK TIES AND ENTREPRENEURIAL ORIENTATION:
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	Model 1 Innov	Model 2 ICT	Model 3 ECT	Model 4 Innov	Model 5 Innov
Hypotheses-testing variables					
Proactiveness (H3.1a &b)	0.18 ⁺	0.09	0.30 ^{**}	0.09	0.03
ICT ^b (H3.1a)				-0.16	0.31 [*]
ECT ^b (H3.1b)				0.30 ^{**}	0.13
Two-way interactions					
ICT x Risk taking (H3.2a&b)					-0.41 ^{**}
ECT x Risk taking (H3.2a&b)					0.22 [*]
R ²	0.17	0.22	0.38	0.22	0.34
Adjusted R ²	0.13	0.18	0.36	0.17	0.28
F	4.67 ^{***}	6.28 ^{***}	14.45 ^{***}	4.61 ^{***}	6.17 ^{***}
N	120	120	120	120	120

^a Standardized coefficients are reported, ^bLog-transformed

⁺ p < 0.10 ^{*} p < 0.05 ^{**} p < 0.01 ^{***} p < 0.001

Results of the regression analysis are reported in Table 3.3. To test whether the variables ICT and ECT mediate the effect of proactiveness on innovative performance (**Hypothesis 3.1**), we followed several steps to proceed the test (Kenny, Kashy, & Bolger, 1998; Muller, Judd, & Yzerbyt, 2005). In model 1, we include the two EO variables, proactiveness and risk taking, along with the control variables. As expected, the coefficients of both these EO variables are positive and significant. In the next step, we regress the same set of explanatory variables in turn on ICT and ECT. We find a significant positive coefficient for proactiveness in the ECT model ($\beta=0.30$, $p<0.01$) (model 3), but not in the ICT model ($\beta=0.09$, n.s.) (model

2). This is a first indication that while ECTs may be mediating the effect of proactiveness on innovative performance, ICTs may not be playing such a role. The final step is to run the innovative performance model with both the EO variables and the network variables (model 4). The proactiveness variable is not significant anymore ($\beta=0.09$, n.s), unlike in model 1. Furthermore, the coefficient of ECTs variable is positive and significant ($\beta=0.30$, $p < 0.01$), while that of ICTs is not ($\beta=-0.16$, n.s.). This confirms that ECTs fully mediate the effect of proactiveness on innovative performance, in support of our **Hypothesis 3.1b**. ICTs on the other hand do not play a mediating role, contrary to our **Hypothesis 3.1a**. Our model seems referring to mediated-moderation because there is a moderation of X to Y effect. However, the simulation of mediated-moderation is beyond the scope of this study.

Next, to test whether risk taking moderates the effect of ICTs and ECTs on innovative performance, we added to the variables in model 4, the interaction terms ICT and risk-taking and ECT and risk-taking (model 5). We find a positive and significant coefficient for ECT interaction with risk-taking ($\beta=0.22$, $p < 0.05$) which partially support our **Hypothesis 3.2a**. However in partial contrast to this hypothesis we find a negative and significant coefficient for the variable ICT interaction with risk-taking ($\beta=-0.41$, $p < 0.01$). However, these results provide full support for our **Hypothesis 3.2b** which stated that a firm's risk-taking orientation has a greater moderating effect on the impact of the firm's ECTs, compared to its ICTs, on innovative performance. Coming to the results on control variables, we find that education of the manager has a positive impact on performance, while firms with younger managers also tend to perform better (models 1,4,5). A better educated manager gives an SME a greater ability to understand new knowledge, recognize its value and to commercialize it

(Qian & Acs, 2013). There is also partial evidence that small-sized firms tend to be more innovative. This is in line with our understanding that smaller firms display greater agility and flexibility in adopting new innovative practices, giving them a competitive advantages over larger firms (Robertson & Langlois, 1995).

To determine the nature of an interaction effect, the main effects and the interaction terms should be jointly considered (Aiken & West, 1991; Wiklund & Shepherd, 2005). From Figure 3.3 we can better understand the extent to which risk taking moderates the effect of ECTs on innovative performance. It shows the predicted innovative performance across a range (from low to high) of ECTs for high- and low-risk taking firms. The horizontal axis measures the number of ECTs, and the dotted and solid lines respectively represent firms with high and low risk taking. Both lines have a positive slope indicating the positive effect of ECTs on innovative performance. However, the slope of the dotted line is much steeper than that of the other line, underscoring that risk taking substantially moderates the impact of ECTs on innovative performance. This suggests that firms that are greater risk takers benefit the most from increasing the number of their ECTs.

To advance further interpretations, we plotted simple slope tests (Aiken & West, 1991). For the interaction effects for ECTs and risk-taking, we applied minus one standard deviation from the mean and plus one standard deviation from the mean. We plotted the relationship between ECTs and risk-taking for low and high levels. We performed a simple slope analysis (Aiken & West, 1991) or regression line to test whether its slope differed significantly from zero. The test showed that the relationship between ECTs and performance was significantly positive when risk-taking was high ($b = 3.14$, $t = 3.10$, $p < 0,05$) but neutral when it was low ($b = 0.874$, $t = 1.24$,

n.s.). This analysis supports the prediction that the relationship between ECTs and performance is significantly stronger when risk-taking is high.

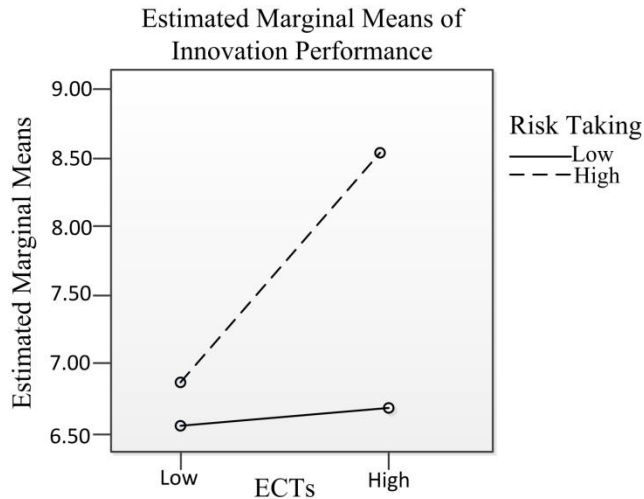


Figure 3.3 The moderating effect of risk-taking on the relationship between ECTs and innovative performance

As shown in Figure 3.3, regardless of the level of risk, higher ECTs result in higher innovativeness compared to lower ECTs; this is because ECTs are likely to bring heterogeneous knowledge and ideas to a firm (Dahlander & Gann, 2010; Aija Leiponen & Helfat, 2010). The interaction effect between ECTs and risk taking shows that ECTs and risk taking are mutually reinforcing, enhancing the innovativeness of the firm. Firms with low ECTs and low risk taking behavior are the worst performers. This is in line with our expectation that too low a risk tolerance will prevent a firm from making advances in its innovative capabilities (Naldi et al., 2007; Ward, 1997).

In addition to the tests described earlier, we conducted further tests to conclude that the assumption of BLUE (Best Linier Unbiased Estimator) of OLS is satisfied (Gujarati, 2003). The Koenker test with a Chi-Square statistic of 10.79 ($p=0.29$), and the Breusch-Pagan test (Chi-Square 10.74 ($p=0.29$)) indicate that the assumption of homoscedasticity is not violated. We tested for potential outlier problems and found that the value of Cook's Distance is 0.23, which is lower than the usually accepted limit of one (Tabachnick & Fidell, 2007), indicating the absence of significant outliers.

3.5 Discussion and conclusion

In this study we explored the effectiveness of knowledge acquisition through ICTs and ECTs and the connection with EO behaviour on innovative performance. We empirically tested our conjectures on a sample of 120 SMEs in a manufacturing cluster in an emerging economy, Indonesia. Our analysis, based on primary data collected through interviews and questionnaires, provided mixed support for our hypotheses. We found that proactive behavior is the antecedent of ECTs and an important trait in characterizing an entrepreneurial firm (Lumpkin & Dess, 2001), in that it drives that firm to engage in ECTs, anticipate future changes, and exploit business opportunities. A highly proactive firm expands its network boundaries to find resources that best complement its own (Rodan & Galunic, 2004), thereby increasing the diversity and novelty of the knowledge at its disposal (Larrañeta et al., 2012) and placing it in a favorable position in relation to its competitors (Kreiser et al., 2013). Our results thus provide further insight into the findings of prior studies, which have revealed that proactiveness has a direct, positive effect on innovative performance (Avlonitis & Salavou, 2007; Kreiser et al., 2013).

On the other hand, we found no evidence of the importance of proactiveness as an antecedent to ICTs. One explanation would be that intra-cluster ties grow naturally out of a firm's existing ties and the resulting referrals, with proactiveness playing only a minor role. In line with this, McFadyen and Cannella (2004) has stated that the potential for finding new knowledge in an existing cluster seems to diminish over time. In response to this result, several of the managers and owners interviewed shared a similar view, stated:

'Not so much new knowledge can be found in the cluster. Joining in the forum group discussions in the cluster, however, will help us in terms of being able to discuss classic problems such as human resources.'

However, one of the respondents gave quite different argument from the others by stating:

'I am a newcomer to this industry. So far, the information from the cluster is sufficient for me. I am still learning from that information and therefore prefer to apply what I have learned.'

This disagreement on the part of this one person is understandable, however, given that he was quite new to the industry and still wanted to absorb the existing knowledge within the cluster; too much new information might otherwise overwhelm him.

ECTs, in contrast, are needed to create new windows into technological opportunities that might provide essential information on new trends, processes, and technologies. Proactive firms are future-oriented, prepared to meet future challenges and exploit future opportunities (Lumpkin & Dess, 1996; Wiklund & Shepherd, 2005), and therefore may actively engage in searching out new ideas outside their cluster, though ECTs. In the interviews, the owners and managers also confirmed the importance of such

ties for them in Cibaduyut. Most of them agreed with our assessment, as testified to by the following comment:

'The environment in Cibaduyut is relatively stagnant. We need to see and hear something beyond our boundaries to help us innovate. A firm will not develop well if it only depends on the information from inside the cluster. In today's competition, we need to find out about the new trends and knowledge; otherwise we will lag behind.'

Besides the importance of external ties, though, four of them also emphasized the advantages of being located in the cluster:

'Due to the proximity of businesses in the area, we can reach suppliers easily, and sometimes we meet with the other producers to discuss the current situation in the industry. The government can also gather us quickly when they have news for the manufacturers.'

Furthermore, establishing and executing a new business venture requires a willingness to decide and take action in the light of uncertainty regarding successful outcomes (Zhao, Seibert, & Lumpkin, 2010). Such a proclivity for risk-taking is stereotypical of entrepreneurs (Robert Baron, 1998) and considered one of the most important traits dictating their success (Naldi et al., 2007; Ward, 1997). The willingness to take risk by tapping into new external sources has been identified as a decisive characteristic of outstanding entrepreneurs (Bathelt et al., 2004). Extending this understanding, we found that high risk-taking enhances an SME's innovative performance by reinforcing the effect of ECTs. For SMEs in particular, external knowledge is a key source of innovation (Jacob & Szirmai, 2007; Lipparini & Sobrero, 1994). Sourcing that external knowledge, however, is inherently risky, due to the relative unfamiliarity with new partners and resulting uncertainty about the outcomes (Dess & Lumpkin, 2005; Lee, Lee, & Pennings, 2001; Walter et al., 2006; Zahra et al., 1999). Nevertheless, firms that take calculated risks are able to invest

resources in their ECTs and tap into potentially valuable external resources. This risk-taking is much needed to spur the implementation of heterogeneous ideas, knowledge, and other resources gained from ECTs, generating enhanced innovative performance. With regard to the risks of cooperating with firms outside the cluster, one of our interviewers provided the following example:

‘Collaboration with distributors outside the cluster brings us higher selling prices, but it also brings higher risk, because we are less familiar with the external partners. But if we can make a good agreement about payment, it lessens the risk. Since Indonesia is a big country, we also have to put in extra effort to frequently check the shipping.’

Another added:

‘To collaborate with unfamiliar firms, we need more qualified human resources; we need greater trust, too, because it is different when you’ve only known people for several days or weeks compared to knowing them for years.’

In terms of ICTs, however, we found that risk-taking negatively moderates their effect on innovative performance. Too much resource commitment for within-cluster knowledge sharing may be counterproductive as this may result only in the diffusion of redundant knowledge instead of making new knowledge available to the firm. This underscores a concern raised in the literature that being located within a cluster is no guarantee for success (Schmitz & Nadvi, 1999).

By studying the impact of ECTs and ICTs on SMEs’ innovative performance, we empirically and theoretically contribute to the streams of literature on the geographic dimensions of knowledge flows and EO. Firstly, by demonstrating the effect of proactiveness and risk-taking on innovative performance (Kreiser et al., 2013), we are the first to link these behaviors with SMEs’ network of ICTs and ECTs. By using a multi-dimensional

perspective of EO, we show that proactive behavior is a “stimulus” for boosting SMEs’ innovative performance, and we find that risk-taking behavior can be an “accelerator” of that performance. Secondly, our study captures the “dark side” of ICTs and their inability to contribute to generating meaningful innovation. Through this striking finding, we learn that ICTs do not significantly impact SMEs’ innovative performance. One possible explanation is that the knowledge in a cluster might be saturated because “everyone knows what everyone knows” (Gilsing et al., 2008). Chesbrough (2003) already highlighted that firms with a too narrow (internal) focus are inclined to miss a number of opportunities because many interesting ones are likely to fall outside its scope. This result also underlines Schmitz & Nadvi’s (1999) assertion that being located in a cluster will not automatically generate innovative outcomes.

Furthermore, our research confirms the findings in the study by Tambunan (2005) that many clustered SMEs in Indonesia do not obtain the optimal benefits of being in the cluster, since they rarely take advantage of opportunities to share knowledge and cooperate with other firms in the cluster. In fact, Sato (2000) stated that clustered SMEs in Indonesia have limited inter-firm specialization in terms of their working processes and no joint action in marketing, production, distribution, and technological development, so the benefits of being in a cluster were limited. Regarding the scarcity of joint initiatives, two of the interviewees had a similar spontaneous response.

‘Most firms in the cluster are producers, and they tend to keep the important information for themselves.’

Thirdly, our study confirms that ECTs are a preferable source of innovation when SMEs are seeking new ideas and information. Our findings provide support for the arguments of Laursen and Salter (2006) that firms

need to involve external actors and sources to help them increase and sustain their innovative performance. In this era, many firms successfully enhance innovation through commercializing knowledge and expertise from various external sources (Chesbrough, 2003). This suggests that firms that are embedded in a local cluster should also actively search for new knowledge outside their cluster.

Interestingly, Klevorick et al. (1995) found that firms in turbulent industries have a stronger tendency to search for more critical resources from their external ties. Complementing their study, we show that it is also important for SMEs in low-tech industries in developing countries to augment their ECTs. Such ties (ECTs) not only bring new insights to a firm, but also enable it to think outside the box, such that the firm is able to adopt new technologies faster than would otherwise be possible. Lagging behind in terms of information on new trends, markets, products, and processes will eventually decrease the ability of an SME to effectively respond to changes in its environment. In today's changing and competitive market place, every firm needs to continually upgrade its processes and products in order to stay in business and escape from commodity-based price competition (Scott & Bruce, 1994).

To summarize the main findings of this study: proactiveness, risk-taking, and external links are the key factors explaining the innovativeness of SMEs in a developing country. A key message of our study is, thus, a call for SMEs to open up to inter-organizational networks that go beyond the confines of the region. Committing resources to nurturing these networks, and increasing the diversity of a firm's knowledge intake, can be vital for successful innovative outcomes.

3.6 Limitations and future direction

Our study is not without limitations, but also throws open opportunities for future research. First, the data we used, although original and derived from field research, is cross-sectional. This has prevented us from examining the effect of changes over time in firm behavior on innovative performance. Collecting longitudinal data in the emerging economy context is particularly challenging, given the lack of governmental level initiatives to this end.

Second, we examined innovative performance using the number of new products introduced (Katila & Ahuja, 2002). It would be interesting to differentiate between radical vs. incremental innovation and examine how different configurations of EO and network characteristics affect these, especially in the context of a more technologically advanced industry. We checked the other data about innovative performance, such as radical innovation and patents. It looks like the data is there, but unfortunately only 4 of the 120 firms showed signs of radical innovation, which is not sufficient for us to do further analysis. The number is not suitable for analysis, because it is too low to generate meaningful findings.

Third, in this study we used a single industry, footwear manufacturing. This may limit the generalizability of the results to other industries. Nevertheless, the lessons drawn from this study may be relevant for similarly low tech but creative industries that constitute a major share of manufacturing in most developing countries.

Fourth, it was beyond the scope of this study to account for the heterogeneity of a firm's network of ICTs and ECTs, encompassing suppliers, distributors, government agencies, research centers, financial institutions, and universities. Study about heterogeneity networks might be interesting for the future study, but this is beyond the scope of the current

paper, because it raises more issue related to portfolio diversity which are theoretically and fundamentally different concepts.

CHAPTER 4

EXTRA-CLUSTER TIES, ENTREPRENEURIAL ORIENTATION, AND INNOVATIVE PERFORMANCE: THE MEDIATING ROLE OF AMBIDEXTERITY

4.1 Introduction

Rapid technological change, demanding customers, and growing competition have made innovation indispensable for firm success in the modern era (Lisboa, Skarmeas, & Lages, 2011; Menguc & Auh, 2010). As globalization constantly reconfigures demand in the marketplace, today's firms are faced with the challenge of improving the quality of their existing product lines and of anticipating technological change and shifts in consumer preferences so as to launch improved and new products in a timely fashion. In order to achieve these twin goals of short term success and long term survival, a growing body of literature has highlighted the need for organizations to become ambidextrous (Atuahene-Gima, 2005; Raisch, Birkinshaw, Probst, & Tushman, 2009; Simsek, 2009).

Tushman and O'Reilly (1996) illustrate the importance of ambidexterity by highlighting the success story of Seiko Watch Corporation. In the mid 1960s, Seiko, which was then one of the leading watch firms in the world, took the bold experiment of launching a quartz watch which ensured more precise time compared to mechanical watches. Seiko

gradually transformed itself into a producer of both mechanical and quartz watches, while most Swiss watch companies chose instead to continue investing in the mechanical watch. The gamble by Seiko, and other Japanese watch companies that followed Seiko's lead, paid off as they continued to prosper, whereas many Swiss companies went bankrupt. Seiko went on to introduce many innovative watches, such as the first professional diver's watch (1975), the first thermo-electric watch (1998), and the first EDP watch with a matrix system (2010).

This story indicates the importance of building both short- and long-term competencies. The failure of a firm to detect environmental change may lead to a failure to adapt and adjust the strategy in time and engender the firm's decline (Walrave et al., 2011). Rapid technological progress and changing business environments can render existing competencies obsolete. The global business landscape is increasingly dynamic and competitive in it, business performance depends on a firm's ability to change and innovate, as well as generate healthy returns on investment (Walrave et al., 2011). While firms should focus on their core competences to sustain their current income streams, they should also "open up new windows on emerging opportunities." Sustained performance is rooted in simultaneously managing short-term efficiency and pursuing long-term innovation (Smith & Tushman, 2005). These two competencies are intertwined: the long-term success of an organization depends on its ability to exploit existing capabilities and vice versa (Raisch et al., 2009). From a theoretical point of view, the simultaneous pursuit of exploration and exploitation can be regarded as the root of the dynamic capabilities view, which stresses sustained innovation (Ancona, Goodman, Lawrence, & Tushman, 2001).

Prior studies have examined how the trade-offs between exploration and exploitation, in particular their balancing, impacts firms' performance.

(Cao et al., 2009) investigated the construct of a balance in the degree of ambidexterity (equal levels of exploitation and exploration) and combined ambidexterity (interaction between exploitation and exploration), and both provide a synergetic impact on firm performance. Similarly He and Wong (2004) found that imbalance between exploitation and exploration has a negative effect on sales growth. By juxtaposing internal exploitation and explorative inter-organization ties, Russo & Vurro (2010) confirmed that their combination improves a firm's innovative performance. On the other hand, Uotila et al (2009) highlighted the optimal result of exploration and exploitation depends on firms' environmental conditions. They found that the balance of exploitation and exploration provides a higher impact under conditions of high industry technological dynamism.

Based on those perspective, we define ambidexterity (the two opposite goals) as a firm's dynamic capabilities in terms of exploiting current offerings (short-term success) and exploring new ones (long-term success) (Walrave et al., 2011). However, little is known about the factors that contribute to the realization of an ambidextrous strategy, which is a particularly pertinent topic in the context of small and medium-sized firms with limited resources. In this study, we posit two factors that are critical to this: network ties and entrepreneurial orientation (EO). Schildt, Maula, and Keil (2005) suggest that to complement their resources, ambidextrous firms seek partners that can enhance their learning and technologies. An extensive body of literature has highlighted how SMEs can potentially access many resources for knowledge, financing, legitimacy, and market power (Eisenhardt & Schoonhoven, 1996) and thereby compensate for their own limited resources. This inevitably entails tapping into their inter-organizational networks (Hewitt-Dundas, 2006). Network ties in this study are based on external ties that extend beyond the cluster in which a firm is

operating (extra-cluster ties, ECTs). However, a firm's strategy for engaging in ambidextrous activities also requires support from beyond its existing boundaries, because otherwise it would take such a long time for the firm to collect all the required knowledge, skills, and technologies (Walrave et al., 2011). ECTs are an important mechanism for SMEs to access the heterogeneous resources vital for knowledge recombination and sustaining competitive advantage (Wales et al., 2011). However, we also consider the intra cluster ties (ICTs) as the base where clusters SMEs located.

The success of a company resides in its capability to sense environmental changes and translate these into a portfolio of exploitation and exploration projects (Walrave et al., 2011). Some firms may attempt to adapt to environmental changes through excessive exploitation, thereby falling into the trap of success (myopic tendencies); this prevents them from perceiving changes in their environment and causes them to focus merely on short-term, exploitative opportunities. At the other end of the spectrum is the danger of unsuccessful exploration, whereby firms fail to align with the environmental situation (Walrave et al., 2011). Accordingly, we believe that an additional role that EO can play in ambidextrous firms is to support their ability to scan and monitor the environmental changes (Keh et al., 2007) . An ambidextrous firms needs to be adaptive and dynamic, able to seek opportunity and take risks. A high level of EO helps build a firm's management system, in which the firm's values, beliefs, and principles are geared towards fulfilling the opposite goals of exploitation and exploration (Kollmann & Stöckmann, 2012). In this study, we define EO as the degree to which top managers are inclined to take business-related risks, seek opportunity and adopt a forward-looking perspective in anticipation of future demand (Covin & Slevin, 1991; Dess & Lumpkin, 2005; Miller,

1983). Without EO, firms are often trapped by their routine and tend to focus on the short term, privileging it over the long term and choosing the certainty of success over the risk of failure (Smith & Tushman, 2005).

This study makes several contributions to the literature. First, prior studies on ambidexterity have tended to focus on hi-tech firms (Cao et al., 2009; Fernhaber & Patel, 2012; He & Wong, 2004; Lavie et al., 2011) or large firms (Gibson & Birkinshaw, 2004; Kouropalatis et al., 2012; Wu & Shanley, 2009). Little research has gone into examining the impact of ambidexterity in the context of resource-scarce SMEs in emerging economies. Achieving ambidexterity would arguably be a challenging task for these firms. In this context our study tries to address the following two questions: how do SMEs achieve ambidexterity? And, how important is ambidexterity for their innovative performance? Second, in answering these questions we develop a conceptual framework that integrates ideas from the literatures on ambidexterity, networks, entrepreneurship, geographical cluster, and innovation. These four streams of studies complement each other and provide a comprehensive framework for explaining the questions we address.

4.2 Literature Review and Hypotheses

4.2.1 Overview of Ambidexterity Perspectives

In 1991, March introduced the concept of exploration and exploitation to the management literature. These two concepts involve opposite viewpoints, characteristics, and resources. "The exploitation implies such things as refinement, production, efficiency, selection, implementation; on the other hand, exploration is captured by terms such as search, variation,

risk taking, experimentation, innovation, flexibility, and discovery" (March, 1991). These different activities demand different strategies, structures, processes, capabilities, and attitudes. Exploration may require different organic structures, autonomy, loosely coupled systems, improvisation, and chaos. Exploitation is commonly associated with mechanistic structures, routine, bureaucracy, control, tightly coupled systems, and stable markets. As regards their contribution to an organization, while exploitation, drawing on the proven capabilities of the firm, ensures a stable, short-term revenue stream, exploration may generate higher but varying returns and involve a higher risk of failure (He & Wong, 2004). The contrast between exploitation and exploration are variously highlighted as market leadership via low-cost production versus product differentiation (Porter, 1980); efficiency versus flexibility (Adler, Goldoftas, & Levine, 1999); adaptability versus alignment (Gibson & Birkinshaw, 2004); and flexibility versus rigidity commitment (Kouropalatis et al., 2012).

We draw on these ideas to explain ambidexterity in the SME context as stemming from an awareness about the importance of, and commitment to, current and future competitiveness. This translates into efforts to exploit current offerings, make incremental improvements to maintain short-run competitiveness—and develop new competencies and adaptability by developing new offerings for future competitiveness (Walrave et al., 2011). While the former involves organizational efforts aimed at gradual improvement by utilizing a firm's experiences and practices (exploitation), the latter requires organizational commitment aimed at introducing new products (exploration).

Fulfilling a firm's exploitation and exploration goals require differential capabilities, which make balancing both competencies a serious organizational challenge. Divergent capabilities required for the exploitation

and exploration strategies suggest limited overlap in organizational resources expended on each, resulting in the two strategies competing for a firm's scarce resources (March, 1991). Managing ambidexterity therefore represents a serious organizational challenge. Extant research offers several ways in which organizations can manage ambidexterity. To manage both strategies simultaneously some organizations create dual structures which enable firm to handle these dual goals and activities (Jansen, Tempelaar, Bosch, & Volberda, 2009; O'Reilly & Tushman, 2008): one department focuses on exploitation while the other focuses on exploration—an approach referred to as *structural* ambidexterity. This structure is perceived to ensure that each department maintains and focuses on their core competencies freely. On the other hand, there is a growing recognition of the concept of behavioral ambidexterity, also called contextual ambidexterity. This approach refers to balancing opposing processes and systems within the same department so it is able to work on both exploration and exploitation (Gibson & Birkinshaw, 2004). A third approach proposes *sequential* ambidexterity which involves balancing exploration and exploitation intertemporally (Venkatraman et al. (2007). Here, each activity alternately reinforces the other: the exploitation of existing capabilities is important for the exploration of new capabilities, and the exploration of new capabilities is essential for increasing the existing knowledge base (Katila & Ahuja, 2002). Figure 4.1 illustrates the three approaches.

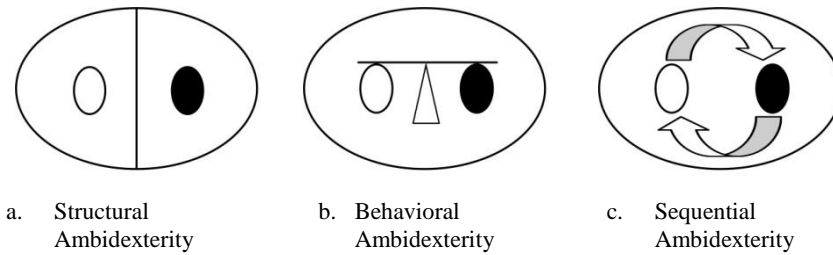


Figure 4.1 Major conceptualizations of ambidexterity

4.2.2 Ambidextrous SMEs

The “entrepreneurial economy” era is characterized by an increasing role played by SMEs (Audretsch & Thurik, 2001). Attention to SMEs has been growing, and with the growing global demand the importance of small firms in the global industrial landscape has been growing (Baptista, Karaöz, & Leitão, 2012) and SMEs have proved pivotal in sustaining and leading growth in several economies. However, SMEs are characterized by a low probability of survival (Bartelsman et al., 2005); given their limited resources they struggle to achieve the minimum efficient scale in their industry (Audretsch, 2002; Baptista et al., 2012; Hewitt-Dundas, 2006). In this context, ability to adapt to environmental demand and pressures is a defining characteristic of a firm’s success. An important question in this regard is: how can an SME with limited resources adapt itself to environmental changes, and become successfully ambidextrous? SMEs need to synergize their exploitation and exploration strategy, in the spirit of March (1991), without having the luxury of specialized organizational structures owing to their limited size and resources. Therefore, ambidexterity in an SME context has to be less structural in nature, with the onus of matching short run and long run success of their companies falling heavily on the owners/managers of companies (behavioral ambidexterity).

However, developing such an ambidextrous strategy has the advantage that improving current competencies and developing future competencies are mutually reinforcing, and as Tushman & O'Reilly (1996) claim, together they result in improved firm performance. Thus, SMEs with an ambidextrous strategy may have better innovative performance than their non-ambidextrous counterparts. Hence, we formulate the following hypothesis:

***Hypothesis 4.1:** Ambidexterity has a positive effect on the innovative performance of SMEs.*

4.2.3 Ambidextrous SMEs and ECTs/ICTs

Given that exploration and exploitation require fundamentally different strategies and logic, their joint implementation releases tensions that are not easily reconciled (Tushman & O'Reilly, 1996). In fact, if the two activities are not well managed performance may deteriorate (He & Wong, 2004), irrespective of whether the firm is an SME or otherwise. However, unlike SMEs, larger firms can afford to invest in capabilities for pursuing the two strategies simultaneously, such as establishing separate subunits that independently pursue exploitation and exploration strategies. Such investments are clearly impractical for SMEs, particularly those in emerging economies where capital and labor markets are underdeveloped. Nevertheless, while the SMEs are constrained by limited capital and labour, they can rely on useful of external knowledge (Desouza & Awazu, 2006). SMEs can potentially access these externally available knowledge elements, and compensate for their own limited resources, by tapping into their inter-organizational networks (Hewitt-Dundas, 2006). In fact knowledge resources that firms have access to are recognized as a fundamental source

of organizational ambidexterity (Russo & Vurro, 2010). Networks enable firms to access new and heterogeneous information at a fast pace, and gain referrals (Gulati, 1999). An extensive body of literature has highlighted that resources gained through a firm's inter-firm network enhances its performance. For emerging economy firms, inter-firm network represents a particularly important intangible asset that help these firms stay ahead of their competitors, bringing in critical resources.

As in most developing economies, firms learn efficiently from local and proximate sources (Schildt et al., 2005) because they facilitate sharing of resources and market wisdom; reduce supply and distribution costs through a smooth coordination of logistical efforts; and minimize partner opportunism (Sheng et al., 2011). The social networks literature stresses the role of localized clusters in fostering cooperation and trust among SMEs within a cluster, thereby effecting the smooth exchange of information among parties (Audretsch, 2002; Havnes & Senneseth, 2001; Karaev et al., 2007). When SMEs are embedded in a cluster, they can obtain local resources, knowledge, and technology through their intra-cluster ties (ICTs) (Park et al., 2010). Proximity also creates a similarity in business logic and cognitive frameworks, so that firms are likely to share the same views of knowledge, markets, and technologies (Schildt et al., 2005). Given these shared knowledge attributes and similar goals, these ties can enhance a firm's knowledge exploitation strategies, such as through the fine-tuning of existing products. For long term success, however, it is not sufficient for SMEs to simply rely on their ICTs (Giuliani and Bell, (2005). This is because, over time, firms in a cluster tend to exchange increasingly redundant information, such that marginal gains from additional interactions with other firms in the cluster begin to generate diminishing returns. As a

result, in the long term, such firms may suffer from overembeddedness and become relationally inert (Duysters & Lemmens, 2003; Uzzi, 1997).

Information exchanges within the cluster should therefore be complemented by accessing novel and diverse sources of knowledge outside of a firm's cluster. Openness to external environment beyond the boundaries of their cluster is especially important for firms that are lagging in technology (Bell & Albu, 1999). While such extra-cluster ties (ECTs) help firms gain novel and heterogeneous information—a crucial ingredient for knowledge exploration (Ahuja & Lampert, 2001)—the experience with different organizational settings, norms, and practices they entail can also enhance a firm's ambidexterity. Therefore we suggest that SMEs that undertake more ECTs relative to ICTs are more likely to pursue a successful ambidextrous strategy:

***Hypothesis 4.2:** SMEs with more ECTs relative to ICTs are more ambidextrous than those with fewer network ties.*

4.2.4 Ambidextrous Firms and EO

The entrepreneurial capabilities of SMEs may have a direct bearing on them achieving ambidexterity, given that the responsibility for achieving knowledge exploration and exploitation rests with same individuals in an SME, as noted before. A firm's entrepreneurial orientation reflects its organizational processes, methods and decision making-style (Lumpkin & Dess, 1996; Wiklund & Shepherd, 2005). It is an ongoing process within an organization and it gets ingrained in the organizational culture of the firm (Dess & Lumpkin, 2005). Entrepreneurially oriented firms are characterized as highly proactive in seeking opportunities, anticipating future demand, and in being a first mover (Lumpkin & Dess, 2001). They also tend to have high

risk taking ability in taking bold decisions with regard to resource commitments, especially in uncertain environments (Rauch et al., 2009). Not surprisingly therefore, prior studies have confirmed that EO is key to enhancing the performance of firms in an SME context (Rauch et al., 2009). In this study we define ‘entrepreneurial orientation’, or EO, as the degree to which top managers are inclined to take business-related risks, seek opportunities, and adopt a forward-looking perspective in anticipation of future demand (Covin & Slevin, 1991; Dess & Lumpkin, 2005; Miller, 1983).

However, very little research has gone into understanding EO’s role as a precursor of entrepreneurial decision and of actual entrepreneurial activities (Hornsby, Naffziger, Kuratko, & Montagno, 1993). In this paper we view ambidexterity as an immediate consequence of EO and as a key constituent of entrepreneurial action. Prior literature hints that a firm’s behavioral mechanisms contribute to its ability to perform exploitation and exploration (Gibson & Birkinshaw, 2004; Lumpkin & Dess, 2001). An important reason for this is that a high EO ensures environmental scanning and monitoring (Keh et al., 2007)—ingredients vital for a successful ambidextrous strategy. To be ambidextrous, a firm must be both adaptive and dynamic: they need to proactively enhance the quality of their products and technology to satisfy their existing consumers, while exploring new ideas, products, and technologies in order to seize potential markets. However, without a high EO, it is difficult for firms to be dynamic and adaptive (Dong, Chun Gang, & Hua, 2010). The driving power of EO characteristics such as proactiveness and risk-taking encourage a firm to develop heterogeneity, creativity, and experimentation, allowing it to identify opportunities, make commitments and pull out when required. On the other hand, firms with lower levels of EO may rather “stick to their

knitting” and focus on their core business. Ambidexterity ensures both current and future viability (Levinthal & March, 1993), and EO in alignment with an ambidextrous strategy. We therefore suggest that firms with strong EO are more likely to respond to changes in their environment and emerging opportunities, and are thus more likely to adopt ambidextrous strategies. Thus, we formulate the following hypothesis:

***Hypothesis 4.3:** SMEs with a high level of entrepreneurial orientation are more ambidextrous than those with a low level.*

4.2.5 The Role of Ambidexterity in Mediating the Impact of ECTs/ICTs and EO on Innovation

Despite the large body of (social) network literatures only few studies have investigated the long-term benefits of networks on innovation (Havnes & Senneseth, 2001). There is increasing consensus that networks may have a long-term impact on innovation through providing ambidexterity in organizations. Networks generally provide the ability to acquire external knowledge, financial resources, technical know-how, trade contacts, and reputation legitimacy (Eisenhardt & Schoonhoven, 1996; Wernerfelt, 1984).

On the other side, EO can influence a firm’s decision-making style and practices, strategic formulation, and ongoing processes (Lumpkin & Dess, 1996). Thus, EO can shape the attitude of the firm’s members and therefore the firm’s behavior (Covin & Slevin, 1989; Kollmann & Stöckmann, 2012). When the firm has opposing goals such as exploitation and exploration, then a strong and consistent focus on EO can provide leadership and guidance, (Tushman & O’Reilly, 1996), allowing managers to build solid teams in pursuing opposing strategies. As a firm culture, EO can unify many different resources (Zhou et al., 2005). Strong involvement from all the

members of the organization is indeed important for ambidexterity. These capabilities of EO can be a strong foundation that enables a firm to deploy different resources and strategies advantageously. Following this, we argue that EO can be seen as an antecedent, precondition, and basis for the support of a firm applying exploitation and exploration strategies.

Even though EO research is abundant and developed, the exact role of EO in firm performance is still debated. Some researchers have found that EO has a positive impact on firm performance; others have drawn different conclusions, however. These contradictory results indicate that the relationship between EO and performance may not be a simple direct relationship. Rauch et al. (2009) presume that other factors may influence the relationship between EO and firm performance, and suggest a contingency approach (Rauch et al., 2009). In line with this suggestion, and as outlined above, we contend that EO, alongside ECTs/ICTs, helps a firm achieve ambidexterity, and in turn ambidextrous proficiency contributes to better innovative performance. Therefore, we formulate the following hypothesis:

Hypothesis 4.4: *The positive effect of a firm's EO and ECTs/ICTs on innovative performance is mediated by the firm's ambidexterity.*

4.2.6 Hypothesized Research Model

Figure 4.2 demonstrates the conceptual framework that explicates the relationships proposed in our hypotheses, depicting the role of ECTs/ICTs and EO as the antecedents of ambidexterity in influencing innovative performance.

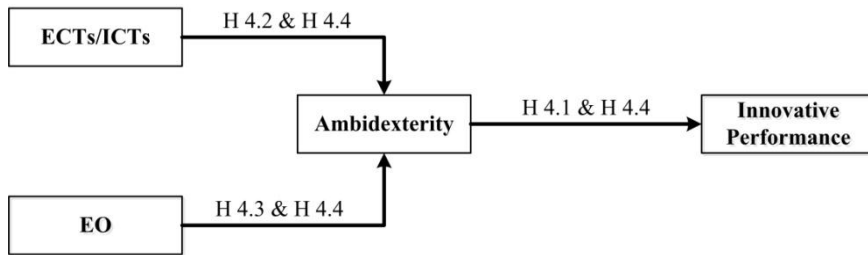


Figure 4.2 The mediating role of ambidexterity on the relationship of ECTs/ICTs and EO on innovative performance

4.3 Research Methods

4.3.1 Sample and Data Collection

While most studies on ambidexterity have been conducted in developed countries, particularly in the context of high-tech industries, this study is carried out in the context of a low-tech manufacturing cluster in an emerging economy. Enriching the stream of ambidexterity studies on SMEs in emerging economy, we conduct this study in the Indonesian footwear industry. Conducting this study in Indonesia is interesting because Indonesian SMEs are considered the engine of the country's economic growth. According to the Central Bureau of Statistics (2009), SMEs in Indonesia have provided employment for 90.9 million workers, who account for 97.1% of the total labor force. There are 51.3 million SMEs in Indonesia, accounting for 99.91% of the total number of business units. These indicate the importance of SMEs in the Indonesian economy. Indonesian manufacturing SMEs operate in a similar context as SMEs in other emerging economies (UNCTAD, 2005). Therefore, lessons learned from the experiences of Indonesian SMEs can be valuable for SMEs in emerging economies. We focus on SMEs in the highly competitive Cibaduyut

footwear cluster; firms in this cluster produce innovative products and vie with each other to get orders from distributors. Innovation is key to survival in this industry, making this a suitable setting for our study (Gunawan, 2011).

We gathered the data through interviews and questionnaires. However, to ensure that all the questions were answered, research assistants guided, asked, and filled the questionnaires based on the information provided by the respondents. This survey method helped us to reduce the missing data in answering the questionnaires. We interviewed 120 owners and managers, each representing a footwear producer in Cibaduyut.

We chose the owner and manager as the respondent of this study because they determine the firm's strategy (Miller & Friesen, 1982). A combination of multistage sampling and snowball sampling were applied to collect the data. We first listed each region, block, and street, and the name of every footwear producer in Cibaduyut. We combined multistage sampling with snowball sampling by asking every footwear producer that we found to refer us to other producers. There are about 800 footwear manufacturers in the Cibaduyut cluster, but actually there is no exact data about these firms and most of them are not registered in the government's industrial department (Gunawan, Jacob, & Duysters, 2013). Our approach helped us find as many footwear firms as possible.

4.3.2 Construction of Variables

4.3.2.1 Innovation

The dependent variable is innovative performance, measuring the number of innovative products produced by the Cibaduyut SMEs. We do not measure innovation by the number of patents, because these SMEs lack

a clear understanding of the importance of patents and have limited experience in applying patents. Thus, we choose to use product innovation to measure the SMEs' innovative performance. New products are an important indicator of innovative performance (Katila & Ahuja, 2002) because they reflect the firm's ability to adapt to changes in markets and technologies (Schoonhoven et al., 1990). Moreover, footwear industry being a highly fashion oriented, creativity driven industry with a short product life cycle, firms must constantly create new designs to maintain their innovative advantage. New products have a significant impact on market share, market value, and firm survival (Banbury & Mitchell, 1995).

For Cibaduyut SMEs, the introduction of innovative products is very important, particularly in order to get orders from distributors. The distributors select innovative products for their catalogs, which are disseminated in many showrooms in Indonesia (Gunawan et al., 2013). To ensure an accurate measurement of product innovation, we carefully explained the concept of innovation to our respondents. Using the OECD (2005) manual we defined innovation as encompassing changes in materials, features, and design, but not changes in color and size. We asked the respondents to indicate the number of innovative products introduced to the market during the preceding year (Stam & Elfring, 2008). This provided us with a continuous variable representing innovation.

4.3.2.2 Ambidexterity

Following He and Wong (2004) and Katila and Ahuja (2002), we measure exploration and exploitation as two different dimensions of learning behavior. We then define ambidexterity, in line with March (1991), as an integrative construct of exploration and exploitation. To measure exploration and exploitation we asked the respondents to indicate on a

Likert scale of 1 to 5 the extent to which given statements represented their position. We measured exploitation via the firm's development of new products and processes through practice and experience, and adjustment of existing products according to changes in consumer demand. To measure exploration, we asked whether the respondents constantly experimented with new products and learning new processes, and whether they regularly allocated funds to support the development of new products and processes (Cao et al., 2009; He & Wong, 2004; Kollmann & Stöckmann, 2012).

As in prior studies (Cao et al., 2009; Lubatkin, Simsek, Ling, & Veiga, 2006) the reliability of these questions turned out to be high. We found a Cronbach alpha of 0.71—a value above 0.7 indicates the reliability of the construct (Field, 2013). We confirmed the internal consistency and composite validity of ambidexterity measure by using CFA and we found 0.81 for the value of average extracted variance for which is above the recommended threshold level of 0.50 and we found 0.94 the composite reliabilities which exceed the 0.70 threshold level for acceptable value (Bagozzi & Yi, 1988).

We then measured ambidexterity by dividing our data into three categories based on high and low values of exploration and exploitation using the “median cut off” criterion (He & Wong, 2004). If a firm has low exploitation and low exploration, we consider it as not being ambidextrous. If exploration is high and exploitation is low, or vice versa, the firm is slightly ambidextrous. If both values are high, we regard the firm as ambidextrous.

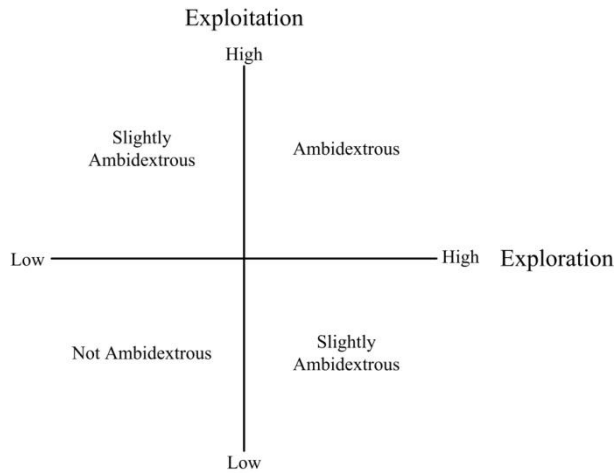


Figure 4.3 Ambidexterity classification

4.3.2.3 Extra-Cluster Ties/ Intra Cluster Ties

We determine the number of a firm's partners based on the number of suppliers, distributors, competitors, customers, universities, research centre, government, industry associations, forum group discussion, financial institutions, law firms, and consultants with which the firm interacts. We clearly distinguish whether the partner is located inside or outside the cluster, and measure ECTs as the number of a firm's partners located outside of its cluster (Giuliani & Bell, 2005). We measure ICTs as the number of partners which are located inside the firm's cluster.

4.3.2.4 Entrepreneurial Orientation

In the literature, EO is commonly characterized in terms of three entrepreneurial traits: proactiveness, innovativeness and risk-taking orientation (Covin & Slevin, 1989, 1991; Miller, 1983). In this study, we focus on two of these dimensions. Given that our dependent variable

measures innovative performance we excluded innovativeness from the characterization of EO. This helps us avoid the, justifiable, criticism that the link between EO and innovative performance is merely tautological (Avlonitis & Salavou, 2007).

To measure proactiveness we asked the respondents to rank, on a Likert scale of 1 to 5, how often their firms initiate actions; find opportunities in changing market conditions; and observe and adopt the best practices that enhance their competitiveness in the market. To measure risk-taking we asked about the firms' preference for high-risk projects; attitude to risk taking when faced with uncertainty; and the extent to which risk taking is ingrained in firm strategy. The correlation among the responses were 0.3 and above, and the Kaiser Meyer-Olkin value was 0.70, further ensuring that the partial correlations among variables exceeded the recommended value of 0.5. The Bartlett's test of Sphericity reached statistical significance, supporting the factorability of the correlation matrix (Pallant, 2011). Next, we employed factor analysis to aggregate the responses to the questions on proactiveness and risk taking into a single measure of EO. We found a Cronbach alpha of 0.80, indicating that this construct is reliable (Field, 2013). To obtain EO unidimensionality, we checked the inter-item correlation for all the scale items by using the confirmatory factor analysis. We found 0.74 for average extracted variance which is above the recommended threshold level of 0.50 and the composite reliabilities is 0.94 which exceed the 0.70 threshold level for acceptable composite reliabilities (Bagozzi & Yi, 1988; Langerak et al., 2004).

4.3.2.5 Control Variables

To account for the variance caused by extraneous factors, we employ a battery of control variables such as the age and education of the respondent and the size of the firm (Kollmann and Stockmann (2012), Jansen et al. (2006), and Lubatkin et al. (2006)). Variations in age may lead to different levels of innovation. While older managers may be more adept at managing the operations and maintaining stable relationships with existing clients, they may be trapped in a system that prevents them from being innovative. As a result, they may avoid developing new ties and seeking opportunities (Wesley & Levinthal, 1990). On the other hand, young managers are less likely to have established routines and may be more open to new ideas, resources, and opportunities.

The education level of the owner/ manager is included in our control variable because managers with more education may be better able to absorb and manage information. They may know how to establish and maintain ties, how to adapt to changing technology, and how to manage with a clear vision. Therefore, different levels of education may influence the innovative performance.

Furthermore, we acknowledge that the size of the firm can also affect innovation. Larger firms may have more skilled employees, be more knowledgeable, and have appropriate technology or the ability to acquire it (Damanpour, 1996). However, they are typically more formalized and their managerial behavior is standardized, and these may hamper innovation (Hitt et al., 1990). In contrast, small organizations are more flexible and may have a greater ability to accept and implement changes despite their limited access to qualified personnel, facilities, and capital resources.

Supporting some of these conjectures, Table 4.2 shows that education is correlated with innovation ($r=0.29$, $p<0.01$); EO is correlated with age

($r=0.18$, $p<0.05$), education ($r=0.27$, $p<0.01$), and firm size ($r=0.43$, $p<0.01$); ECTs/ICTs are correlated with age ($r=0.30$, $p<0.01$) and firm size ($r=0.39$, $p<0.01$); and ambidexterity is correlated with education ($r=0.25$, $p<0.01$) and firm size ($r=0.35$, $p<0.01$). The summary of measurement details are presented in Table 4.1.

Table 4.1 Description of the variables

Variable	Description
Innovative Performance	The number of product innovations a firm has introduced onto the market. (appendix A, no. 19, year 2011)
Entrepreneurial Orientation	We used questions about proactiveness and risk-taking orientation which have been used widely in EO studies (Kreiser et al., 2010; Marino et al., 2002; Rhee et al., 2010). Respondents were asked multiple questions about their firms' proactive orientation: (1) initiative in terms of being the first mover in dealing with competition; (2) tendency to scan, observe, and adopt the best business practices; and (3) looking forward to seek out new opportunities. (appendix A, no.25) Indications of a firm's risk-taking behavior are: (1) a strong preference for high-risk projects (with chances of high return); (2) a willingness to take risks when confronted with uncertainty; and (3) a strategy that indicates a strong tendency to take risks. The questions were designed on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). (appendix A, no.19)
ECTs/ ICTs	ICTs: Indicates the number of your network ties/partners inside your cluster area with: suppliers, distributors, competitors, customers, universities, research centres, government bodies, industry associations, forum group discussions, financial institutions, law firms, and consultants. (appendix A, no. 19) ECTs: Indicates the number of your network ties/partners outside your cluster area with: suppliers, distributors, competitors, customers, universities, research centres, government, industry associations, forum group discussions, financial institutions, law firms, and consultants. (appendix A, no. 19)

Variable	Description
Ambidexte- rity	<p>Using ambidexterity questions from Cao et al. (2009), He and Wong (2004), and Katila and Ahuja (2002) we asked the respondents to indicate their degree of exploitation according to their firm's activities in terms of (1) creating new products and processes through practice and experience and (2) adjusting existing products to meet changes in consumer demand. (appendix A, no. 14)</p> <p>To measure exploration, we asked about the firm's (1) activities in terms of constantly experimenting with new products and learning new processes and (2) concerns with regard to regularly allocating funds to support the development of new products and processes. The questions were designed on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). (appendix A, no. 25)</p>
Age of Owner/ Manager	Age of the owner/manager (in years): (1) Under 30, (2) 31-40, (3) 41-50, (4) Over 50. (appendix A, no. 1)
Education of Owner/ Manager	Education: The level of education of attained by the owner/manager: (1) primary school, (2) junior high school, (3) high school, (4) undergraduate, (5) graduate. (appendix A, no. 2)
Firm Size	Number of employees: (1) Fewer than 5, (2) 5-20, (3) 21-50, (4) 50-100, (5) 100-200. (appendix A, no. 5)

4.4 Data Analysis and Results

4.4.1 Data Analysis

Table 4.2 shows the descriptive statistics: the means, standard deviations, minimum and maximum values, and correlations. We examined the bivariate correlation of the variables and found excellent discriminant

validity. There are no interfactor correlations above 0.65, indicating that there are no multicollinearity problems (Tabachnick & Fidell, 1996).

Given that our dependent variable is continuous we adopted ordinary least square (OLS) regression to test our hypotheses (results from ordered logit model provided similar conclusions). We found that the skewness and kurtosis values were less than 1.5, indicating that the data closely follow normal distribution (George & Mallery, 2011). We also ruled out multicollinearity problems—the tolerance values of the multicollinearity statistics were close to 1, and all the VIF values were less than 3 (Barrow, 2009).

Table 4.2 Means, Standard Deviations, and Correlations^a

Variable	Mean	s.d	Min	Max	1	2	3	4	5	6
1. No. innovations	7.47	2.99	2	16						
2. EO	2.71	0.43	2	3.83	0.35**					
3. ECTs/ICTs	1.7	2.28	0	17	0.41**	0.48**				
4. Ambidexterity	2.12	0.52	1	3	0.36**	0.60**	0.30**			
5. Age of owner/manager	2.49	0.71	<30	>50	0.01	0.18*	0.31**	0.12		
6. Education of owner/manager	2.85	0.53	Junior. High	Bachelor	0.29**	0.27**	0.08	0.25**	-0.18*	
7. Firm size	1.57	0.51	<5	21–50	0.08	0.43**	0.32**	0.35**	0.24**	0.13

^a n=120

*p < 0.05, **p < 0.01, two-tailed tests

4.4.2 Results

Table 4.3 presents the results of our OLS regression analyses. We use model 1 to test **Hypothesis 4.1**, on the impact of ambidexterity on innovation. A positive and significant coefficient ($\beta=0.32$, $p<0.001$) for the ambidexterity variable confirm that the innovative performance of ambidextrous SMEs is higher than that of non ambidextrous SMEs.

Model 5 tests the influence of ECTs/ICTs on ambidexterity. We find a significant coefficient for this variable ($\beta=0.20$, $p<0.05$), confirming **Hypothesis 4.2** *that SMEs with more ECTs relative to ICTs are more ambidextrous than those with fewer network ties*. Model 6 shows that EO indeed has a significant effect on ambidexterity ($\beta=0.53$, $p<0.001$), supporting **Hypothesis 4.3** *SMEs with a high level of entrepreneurial orientation are more ambidextrous than those with a low level*. Finally, table 2 and 3 also indicates the mediating effect of ambidexterity in the relationship between EO and ECTs/ICTs on the one hand and innovative performance on the other. To test the mediating effect, we followed the procedures from Kenny et al. (1998); Muller et al. (2005) and Shaver (2005). A variable might be considered as a mediator regarding to which extent it carries the influence of independent variable to dependent variable. In general, the mediation occurs when the independent variable significantly influences the mediator, (2) without the mediator, the independent variables also significantly affects the dependent variable (3) the mediator has a significantly effect on the dependent variable, and (4) finally the result shows the effect of the independent variables on the dependent variables becomes less after the addition of the mediator to the model. Then, to prove the test, the Sobel test can be performed (MacKinnon, Warsi, & Dwyer, 1995).

Table 4.3 Results of OLS Regression Analysis^a

Variable	Model 1 Innov	Model 2 Innov	Model 3 Innov	Model 4 Innov	Model 5 Ambi	Model 6 Ambi	Model 7 Innov
Controls							
Age of owner/manager	0.02	-0.01	0.01	-0.03	0.03	0.01	-0.03
Education	0.22**	0.27**	0.21*	0.21*	0.20*	0.09	0.19*
Firm size	-0.06	-0.19	-0.08	-0.10	0.25**	0.10	-0.12
Ambidexterity	0.32***						0.21*
ECTs/ICTs		0.23*		0.13 ⁺	0.20*		0.13
EO			0.32***	0.27***		0.53***	0.16
R ²	0.18	0.13	0.17	0.18	0.20	0.38	0.21
Adjusted R ²	0.15	0.10	0.14	0.14	0.17	0.36	0.17
F	6.13***	4.44**	5.83***	5.04***	7.27***	17.7***	5.04***
N	120	120	120	120	120	120	120

^a Standardized coefficients are reported
⁺ p < 0.10, *p < 0.05, **p < 0.01, ***p < 0.001

As a first step we confirm the significant positive impacts of ECTs/ICTs (model 2, $\beta=0.23$, $p<0.05$) and EO (model 3, $\beta=0.32$, $p<0.001$) on innovation. This is also confirmed by model 4, in which the two variables demonstrate their joint impact on innovation. The second step involves ensuring that ECTs/ICTs and EO have a significantly positive impact on ambidexterity—this amounts to validating **Hypothesis 4.2** and **Hypothesis 4.3**, as we have already done above. The final step involves testing the joint effect of ambidexterity, ECTs/ICTs, EO on innovation. Evidence of ambidexterity’s mediating role in the relationship between ECTs/ICTs and EO on innovation is confirmed by the non-significant

coefficients for ECTs/ICTs and EO and a significant coefficient for ambidexterity (Model 7). These results provide strong support for **Hypothesis 4.4**: the positive effect of a firm's EO and ECTs/ICTs on innovative performance is mediated by the firm's ambidexterity. Baron and Kenny (1986) explain that when the impact of the main variables (ICTs/ECTs and EO in our case) on the dependent variables disappears after the mediation variable (ambidexterity) is added, the relationship is fully mediated. Moreover, there is also an improvement in the R^2 from models 1, 2, and 3 (18%, 13%, and 17%) to model 7 (21%). A Sobel test was then conducted to confirm the mediation effect (Baron & Kenny, 1986; MacKinnon et al., 1995). The measurement result of the mediating role of ambidexterity on ECTs/ICTs in relation to innovative performance was 1.95, $p < 0.05$ and the result for the mediating role of ambidexterity on EO in relation to innovative performance was 3.37, $p < 0.05$. Assuming that we set our alpha at .05, technically, we would not reject the null hypothesis of no mediation for both tests.

4.5 Discussion

The results of this study answer several relevant questions pertaining to the link between ambidexterity and innovative performance in SMEs. First, how do SMEs achieve ambidexterity? Going by conventional thinking, it is not easy for SMEs to be ambidextrous, because doing so calls for them to possess several conflicting resources and capabilities. Ambidexterity requires efficiency, learning by doing, experimentation, commitment to risky investments, satisfying existing customers, and pursuing potential customers. Therefore, some researchers suggest that, in order to get these competencies, firms need to accumulate vast amounts of resources and

expertise (March, 1991). In this sense, larger firms are more likely to be ambidextrous (Kouropalatis et al., 2012). Aided by their resource abundance, large firms can establish separate departments for exploitation and exploration. Even so, as Tushman and O'Reilly (1996) show, few firms can successfully manage these activities simultaneously because the disparate strategies, structures, and logic involved create tensions that are difficult to reconcile. Not surprisingly, therefore, the failure to manage ambidexterity well has been shown to exert a negative impact on performance (He & Wong, 2004). However, departing from much of the existing literature, we studied ambidexterity in the context of SMEs and dispelled any doubts about the ability of SMEs in emerging economies to succeed in being ambidextrous.

We found that the ECTs/ICTs and EO of the SMEs compensated for their resource scarcity and acted as key driving forces of their success. SMEs, by definition, have limited resources in terms of capital, human resources, and up-to-date knowledge. Their network ties provide important resources, such as ideas and referrals. They also, particularly those spanning beyond the cluster in which an SME is based (i.e., ECTs), can allow SMEs to overcome the limitations of their small size. For the successful pursuit of ambidexterity, access to more resources is desirable (Cao et al., 2009). New ideas, technologies, knowledge, materials, and processes can be applied for exploitative and explorative strategies. Partnering through ECTs is therefore a major strategic resource, much more valuable than ties within the firm's cluster (Sato, 2000). Regarding this finding, most of the managers and owners interviewed had similar comments. To quote a couple:

'In any kind of business, the network is important because it can provide you with more Information and knowledge about many things. However, learning from advanced firms is really important; they can give you the

pattern of success. Learning by doing and learning by guidance are good ways to improve innovation.'

There were also five of them with a slightly different response. As one of the latter group said:

'We can do this if a firm is already relatively settled in terms of sales, human resources, and finance. When a firm is still struggling to survive from day-to-day, then the implementation of this ideal concept is too good to be true.'

We also highlighted the importance of EO for ambidextrous SMEs. EO influences the attitudes of a company's employees (Covin & Slevin, 1989; Kollmann & Stöckmann, 2012). It also provides the commitment that allows a firm to achieve the opposing goals of exploitation and exploration. Thus, the characteristics of EO, such as proactiveness and risk-taking, help firms achieve ambidexterity. Proactiveness is important because it basically drives firms to increase their competencies by experimenting with new things and seeking new opportunities when faced with changes in the environment. On the other side, risk-taking makes the implementation of ambidexterity possible. Without it, it is difficult for firms to execute decisions which must be carried out under high uncertainty. EO is therefore important for pursuing ambidexterity and could be seen as a firm's basis for executing exploitation and exploration activities. Clearly, this study indicates that a high level of EO increases a firm's ability to become ambidextrous. We emphasize that entrepreneurial firms have a strong tendency to achieve a sustainable competitive advantage and a more future-oriented perspective. Regarding this view, most of the managers and owners agreed. Another, reflecting the general view of interviewees, put it more directly:

'You should not become an entrepreneur if you are not willing to take a risk and you do not want to anticipate future competition.'

To sum up, networks provide knowledge, financial resources, technical know-how, trade contacts, and reputation legitimacy (Eisenhardt & Schoonhoven, 1996; Wernerfelt, 1984), while EO provides a desirable organizational foundation and circumstances that ensure the appropriate combination and recombination of firms' resources for achieving ambidexterity and enhanced performance (Kollmann & Stöckmann, 2012). In brief, we see both network ties and EO as being essential in aiding SMEs in overcoming their resource constraints and becoming ambidextrous. A second question under consideration was: how important is ambidexterity for innovative performance? We found that ambidexterity helps SMEs transform their resources into dynamic capabilities, thereby boosting innovative performance. We asked the managers and owners being interviewed to on how ambidexterity applied to their business life. One of them said:

'Normally shoe trends only last for a few years. So, thinking about the next product is very important in this industry. For example, materials such as leather may be in short supply or become expensive in the future. Firms should therefore be prepared for how to deal with future competition.'

Besides that, some of the owners and managers in Cibaduyut emphasized the importance of access to resources:

'To win the competition, you need more resources and capabilities, because they will give you more power to be successful in this industry. This is a good base for doing exploration and exploitation, because you have the know-how and the courage and motivation to innovate.'

In particular, our findings indicate that an SME's performance outcome is not the direct result of its standalone resources, but rather results from how those resources get combined to create an ambidextrous organization.

4.6 Contributions

4.6.1 Theoretical Implications

Most studies of ambidexterity have investigated large high-tech firms in developed countries (Cao et al., 2009; Fernhaber & Patel, 2012; Gibson & Birkinshaw, 2004; He & Wong, 2004; Kouropalatis et al., 2012; Lavie et al., 2011; Wu & Shanley, 2009). Differently, we tried to empirically and theoretically enrich the stream of literature on ambidexterity in the context of SMEs in an emerging economy. We found that SMEs in emerging economies can be ambidextrous and successful innovators by getting a number of things right. In this era of fast technological change, small size is not the biggest constraint for achieving competitive advantage. In fact, some studies have found that small firms are more innovative than large firms (Graves & Langowitz, 1993; Huang, Yu, & Seetoo, 2012; Plehn & Dujowich, 2013).

We also tried to explain how SMEs become ambidextrous through the simultaneous management of exploitation and exploration. By identifying the mechanisms behind SMEs become ambidextrous; this study theoretically and empirically contributes to several scholarly areas. We contribute to cluster and network theory (Giuliani & Bell, 2005; Gulati, 1999), entrepreneurship literature on EO, organizational behavior theory (Covin & Slevin, 1989, 1991; Dess & Lumpkin, 2005), the recent theorizing on ambidextrous firms (Gibson & Birkinshaw, 2004; He & Wong, 2004; March, 1991; Tushman & O'Reilly, 1996), and innovation literature. This study aims to enrich the previous ambidexterity and innovation literature by providing a view on how SMEs in a developing country pursue ambidexterity and innovation.

In our study, we found that ECTs/ICTs and EO are the drivers of successful ambidextrous SMEs in Cibaduyut, Indonesia. ECTs/ICTs compensate for the SMEs' lack of resources since networks provide access to further networks and resources (Gulati, 1999; Gunawan et al., 2013). In line with our findings, Kreiser et al. (2013) emphasize that heterogeneous capabilities are necessary for successful innovation. We also found EO makes it possible to achieve the goals of exploitation and exploration simultaneously (Kollmann & Stöckmann, 2012). To pursue an ambidextrous strategy, firms need to confront and overcome their natural inertia in terms of existing structural and socio psychological tendencies. Entrepreneurial supports might enable firms to pursue innovation, despite inertial tendencies and forces for consistency, as well as enable the coexistence of inconsistent agendas (Smith & Tushman, 2005)

Simultaneously, this study also answers the question of the effect of EO on innovation, which has been widely debated by researchers (Kollmann & Stöckmann, 2012; Kreiser et al., 2013). A decreasing impact of EO can be considered as a signal that the EO should be converted into an appropriate action such as ambidexterity. We have also found that high innovative performance is achieved when a firm nurtures ECTs/ICTs and EO and transforms the resources thus obtained into ambidextrous activities. This approach gives better results than ECTs/ICTs, EO, or ambidexterity individually.

4.6.2 Practical Implications

We suggest that the findings of this study can provide meaningful insights for the owners and managers of SMEs. Since they are the ones who make the decisions regarding organizational form, culture, and resource

allocation that are necessary to overcome inertia and engage in both exploring and exploiting, their ability to understand a situation, seek information, and make decisions will influence how firms embrace the tension and contradictions (Smith & Tushman, 2005). The managers and owners should be able to manage the conflict and see the different strategies in synergy, because the knowledge and routines from existing production processes can help firms launch new products. Despite the fact that learning opportunities might be widely available, management must decide on which exploitation and/or exploration opportunities to actively invest in (Walrave et al., 2011). One way to do this is for firms to utilize their network ties to regularly collect information about changing customer demands, emerging technologies, and other fluctuations in the market and competitive environment (Walrave et al., 2011).

Furthermore, one of the ways forward for SMEs in pursuing these paradoxical strategies is to create a system that adopts punctuated exploration and exploitation activities. The owner and manager need to create the right balance of exploitation–exploration that aligns with the market and competitive environment (Walrave et al., 2011).

A careful scheduling of activities will allow managers to pursue exploitation and exploration projects. For example, the manager could devote specific time periods to routine exploitation activities and other time periods to creative exploration activities. With this system, firms can create a series of innovations to cover short- and long-term competitive advantages. Flexibility and commitment are essential in such a system. The owner and manager do not have to choose strictly between flexibility or commitment; rather, they need an adaptable strategy that can be deployed at the suitable time (Kouropalatis et al., 2012). The success of ambidexterity, therefore, resides to a large extent in the managerial capability to sense environmental

changes and translate these into a portfolio of exploitation and exploration projects (Walrave et al., 2011). Of course this is not an easy job; it requires strong managerial art, knowledge and skills. The owner and manager also need to develop an understanding of long- term perspectives in developing and updating their firm's common values and culture for organizing exploitation and exploration strategies in an effort to enhance sustainable innovation. Moreover, to synchronize the plan and the action in the field, employees should be empowered and given authority. Then, knowledgeable and responsible employees are essential for the success of ambidexterity.

We have found that innovative performance is highest when firms nurture ECTs/ICTs and EO through ambidextrous activities. We therefore suggest that firms expand their external ties by attending conferences, arranging business meetings, joining industry associations, and compiling databases of contacts (Stam & Elfring, 2008) or connecting to gatekeepers (Kirkels & Duysters, 2010). SMEs can also increase their EO through education, training, and organizational intervention (Krueger, 2006).

4.6.3 Limitations and Future Directions

The findings of this study open up the black box of ambidexterity in SMEs context. It provides a much clearer picture for SMEs who aim to adopt an ambidextrous strategy. This study also provides us with a better understanding about the mechanism of how ECTs/ICTs and EO influence ambidexterity. Also we learned how the SMEs might manage ambidextrous activities. What we have now can be a basis for further study on ambidextrous SMEs. Future research may reaffirm our current theorizing and empirical results and broaden its implications by exploring several industry sectors. This would enhance the generalizability of the study.

In this study, we have used the number of innovations as our measure. We collected data on radical innovation and found that only few SMEs have carried out this particular type of innovations. Then, we decided to use the number of innovations because it represents the firm's adaptability to changes in markets and technologies (Schoonhoven et al., 1990).

Another limitation of this study is the measurement of ambidexterity. The design based on the Likert scale may have captured limited dimensions of exploitation and exploration (He & Wong, 2004). Future research could add to more refined measurements. Also, because of the limitations of our data, we cannot compare the results over several periods. Such a comparison would allow us to see the consistency of the results. Therefore, future research should consider the use of longitudinal data.

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CHAPTER 5

DISCUSSION AND CONCLUSIONS

5.1 Introduction

Given that business competition is characterized by rapid changes in demand and technology, many entrepreneurs, policymakers, and academicians emphasize the importance of innovation. A reliance on existing products is simply not sufficient for meeting evolving market conditions. Especially nowadays, product and business model life cycles are becoming ever shorter due to tight competition and constant technological change (Langerak et al., 2004; Pérez-Luño et al., 2011). Life-cycle theory states that every product proceeds through an introduction, growth, maturity, and decline phase. Business survival, therefore, is predicated on constantly evolving and producing new products, and innovation is undoubtedly a crucial element in that.

SMEs in developing countries must also operate in this changing competitive environment. And they face a particular set of difficulties in remaining competitive or even competing in their domestic markets (ESCAP, 2009). These firms are forced to respond to this situation by offering either lower prices or product differentiation. If they apply a low-price strategy, they will suffer shrinking profits and struggle with smaller budgets for developing future competencies, frustrating their efforts to satisfy changing customer demand. Moreover, research suggests that a low-

price strategy is more desirable for large firms, due to their economic scale, while SMEs do better adopting a differentiation or innovation strategy (Mesquita & Lazzarini, 2008). Their simple decision-making structure, flexibility, and strong customer relationships enable SMEs to react faster to changes in the environment and be innovative. Many studies therefore emphasize the significance of innovation for SMEs (Acs & Audretsch, 1987; Lasagni, 2012).

Despite the growing interest in SMEs as a topic of study, the actual process behind how such firms pursue innovative performance remains unclear (Hoffman, Parejo, Bessant, & Perren, 1998). We believe it is essential to study the mechanisms that enhance and support innovation in SMEs. To that end, we decided to examine the following question: *What are the fundamental factors influencing SME innovative performance and what mechanisms are at work?*

In this chapter, we present the answers to our research question, along with our findings on the hypotheses tested. Then, we draw conclusions as to whether or not we reached our research objectives, based on the three empirical studies we conducted to theoretically and empirically examine the fundamental factors and underlying mechanisms that increase innovativeness in SMEs. We will also address the limitations of our study and provide suggestions for future studies.

5.2 Study 1: Discussion and Conclusion

In this study, we examined the effect of EO on innovative performance and how it relates to “basic absorptive capacity” (BACAP) and “extended absorptive capacity” (EXCAP) in strengthening SME innovativeness. Since studies have shown that EO performance is not uniform, we decided in this first study to study it in the context of a developing country.

Researchers believe that the process for cultivating innovation is embedded in EO, because it is accompanied by a strong organizational commitment that is manifested in organizational processes, decision-making styles, practices and methods (Lumpkin & Dess, 1996; Wiklund & Shepherd, 2005). EO is perceived to improve innovation because it drives organizations to seek opportunities, anticipate future changes, engage in high-risk projects in support of new ideas, experiment, adopt creative processes for creating new products, and devise creative solutions. Furthermore, some studies claim that EO improves a firm's overall performance (Covin & Miles, 1999; Covin & Slevin, 1991; Lumpkin & Dess, 1996; Wiklund & Shepherd, 2005). Other studies, however, have stated that EO does not always boost performance, because its efficacy depends on the environment (Covin & Slevin, 1989; Tang et al., 2008; Walter et al., 2006). These discrepancies in the findings left us in an ambiguous state with regard to what the influence of EO on the innovativeness of SMEs operating in a developing country might be.

In that context, we found a curvilinear pattern (U-shaped) for the influence of EO on innovation. This finding has two potential implications. The first is that firms will benefit from EO when they are prepared to compensate for the learning process. The initial learning costs associated with shifting from low to moderate levels of EO generally cause SMEs to experience negative returns on innovation, but they will start achieving positive returns as they attain higher levels of EO. The second implication is that, as suggested in prior studies, it can take an extended period of time to understand the processes, structures, and behaviors of EO, and thus implementing and benefiting from it is a long-term process (Wiklund, 1999).

Another aspect to consider is that SMEs will need some essential ingredients, such as new competencies, knowledge, and ideas, in adopting

an innovation strategy. Though many such firms have limited capital and human resources, they can leverage outside resources and overcome such obstacles with knowledge (Desouza & Awazu, 2006). Access to external knowledge is an important alternative for SMEs pursuing innovation. While external knowledge is abundant, it is not necessarily ready-to-use: firms must still be able to recognize, assimilate, and utilize such knowledge for commercial ends (Cohen & Levinthal, 1990). This requires both BACAP and EXCAP, which help companies value, understand, acquire, and assimilate new and existing knowledge and ideas and transform them into new products or processes. Accordingly, we argue that BACAP and EXCAP strengthen the impact of EO on innovative performance.

Our results showed that BACAP and EXCAP had an intensifying effect on EO, and that with this interaction, EO had a greater impact on the ultimate success of innovative performance than any other factor individually. High levels of EXCAP and BACAP work well together with high levels of EO. BACAP allows firms to better understand critical processes and select appropriate sources and knowledge, and EXCAP allows firms to engage with external knowledge more effectively. The findings of this study confirm two things. First, the interaction of EO with high BACAP and EXCAP has a higher effect on SME innovativeness. A higher level of EO and higher levels of BACAP and EXCAP help firms create more value by synergizing their internal capabilities and external resources. Second, it is difficult to access and maximize external knowledge with EXCAP alone, without support from EO and BACAP.

5.3 Study 2: Discussion and Conclusion

With regard to the importance of knowledge as part of an innovation strategy, Nooteboom (1994) highlighted that one of the ways for SMEs to

overcome their business obstacles is through network ties. While SMEs have certain limitations in generating knowledge by themselves, they can access outside knowledge through their network. Thus, the role of network ties is highly relevant for knowledge enhancement and innovation. Some studies show that network ties contribute significantly to innovative performance by facilitating and transferring knowledge as a source of novel ideas (Leiponen & Helfat, 2010; Rogers, 2004; Zeng et al., 2010). Furthermore, studies on developing countries have highlighted network ties as growing in importance in terms of promoting innovation (Jacob & Meister, 2005; Kaminski, de Oliveira, & Lopes, 2008). The variety of knowledge that can be acquired through network ties is considered a critical success factor for innovation. Innovative firms constantly seeking information from diverse resources (Leiponen & Helfat, 2010). In fact, many SMEs in developing countries are part of a cluster (Sandee, 1995) and connected to information flows through both intra-cluster ties (ICTs) and extra-cluster ties (ECTs). Both types of ties are crucial for SME innovativeness: ICTs provide specific types of knowledge, cooperation, collective learning, and knowledge sharing, while ECTs provide more new and heterogeneous knowledge that has not been developed well in the cluster (Andersson et al., 2002; Belderbos et al., 2011; Walter et al., 2006).

In reviewing the literature, however, we found very little research on how EO behavior relates to internal and external cluster ties in the efforts to enhance innovation. We theorized that the traits of EO – proactiveness and risk-taking – could also play a role in generating innovative gains through ICTs and ECTs. Proactiveness corresponds to a firm’s ability to stay ahead of its competitors in anticipating future changes, while a risk-taking orientation denotes a firm’s willingness to become involved in and make risky investments. These traits are also involved in

finding and collaborating with new ties, which is a risky decision since there is no guaranty that the collaboration will benefit both sides.

We integrated the theories related to geographical clusters that emphasize the importance of ICTs and ECTs with the literature on EO that stresses the role of an organization's entrepreneurial culture for success. Surprisingly, the results of our study showed that ICTs did not positively impact innovative performance. We did not find evidence for the importance of proactive behavior in utilizing ICTs to acquire knowledge and information for innovative performance. We did find, however, that proactive behavior was an antecedent in establishing ECTs.

This phenomenon can be explained by the fact that market trends and technologies change rapidly and continuously, and intra-cluster knowledge flows may not keep pace with those changes. Proactive SMEs prefer to find knowledge through their ECTs, since the knowledge within their cluster might be saturated and homogeneous— “everyone knows what everyone knows” (Gilsing et al., 2008). We also found that risk-taking negatively moderates the effect of ICT on innovative performance but it is required to spur the implementation of heterogeneous ideas, knowledge, and other resources from ECTs into innovative performance. Since the knowledge from ICTs is more homogeneous and can be redundant, innovative SMEs are less interested in those network ties.

Study 2 has several implications for SMEs in developing countries: 1) ECTs are important sources for SMEs to access heterogeneous resources and information, which are essential elements for innovation; 2) proactiveness and risk-taking are fundamental behaviors for establishing and utilizing ECTs; and 3) too much proximity can be a dark side of ICTs, in their inability to generate meaningful innovation.

5.4 Study 3: Discussion and Conclusion

Innovation brings firms not only benefits, but also challenges in terms of managerial proficiency. Pursuing innovation involves identifying and utilizing the ideas, tools, and opportunities for creating new or enhanced products (Andriopoulos & Lewis, 2010). To achieve sustainable competitiveness, firms must be able to build on their present innovation competencies and extend these into the future by exploiting existing competencies and exploring new opportunities. By doing both at once, firms enjoy stable revenue from their exploitative strategy, while securing future revenue from their explorative strategy (He & Wong, 2004). That is, firms earn cash from their existing products or routine activities and can then use the revenue from daily activities to fund the development of new products and capabilities. In turn, the returns on those new products will become the next routine cash flow. That is why it is widely acknowledged that exploitation and exploration are both necessary capabilities for successful innovation development (Tushman & O'Reilly, 1996). A firm that is capable of building both competencies is considered an ambidextrous firm.

Given the importance of ambidexterity for sustainable innovation, we argue that, besides large firms, small and medium enterprises (SMEs) also need to be ambidextrous. This proposition needed to be theoretically and empirically investigated, however, because we discovered that little is currently known about the impact of ambidexterity on SME innovativeness in emerging markets. The perspectives above lead us to incorporate the ambidexterity study with EO and ECTs/ICTs. We posit ECTs relative to ICTs, because we expect the role of ECTs is more vital to innovative performance, nevertheless the base where clustered SMEs located and their given interaction with ICTs are also weighted.

We realize that it is not easy for SMEs to be ambidextrous, since it requires using several opposing resources and capabilities at once, such as efficiency, learning by doing, experimentation, and satisfying existing customers, while simultaneously pursuing the demand of potential customers. Thus, an SME needs an appropriate recourse and strategy. ECTs/ICTs can provide the complementary resources needed. They can connect firms to broader resources, ideas, and referral networks and help them be ambidextrous.

In addition, the characteristics of EO can influence attitudes among a firm's members (Covin & Slevin, 1989; Kollmann & Stöckmann, 2012). EO can help a firm sustain its commitment to devoting time and resources to exploitation and exploration activities. And because of its distinctive characteristics, EO also serves as a critical precondition to achieving such opposing goals as exploitation and exploration. It takes proactiveness to drive firms to increase their competencies in order to satisfy their existing customers and seek new opportunities in preparation for changes in the environment. Similarly, risk-taking is a requisite skill for pursuing an ambidextrous strategy because of the higher levels of investment required. Thus, EO characteristics are important for ambidextrous firms and could be seen as a basis for conducting exploitation and exploration activities, making EO an antecedent of an ambidextrous strategy in pursuing innovation.

The arguments outlined above are reinforced by our empirical finding that ECTs/ICTs and EO are the antecedents of an ambidextrous strategy. This has three implications. First, theoretically, a firm's ties may provide knowledge, financial resources, technical know-how, trade contracts, and reputation legitimacy (Eisenhardt & Schoonhoven, 1996; Wernerfelt, 1984), but logically, any resources acquired through ECTs/ICTs must be

transformed into exploitation and exploration activities. Second, the commitment to EO must translate into real action, such as said exploitation and exploration activities. This means that the basic values and behaviors that are part of EO must be realized in terms of the next processing stage, such as through ambidextrous activities. Third, ambidextrous SMEs perform better in terms of innovation than other SMEs. This implies that good support and strategies help them to overcome their constraints and perform better.

5.5 Remarks on Final Conclusions

Our study has made a conceptual and empirical contribution to the research on SMEs in developing countries by examining the fundamental factors and mechanisms that increase SME innovative performance. The findings from our three empirical studies have several primary implications. One is that EO is a foundation of innovative activities and benefits are maximized at higher levels of EO. High levels of EO encourage firms to seek a leading position in anticipating changes in market demand, shaping future conditions, daring to capitalize on opportunities, and even setting the rules of the game. High levels of BACAP and EXCAP are also needed, along with EO, to enhance the innovative performance of SMEs by improving their ability to recognize, assimilate, and utilize new knowledge and information and use it for commercial purposes.

Our study also implies that committing too many resources to sharing knowledge within clusters may be counterproductive, since it can lead to the diffusion of redundant knowledge, instead of bringing in new knowledge to the firm. ECTs, then, seem to be a more preferred source for SMEs seeking new ideas, information, and knowledge. Further, this study also shows that ambidexterity helps firms sustain innovation by enabling them to focus on

their core products in order to make money, while also opening up new windows of emerging opportunities. Moreover, we found that EO and ECTs/ICTs are antecedents of ambidexterity in organizations, in that the resources accessed through ECTs/ICTs and the commitment derived from EO can be transformed into appropriate activities, such as exploitation and exploration. Finally, we learned what factors and mechanisms help SMEs in developing countries enhance their innovative performance, through our conceptual and empirical examination and by linking together the streams of research in the areas of EO, absorptive capacity, network ties, and ambidexterity.

5.6 Limitations and Future Research

The findings of this study unlock the black box of SME innovativeness in the context of emerging countries. Whereas this was once a grey area for us, we now have a clear picture showing that SMEs can also successfully adopt several strategies for innovation enhancement. This study also gives us a greater understanding of the mechanisms behind how EO, absorptive capacity, network ties, and ambidexterity influence innovation. The findings can now be used as a basis for future research on SME innovativeness in emerging markets/developing countries. However, no studies are without limitations, and ours has several, as well.

Firstly, due to time and financial constraints, we could not compare results across periods of time. Even though we used established and well-known measurements to develop the constructs, taking the period of time into consideration would help in terms of checking the consistency of the firms and the results. Therefore, future researchers should consider conducting a longitudinal study.

Secondly, we examined innovative performance by using the number of new products introduced to marketplace (Katila & Ahuja, 2002). Although we also collected data on radical innovation in the questionnaire, we found extremely few SMEs engaged in that pursuit. So, we decided to use the number of product innovations as the dependent variable. Product innovation is recognized as a sign of a firm's adaptability in terms of adjusting to changes in the market and in technology (Schoonhoven et al., 1990). It would be interesting in the future, however, to study the innovative indicator by examining process innovation and the degree of novelty of the innovations. Since market competition is increasing, higher levels of innovation are desirable.

Thirdly, in this study we looked at a single industry, footwear manufacturing. This may limit the generalizability of the results. A study with bigger samples from several industries and regions could yield more conclusive findings (Littunen, 2000). Therefore, future research could adopt this study and broaden its implications by increasing the range of the sample population. Similar studies done on diverse industries would allow for wider comparisons and enhance the generalizability of the results. Nevertheless, this study has provided a portrait of SME innovativeness in Indonesia that is reflective of SMEs in other developing country such as Thailand, Vietnam and the Philippines.

Regardless of the clear evidence provided of the value of EO, absorptive capacity, network ties, and ambidexterity as factors for increasing SME innovative performance, this study is just one more step toward understanding the factors and antecedents of innovative performance. Future research may incorporate these concepts, and relate them with other interesting innovation studies.

5.7 Practical Implications

Our study also provides practical insight into the owners and managers of SMEs in emerging markets. External resources are perceived as a source of heterogeneous knowledge, which is a fundamental resource for innovative performance. BACAP and EXCAP can help firms learn to effectively and efficiently value, acquire, assimilate, and implement new knowledge and transform it into new products or processes. We suggest that BACAP and EXCAP should be used together to strengthen the impact of EO in spurring the pace of innovation.

Our findings also reveal the role of EO and ECTs/ICTs as the antecedents of ambidexterity in boosting innovative performance. In terms of practical implementation, EO can be improved by the government, managers, and owners. These parties can provide training to develop soft skills in the area of EO traits. It has been demonstrated that characteristics such as risk-taking and proactiveness can be enhanced through education, training, and organizational intervention (Krueger, 2006). For example, by devoting more time to education and training to improve EO, SMEs could perhaps be able to better utilize opportunities and take more risks, with the appropriate gains. This is important because risk-taking and proactive behaviors without sufficient knowledge can be harmful to a firm. Training about risk management, business plans, and reading opportunities would thus help companies consider risks wisely in their proactive innovation efforts. However, a high level of EO may not significantly raise a firm's innovative performance in the short term. Enhancing innovation takes time and effort, even after the entrepreneurial commitment. This makes it all the more important that SME owners and managers clearly understand the process and the implications of adopting EO.

Since ambidexterity was found to be an important aspect of innovative performance, the managers and owners should consider adopting a system that can support its smooth implementation. They could put good strategic planning in place by devoting time to both routine and exploration activities. Such a system would create room for a series of innovations to cover short-term and long-term competitive advantages. This system would be further bolstered by employing strong management in conjunction with an empowered staff.

In line with our findings, we suggest that an overemphasis on cluster policy is not warranted. It is important to recognize that SMEs do not operate in splendid isolation in a single, stable business environment. In today's competition, knowledge and information from ECTs are critical for the innovativeness of SMEs. As a practical implication, ECTs can be improved through conferences, business meetings, memberships in industry associations, and compiling databases of contacts (Stam & Elfring, 2008) or connecting to gatekeepers (Kirkels & Duysters, 2010). Thus, policymakers and development practitioners, such as government bodies and the World Bank Institute, should endorse policies designed to facilitate an enabling environment for SMEs to enhance their capabilities and networks. Having appropriate policies and strategies in place to support SME innovation is important for national and regional economic development, because SMEs have such a huge potential to leap from the garage to greatness (ESCAP, 2009). Moreover, given the constantly evolving business environment, policymakers and development practitioners should keep evaluating their policies and strategies so that they remain relevant for the particular contexts and situations in which SMEs are operating.

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Appendix A

The Questionnaire Used in the Study

Questionnaire for the research project “The Performance Antecedents of Innovation: A Study of SMEs in a Developing Country”

Name of firm :

Telephone number :

Email address :

Interaction: By this term, we mean telephone and email communications, formal meetings, and informal social gatherings.

Innovation: By this term, we mean product innovation derived through changes in materials, features, or design; thus, we do not consider changes in color or size as representing an innovation.

Please tick (✓) the appropriate box or write your answer in the space provided.

1. Age of the owner/manager (in years)

Under 30

41- 50

31- 40

Over 50

2. Level of education

Graduate Degree

Bachelor’s Degree

Senior High School

Junior High School

Primary School

3. Age of the firm

Less than 5 years

5-10 years

- 11-15 years
- More than 20 years
- 16-20 years

4. Type of ownership
- Sole Proprietorship
 - Corporation
 - Partnership

5. Number of employees
- Fewer than 5
 - 21-50
 - 100-200
 - 5-20
 - 50-100

6. Your previous business experience in the past of 5 years:
- Footwear
 - Non-Footwear

7. Number of employees at each educational level

Primary School	Junior High School	Senior High School	Bachelor's Degree	Graduate Degree
.....

8. Please rate your business's performance compared to your competitors.
 (Values: 1 = very low, 2 = low, 3 = average, 4 = high, 5 = very high)

Year	Growth Rate of Total Sales	Growth Rate of Market Share	Growth Rate of Net Income after Tax	Growth Rate of Exports	Overall Performance
2007					
2008					
2009					
2010					
2011					

9. Please rank from 1- 15 on the following networks (from 1= the most important, to 15 = less important) that your firm gets valuable information, and number the area of the network (could be more than 1 answer)

Network	Rank the network from 1- 15 (1 is the most important and 15 is the last important)	Number of network	
		In cluster area	Outside of cluster area
Suppliers
Competitors		
Customers		
University		
Research Centre		
Government		
Industry Association		
Forum Group Discussion		
Financial institution		
Law firms		
Consultant		
Family		
Friends		
Other.....		

10. Please give sign (✓) to the networks that are related to your business cooperation

Network	The network that you must closely communicate, coordinate, co-operate with	The network that drive new product and process development	With this partner, your firm has stable and reliable cooperation	The network that you closely promote cost savings
Suppliers				
Competitors				
Customers				
University				
Research Centre				
Government				
Industry Association				
Forum Group Discussion				
Financial institution				
Law firms				
Consultant				
Family				
Friends				
Other.....				

11. Please fill the name of firms and type of firms in business chain that you cooperate intensively in the cluster, and give the sign (✓) to the type of network, duration of network, and frequency rate of interaction.

Network	(category of network: supplier, competitor, distributor etc)	Type of network		Duration rate of network				Frequency rate of interaction			
Name of firm		Formal/ Market transaction	Informal/ Free of charge	Less than 1 year	1-5 yrs	6-10 yrs	More than 10 yrs	Rarely (once per year)	Some Times (2-5 times per year)	Often (Every month)	Very often (every week)
										
										
										
										
										
										

12. Please name the footwear producer that you know get information from outside the cluster and footwear producer that always share information in the cluster

Please name the companies (shoe producers) that bring you outside information of the cluster	Please name the companies (shoe producers) that always share information inside
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	
9.	
10.	

13. Please tick sign (✓) whether your company has Hi or Low activities regarding to information utilization from the networks:

Activities	Hi	Low
Taking information from external networks		
Assimilating the information acquired		
Implementing the information to meet customer demand		
Sharing information to intra- cluster networks		

14. Firm's interaction with other firms inside the cluster: please tick (✓) the applicable column.

Firm Interaction within the Cluster	(1) Totally Disagree	(2) Disagree	(3) Slightly Agree	(4) Agree	(5) Fully Agree
Our firm always shares information and knowledge with other firms inside the cluster					
Our firm tends to interact with other firms inside the cluster to accelerate the adoption of new technologies in our firm					
Our firm tends to interact with other firms inside the cluster to learn about new products or processes					
Our firm tends to interact with other firms inside the cluster to meet changes in customer demand					

15. Firm's interaction with firms outside the cluster: please tick (✓) the applicable column.

Firm Interaction outside the Cluster	(1) Totally Disagree	(2) Disagree	(3) Slightly Agree	(4) Agree	(5) Fully Agree
Our firm always shares information and knowledge with other firms outside the cluster					
Our firm tends to interact with other firms outside the cluster to accelerate the adoption of new technologies in our firm					
Our firm tends to interact with other firms outside the cluster to learn about new products or processes					
Our firm tends to interact with other firms outside the cluster to meet changes in customer demand					

Questions about Innovation

16. Please tick (✓) the types of innovation that your firm has developed and/or introduced (more than one answer possible):

- Product Innovation
- Process Innovation
- Marketing Innovation

17. Please tick (✓) the appropriate category for the innovations that your firm has developed and/or introduced (more than one answer possible):

Innovation	Category			
	Step-by-step Changes	Drastic Changes	Change(s) Easy for a Competitor to Imitate (<1 year)	Change(s) Difficult for a Competitor to Imitate (<1 year)
(1) Product				
(2) Process				
(3) Marketing				

18. Type of innovation undertaken by the firm between 2007 and 2011 (more than one answer possible):

- New to the world
- New to the industry
- New for the firm and different from your competitors
- New for the firm but the same as your competitors
- No innovation at all

19. The number of innovated products / services that your firm has introduced into the market between per year:

Year	Number of innovation products
2007
2008
2009
2010
2011

20. Has your firm received any awards or certifications?

- YES (Please specify.....
Level.....)
- NO

21. The number of research and development (R&D) employees:

- None
- 1-5 people
- 6-10 people
- More than 10 people

22. Please tick (✓) the methods you use to acquire knowledge to promote innovation in your business (more than one answer possible):

Method of Knowledge Transfer	(1) Not Very Important	(2) Not Important	(3) Fairly Important	(4) Very Important	(5) Crucial
Articles from magazines, books, and newspapers					
Face-to-face communication with firms within cluster					
Learning by doing (practice and experience)					
Learning from advanced foreign firms					
Internet					
Seminars and training					
Technological expertise					
Other (please specify)					

23. Which of the following types of funding did your firm use for innovation from 2006 to 2010 (more than one answer possible):

- Government

 Own Financial Resources
 Individuals

 Financial Institution
 Research Corporation (Scientific Council)
 Other (please specify).....

24. Please tick (✓) the factors that have hampered your innovation activities.

Factors	(1) Very Insignifi- cant	(2) Insignifi- cant	(3) Fairly Signifi- cant	(4) Signifi- cant	(5) Very Signifi- cant
Imitation by firms located nearby					
Lack of qualified personnel					
Lack of information /familiarity with technologies					
Shortage of financial resources					
Government regulations					
Other (please specify)					

25. Please tick (✓) the applicable dimension of entrepreneurial orientation for your firm.

Dimension of Entrepreneurial Orientation		(1) Strongly Disagree	(2) Disagree	(3) Slightly Agree	(4) Agree	(5) Strongly Agree
INNOVATIVENESS						
IN 1	Our firm is known as one of the innovative firms in the cluster					
IN 2	In the past 5 years, our firm has constantly experimented with new products and					

	processes					
IN 3	Our firm regularly allocates funds toward creating more innovative products and processes					
PROACTIVENESS						
PR 1	In dealing with competition, our firm is often the first to initiate action, to which competitors then respond					
PR 2	In dealing with competition and changing market conditions, our firm continually seeks out new opportunities					
PR 3	Our firm actively observes and adopts the best practices in our sector to enhance our presence in the market					
RISK-TAKING						
RT 1	Our firm has a strong preference for high-risk projects (with chances for a very high return)					
RT 2	Our firm believes taking risks is necessary to achieve the firm's objectives, especially when confronted with making decisions that involve uncertainty					

APPENDIX A

PR 3	Our firm's strategy can be characterized by a strong tendency to take risks					
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Appendix B

Questions for Interview

1. How important is product innovation in the footwear industry?
2. In our study, we found that proactiveness and risk-taking behaviors are important for enhancing innovation in a firm. Do you agree with this finding? And why do you think that is?
3. In our study, we found that developing proactive and risk-taking behaviors takes a certain amount of time and investment, because it entails a learning process and trial and error. However, being consistent in maintaining these behaviors brings firms benefits in the long term. Do you agree with this? And what is your opinion?
4. In our study, we found that education, experience and technical capability were all important in enhancing a firm's innovative performance. Do you agree with this assertion and why?
5. In our study, we found that the interaction between education, experience, and technical capabilities and entrepreneurial orientation may increase a firm's innovative performance. Do you agree with this and why?
6. In our study, we found that capabilities for acquiring, transforming and implementing knowledge may enhance a firm's innovative performance? What do you think about that and why?
7. In our study, we found that the interaction between acquiring, transforming, and implementing knowledge and entrepreneurial orientation enhances a firm's innovative performance? Do you agree with this and why?
8. In our study, we found that a firm's innovative performance is boosted by the interaction of education, experience, and technical capabilities; an ability to acquire, transform, and implement

- knowledge; and an entrepreneurial orientation? Do you agree with this and why?
9. What kinds of efforts has your firm made to increase its entrepreneurial orientation (to be proactive and risk-taking)?
 10. What kinds of efforts has your firm made to improve its ability to acquire, transform and implement knowledge?
 11. In our study, we found that having both comprehensive absorptive capacities and entrepreneurial orientation together was more effective than only having one of them? Do you agree with this finding? And why?
 12. In our study, we found that proactive behavior doesn't lead firms to build intra-cluster ties. Proactive firms tend to develop ties with firms outside the cluster, rather than inside. Do you agree with this and why?
 13. When looking for up-to-date information and knowledge, we found that firms tend to go to partners outside the cluster, rather than inside the cluster. Do you agree?
 14. In our study, we found that risk-taking is necessarily more important for supporting cooperation outside the cluster than it is inside the cluster? Do you agree with this? And why do you think that is?
 15. What is your opinion of the kind of information and knowledge spread within the cluster? Is this information already known and similar to previous knowledge?
 16. What kinds of efforts has your firm made to improve collaboration with firms outside the cluster?
 17. What are the firm's barriers to building cooperation with firms outside the cluster?
 18. In our study, we found that ambidexterity (the ability to exploit existing products while exploring new ones) was important for enhancing a firm's sustainability in terms of both short- and long-term survival. Do you agree with this? Why do you think that is?

19. In our study, we found that a firm's ability to interact with more external ties assisted it in becoming ambidextrous. Do you agree with this and what is your opinion?
20. In our study, we found that improved entrepreneurial orientation affected a firm's ability to become ambidextrous. Do you agree with this and what is your opinion?
21. In our study, we found that the support from external ties and entrepreneurial orientation can enhance a firm's ability to become ambidextrous? Do you agree with this finding and why?
22. What kinds of efforts has your firm made to improve exploration and exploitation competencies?

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Samenvatting

Dit proefschrift bespreekt de bevorderende omstandigheden van productinnovatie bij het midden en klein bedrijf (MKB's). Ten einde de productinnovatie van MKB's te kunnen bespreken en verbeteren, zijn drie empirische studies uitgevoerd. De effecten van diverse variabelen met betrekking tot het verbeteren van productinnovatie, zoals entrepreneur orientatie, basic absorptievermogen, uitgebreide absorptievermogen, externe netwerken, interne netwerken en innovatie veelzijdigheid (gelijktijdig bezig zijn met exploitatie en exploratie).

De eerste studie behandelt het effect van entrepreneur oriëntatie en absorptievermogen op de productinnovatie van een bedrijf. Gebruik makend van gegevens van 120 kleine en middelgrote bedrijven, afkomstig uit de cluster van schoenenproductie in Cibaduyut, Indonesië, hebben wij het effect van entrepreneur orientatie (EO) op productinnovatie onderzocht en hoe dit zich verhoudt tot "basaal absorptievermogen" (BACAP) en "uitgebreide absorptievermogen" (EXCAP) wat betreft de versterkende werking op de innovatie van MKB's. Bij MKB's in ontwikkelingslanden vonden wij een U-vorm relatie met betrekking tot de invloed van EO op innovatie. De onderzoeksresultaten tonen aan dat BACAP en EXCAP een versterkende werking hebben op EO, en dat EO met deze interactie een groter effect had op het uiteindelijke succes van productinnovatie dan andere op zichzelf staande factoren. Deze bevindingen impliceren de volgende twee zaken: 1) bedrijven zullen van EO profiteren als zij bereid zijn de leerkosten te investeren. Initieel leveren leerkosten die gepaard gaan met de omslag van een laag naar gemiddeld niveau van EO veelal een

negatief rendement op met EO bij MKB's, maar zij zullen positieve resultaten boeken naarmate ze een hoger niveau van EO bereiken. 2) De interactie van EO met een hoge BACAP en EXCAP heeft een synergetisch effect op het innovatievermogen van MKB's.

De tweede studie combineert twee onderzoeklijnen met verschillende resultaten over de rol van twee sleutelementen: wij onderzochten de effectiviteit van kennisacquisitie door interne netwerken (ICT's), externe netwerken (ECT's) en entrepreneur oriëntatie in het vormgeven van de productinnovatie van bedrijven. Verrassend genoeg toonden de resultaten van ons onderzoek dat ICT's geen positief effect hebben op productinnovatie. Geen bewijs werd gevonden voor het belang van pro-actief gedrag bij het inzetten van ICT's om kennis en informatie te verwerven voor productinnovatie. Wat wij echter wel ontdekten is dat pro-actief gedrag vooraf gaat aan de totstandkoming van ECT's. Verder namen wij waar dat het nemen van risico's het effect van ICT op productinnovatie vermindert, maar dat het tevens een vereiste is om de implementatie van heterogene ideeën, kennis, en andere middelen van ECT's naar productinnovatie, aan te wakkeren. Deze studie onderstreept diverse implicaties voor MKB's in ontwikkelingslanden: 1) ECT's zijn belangrijk voor MKB's als leveranciers van heterogene middelen, 2) pro-activiteit en het nemen van risico's zijn fundamenteel om ECT's te vestigen en in gebruik te nemen; en 3) als ICT's te dicht bij elkaar staan kan dit een negatief effect hebben, omdat dit betekenisvolle innovatie in de weg staat.

In de derde studie verbeteren wij de bestaande literatuur over innovatie veelzijdigheid door EO en ECT's/ITC's daarin op te nemen. Om duurzaam concurrentievermogen te kunnen bereiken, moeten bedrijven in staat zijn voort te bouwen op hun huidige innovatieve vaardigheden, en deze uit te breiden naar de toekomst door bestaande competenties te benutten en

nieuwe mogelijkheden te onderzoeken, waardoor een vorm van innovatie veelzijdigheid wordt gecreëerd. Wij beseffen dat het voor MKB's niet eenvoudig is om innovatie veelzijdig te zijn, aangezien dit vereist dat verschillende tegenstrijdige middelen en mogelijkheden tegelijkertijd ingezet worden, zoals efficiëntie, "leren door te doen", experimenteren en het tevreden stellen van bestaande klanten, terwijl gelijktijdig aan de eisen van toekomstige klanten moet worden voldaan. ECT's/ICT's kunnen echter voorzien in de benodigde aanvullende middelen. EO kan een bedrijf helpen bij de permanente investering in tijd en middelen voor exploitatie en exploratie activiteiten. Onze bevindingen betekenen twee dingen: 1) In theorie kan een bedrijf kennis verkrijgen via netwerken, maar alle middelen die verworven zijn door ECT's moeten worden getransformeerd in exploitatie en exploratieactiviteiten. 2) De inzet voor EO moet zich vertalen naar concrete acties, zoals exploitatie en exploratieactiviteiten.

Onze studie heeft een conceptuele en empirische bijdrage geleverd aan de studie van MKB's in ontwikkelingslanden, door de fundamentele factoren en mechanismen te onderzoeken die de productinnovatie van MKB's bevorderen. Ten slotte hebben wij ontdekt welke factoren en mechanismen MKB's in ontwikkelingslanden helpen hun productinnovatie te verbeteren, door ons conceptueel en empirisch onderzoek en door de onderzoekslijnen in het gebied van EO te combineren: absorptievermogen, netwerken en innovatie veelzijdigheid.

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Curriculum Vitae

Theresia Gunawan was born in Tarutung, Indonesia on the 10th of August 1978. She attended high school in SMA Negeri 1 Tarutung (1993-1996) in Tarutung, Indonesia. For her bachelor's degree, she studied in Business Administration, Parahyangan Catholic University (UNPAR), Bandung, Indonesia. She successfully completed her bachelor degree (2000), and was rewarded cum-laude a Bachelor of Business Administration. After finishing her bachelor degree, she has been working in UNPAR as a lecturer in Business Administration Department. From 2004-2006 she became the head of Center for Business Studies (CEBIS) and involved in various research projects, consultancies, trainings and community developments programs. In 2005, she joined as a researcher under OXFAM-Great Britain Community Development. She then joined the master's program in UNPAR and earned the Master of Management degree in 2005. From 2007-2008, she was appointed as a Vice Dean of Organizational and Financial Affairs.

In December 2008, she received a scholarship from Japan-Indonesia Presidential Scholarship to pursue Ph.D degree in The Netherland. She completed her Ph.D course work in 2009 and in the same year she joined Executive Education Program for Women's Entrepreneurship Promotion which is supported by Maastricht School of Management. She earned Master of Philosophy in Maastricht

School of Management (2011) after successfully defending her Ph.D proposal. She then join Eindhoven University of Technology in Department of Industrial Engineering & Innovation Sciences (IE&IS) to complete the remainder of her Ph.D program. During the Ph.D research, she was awarded the On-Going DIKTI's research fund (2012) from Indonesian government. Theresia's reserach interests include small and medium entreprises, innovation, geographical cluster, entrepreneurship and ambidextrous firms of which the results are presented in this dissertation.

During her study, she presented her papers in many international conferences and one of her papers has been presented at the Conference for the Academy of Innovation and Entrepreneurship (AIE 2013), in Oxford University, United Kingdom and was nominated for the best paper award.

Publications

Gunawan, T., Duysters, G., & Jacob, J. (2015). *Network ties and entrepreneurial orientation: innovative performance of SMEs in a developing country.* (Published in the domain *International Entrepreneurship Management Journal*)

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