



Network Ties, Knowledge Absorptive Capacity, Entrepreneur Orientations and
Innovation: Evidence from New Firms in Thai Agricultural Industry

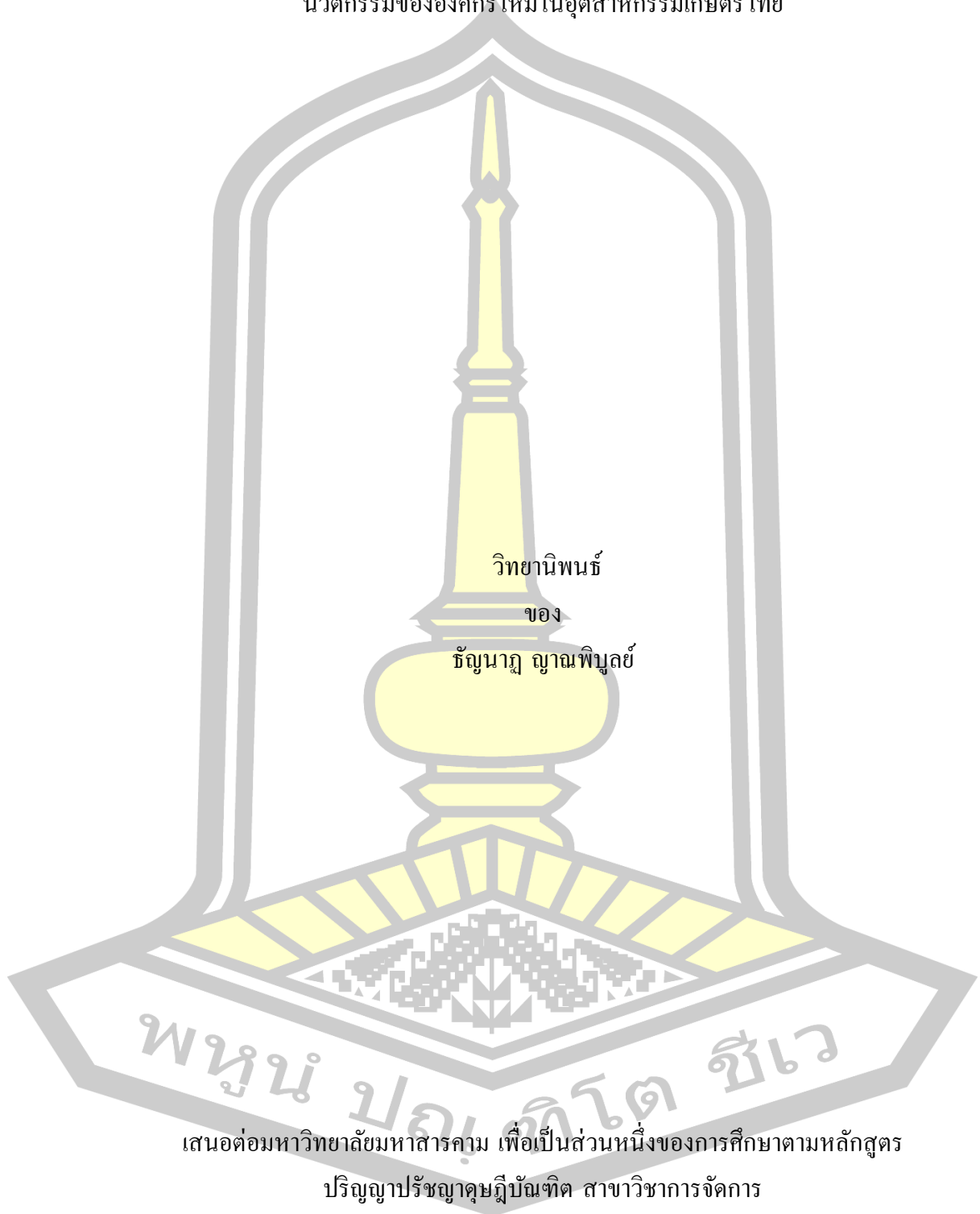
Tanyanart Yanpiboon

A Thesis Submitted in Partial Fulfillment of Requirements for
degree of Doctor of Philosophy in Management

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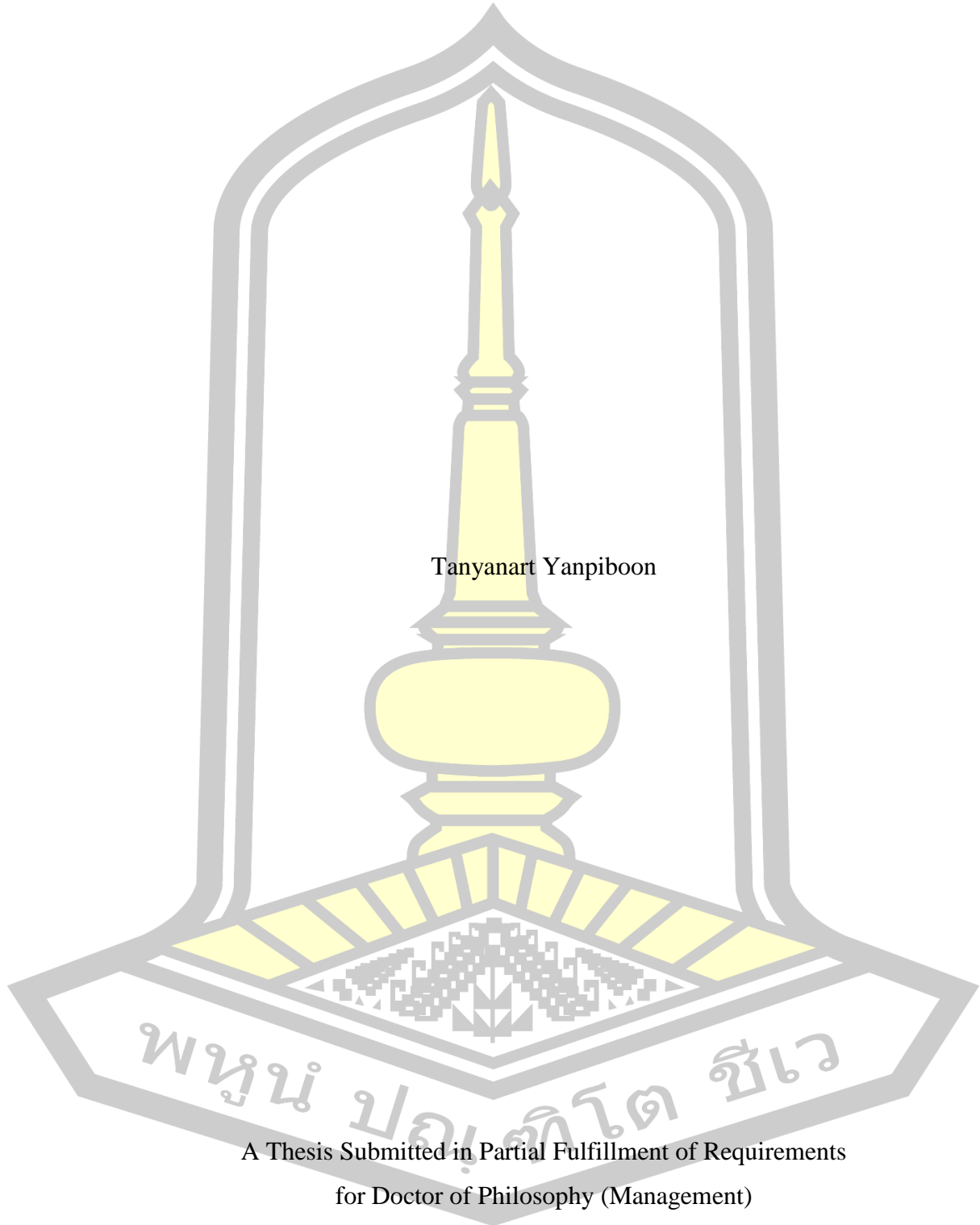
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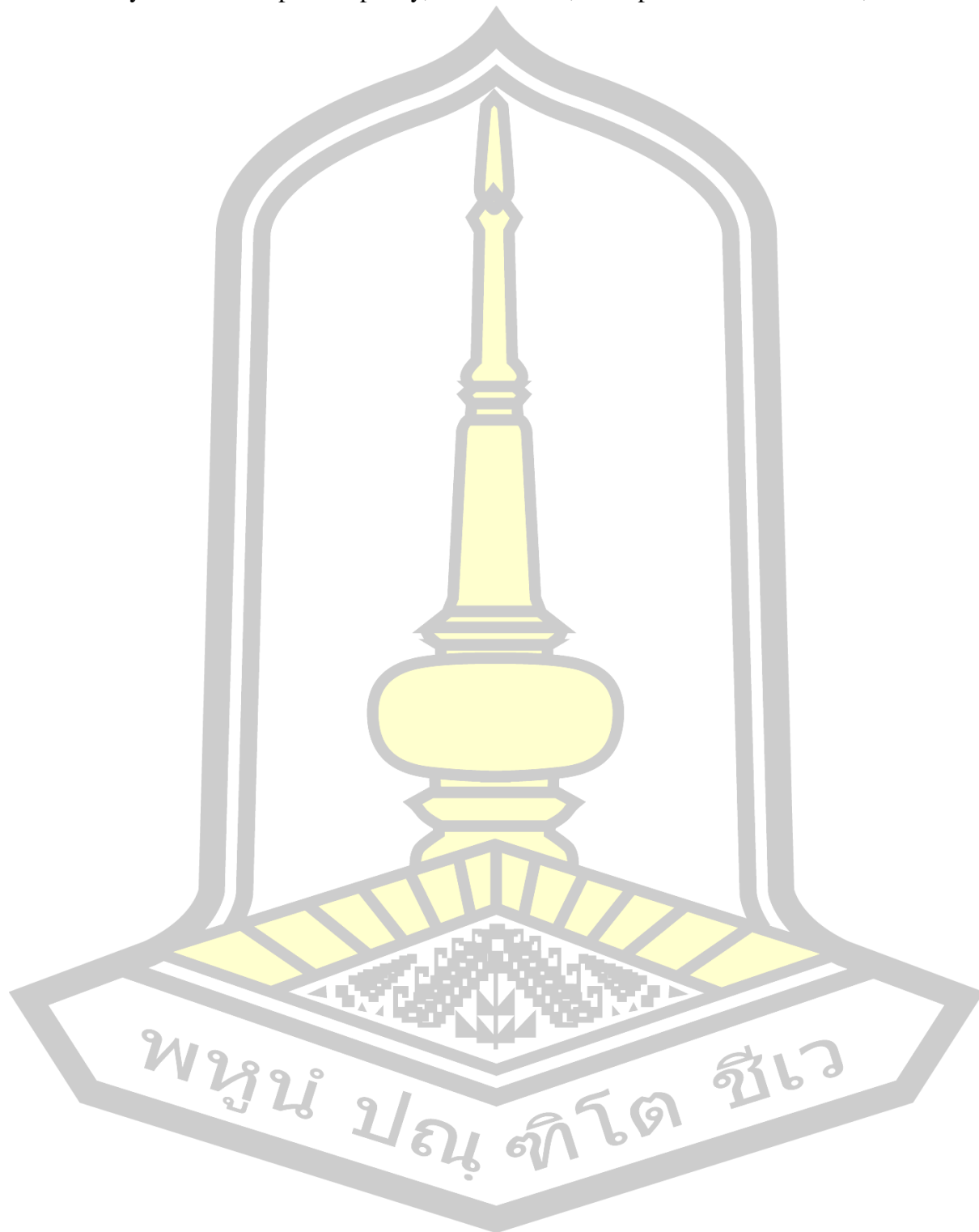
ABSTRACT

The purpose of this research is to investigate the mediating effects of knowledge absorptive capacity (ACAP) (i.e., potential and realized) in the relationship between network ties and innovation as well as the moderating effects of entrepreneurial orientation (E.O.) in the relationship between the two components of ACAP and innovation. Among these constructs are investigated in new firms in the Thai agricultural industry. To understand the phenomenon in the real-world context, this research used case study research based on 6 selected cases together with a survey research. A survey questionnaire was then distributed to 188 new firms in Thai agricultural industry. To analyze the data, structural equation modeling and hierarchical regression were employed to assess construct validity and test the stated hypotheses.

Case study research provides evidence for confirming the conceptual framework in the context of study. The empirical results show that the two components of ACAP (potential and realized) play different roles. Particularly, potential ACAP plays significantly a critical role not only to innovation, but also a mediator between network ties and innovation. Moreover, the relationship between potential ACAP and innovation can be strengthened when EO plays a moderating role. Realized ACAP is positively related to innovation but not significant. This reflects the low level of prior-related knowledge of the new firms that need times to accumulate their knowledge to enhance their innovation for applying the commercial end.

This research contributes to the literature of network ties, ACAP and innovation. Particularly, ACAP is a black box in the relationship between network ties and innovation by emphasizing a critical role of potential ACAP for new firms. In addition, EO can trigger potential ACAP and innovation. Accordingly, new firms from Thai agricultural industry pay attention to external knowledge by building a relationship with external sources (e.g., partners, customers, government) to achieve their desired innovation as the country moves toward Thailand 4.0.

Keyword : Absorptive capacity, Network ties, Entrepreneurial orientation, Innovation



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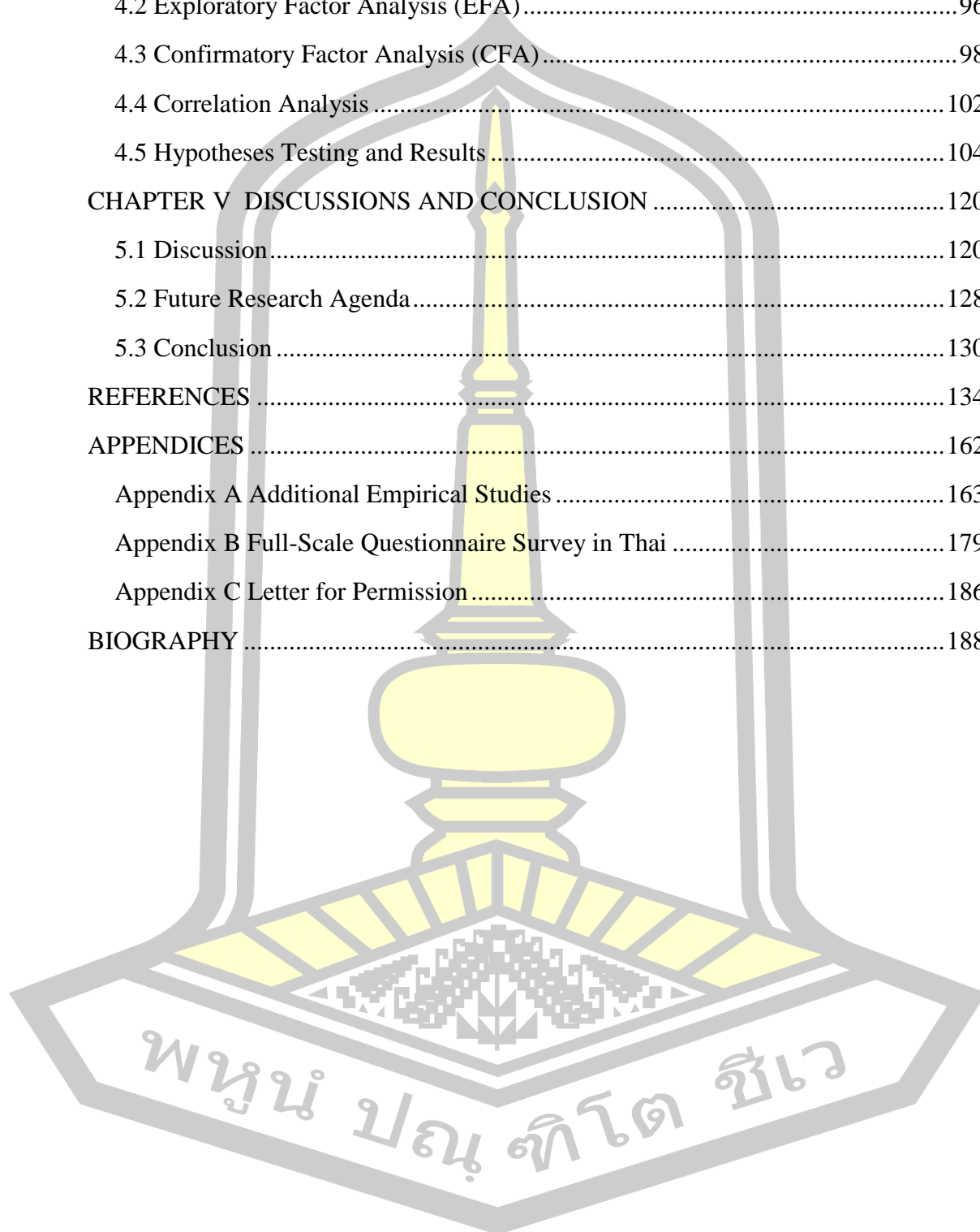
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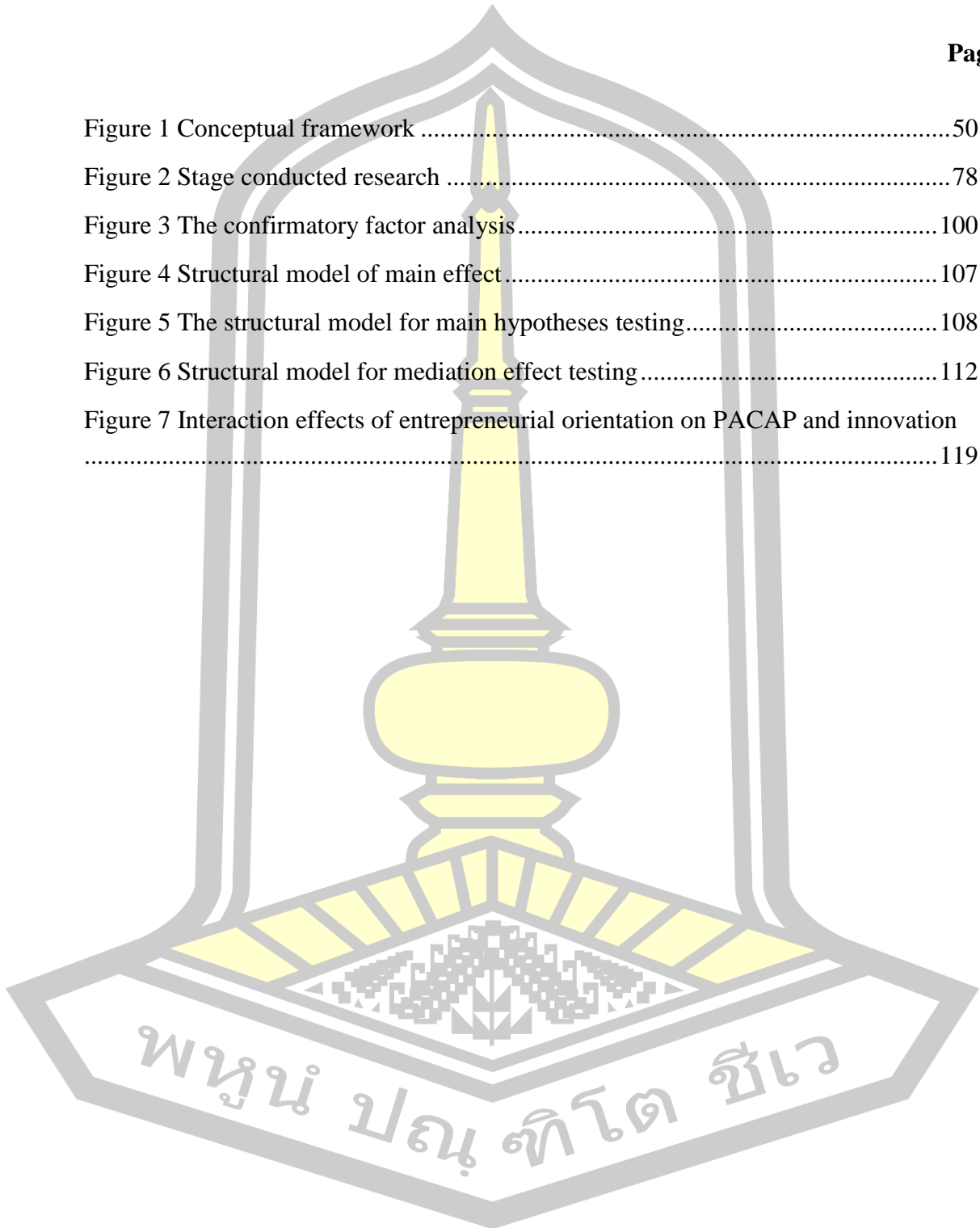


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CHAPTER I

INTRODUCTION

1.1 Background and Rationale of this Research

New firms are significant to development and economic growth because they enter a market for the first time and contribute new products (Hormiga, Batista-Canino, & Sánchez-Medina, 2011). Previous studies suggested that creating a new company is associated with national indicators of economic development and growth, prevalence of informality, ease of access to finance, and regulatory environment (Ardagna & Lusardi, 2010; Klapper, Amit, & Mauro, 2010). New products are vital to firms' existence in the currently rapidly changing business environment (Danneels, 2002) which new firms rely on innovation, especially in competition with established firms in the market (Almeida, Dokko, & Rosenkopf, 2003).

Innovation is increasingly being considered as one of the key factors in driving firms to succeed in the competition (Baker & Sinkula, 2002) because when firms possess the capacity to innovate, they can respond to environmental challenges faster and better than firms that are not innovative (Brown & Eisenhardt, 1995; Love & Roper, 2015; Miles, Snow, Meyer, & Coleman, 1978). Such firms have a propensity to manifest increasing of market value, profitability, and survival by creating new products (Czarnitzki & Kraft, 2004; Geroski, Machin, & Reenen, 1993). These firms tend to face low competition at the first introduction of products into the market (Roberts, 1999).

Innovation is the mechanism in which firms create, integrate, recombine, and shed resources to develop and introduce new products, processes, or services to the marketplace (Grillitsch, Martin, & Srholec, 2017; Rosenbusch, Brinckmann, & Bausch, 2011). It is also the firms' ability to create, manage, and maintain knowledge (Cohen & Levinthal, 1990; Smith, Collins, & Clark, 2005). Innovation emerges by combining and recombining knowledge elements (Kimble & Wang, 2013; Schumpeter, 1934; Weitzman, 1998). It also involves linking the ideas and knowledge that were not previously linked or combining ideas and knowledge previously

connected in the newness of the process (Kogut & Zander, 1992; Nahapiet & Ghoshal, 2000). A key factor for innovation is knowledge, which it is widely acknowledged (Spender & Grant, 1996; Thornhill, 2006) as ; namely, knowledge is at the essential factor of in creating and maintaining a competitive advantage (Grant, 2016; McEvily & Chakravarthy, 2002).

To achieve innovation, most firms develop considerable knowledge, but there are only a few firms that have all the inputs needed for a successful and ongoing development (Almeida et al., 2003). Particularly, the new firms may be find it difficult to access it inputs because they suffer problems, whether it is newness, smallness, lack of important internal resources, and lack of the ability to make the firm successful, (Hite & Hesterly, 2001) and or also, the lack of knowledge used for innovation. Few firms possess all input factors to bring success, continuity, and development (Almeida et al., 2003). For this reason, to achieve innovation, firms often attempt to fulfill their lack of knowledge by looking for external knowledge sources, which means firms cannot rely solely on internal knowledge development. Hence, firms need networks, which are external knowledge sources, to absorb crucial knowledge.

Several empirical studies on network perspective indicated that networks confirm which different partner types engender new knowledge combinations of innovation (e.g. Laursen, Masciarelli, & Prencipe, 2012). A network tie is a combination of amount of time, emotional intensity, intimacy (mutual confiding), and reciprocal services (Granovetter, 1983). In promoting innovation, an interorganization of ties plays an important role, and currently, it is widely recognized (Proprius, 2002; Stejskal, Meričková, & Prokop, 2016). New companies are unlikely to grow because small companies do not create effective working relationships with others such as suppliers and customers who are sources of knowledge and information that may enhance new ideas, exchange opportunities, and access to resources (Baum, Calabrese, & Silverman, 2000; Chen, Lin, & Chang, 2009; Schutjens & Stam, 2003). The key factor in network building is to strengthen the ties among members, and these ties not only support knowledge sharing but also circulate information in the network (Inkpen & Tsang, 2005;Thorelli, 1986; Vanhaverbeke, Gilsing, Beerkens, & Beerkens, 2009). However, it is generally accepted that important knowledge cannot

be easily obtained from external sources. Hence, which will help to create the need to creating internal knowledge is necessary (Nonaka, 1994). Specific organizational routines and processes that refer to absorptive capacity (hereafter ACAP) are needed to achieve innovation. In other words, the network complements ACAP with the potential to overcome the resource constraints and disadvantages of the organization in enhancing the firms' innovation (Kotabe, Jiang, & Murray, 2017).

Cohen and Levinthal (1990) stated that the ACAP of a firm allows it to recognize, absorb, and utilize outside sources of knowledge. Similarly, Zahra and George (2002) presented the conceptualization of ACAP as a dynamic capability pertaining to knowledge creation and utilization that facilitate a firm's ability to gain and sustain a competitive advantage. When an organization aims to focus on developing innovation, these capabilities are a fundamental task (e.g., Camisón & Villar-López, 2014; Xie, Zou, & Qi, 2018).

To enhance utilization of the knowledge for innovation, in literature on entrepreneurial orientation (hereafter EO), previous empirical studies indicate that scholars have explored the effect of EO, and they found that it relates to performance (e.g., Anderson & Eshima, 2013, Engelen, Kube, Schmidt, & Flatten, 2014; Kreiser, Marino, Kuratko, & Weaver, 2013). EO can be a key indicator of how firms organize and increase the performance of benefits through their knowledge-based resources. Firms focus on the utilization of these knowledge-based resources to discover and exploit opportunities (Wiklund & Shepherd, 2003). Thus, EO can explain some management processes that help firms orient and lead to the competition because EO encourages the operations of firms according to signals, starting from the internal and external environments (Lumpkin & Dess, 1996; Sciascia, D'oria, Bruni, & Larrañeta, 2014).

Table 1 Growth rates of new firms classified by business in 2017

Sector	Trade	Service	Manufacturing	Agricultural
Growth Rate (%)	6.92	12.82	3.27	16.62

Source: OSMEP, 2017

In Thailand, the number of new firms has increased, especially in the agricultural sector which is presented in Table 1 (The Office of SMEs Promotion : OSMEP, 2017). Simultaneously, the agricultural industry occupies the largest sector of the Thai gross domestic product (GDP) for 2016 at 8.3%, which makes agriculture an important industry for the Thai economy. In addition, one of the world's major agricultural producers and exporters, Thai agricultural exports accounted for 18% of total exports. Recently, the Thai government has been urged to adjust as the country moves toward Thailand 4.0. Thailand is moving toward an innovation-driven economy, under the Thailand 4.0 policy; one of the government policies especially drives change to the country's traditional farming. Thailand's exports of agricultural products mainly include rice, rubber, cassava, and granulated sugar. Most of Thai agricultural products are primary products or raw material. These products do not add value as intermediate and late products; moreover, they lack variety that affects the real income of agricultural producers (Ministry of Industry, 2016). Increasing new entrants in this group is likely to generate seriously high revenue; however, new entrants in Thailand lack knowledge and understanding, have no globally international business negotiation skills, and have no realization of the rapidly changing world situations amidst modern business management (OSMEP, 2017). New firms in the agricultural sector need be supported so they would become the main force to drive the agricultural sector in the future; furthermore, supporting these new firms is a way to help Thailand become a high-income country.

Therefore, this research aims to study how new firms can achieve innovation through working together, network ties, ACAP, and EO and investigate the relationship among them. Moreover, the manufacturing industry is critical in contributing to economic growth, but most studies involved with innovation in this industry have focused on large firms (Terziovski, 2010) Hence, the present research concentrates on the manufacturing industry using the data of small and medium enterprises. To contribute to the context of study, this research also aims to explore new firms in the Thai agricultural manufacturing context and determine whether certain variables can work in this context through a case study. This research explains phenomena of discussion in the previous section, from the lens of new firms in the

Thai agricultural context, a firm's network ties, knowledge ACAP, and EO influence to innovation.

1.2 Problem Statement

This research explains phenomena of discussion in the previous section, from the lens of new firms in Thai agricultural context, a firm's network ties, knowledge ACAP and EO influence to innovation.

First, several empirical studies show that network ties influence innovation because new knowledge is combined by connecting diverse partner types (e.g., Huang, Lai, & Lo, 2012; Laursen et al., 2012). Nonetheless, in the meta-analysis study of Rosenbusch, Brinckmann, and Bausch (2011), the relationship between external knowledge and innovation suggests that received benefits from external sources were not better than those from internal sources. Such result appears to be the shortcut of a linkage process of knowledge from the network that affects innovation and neglect of awareness of external knowledge.

Simultaneously, ACAP acts as a black box because Cohen and Levinthal (1990) pointed out that ACAP has the ability to recognize the knowledge that a firm obtains from external sources. If firms increase their ACAP, their innovations will become even better; however, to achieve this improvement, firms need to possess better capabilities of acquiring, assimilating, transforming, and exploiting new knowledge (Huang, Lin, Wu, & Yu, 2015; Zahra & George, 2002). Critical ACAP concepts have focused on creating new knowledge from external knowledge sources (e.g., Flor, Cooper, & Oltra, 2018; Zahra & George, 2002) by integrating knowledge from external sources with the processes of the firm can be achieved through the firm's ACAP development. Previous studies suggest that developing ACAP as a fundamental dynamic capability is important in improving innovation in organizations (Fosfuri & Tribó, 2008; Limaj, Bernroider, & Choudrie, 2016; Roberts, Galluch, Dinger, & Grover, 2012).

Zahra and George's (2002) ACAP concept has been defined as a set of a firm's abilities in enhancing knowledge. They also proposed potential absorptive capacity (hereafter PACAP) and realized absorptive capacities (hereafter RACAP) as

two components of ACAP. PACAP involves acquiring and assimilating knowledge from sources, and RACAP refers to transferring and exploiting knowledge. Similarly, PACAP refers to the external knowledge that an organization is able to acquire and assimilate or the creation of knowledge, while RACAP refers to the external knowledge that an organization has transformed and exploited or the utilization of knowledge (Lane, Koka, & Pathak, 2006; Setia & Patel, 2013). Knowledge sources have been claimed as antecedent of ACAP which relate to interorganizational relationship sources including acquisitions. When a firm is exposed to knowledge, the firm's decision making (March & Simon, 1993), developing capabilities in the future (McGrath, MacMillan, & Venkataraman, 1995), and tendency to explore new and related knowledge will be influenced (Van Wijk, Van den Bosch, & Volberd, 2001).

Lewin, Massini and Peeters' (2011) concept argued that ACAP moderates or mediates the range of phenomena associated with a firm's level of innovation and performance. ACAP as a moderator has evolved that factor to develop and adopt firms' abilities (e.g. Escribano et al., 2009; Tsai, 2009; Wang, & Han, 2011; Engelen, Kube, Schmidt, & Flatten, 2014; Popaitoon & Siengthai, 2014), while it has also shown the role of intermediaries. For example, Kostopoulos, Papalexandris, Papachroni and Ioannou (2011) have found that ACAP contributes both directly and indirectly to innovation and financial performance.

Moreover, ACAP remains an elusive construct, which makes it even more difficult to understand how the dimensions of the elements are the mediums of innovation (Kim, Kim, & Foss, 2016; Volberda, Foss, & Lyles, 2010). Volberda et al. (2010) argued that ACAP is caused by action and the interaction of individuals and organizations, and interorganizational antecedents remain unclear as to the outcome, such as innovation. Duchek (2013) also argued that ACAP has been suggested that the definitions that are used, and the components, antecedents, and outcomes of ACAP are extremely heterogeneous. At the same time, most studies of ACAP focus solely on the overview of ACAP or either PACAP or RACAP; few studies have concentrated on the two components of ACAP simultaneously (e.g., Cepeda-Carrion, Cegarra-Navarro, & Jimenez-Jimenez, 2012; Leal-Rodríguez, Ariza-Montes, Roldán, & Leal-Millán, 2014). Therefore, this research investigates network ties, the two components

of ACAP, innovation by antecedent as network ties, and mediator as ACAP to fill the gap above.

Second, as mentioned above, new firms need to rely on external knowledge sources because they have insufficient knowledge to achieve innovation. In the innovation literature, scholars have argued that the role of age influences the capacities of firms to innovate. Kotha, Zheng, and George (2011), for example, found that the systems of new firms to innovate are different from those of older firms; older firms have a higher quantity of output than their newer counterparts. Although, in the prevalent empirical study, most scholars have a consensus that organizational age is determined as a control variable and such age influences performance, the implications of age on the firm's ability to absorb and exploit knowledge remain unclear (Zou, Ertug, & George, 2018). Hite and Hesterly (2001) also pointed out that each stage of the organizational life cycle is more than changing over time, and each stage is a unique strategic context. They also pointed that during the early stages, networks' characteristics tend to lean more toward providing advantages to firms. A firm's network relationship displays the importance of the way of approaching to acquire the resources needed to survive and grow (Gulati, 1998; Jarillo, 1989). In light of the hazards that new firms face, investigating which factors play a role in their exiting is timely (Coleman, Cotei, & Farhat, 2013). Hence, this research aims to demonstrate that network ties as external knowledge sources are a critical factor of new firms.

Moreover, this research extends Zahra and George's (2002) ACAP concept involving the effect of knowledge sources on PACAP. This research proposes that network ties will enhance PACAP because close relationships with external sources will result in better assimilation of new knowledge (Kostopoulos et al., 2011). Through this way, this research will contribute to an emerging body of literature on the external knowledge of ACAP. Most prior studies have focused on identifying sources of knowledge (e.g., Escribano et al., 2009; Kostopoulos et al., 2011) but ignored how to acquire new knowledge. This research aims to not only investigate the influence of network ties on PACAP but also find which external sources are important in the context of study.

Third, Lewin and colleague's conceptual study (2011) suggested that numerous factors tend to display a moderating role to develop ACAP capacities and relationship between ACAP and successful performance. They proposed that key people are important in a firm. These people can facilitate to share, transfer, and utilize knowledge; moreover, they can integrate both external and internal knowledge for the firm's success. In other words, a firm needs processes that organize all knowledge, which is referred to as EO. Entrepreneurship researchers have a consensus that EO strongly influences performance (Lumpkin & Dess 2001). The growing literature has provided different perspectives on the EO construct; apart from EO represent independent (e.g., Pate, Kohtamäki, Parida, & Wincent, 2015). To contribute to the EO literature differently, this research aims to prove that EO has a moderating role, because evidence of this role is few.

Fourth, the context of the studied industry affects the continued existence of new firms (Coleman, Cotei, & Farha, 2013); the contextual factors also affect ACAP (Volberda et al., 2010). In most previous studies of ACAP, researchers studied ACAP in high-medium technology. Table 2 show relevant previous studies on ACAP in high-technological context.

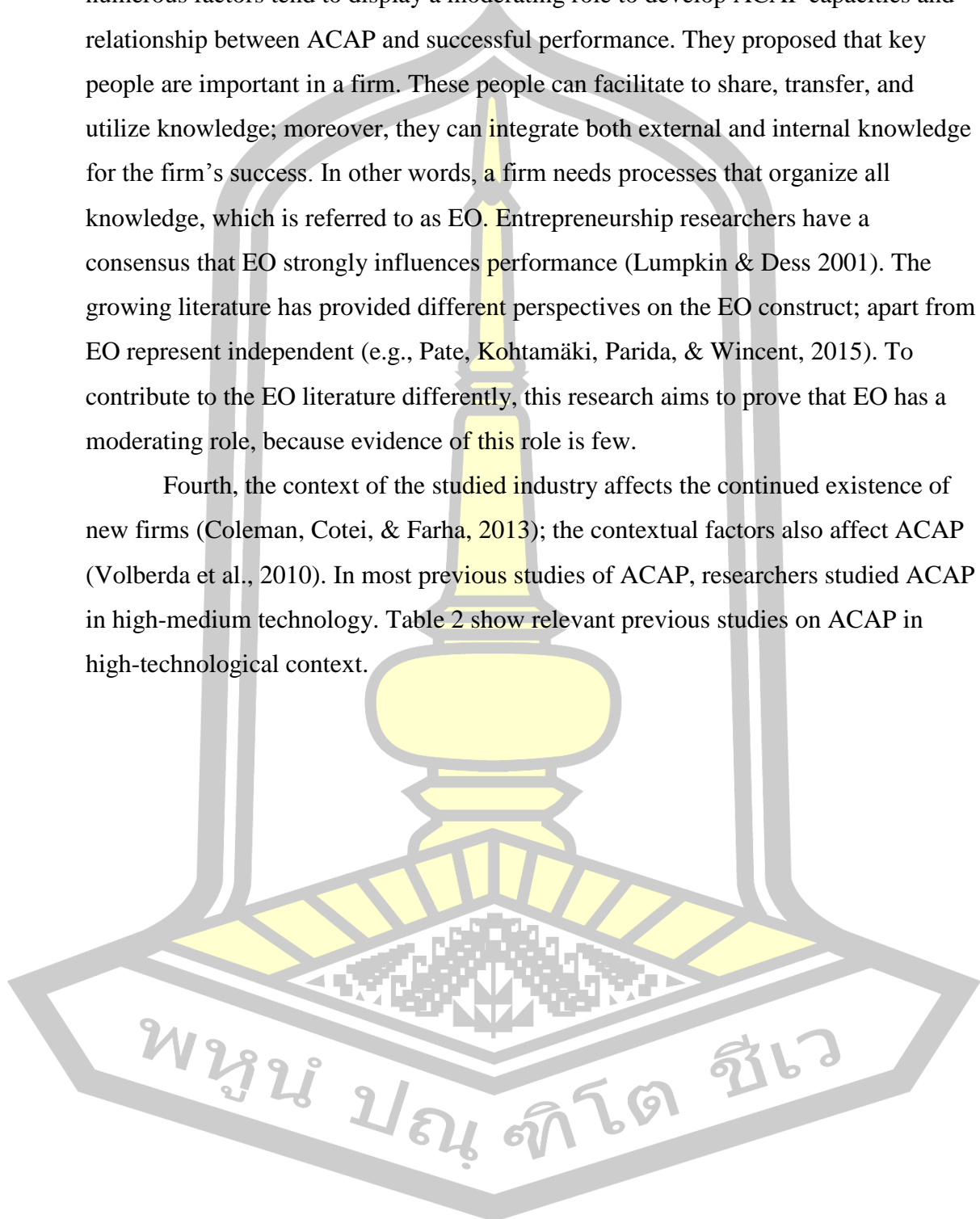


Table 2 Previous studies on ACAP in technological context

Authors (Year)	Industry	Results
Lin, Tan, and Chang (2002)	Electronics and chemical sector	ACAP relate to distribution channels for technology, collaboration mechanisms and R&D resources.
Matusik and Heeley (2005)	prepackaged software	Increased knowledge or knowledge creation activities are supported by ACAP.
Fosfuri and Tribó (2008)	Baes on CIS i.e. Electricity gas and Water, IT, communications	PACAP can participate in the competition advantage in innovation through collaborate R&D collaboration, external knowledge acquisition and experience with knowledge search which these are key antecedents.
Chen, Lin, and Chang (2009)	E&E, the opto- electronic and communication, the biotechnology	ACAP has not only a positive impact on the firm's innovation but also a positive effect on competitive advantage of the firm.
Kostopoulos et al. (2011).	Baes on CIS (firms have a R&D budget)	ACAP has direct and indirect influence on innovation and financial performance.
Leal- Rodríguez et al. (2014)	Automotive sector	RACAP fully mediates the influence of the PACAP on innovation outcomes
Huang et al. (2015)	ICT sector	ACAP partially mediates the relationship between R&D investment and firm innovation.
Yoo et al. (2016)	ICT, E&E, Machinery and Metal, Bio and Pharmaceuticals	ACAP enhance learning activities and outcomes.

As mentioned above, ACAP has been extensively studied. In the context of Thailand, researchers have studied ACAP. For example, Whangthomkum, Igel, and Speece (2006) examined the relationship of ACAP and its elements to technology transfer effectiveness in the flexible packaging industry. Popaitoon and Siengthai (2014) investigated linking human resource management practices, knowledge ACAP in a project team, and project performance in project-oriented firms in the automotive industry. Darawong (2015) examined the impact of cross-functional communication on the ACAP of the new product development of teams in the high-technology industry. These studies contribute to ACAP literature and to the relevant Thailand context, and they were conducted in an industry that relies on high technology.

However, according to Organisation for Economic Co-operation and Development (OECD) (2011), industries are classified by technology implementation intensity shown in Table 3, based on the level of technologies and knowledge intensity used. Thus, the agricultural manufacturing industry was grouped as a low-tech industry. To provide and understand the comprehensive theoretical and practical perspectives of ACAP, this research is qualitative using a case study and support quantitative research.

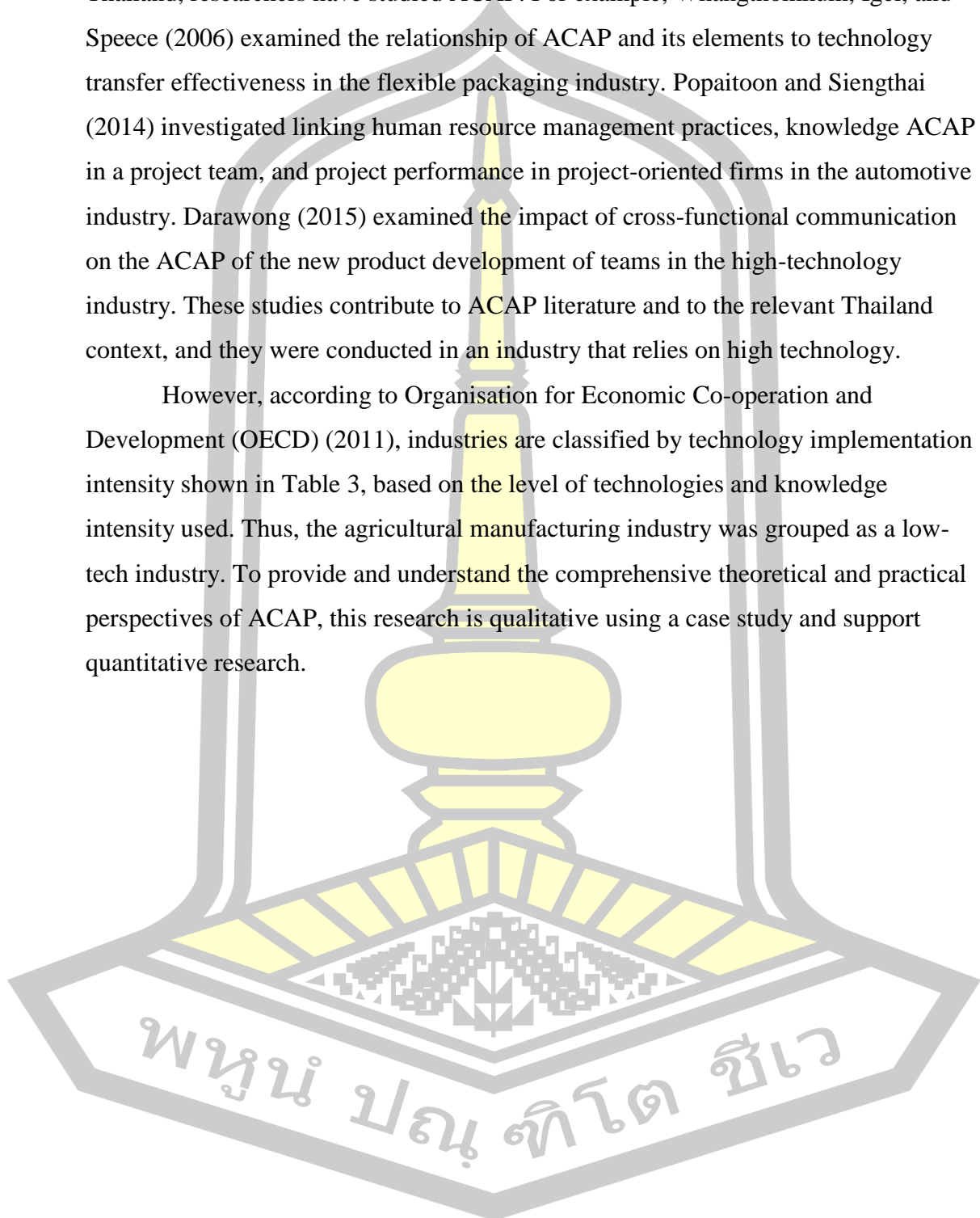


Table 3 The categorization of industry by technology/knowledge intensity

<p>High-tech industries</p> <ul style="list-style-type: none"> - Pharmaceutical - Office, accounting and computing machinery - Radio, television and communication equipment - Medical, precision and optical instruments - Aircraft and spacecraft 	<p>Medium-Low tech industries</p> <ul style="list-style-type: none"> - Coke, refined petroleum products and nuclear fuel - Rubber and plastics - Basic metals - Fabricated metal products
<p>Medium-High tech industries</p> <ul style="list-style-type: none"> - Electrical machinery and apparatus - Motor vehicles, trailers and semi-Trailers - Chemicals excluding Pharmaceuticals - Railroad and other Transport Equipment - Machinery and Equipment 	<p>Low-tech industries</p> <ul style="list-style-type: none"> - Food products, beverage and tobacco - Textiles, fur and leather - Wood, paper, printing and publishing - Furniture, other manufacturing and recycling

Source: OECD (2011)

1.3 Research Questions

The key research questions to address the above problem statement are as follows:

- 1.3.1 How do network ties and knowledge ACAP achieve innovation for new firms?
- 1.3.2 What is the relationship among network ties, knowledge ACAP, and innovation?
- 1.3.3 To what extent does EO moderate the relationship between the two components of ACAP and innovation?

1.4 Objectives of the Research

The specific research objectives are as follows:

- 1.4.1 To provide and understand the comprehensive theoretical and practical perspectives of ACAP
- 1.4.2 To examine the direct effects of network ties, PACAP, RACAP, and innovation
- 1.4.3 To investigate the moderating effect of EO in the relationship between a firm's knowledge ACAP (PACAP and RACAP) and innovation.

1.5 Significance of the Research

This research explores the variance in new firms' innovation from integration of knowledge, particularly from external knowledge, through using knowledge ACAP that is composed of two components: PACAP and RACAP. ACAP has a clear mediator role in the relationship between network ties and innovation. It also investigates the moderating effects of EO on the relationship between the two components of knowledge ACAP and innovation. It extends Zahra and George's (2002) concept. It responds to the calls for research on ACAP as a black box (Volberda et al., 2010), antecedents remain unclear as to the outcome, such as innovation and a key factor as moderator (Lewin et al., 2011). This research provides insights that contribute in many aspects and have managerial implications.

First, Lane and Lubatkin (1998) were among the first to highlight the contextual nature of ACAP. They argued that ACAP differs according to the specific relationships related to it. After all this time, understanding of the extent to which ACAP is the same or different across an organization with regard to function, counterpart, or location is still limited (Minbaeva, Pedersen, Björkman, & Fey, 2014). This research thus explores the context of study. The existence of variants in the agricultural manufacturing industry in Thailand is unclear. To develop a better understanding of the ACAP re-conceptual model and to explore the relationships among network ties of external sources, the components of ACAP, EO, and innovation for new firms. In this research, the phenomenon related to new firms is

insufficient, and they rely on external sources. Firms attempt to find new knowledge that may be obtained via network ties to achieve innovation. Accordingly, the findings can be suitable to explain the phenomenon on new firms in the agricultural manufacturing industry in Thailand.

Second, although ACAP has been implemented in various domains of research, it is still fragmented with a lack of consensus on the understanding and components of the construct (Lane et al., 2006; Todorova & Durisin, 2007; Zahra & George, 2002). In this research, ACAP is explicitly separated. This research empirically tests the link among network ties, PACAP, RACAP, and innovation, which previous studies have rarely performed (Escribano et al., 2009; Kostopoulos et al., 2011; Rosenbusch et al., 2011). This research contributes to both the network and knowledge ACAP literature. In particular, this research emphasizes the mediating role of the two components of knowledge ACAP. PACAP mediates in the relationship between network ties and innovation, and RACAP mediates in the relationship between RACAP and innovation. This focus sheds light on the roles of these two components and their antecedents that extend Zahra and George's (2002) conceptual model ACAP. This research provides insights in terms of explaining captured knowledge that advances innovation and the critical role of the two components of knowledge ACAP, in particular, as a mediator in these relationships.

Third, EO is generally recognized to influence performance (Covin & Lumpkin, 2011; Lyon, Lumpkin, & Dess, 2000; Rauch, Wiklund, Lumpkin, & Frese 2009; Wiklund, 1999; Zahra, 1991); based on the empirical studies shown in Appendix Table A3, these probabilities of positive and relevant performance for the firm. Previous studies show that the relationship between EO and performance is not whole. On the other hand, there are different aspects, namely, EO may be moderated by factors that may occur both internally and externally, such as a firm's availability of resources and competencies (García-Villaverde, Ruiz-Ortega, & Canales, 2013; Wiklund & Shepherd, 2003) and industry contexts (Covin & Covin, 1990; Lumpkin & Dess, 2001). Moreover, two different approaches in the particular relationship between ACAP and EO has been studied through (1) exploring the role of ACAP as a determinant of EO (e.g., Salvato, Sciascia, & Alberti, 2009, Zahra, Filatotchev, & Wright, 2009), and (2) solving the moderating role of ACAP in the EO on

performance relationship (e.g., Hayton & Zahra, 2005, Zahra & Hayton, 2008). While it's few and not clear, testing, the EO is moderator. This research contributes to the literature of ACAP, EO, and innovation. In particular, this research emphasizes the moderating role of EO in the relationship between the two components of ACAP and innovation. This research sheds light on the roles of EO in new firms that aim to achieve innovation, thereby providing insights in terms of recognition of opportunities; a firm looks for opportunities to acquire and exploit knowledge.

1.6 Scope of the Research

The scope of this research includes new firms' innovation that represents the generation and development of new products. Although there are other factors that affect the success of a new firm and its innovation, such as economic, environmental, and technological, this research concentrates on achieving innovation by knowledge, namely, acquiring essential knowledge from network ties and through ACAP. At the same time, EO will promote innovation as well. This research concentrates on the Thai agricultural manufacturing context. It explores and investigates new firms whose length of operation is less than 10 years. Concurrently, these new firms manufacture agricultural products by passing added value to processed goods as well as introduce new products into the current markets.

1.7 Structure of the Research

This research is organized into five chapters:

Chapter 1 provides the introduction of this research. It comprises the background and rationale for this research, problem statement, questions and objectives of the research, significance of the research, the scope of the research, and the structure of the research.

Chapter 2 provides the review of relevant literature, which is divided into five sections. As such, the literature was intensively reviewed in the following areas: (1) new firms in the Thai agricultural context of study; (2) theoretical foundation; (3) innovation; (4) network ties, knowledge ACAP, and innovation; and (5) moderating

role of EO on knowledge ACAP and innovation. In addition, the conceptual framework based on the relevant literature was reviewed according to the five main constructs, among the relationship of key constructs, and the hypotheses are included. Finally, the conceptual model and the hypotheses and definition are proposed in this chapter.

Chapter 3 describes the way in which this research was operationalized to answer the research inquiries and the explanations regard the chosen research paradigm, a positivist paradigm, research methodology. To answer the four questions, this research is divided into two parts. The first part answers the first question via a qualitative case study to explore the context of study, whereby it provides an understanding of the contemporary phenomenon in depth and within its real-world context (Yin, 2013). Second, a quantitative research approach was adopted to answer the remaining three questions. The qualitative and quantitative studies are explained. The following parts provide the procedures of the case studies, the research design, and the methods for data collection, operationalization of the survey, and data analysis. Therefore, this research uses a mixed method, that is, quantitative and qualitative.

Chapter 4 illustrates the descriptive statistics that reflect the characteristics of new firms in the Thai agricultural manufacturing industry. This chapter also explains the constructs, network ties, knowledge ACAP, EO, and innovation in terms of correlations and preliminary analysis before testing the proposed hypotheses. In addition, the analysis of the survey data is described and discussed, and then based on testing the hypotheses using structural equation modeling and hierarchical regression analyses, the results are presented.

Finally, Chapter 5 concludes the crucial findings of this research. It is divided into summary of research, theoretical contribution, managerial contribution, future research agenda, and conclusion.

CHAPTER II

LITERATURE REVIEW

This chapter reviews relevant literature concerning the four areas of knowledge. First, two theoretical foundations have explained the phenomenon. Second, the literature on new firms is reviewed with respect to the agricultural industry viewed as context of study. Third, innovation, network ties, and absorptive capacity (hereafter ACAP) have been described as components hypothesized to affect innovation, within the notion of external knowledge and evolution of ACAP concept. Fourth, the literature of entrepreneurial orientation (hereafter EO) has suggested that the design of EO should represent a moderating role because it moderates the relationship between knowledge ACAP and innovation. The last section of this chapter provides the conceptual model of this research.

2.1 New Firms in Thai Agricultural Context of Study

The context of study concentrates on new firms in the Thai agricultural context. A new firm was defined as a newly formed organization and is undergoing the early stages of the organization's life cycle (Hite & Hesterly, 2001; Katila & Shane, 2005; Pirolo & Presutti, 2010). A new firm's growth is composed of two stages: emergence stage which is one to three years and early growth stage which is seven to ten years (Pirolo & Presutti, 2010). These periods are the length of time it has opened which influences the possibility of the firm's growth through availability of information based on experience and track record generated (Carayannopoulos, 2009).

Previous research challenges this interpretation, concluding that new firms confront a barrier of newness and their size tends to be small (Pirolo & Presutti, 2010). In the literature, scholars have a consensus that new firms have a lower quantity of output than older firms (Kotha et al., 2011) and have higher failure rates than their older counterparts (Baum et al., 2000; Carayannopoulos, 2009; Katila &

Shane, 2005). Such high failure rate is largely attributed to a lack of systems to keep track of the new firms' performance and strategy of informal planning processes (Wheelen & Hunger, 1999). Lu and Breamish (2001) observed similar failure rates in Australia, the United Kingdom, Japan, Taiwan, and Hong Kong. Hence, new firms face a higher probability of failure than large firms. In addition, Stinchcombe's (1965) seminal paper focused on two terms of the founding conditions. The subsequent performance of the new firm is significantly affected by the surrounding environment. The first in order to firm, the main members of the new firm are not familiar with the newness of their work and their roles at the time that the resources of the new firm extend to the limit. The second in order to environment, new firms are presumed to lack underlying influence and stable exchange relationships with important external components, guaranty and recognition of reliability, quality, and legitimacy with year of experience in creating particular products compared with other firms.

According to a 2016 small and medium enterprise statistics report in Thailand, the registration of new firms increased from the previous year at 36%, which significantly contributed to Thailand's growth and prosperity, and over 42% of the Thai GDP (OSMEP, 2017). In the agricultural sector, new firms' registration was at 16%, which was higher than other sectors. Simultaneously, the agricultural industry was the largest contributor of the Thai GDP at 8.3%, making agriculture an important industry in the Thai economy. In addition, one of the world's major agricultural producers and exporters, Thai agricultural exports accounted for 18% of total exports. The main agricultural products in Thailand are rice, rubber, cassava, and granulated sugar. Most of Thai agricultural products are primary products or raw material. These products do not add value as intermediate and late products; moreover, they lack variety that affects the real income of agricultural producers (Ministry of Industry, 2016).

According to the 2017 agricultural economic report (2018), the index of agricultural commodity prices sold by farmers was down by 3.3%. At the same time, the Ministry of Industry in Thailand released the policy which promotes manufacturing of products as processed goods to add value for agricultural products and competitive advantage. Based on the Department of Business Development (DBD) in Thailand, manufacturing refers to processed goods; raw materials used in

the processing of raw materials are agricultural, forestry, fishery, mining or quarrying, and other types of production activities. Similarly, OECD (2011), classifies manufacturing industries into categories based on R&D intensities which are illustrated in Table 1.2. Manufacturing is classified in the low-technology category. The results are consistent with the reports on research and development (R&D) in Thailand, showing that Thailand has relatively low R&D investment compared with other Asian countries such as South Korea, Japan, China, and Singapore, which accounts for 2%–4% per GDP (National Science Technology and Innovation Policy Office, 2017). Furthermore, Intarakumnerd, Chairatana, and Tangchitpiboon (2002), proposed that in developing countries, the national innovation system is less successful in catching up with technology. On the other hand, in developed countries such as Thailand, the result showed that the development of Thailand is not linked to its economic structural development.

Inefficient businesses are unable to trade or invest. Therefore, they are unable to compete. Although the Thai government supports the activities of new firms in many aspects, such as training entrepreneurs and funding sources, it is not enough to make the startups competitive. Consequently, they have to be understandable, learn processes from other sources, and apply themselves. Therefore, this research concentrates on new firms in the Thai agricultural context to identify a phenomenon and contribute to new firms.

2.2 Theoretical Foundation

2.2.1 Knowledge-based view of the firm

The knowledge-based view (KBV) involves intelligence, as well as creation, integration, and application (Conner & Prahalad, 1996; Kogut & Zander, 1992; Nonaka, 1994). Generally, KBV mentions an approach that concrete input resources are operated and converted into added values (Teece, Pisano, & Shuen, 1997). Considering the discussed facts, the most effective, among all resources, source of long-lasting distinction is knowledge in light of being stagnant (McEvily & Chakravarthy, 2002). Similarly, knowledge enables firms to predict nature and

competency of changes more precisely among their surroundings and aptness with strategic and schematic operations (Cohen & Levinthal, 1990). Organizations will experience less proficiency on finding and employing chances in case of lacking such knowledge.

For knowledge to be applicable, it should be transferable, it should have the ability to aggregate, and it should have proper proficiency. First, it is not easy to transfer knowledge among organizations because of their strategies, peculiarity of circumstances, and complexity, which empower knowledge to supply sources of competitive usefulness (Galunic & Rodan, 1998; Grant, 1996; Kogut & Zander, 1992). Second, knowledge accumulation insists on knowledge receivers to possess the skills to evaluate, assimilate, and employ it. This ability or skill is called ACAP (Cohen & Levinthal, 1990). Finally, the appropriateness of knowledge can be known by market performances; however, patents and copyrights are still protected by legal property rights (Grant, 1996).

Grant (1996), in his seminar concerning firms' knowledge-based theory, stressed on knowledge dwelling in individuals and the primary functions of the organization in applying knowledge. Similarly, KBV was developed by Grant through designating the elemental mechanisms for the firms to incorporate knowledge through directions and organizational tasks. He also better expressed organizational tasks for accumulating knowledge owing to the alteration of tacit knowledge into explicit one by rules and directions, which may be associated with considerable knowledge disadvantages. Lately, Grant and Baden-Fuller (2004) suggested knowledge accessing and knowledge acquirement as the main apparatus of any organization that may gain advantages from interorganizational relationships. Moreover, they proposed that firms' knowledge expertise could be added through knowledge accessing, and firms' knowledge base could be increased by knowledge acquirement. Accordingly, the argument in this research is that knowledge is imperative for constructing new outcomes that are created by knowledge congregation deriving from external knowledge. External knowledge sources are good for firms, especially for innovation, which is a proxy for new knowledge acquisition, coalition, adaptation, utilization, and conception, which are similar to new product achievements.

2.2.2 Social capital theory

Social capital proffers actors with favorable resources that include criteria, reliability, and network connection (Huang et al., 2012). An extensive investigation of interfirm relationships highlights how firms are amiably engaged in networks of relationships that consolidate the varied sets of organizational actors; besides, it has developed eminence as a concept that supplies a principle for addressing and categorizing a firm's set of relationships (Inkpen & Tsang, 2005). Nonetheless, even if a social capital concept has been considerably discovered and acknowledged, there is a prevailing irresolution on its definitions and consequences (Koka & Prescott, 2002).

In his inspection, Portes (1998) indicated that Bourdieu's (1986) analysis was the first systematic analysis of social capital. Bourdieu explained a notion that it was the total of tangible or capable resources that were connected to propriety of a long-lasting network with more or fewer initiated relationships of reciprocal familiarity or perception. While the concept emerged, in virtue of Burt (1992) and others' work, a consensus occurred when social capital stood for actors' ability to ensure advantages because of membership in either social networks or other social structures (Portes, 1998). Advantages, at the organizational level, contained prerogative access to favored opportunities for new businesses, inducement, prestige, knowledge and information, and heightened understanding of network norms.

Although Adler and Kwon's (2002) inclusive review illustrated many different methods used to study social capital, there were two patterns from the diverse terms. The first stemmed from social networks. Academics underlined personal advantages, such as occupational achievement, which actors directly obtained from their social capital. In this perspective, proponents considered social capital as a private good, possessed by individuals. Furthermore, social capital as a public good was conceptualized by other scholars. It demonstrated that social capital was similar to a social unit, instead of an individual. Consequently, it was accessible and advantageous to those who both create it and group members in general, on behalf of a public good, at large (Kostova & Roth, 2003).

Subsequently, Inkpen and Tsang (2005) indicated that social capital was the resource sum that was engaged in, available through, and original from the network of relationships occupied by an individual or an organization. A term and condition facilitated no less private and public good views of social capital. The central proposition was that the network of relationships was a priceless resource, especially for not only an individual but also an organization, in this perspective of social capital. The rationality of this perspective could be found in the instance of the firm which founded a network tie with another firm, like an agreement called supply contract. Two firms possessed this network tie called a social capital resource. As time goes by, the trustworthiness between the firms may be developed. Such trustworthiness, as well as the formal ties between the firms, would also generate a social capital resource; thereby, the firm's social capital was extended. Diverse advantages, under the social capital, such as favored knowledge access, might flow through the firms.

The original social capital is at individual by an individual's network of relationships can be distinguished from social capital of the organization comes from network of relationship in organization. The former has the nature of a private good, whereas the latter has the nature of a public good. According to social capital as a public good, in an organization, members are able to access the resources obtained from the relationship network without the need to participate in the development of those relationships (Kostova & Roth, 2003). These two levels of social capital are often interrelated. For example, a manager can help his or her organization set up a joint venture with another firm by his or her own social relationships and personal connections. Hence, the individual social capital is the basis for creating the social capital of the organization; moreover, the social capital benefit investigated is the opportunity to acquire knowledge from other network members. The social capital stemming from each network of relationships is noticeable in view of organizational social capital deriving from a network of relationships in an organization. The first one shows the trait of a private good, and the other one complies with the nature of a public one as well. Organizations' members are able to expose resources obtained from the network of relationships without taking part in this relationship advancement inevitably because social capital is a public good (Kostova & Roth, 2003).

Consequently, interconnection regularly takes place between these two levels of social capital; for instance, the manager can assist his or her firm to settle co-investment with another company in virtue of social and personal relationships. The foundation of individual social capital is enormously advisable for any organizations; likewise, it is beneficial and results in opportunities to acquire knowledge from other network members.

In accordance with the above-mentioned discussion, two guiding firm-level theories, firms' KBV and social capital theory, are imperative to this research. The former is applied to depict that the firm is the storage of knowledge and proficiency (Kogut & Zander, 1992). The benefits for an organization stem from knowledge creation and transfer. New integration of knowledge and other resources brings about knowledge creativity and innovation (Cohen & Levinthal, 1990). Yli-Renko, Autio, & Sapienza (2001) expressed that gathering knowledge through learning was a driving force in advancement or growth for new enterprises since knowledge attainment results in opportunities to create new products and augment the firms' capability to take advantage of these opportunities. Regarding new firms, not only developed but also growing ones are principally reliable upon innovatively incorporating their own definite knowledge with other external things, particularly owing to the fact that new firms need resources and they are countable upon such knowledge to survive and grow constantly (Subramanian, Bo, & Kah-Hin, 2018). The latter, social capital theory, cites that a major contributor to its accomplishment is the form of a firm's external networks. Enterprises deal with suppliers and other partners to gain external resources that will be used to generate products and services, along with the competition in terms of price, and adopt the quality to attract and maintain their customers (Burt, 1992; Pennings, Lee, & Witteloostuijn, 1998; Uzzi, 1997). Their proficiency to assemble extramural resources, approach customers, and specify entrepreneurial probability is limited on external networks, seeing that social relations are intermediate among economic transactions and take counsel with organizational legality (Granovetter, 1985). As a result, social capital theory demonstrates that new firms should prioritize strategies that emphasize the advancement of valuable networks with external resource holders to gain accomplishment, particularly in this research.

Each view has various considerations respecting the root of value creativity. KBV accentuates on accumulating external knowledge or proficiency, whereas social capital theory aims at its relational traits with external identities. Actually, both of them should be amalgamated now that new firms have to create firm-specific properties as they simultaneously obtain complementary external sources by means of social networks. Discussing two perspectives, accordingly the joint influencing on external contacts touching knowledge ACAP and knowledge ACAP affecting innovation in new firms' contexts is investigated by this research.

2.3 Innovation

Innovation leads to new productivity, services, or procedure (Damanpour, 1991). Johannessen, Olsen, and Lumpkin (2001) indicated that innovation illustrates newness. In general, innovation is specified as a new design for utilization and advancement that is related to a new outcome, service, manufacturing procedure, organization, or managerial system (Bessant, Lamming, Noke, & Phillips, 2005). It involves the introduction of ideas or efforts to enhance a firm's actual outputs (Camisón-Zornoza, Lapiedra-Alcamí, Segarra-Ciprés, & Boronat-Navarro, 2004). According to Nohria and Gulati (1996), innovation is composed of approach or process, structure, policy, and market opportunity that allow the management to innovate any units which contribute to newness. Table 4 provides additional definitions of innovation from other scholars.

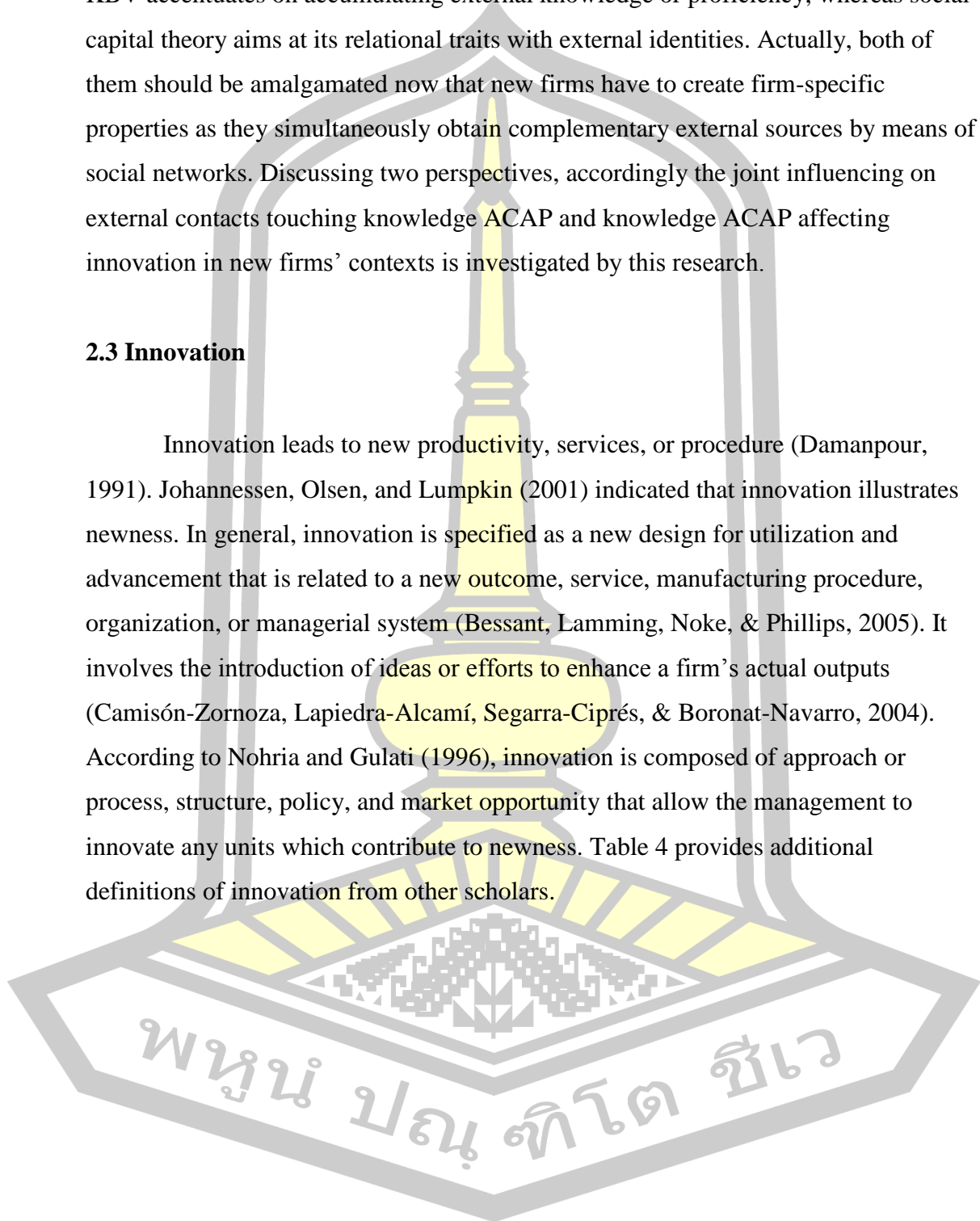


Table 4 The summary of definition of innovation

Author(s)	Definition of innovation
Schumpeter (1934)	“New products, new methods of production, new sources of supply, the exploitation of new markets, new ways to organize the business.”
Van de Ven and Polley, (1992)	“A highly uncertain process in which firms or people undertake a sequence of events over an extended period of time, transforming a novel idea into an implemented actuality.”
Damanpour and Gopalakrishnan (2001)	“The adoption of an idea or behavior pertaining to a product, service, device, system, policy or programmed that is new to the adopting organization”
Katila & Shane (2005)	“A process that begins with an invention, proceeds with the development of the invention, and results in the introduction of a new product, process or service to the marketplace.”
Rosenbusch et al. (2011)	“The process of the adoption of internally or externally generated devices, systems, policies, programs, processes, products, or services that are new to the adopting organization.”

Innovation becomes a firm’s major mechanism by generating, integrating, remodeling, and releasing resources to carry on the development in order to introduce new products, processes, or services to the marketplace (Danneels, 2002; Grillitsch Martin, & Srholec, 2017; Rosenbusch et al., 2011). Likewise, it plays a role in a firm’s capability to cope, retain, and engender knowledge (Cohen & Levinthal, 1990; Smith, ollins, & Clark, 2005). It is associated with uniting or recombining formerly unlinked ideas and knowledge in novel methods (Kogut & Zander, 1992; Nahapiet & Ghoshal, 2000). In recent years, knowledge has been extensively realized as a main source of innovation among firms (Spender & Grant, 1996; Thornhill, 2006).

Knowledge plays a key role at the core of creativity and maintenance for competitive advantages (Grant, 2016; McEvily & Chakravarthy, 2002).

For diversely innovative activities, a researcher has classified innovation seeing that not all innovative activities are related to performances in the same manner (Damanpour, 1991). Product, process, or administrative innovations are crucial for the usual classification of innovation (Damanpour & Evan, 1984; Damanpour & Gopalakrishnan, 2001), accompanied by increment, architecture, or fundamental (Henderson & Clark, 1990). Concurrently, innovative products are concerned with both producing new needs and accommodating firms' advancement. If creative firms define limitations to preclude rivals from getting into markets, their positions in the markets will be stronger, and above-average returns will be their reward if they innovate persistently (Rosenbusch et al., 2011).

Firms' new innovation is more long-lasting than their counterparts that do not innovate given that new enterprises are embedded in both product and process innovation (Colombelli, Krafft, & Vivarelli, 2016). Based on different aspects that occurred, Colombo and Grilli (2010) recommended that the analysis should be passed on to innovative new firms. First, the basis of new enterprises might be more or less contributory to technological and productive advancements. Apparently, certain new enterprises which placed importance on hi-tech innovations would have a more various position than any other new firm which did not do it. Additionally, on the condition that main encouragement set out a new firm to be connected to innovative schemes, the probability of higher survival rates and better post-entry performance was likely to emerge (Colombelli et al., 2016). Cefis and Marsili (2006) discovered a lucid testimony concerning an innovation premium in newborn firms' survival forms. In addition, an innovator, compared with non-innovator counterparts, increases the time anticipated to survive by 11%. In general, some of recent studies illustrated that the inclination for innovation came out because a firm's advancement drove off, and it acted as a positive indicator of survival.

Innovation introduction and prosperous development require particular resources and capabilities for any organizations to generate and appropriate the advantages from innovation (Subramanian et al., 2018). The successful growth and innovation initialization require distinctive organizational resources and competence

to generate and appropriate the benefits of innovation (Sethi & Sethi, 2009). Few firms possess all internal proficiency required for excellent and constant innovation (Powell, Koput, & Smith-Doerr, 1996). Hence, firms incessantly aim at external sources to accomplish their knowledge qualifications. Innovative products need producers to determine competent new markets and valuable business probabilities, realize and attain new technological and market knowledge from surroundings, and alter and incorporate such knowledge into internal performances instantly (Hult, Ketchen Jr, & Slater, 2004; Whitehead, Zacharia, & Prater, 2016). Consequently, manufacturers' proficiency is to penetrate and pull both codified explicit and experience-based tacit knowledge, which has to count on supply chains to demonstrate new products which can be engaged in commerce (Hargadon & Sutton, 1997; Wang, Yeung, & Zhang, 2011). ACAP enables a producer to direct exploratory and exploitative learning simultaneously (Enkel, Heil, Hengstler, & Wirth, 2017; Marabelli & Newell, 2014).

Innovation in manufacturing industries originally intended to eliminate costs, and it definitely focused on improving processes through formal structures and systems. Thereafter, process improvement was used by numerous large manufacturing firms, and they were generally successful (Wheelen & Hunger, 1999; Bessant & Tidd, 2007). Freeman (1982) indicated that for manufacturing sectors, innovation involved many kinds of activities: management design, technical, manufacturing, and commercial. These activities were associated with a new or improved product in the markets or the first commercially used new or improved process or a tool. Competitive advantages were generated by firms in the manufacturing sectors for the purpose of employees' initiative proficiency to various products for small but specific and well-defined segments of the population called niche markets (Damanpour 1992; Fuchs & Schreier, 2011). Nevertheless, cost efficiencies were taken to introduce competitive advantages among large manufacturing enterprises to gain benefits relying on systems and formalized structures (Porter, 1990; Benner & Tushman, 2003; Bessant & Tidd, 2007). Moreover, developed countries which possessed manufacturing and high-technology industries were investigated in most of the studies relevantly (e.g., Dagnino, Levanti, Minà, & Picone, 2015; Ketelhöhn & Ogliastri, 2013; Partanen, Chetty, & Rajala, 2014; Petrick, Maitland, & Pogrebnyakov, 2016).

Additionally, among large groups of the economy, special innovation was categorized; for instance, manufacturing industries utilized technical modernization within products and processes (Armbruster, Bikfalvi, Kinkel, & Lay, 2008). In relation to manufacturing, a finding associated with innovation was varied from a developed economy. This finding illustrated that numerous industries and technological innovation or nontechnological innovation brought about distinct consequences of performances (Geldes, Felzensztein, & Palacios-Fenech, 2017).

In this research, the researcher focused on new firms in the agricultural manufacturing context of Thailand, whose developed products will be instituted into the markets advisably. Particularly for innovation in the manufacturing context, this research is based on the definition of innovation by Freeman (1982) and Johannessen et al. (2001) who studied measuring innovation. Thus, in this research, innovation refers to the creation of a new product that is new to firms and markets and this product can achieve commercial success. A new firm's product is created by integrating and combining knowledge inputs from several different sources. To achieve innovation, inputs of relevant complementary knowledge are also necessary. Hence, respecting the argument of this research, new firms can acquire knowledge, including new knowledge to develop new products by relationships with external knowledge sources.

2.4 Network Ties, Knowledge Absorptive Capacity and Innovation

2.4.1 Network ties

Networks refer to kinds of tools employed to gain relationships and cooperation between a firm and more firms to distribute and substitute resources, information, and adeptness which can ameliorate firm performances (Parmigiani & Rivera-Santos, 2011). Podolny and Page (1998) cited that a crucial trait of networks is the repeated and endurable exchange of relationships among the actors in the networks. Granovetter (1973) illustrated that network tie was a unification of a good deal of time, emotional intensiveness, reciprocal consignment, and bilateral services. Ties were identified by high levels of interplay, communication, and emotional

combination (Gulati, 1995). Furthermore, relationship patterns between the network actors and coping with the actors' definite method were related (Inkpen & Tsang, 2005). For disposition of ties, Kogut and Zander (1992) expressed that network ties placed importance on robust ties forming closeness and frequency, and they were more advantageous in transporting new knowledge because this knowledge was particularly strategic and elaborate. By contrast, feeble ties involved distance and infrequency that made it difficult to supply novel and nonredundant knowledge (Granovetter, 1983).

Firms' network relationships advise ways to acquire indispensable resources for firms' existence and advancement (Gulati, 1998). For this reason, the purpose of new enterprises is to get to a necessary boundary situation when the constitutions of ties are practical to new firms' growth. The literature requires a more dynamic aspect of entrepreneurial networks and their advancement at a general level (Cross, Borgatti, & Parker, 2001; Hite, 2005; Human & Provan, 2000). The encouragement of a more dynamic aspect aims to determine whether a new firm should pull diverging configurations in interorganizations that are implicated in powerful or feeble ties to make the crucial changes necessary for varied steps of its life evolution, with important consequences on the advancement of economic and innovative performances (Hite, 2005; Pirolo & Presutti, 2010). The strength and weakness of ties are the formations of the ties and are not necessarily conflicting; they demonstrate various roles for the firms' accomplishment. Moreover, enterprises vigorously develop a life cycle. They normally require new and supplementary resources to encourage their advancement, which may bring about the change in the configuration of the interorganizational ties that is helpful in strengthening their different aims of performances (Lechner, Dowling, & Welp, 2006; Shane & Stuart, 2002).

The significance for a new firm to adopt its interorganizational networks to change task and resource qualifications is supported by this research to strengthen the economic performance and innovation of a firm during its life cycle (Baron & Markman, 2003; Hite, 2005; Maurer & Ebers, 2006; Shane & Venkataraman, 2000). In particular, Burt (1992) and Uzzi's (1997) study provided theoretical assumptions which empirically indicated that high-level implantation among partners reduces nonsuperfluous information, resulting in new probability and restricting a firm's

entrepreneurial capability to adapt. The unanticipated disadvantage of a major network increased the susceptibility of organizational networks. Meanwhile, the combination between strongly closed partners was likely to unify the dependency problems of resources (Portes & Sensenbrenner, 1993). The strength of ties was able to decrease the circulation of new information between interconnected partners. Repeated ties to identical network partners signified that there were few or no interactions with outside partners that proficiently boosted innovative perspectives (Burt, 1992). Again, the strength of ties is required for comprehending innovation (Tiwana, 2008). From this method, other studies attest to the significance of strength of ties, especially to a new firm (Hite & Hesterly, 2001; Lechner & Dowling, 2003). Uzzi (1997) illustrated the importance of ties between partners in a long and more intense relationship, contributing to their mutual trust and perception of their identity and assisting one another when there is an opportunity for advancement.

Network ties involve frequency of contacts of interaction, communication, and emotional attachment, which is demonstrated in this research (Granovetter, 1973; Gulati, 1995). Interorganizational relationships are more efficient in leading activities toward close partner relationships (Parmigiani & Rivera-Santos, 2011). Therefore, network ties have been discussed seriously in studies on relationships between a new enterprise and external knowledge sources relating to interaction, frequency of contacts, and emotional intensiveness among their relationships. Additionally, the degree of intimacy and mutual commitments between actors connected to a relationship is studied. A new firm's network is composed of partners, relationships, providers, purchasers, and other enterprises that do business with one another (Lechner et al., 2006). Most of the previous networks seem smaller, less various, and more repeated than those of bigger and more aged firms (Hite & Hesterly, 2001; Yli-Renko et al., 2001). In addition, for debates in this research, new firms are prone to creating relationships with external sources to store a great deal of knowledge.

2.4.2 Knowledge absorptive capacity

Cohen and Levinthal (1989) determined ACAP as the competency to learn from external knowledge by processes of knowledge uniqueness, absorption, and

utilization. In later papers, they corrected this original exposition, driving out a new perspective with a greater focus on the cognitive features highlighting the learning process. In the second method, they gave a new or different definition to the ACAP construct, that is, it was the firms' competency to evaluate, adapt, and employ knowledge from external sources for commercial ends. ACAP is regarded as a by-product no less in R&D activities than the diversification or breadth of the organization's knowledge foundation, its previous learning adeptness, a shared language, the mental models, the existence of cross-functional interfaces, and problems—unraveling competency of the organization's members.

Constructed within the circumstances of technological knowledge, these terms of ACAP have cardinally attested to the conceptualization in the framework toward such a scope that few subsequent studies have corrected or extended Cohen and Levinthal's (1990) definition. The construct is applied broadly in the boundary in the literature within the fields of organizations and economics, in the light of the definite needs of each study, such as lacking an inherited concept or no theoretically testified concept based on the literature. Former studies (e.g., Arbussa & Coenders, 2007; Liao, Welsch, & Stoica, 2003) only slightly changed Cohen and Levinthal's definition and altered its dimensionalization, and they did restrict the construction to two dimensions: (1) the assessment, attainment, and absorption of external knowledge, and (2) its internal circulation and utilization. Matusik and Heeley (2005) advanced a three-level model of ACAP that is individual, intraorganizational, and organizational and emphasized two elements, in case of access to and absorption of external knowledge.

Cohen and Levinthal (1989) introduced the construct, and it was first reinterpreted by Lane and Lubatkin (1998). These scholars termed a new construct that was relative to ACAP. The key dissimilarity from Cohen and Levinthal's constructs is on its circumstances of analysis; consequently, competency to absorb knowledge from a sector was examined by Cohen and Levinthal (1989, 1990), while the capacity of organizations to absorb from other organizations was investigated by Lane and Lubatkin (1998). The relative ACAP (student or receiver) was defined as the competency of the firm to assess, adapt, and employ knowledge stemming from another (teacher or sender). After illustrating that R&D expenditure could describe

only 4 percent of the difference in interorganizational learning. The relative traits of the two organizations were summarized by Lane and Lubatkin (1998). Particularly, the relationships between their knowledge processes and application systems were determined by a large range of an organization's competency to assimilate knowledge from another firm. Cohen and Levinthal (1989), according to Zahra and George (2002), constructed the most far-reaching reconceptualization of the ACAP. Zahra and George (2002) connected the construction to a set of organizational patterns and strategic processes, through which firms obtained, absorbed, transferred, and utilized knowledge with the target of creating a dynamic organizational competency. In accordance with Zahra and George (2002), the four capabilities or processes in their definition brought in and stood for four dimensions of ACAP which naturally united and built upon one another to generate a dynamic organizational competency.

At the same time, Cohen and Levinthal's (1989) proposed an original three-dimensional model. Zahra and George's study reformed the model and proposed one with four dimensions, and they united these models into two components: potential absorptive capacity (hereafter PACAP) and realized absorptive capacity (hereafter RACAP). PACAP includes the dimensions of knowledge acquirement: both the competency to assess knowledge that Cohen and Levinthal (1990) was leading up to and the competency to attain knowledge and to absorb it. In turn, RACAP is composed of knowledge transformation and utilization.

These two components are carried out separately but have mutually supported complementary functions, according to Zahra and George's (2002) study. Firms could not utilize external knowledge unless they obtained it. The competency to gain and absorb external knowledge might be generated by certain organizations; nonetheless, they could not alter and employ this knowledge. In other words, they could not convert it into competitive benefits. Therefore, both subsets of ACAP meet a necessity but inadequate circumstances to construct values for the firms. Built from an elaborate review of the main papers distributed on absorptive competency, the construct as a firm's competency to utilize knowledge from the external surroundings was determined by Lane et al. (2006) through three consecutive processes: (1) exploratory learning that yields recognition and understanding regarding new potentially valuable external knowledge, (2) absorption regarding valuable new

knowledge via transformative learning, and (3) utilization of absorbed knowledge for generating newness and commercial outputs via exploitative learning. According to most of the studies on ACAP, this definition, directing to the learning process, instituted three of Cohen and Levinthal's (1989, 1990) classic dimensions. For all that, transformation competency was implicitly illustrated by Lane et al. (2006) through considering external knowledge absorbed through transformative knowledge and through combining this knowledge with current knowledge.

In line with Zahra and George's (2002) concept, there were, within ACAP, four distinctions, but they had complementary abilities: acquisition, assimilation, transformation, and exploitation. These various competencies helped the organization obtain competitive advantages that yielded greater accomplishment (Barney, 1991).

First, acquisition is associated with a firm's proficiency of determining and gaining external knowledge that is crucial to its processes. It includes Cohen and Levinthal's (1990, p. 128) process to recognize and evaluate new external knowledge. Consequently, Cohen mentioned that the ability to value and employ outside knowledge is broadly a responsibility of the level of preceding related knowledge. Former knowledge is regarded to be an ability to comprehend the value of new information and to absorb and utilize it to commercial attainment.

Second, assimilation is derived from a firm's routines and procedures that allow it to examine, operate, interpret, and comprehend the information gained from external sources (Kim, 1998; Szulanski, 1996). Individuals' knowledge interpretation and comprehension are in the second dimension of ACAP, which is the stage approaching the individual level more than the collective one. Definitely, knowledge assimilation explains the competency of realizing new external knowledge and connecting it with the previous knowledge foundation.

Third, transformation, in current firms' processes and products, is the internalization of new external knowledge. Zahra and George (2002, p.190) indicated that this dimension stood for the firm's competency to originate and complete the routines that accommodate uniting existing knowledge and the newest obtained and absorbed one. It is achieved by increasing or erasing knowledge or unpretentiously rendering the same knowledge in diverse manners.

Fourth, exploitation means an organizational proficiency relying on the routines that encourage the firms to complete, expand, and pull existing abilities or to generate new ones through cooperation to attain and convert knowledge into its procedure. This stage is customarily essential. Cohen and Levinthal's (1990, p. 128) definition is thoroughly considered that employees have to be able to utilize new external knowledge to commercial ends. Thus, this suggestion is important to other stages for the scope which they can reach knowledge utilization.

For all that, Todorova and Durisin (2007) doubted that the abilities of both assimilation and transformation knowledge were two different subsequent processes. The author demonstrated that transformation competency was not the phase that brought about absorption, but rather an alternative process. Hence, ACAP was a firm's ability to evaluate, attain, absorb or transform, and apply external knowledge. They additionally argued that by the time external knowledge was suitable for the firm's cognitive patterns, assimilation of knowledge taking place would lead directly to its utilization or application, without transforming this knowledge previously. On the other hand, so long as the external ideas or knowledge was not appropriate for currently internal knowledge structures, the knowledge or ideas would be transformed. In this manner, cognitive structures should be adapted to an idea or any situation that individuals could not absorb. Likewise, they illustrated that as long as a firm decided to obtain external knowledge, regardless if such knowledge was associated with the foundation and the structure of the firm's current knowledge. The firms have to realize, investigate, and systematize knowledge seeing that it was derived from considerably diverse organizational cultures, systems, and experiences. This stage was prior to the obtained knowledge which was extended and combined into the firm's current and available internal patterns, processes, and insights.

Recently, Camisón and Forés's (2010) defined ACAP as a systematic and dynamic competency which emerged as two subsets of proficiency and had an absorptive ability. PACAP, which owned knowledge acquisition and absorptive competency, demonstrated the efforts of firms on estimating, attaining, and absorbing new external knowledge. RACAP, reflectively found in knowledge transformation and utilization, stood for firms' capability to incorporate and rearrange the current internal knowledge and the newest absorbed knowledge and to integrate this adopted

knowledge into procedures of the firms, methods, patterns, and performances, no less to perfect existing knowledge and competency than to generate new practices and capabilities.

Based on the above-mentioned discussion, the ACAP concept has been broadly argued by scholars. Still, this research is dependent on Zahra and George's (2002) ACAP concept, supplying two abilities which should be obviously parted now that they count on methods of various natures within organizations and are parts of different elements (PACAP versus RACAP). Even if a firm can indicate, comprehend, and absorb external knowledge, it may not be able to incorporate such knowledge with its formerly existing knowledge.

2.4.3 Network ties, knowledge absorptive capacity and innovation

Network ties are essential, but ties alone cannot help any firm result in a better performance; the firm must also rely on other variables to drive achievement (Peng & Luo, 2000). Cohen & Levinthal's concept (1989, 1990) stated that an emerging structure of literature was investigating the importance of a firm's ability to obtain, absorb, and develop commercializable consequences from new external knowledge to develop its ACAP (Lichtenthaler, 2009; Tsai, 2001; Zahra & George, 2002). A firm's ACAP is not an aim in itself but can create important organizational performance (Fosfuri & Tribó, 2008), such as related ACAP among others, innovative capabilities, and innovation performance. The essential rationale is that ACAP stimulates the speed, frequency, and magnitude of innovation; on the other hand, it may produce knowledge that becomes part of the future of the firm (Zahra & George, 2002). ACAP is an instrument to both identify and translate external knowledge inflows into tangible benefits, as well as an approach to achieve superior innovation and financial results over time (Kostopoulos et al., 2011). Firms along with a powerful ACAP can absorb or obtain newly developed knowledge, integrate it with their previous related knowledge, and employ it in their innovation approach. Organizations that steadily engage in business on absorbing and utilizing new external knowledge are more willing to invest on modifying environmental circumstances by establishing innovative outcomes and meeting the requirements of current markets

(Chen & Huang, 2009; Jansen, Van Den Bosch, & Volberda, 2006; Lichtenthaler, 2009). Firms need to learn or absorb some sort of new knowledge to achieve innovation. On the contrary, a firm's innovation is needed for the assimilation of distinct types of knowledge scopes or contexts. Traditionally, an interference of the existing knowledge (or previous related knowledge) that the enterprise possesses, with external knowledge, a related cognitive closeness, and supports the creativity of utilizing innovations (Lord & Ranft, 2000; Nootebooma et al., 2007).

Former studies have discussed that PACAP cannot improve a performance but only that enterprises agglomerate, integrate, and remodel existing resources to perform more effectively and successfully than their competitors (e.g., Eisenhardt & Martin, 2000; Helfat & Peteraf, 2003; Winter, 2003). Particularly, the present research has focused on firms' assimilation capability, that is, their ability to gain new external knowledge, absorb it, and combine it with existing internal knowledge—and heighten it to gain supreme achievement (Cohen & Levinthal, 1990; Ethiraj, Kale, Krishnan, & Singh, 2005). RACAP pertains to alternating and utilizing the obtained and absorbed knowledge by converting that knowledge into the firm's performances, thus improving the firm's innovation. Without RACAP, firms and their management's capacity to gain and absorb external knowledge may fail to help institute their competitive benefits (Zahra & George, 2002).

The advantages of novel knowledge attained from external sources also rely on a large amount of knowledge that has been gathered and learned when the firm carries out changes via RACAP. Most studies contemplate that RACAP drives new concepts into organizations, heightens the proficiency to cognize both new ideas, and strengthens creativity. The capability refers to new chances (e.g., Chesbrough, 2003; García-Morales, Lloréns-Montes, & Verdú-Jover, 2008; Gray, 2006). RACAP is the key process in the utilization of knowledge, heightening the firm's capacity to innovation. Similarly, RACAP simplifies the development of a firm's innovation proficiency by utilizing acquired knowledge from not only internal but also external sources. A firm's innovation can then be viewed as the output from the achievement of ACAP.

However, Kostopoulos et al. (2011) mentioned that firms' connection in innovation integration with variously external parties heightened their knowledge

foundation and instituted a better skill to absorb and utilize a variety of knowledge. Possessing is able to access complementary knowledge brought firms about concurrently taking advantage of two important learning opportunities: gain access to a diverse order of novel knowledge and skills and create the competency to interpret and utilize these diverse inputs by defining similarities and interfering with currently existing knowledge bases.

This research views the ACAP concept that typically presented despite empirically studies yet testing ACAP models based on Zahra and George (2002); particular, two components as mediator at the same time is few studies. Moreover, if a new external knowledge functions as an antecedent of ACAP, then it can influence innovation achievement. In pursuit of these frameworks and the points mentioned formerly, the present research assumes that a firm that is not able to gain and absorb new external knowledge is without ties with external sources, thereby not benefiting from any innovation advantages.

2.4.3.1 Network ties and potential absorptive capacity

To achieve new knowledge, networks are more essential for new firms (Baum et al., 2000; Street & Cameron, 2007). Recent trading has been considerably related to networks; furthermore, essential consequences on their operations are connected to the ties with other firms. Accordingly, with other enterprises, joint agreements and ties are able to sustain firms' advancement to supply complementary data, perception, and other materials (Cohen & Levinthal, 1990). Among a complicated and unstable circumstance for survival and success, any enterprises are countable on developing ties with others which lead to some advantages to them (Wu, 2011). For instance, a better position to readily define and absorb new external knowledge is for the firm to invariably develop and boost tight relationships with providers relating to state-of-the-art technologies, specialized research, or market foundations in the event that it requires (Kostopoulos et al., 2011). Comprehension to positive influences of acquired external knowledge on innovation achievement (Ahuja & Katila, 2001; Frenz & Ietto-Gillies, 2009; Yli-Renko et al., 2001) and elemental inputs of ACAP (Kostopoulos et al., 2011) have been introduced by the literature.

The firms which obtain external knowledge within their surroundings will be able to make a decision, expand the order of current resources, accommodate the advancement of future competency, and support the level of experientially collected learning to tackle and create values from external information (Zahra & George, 2002). Cohen and Levinthal (1990) expressed the value among such relationships by assuming those firms that sustained broad and active networks from external partners would become conscious of each other's exclusive abilities and knowledge, thereby enhancing their stimulus to generate ACAP. In the same way, other academicians debated enterprises' systematic participation pertaining to knowledge-intensive collaborations which were more probable to enlarge the breadth and depth of their knowledge foundations and, thus, reform their internal abilities and knowledge-arraying ones (Kumar & Nti, 1998; Van Wijk, Jansen, & Lyles, 2008). Zahra and George (2002) cited that PACAP was essentially influenced by external knowledge sources in diverse patterns, pertinently previous knowledge forms, respecting the substances of a firm's ACAP. Attainment and procurement through licensing and contractual contracts and interorganizational connections, included with R&D partnerships, joint ventures, and alliances are all external sources which provide the knowledge (Vermeulen & Barkema, 2001). A firm's interaction with its surroundings to obtain knowledge would affect their decision-making and the growth of their future competency (McGrath et al., 1995). Likewise, Van Wijk et al. (2008) affirmed that a firm's inclination was undoubtedly influenced by the breadth and depth of knowledge exposure to discover new and related knowledge. Obviously, firms increase knowledge through access to various sources in their surroundings, and these sources necessarily affect their obtainment and absorption abilities.

Consequently, developing ties with external sources should be implemented by a new enterprise to illustrate and enhance learning on the consequence of bringing this idea to a further phase. The latest studies have summarized access to many sources of information as part of knowledge obtainment when measuring ACAP (Ferreras-Méndez, Newell, Fernández-Mesa, & Alegre, 2015; Fosfuri & Tribó, 2008; Soo, Devinney, & Midgley, 2007; Spithoven, Clarysse, & Knockaert, 2010). ACAP evaluates the degree to which informants actively look for external information, stored for future applications, to employ new knowledge and share it with other

people in the organizations. In addition, the degree to which a respondent takes part in conferences and training and keeps abreast of new technology is evaluated (Soo et al., 2007). Knowledge acquisition is a crucial factor in ACAP and ultimate innovation and accomplishment, while ACAP can be estimated through encouraging R&D (Cohen & Levinthal, 1990; Tsai, 2001; Vega-Jurado, Gutiérrez-Gracia, Fernández-de-Lucio, & Manjarrés-Henríquez, 2008), which aims at internally generated knowledge. Attaining knowledge from external sources is also imperative, as seen in studies that investigate ACAP by analyzing sources of information (Armario, Ruiz, & Armario, 2008; Fosfuri & Tribó, 2008; Liao et al., 2003; Murovec & Prodan, 2009; Vega-Jurado et al., 2008) and social capital conditions (Bøllingtoft & Uihøi, 2005). Also, social capital consists of individual and collective social networks, ties, and structures that allow individuals to access know-how and information. Social ties linking actors toward resource suppliers to accommodate the acquisition of resources were discovered by Aldrich and Wiedenmayer (1993). The results in the following section of this research which investigates a new firm's networks will supply external knowledge, highly regarded necessity that influences acquisition and assimilation capabilities. Therefore, the hypothesis is proposed as follows:

Hypothesis 1: Network ties are positively related to potential absorptive capacity

2.4.3.2 Potential absorptive capacity and innovation

Concerning the key theoretical hypotheses of ACAP, firms that rely on innovation will benefit from new external knowledge only if they acknowledge the value of this knowledge and utilize and internalize the pieces of knowledge (Cohen & Levinthal, 1990; Zahra & George, 2002); otherwise, firms may be trapped potentially (Ahuja & Katila, 2001). They may lose sight of grasping the opportunities that new external knowledge proposes (e.g., fundamental technologies which industries are adaptable to and novel competitive products) (Kostopoulos et al., 2011). In accordance with the concept of Zahra and George (2002), the above mentioned is similar to PACAP.

PACAP stands for the ability to seek knowledge for enterprises' growth; nonetheless, firms may not employ innovation that ACAP shows the ability to generate products and services. Supposing that there is no space for it, new knowledge cannot be trained in the organization. In line with Reagans and McEvily's (2003) study, the search process is the starting point of knowledge transfer. Pending this stage, the receivers of knowledge first require defining and assessing the providers' knowledge. For all that, the original cognitive filtering mechanisms as well as reference systems tend to affect receivers' features and assessment owing to the omission of losing an assimilating powerful trap resulting from incompetence to perceive or understand the efficient values of new external knowledge.

Fosfuri and Tribó (2008) and Murovec and Prodan (2009) obtained their measurements of PACAP from companies' ranks regarding the necessity of knowledge from various sources to innovation. Furthermore, Vega-Jurado et al. (2008), in line with PACAP on whether organizations subscribed to journals, took part in meetings and scientific fairs (higher involvement brought about a higher ACAP). They set down PACAP on a variety of sorts (providers, clients, academies, technology organizations) of knowledge for innovation, accompanied by more sources offering higher ACAP. Therefore, new enterprises are prone to generating relationships with those external sources to obtain a great deal of knowledge. The most crucial knowledge was probable to come from clients and competitors, but a great many sources are better because a broader scope of sources is more possible to offer more information that is anticipated to provide more choices to define alteration in the surroundings and to ameliorate achievement (Liao et al., 2003).

The scholars have indicated that organizations commonly obtain results from attaining external knowledge more than invention (e.g., Hamberg, 1963; Mueller, 1962; Von Hippel, 1988), especially at the organizational level. In accordance with Cohen and Levinthal's (1990) study, the ability to employ external knowledge is crucial in the process of gaining innovation outcomes; it is a practice in the level of previous related knowledge. A firm's ACAP is realized as an organizational competency that supports knowledge to become new outcomes or processes to assist innovation (Harrington & Guimaraes, 2005; Newey & Zahra, 2009). Additionally, firms which own a high level of learning may attain considerable achievement

through employing absorbed knowledge in innovation processes (Zahra & George, 2002). To enlarge the perspective, Fiol (1996) claimed that enterprises' competency to institute innovation products was countable upon the previous gathering of knowledge that they had assimilated. The presence of knowledge had correspondingly contributed to the dependence between innovation and knowledge. Thus, an innovative attempt was a sequence of the effort and spending everything in knowledge and workers. Similarly, consequences from innovation methods that respected new outcomes and processes generated new knowledge thereafter (Prajogo & Ahmed, 2006).

External knowledge attainment also abridged the cycles manufacturing – products and led *ceteris paribus* to a greater rank for introducing new products. For instance, Dyer and Singh (1998) expressed that both decreasing a variety of product deficiencies and bringing faster in product achievement cycles were reliable on relationship-specific investments. Zahra and George (2002) indicated that a great deal of knowledge was able to augment the speed of processing and consequently reduce product development cycles. Eventually, external relation-specific knowledge acquisition augmented product growth by enhancing the satisfaction to enlarge new products. Return from developing new products specifically for exchanging partners came from relationship investments which they added (Dyer & Singh, 1998). Therefore, the hypothesis is proposed as follows:

Hypothesis 2: Potential absorptive capacity is positively related to innovation

2.4.3.3 Potential absorptive capacity and realized absorptive capacity

The complementarity, which is associated with connection and a good deal of new knowledge obtained from external sources with the current knowledge of the firm or innovation movement such as complementarity with internal developing new products or R&D contractual agreements in progress, these are useful that it should further increase consequences (Lofstrom, 2000). The studies based on resource-based theory support this discussion and suggest that advantages from resource

incorporation (e.g., combining new with existing knowledge) are more prone to occur when there is complementarity rather than similarity (Harrison, Hitt, Hoskisson, & Ireland, 2001; Teece, 1986). By the time the firms have access to complementary knowledge inflows out of diverse external sources, it tends to be related to achieving knowledge, absorption, and utilization in light of the value and growth probability that these inflows are able to consequently create and stimulate the level of its ACAP (Abecassis-Moedas & Mahmoud-Jouini, 2008; Lane & Lubatkin, 1998; Zahra & George, 2002).

Leal-Rodríguez et al. (2014) demonstrated that PACAP and RACAP had varied roles. Their effect was not segregated; it was fairly in harmony. Both elements of ACAP evolved and took part in the amelioration of firm accomplishment. Firms could not probably apply knowledge without first obtaining it. Firms were able to gain and absorb knowledge, yet they might not have the competency to transform and utilize this knowledge for creating profits. Simultaneously, a high PACAP did not essentially enhance achievement. RACAP transformed and utilized the absorbed knowledge by assimilating it into the firm's processes. PACAP could be seen as a process for obtaining new knowledge, while RACAP could be recognized as a process for utilizing this precious knowledge. Therefore, it is extremely essential that generated new knowledge is reserved and retained within the firm because it provides access to organizational members who utilize it. Otherwise, RACAP and the valuable knowledge will disappear (Cepeda-Carrion et al., 2012).

On the other hand, as a previous discussion, complementarity occurs between two elements which may lead to considering the degree of influence that PACAP has on innovation consequences. The contemplation of all the statements above indicates that firms, to institute their own ACAP, will depend on their competence while comprehending new knowledge and combining it with their currently existing prior-related knowledge to utilize it. In the same manner, solely, knowledge is not enough; tools are needed for firms to exploit and appropriate such knowledge buried in innovation (Lee & Wu, 2010). PACAP and RACAP possess varied abilities and positions, yet their effects are not isolated. They are rather complementary. PACAP and RACAP are distinguished and thus may be described in different structures, aims, and schemes. PACAP and RACAP coincide and assist each other to innovation

improvement. Consistent with this concept, this research discusses the acquisition and absorption of PACAP, and the alteration and utilization of RACAP happen respectively. Therefore, the hypothesis is proposed as follows:

Hypothesis 3: PACAP is positively related to RACAP

2.4.3.4 Realized absorptive capacity and innovation

ACAP is repeatedly mentioned as an essential source of innovation achievement (Chang & Cho, 2008; Lyon et al., 2000; Madhavan & Grover, 1998). The firms that possess well-developed and high-quality knowledge processing methods are more willing to search after innovativeness, whereas the assimilation capacity and the processes that develop firms' innovative ability are difficult to duplicate and may, in turn, produce long-term competitive advantages. RACAP reflects the ability of work within the organization, especially the internal capabilities of the firm, to take advantage of knowledge. Zahra and George (2002) have described it as an organization's ability to transform and exploit knowledge which knowledge conversion is related to that the firm can develop improve duties to facilitate the collection of knowledge contained within the firm and new knowledge. And the exploitation of knowledge relevant to the organization's ability to adjust, expand and utilize existing capabilities or to create new ones by combining knowledge gained and systematic transformation process and operation.

After defining potential utilization, a firm applies knowledge. This constitutes an actual utilization (Smith et al., 2005). Learning in the range of ACAP contains the following process phases: transforming the absorbed knowledge and utilizing this knowledge (Lane et al., 2006; Todorova & Durisin, 2007). To efficiently utilize knowledge, a firm requires previous knowledge (Jansen et al., 2005). After absorbing external knowledge, a firm frequently has an in-depth comprehension of the knowledge (Cassiman & Veugelers, 2006). Knowledge, hence, specifies if exploiting opportunities are found and in which areas they are discovered (Shane & Venkataraman, 2000; Smith et al., 2005). As new utilization is often evolved by combining existing knowledge with new one, exploitation achievement is usually the

most successful in well-known knowledge (Kogut & Zander, 1992; Tsai & Ghoshal, 1998). New knowledge is the crucial element of former knowledge in transforming and utilizing assimilated one (Teece, 2007; Van Den Bosch, Volberda, & De Boer, 1999). Zahra and George (2002) mentioned that, after a thorough alteration of former related research, important relationships between a firm's ACAP were shown in most of the empirical studies. Its innovative consequences and the other ones are associated with the creativity and implementation of competitive advantages. Although PACAP is important, RACAP is the elemental root of performance amelioration. Thus, these consequences fundamentally mirror a firm's RACAP attempt. As a result, it is important to integrate new and current knowledge. Utilization learning helps firms create new sensible schemata (Jansen et al., 2005). Apart from matching knowledge with utilization, utilization learning turns knowledge into new outputs (Tsai, 2001). As PACAP helps a firm gain externally new knowledge, RACAP plays a crucial role in utilizing new knowledge and eventually aids the firm to generate values. PACAP influences innovation via management adaptability and growth of new resources and proficiency, and RACAP does the same by the advancement of new processes and outcomes (Camisón & Forés, 2010). For all that, PACAP and RACAP are not similar.

Cepeda - Carrion et al. (2012) found that RACAP has a positive effect on innovation because RACAP encourages the use of knowledge created which is essential for innovation development. This ability not only shows the improvement of existing knowledge and the ability to transform knowledge to the organization to apply to knowledge creation activities is a process that is important to the effectiveness of the workload in learning (Lewin et al., 2011). Although the ability to use external knowledge is necessary to identify and scrutinize relevant external knowledge, the competitive advantage in innovation can only occur when the firm has the ability to use internal knowledge (Fosfuri & Tribo, 2008). The knowledge contained within that the firm must be shared. With members of the organization and integrating with the knowledge created within and in converting knowledge to help the organization develop new awareness or change existing processes and finally exploiting knowledge to new products (Kogut & Zander, 1992). The ability is transforms and exploits the knowledge that is a process of being able to use internal knowledge and it affect the firm's performance through product and process

innovation (Tsai, 2001 Zahra & George, 2002). The present research proposes that RACAP influences innovation. Therefore, the hypothesis is proposed as follows:

Hypothesis 4: Realized absorptive capacity is positively related to innovation

2.5 Moderating Role of Entrepreneur Orientation on Knowledge Absorptive Capacity and Innovation

2.5.1 Entrepreneur orientation

EO is a key construct which appears in the literature on entrepreneurship and strategic management for many years (Anderson, Covin, & Slevin 2009; Covin, Green, & Slevin, 2006). The concept of EO originated in the strategy-making process literature (Mintzberg, 1973). EO refers to an organization-wide activity that combines decision-making, planning, examination, and many properties of an organizational approach to life, value pattern, and task (Hart, 1992). EO stands for the policies and practices that supply a foundation for entrepreneurial judgments and operations. For this reason, EO may be considered as the entrepreneurial strategy-making approach that major decision makers employ to render a firm's organizational intention and boost its perceptibility. EO comprises three dimensions: innovativeness, proactiveness, and risk taking. These dimensions normally demonstrate thorough intercorrelations with one another (e.g., Bhuiyan, Menguc, & Bell, 2005). Hence, in conformance with Covin and Slevin's (1989) original conceptualization and measurement and later works, most studies incorporated these dimensions into one single determinant (e.g., Wiklund & Shepherd, 2003).

However, there have been some debates in the literature regarding the dimensionality of EO. As suggested by recent theories, the dimensions of EO may occur in various integrations (e.g., Covin et al., 2006; Lumpkin & Dess, 2001; Tang et, Yan, & Wang, 2008). Each dimension represents varied and dependable features of the multidimensional concept of EO (George, 2006). Particularly applying to the dimensionality of EO, Covin et al. (2006: 80) noted that intellectual improvement respecting EO would likely occur as an operation of how obviously and perfectly

scholars could describe the pros and cons of alternative conceptualizations of the EO construct and the circumstances under which the alternative conceptualizations might be proper.

The work on EO stands for a thread of literature which has investigated innovation in previous studies, like the meta-analysis study by Rauch et al. (2009) and Pérez-Luño, Wiklund, and Cabrera (2011). In this literature, investigators have discussed that the strategic direction of innovation comes out being compatible with two other strategic orientations, namely, proactiveness and risk taking to organize a three-cornered group, pointing to a firm's EO. The EO literature has founded the compatible outcomes which among greater innovation, proactiveness, and risk taking are connected. These outcomes keep up across distinct firms, industries, cultures, national extents, and other contextual features appearing to be most of the other innovation literatures. In analyzing the innovation symmetry of EO, examiners have stressed on the advent of new goods in marketplaces, regardless whether these new products stand for innovation options or creation. Likewise, EO research has not yet determined if this structure is relatively closer to the uncertainly analyzing methods, identifying innovation creativity, or arising from more designed utilization manners. They propose that no less is innovation positively connected to proactiveness and risk taking, less that these two dimensions of EO are adjacently and variously colligated with the characters of innovation which the enterprise seeks after (utilization or generation).

Consequently, this research is countable on the EO literature to speculate about risk taking and proactiveness and anticipate innovation utilization and/or generation in varied approaches. This research also depends on work suggestions that the dimensions of EO do not have to covary, but they can be usefully investigated as hierarchically dependent (Richard, Barnett, Dwyer, & Chadwick, 2004; Tang et al., 2008). This method deviates from more customary ones of visualizing EO, consisting of three isolated or joint dimensions and rather than using two of them (risk taking and proactiveness) to anticipate the aspects of the third one (innovation utilization and innovation creativity). Similarly, as the EO literature supposes, EO is an organization's fairly steady and persisting characteristic. It supposes that the firm's inclination prefers one mode of innovation (creativity and utilization) over the other

one, and to equilibrate the two is the firm's fairly steady and persisting characteristic.

2.5.2 Entrepreneurial orientation, knowledge absorptive capacity and innovation

The main concept of an EO's strategic aspect is that firms are more prone to encircle creativity and pursue new entries (Lumpkin & Dess, 1996; Miller, 2011). Entrepreneurial firms are typically more achievable than nonentrepreneurial ones seeing that entrepreneurial firms are able to search after high-quality probability in the marketplace (Lumpkin & Dess, 1996). As such, EO may influence the curvilinear connection between ACAP and firms' financial achievement via increasing the commercialization of firm knowledge and the critically utilizing aspect of ACAP. By greater EO, firms are able to indicate probability to utilize their knowledge to advance among their competitors and to take the risks necessary to pioneer and provide new contributions in promised markets.

With regard to the strategic aspect at the firm level, EO stimulates and contributes firms' efforts to exploit knowledge assimilated into creating value resource bunches (Griffith, Noble, & Chen, 2006; Wiklund & Shepherd, 2003). Resource bunching and pulling are crucial in improving achievement and avoiding reducing returns as it is rarely simple to act on obtaining a resource adequate to appropriate for its value (Ireland, Hitt, & Sirmon, 2003). Entrepreneurial firms can create resource bundles through the collection, accumulation, and pursuit for the highest possible returns out of their available resources (Stevenson & Gumpert, 1985). Firms appear to be more reactive to externally obtained knowledge with a more assured strategic direction (Liao et al., 2003). In addition, with higher levels of EO, firms enhance achievement via heightening their information utilization efforts (Keh, Nguyen, & Ng, 2007).

2.5.2.1 Entrepreneurial orientation as moderator in relationship between potential absorptive capacity and innovation

Knowledge acquired and assimilated by a firm's PACAP may affect the quality of its entrepreneurial behavior. PACAP encourages differentiation in innovation consequences (Tsai, 2001) through assisting firms to gain knowledge from external sources such as suppliers, customers (Ahuja & Katila, 2001; Huggins & Thompson, 2015) and competitors and absorb obtained knowledge to accommodate innovations (Flor et al., 2018; Laursen & Salter, 2006). EO is like an organization-wide competence, increasing the satisfaction of the firm that has a search behavior. PACAP is a boundary-spanning knowledge ACAP, aiding to improve search outcomes. Thus, this brings about higher levels of EO unified with PACAP to accommodate efforts toward merging various knowledge components (Patel, Kohtamäki, Parida, & Wincent, 2015). In addition, PACAP enhances a variety of knowledge elements to increase uncertainty in ex ante identification of value-creating integration of knowledge components or recombinant uncertainty (Fleming, 2001; Sorenson & Fleming, 2004).

The competence to attain and amalgamate external knowledge and absorb it within the organization is essential for proactive organizations looking for specific and new resolutions. For example, when a firm emphasizes its relationship with its key customer, it can determine what customers need, and it is an important marketing knowledge (Lane et al., 2006; Tzokas, Kim, Akbar, & Al-Dajani, 2015). The firm then can utilize this acquired knowledge, although the probability of an even greater discovery comes from the cost of a higher probability of failure (Singh & Fleming, 2010). PACAP brings up proactive knowledge-creation processes to enhance the variety of innovation probabilities (Liao et al., 2003; Zahra & George, 2002). To ameliorate the risk-taking dimension of EO, high PACAP supplies access to remote technological boundaries. Particularly, for searching after dissonant knowledge combinations, the possibility of various information descends the perception (Vlek & Stallen, 1980), and the possibility of loss (Sokolowska & Pohorille, 2000), enhance the comprehension of controllability (Vlek & Stallen, 1980). Such perceptions tend to either achieve innovations or face harmful failures. This condition indicates that PACAP strengthens EO efforts to struggle for a broad range of innovations, together with the possibility of comprehending both achievement and failures. Totally, improving EO and higher PACAP contribute to an infrastructure by obtaining and

absorbing external knowledge to expand recombinant opportunities in the technological quest. Knowledge recombination efforts at higher levels of PACAP and EO lead firms to more thoroughly explore the outskirts of innovation (Simonton, 1999). Therefore, the hypotheses are proposed as follows:

Hypothesis 5a: Entrepreneur orientation positively moderates the relationship between potential absorptive capacity and innovation

2.5.2.2 Entrepreneurial orientation as moderator in relationship between realized absorptive capacity and innovation

Knowledge transformed and exploited by the approach of RACAP can enhance the efficacy of EO as much as obtained and absorbed knowledge by virtue of a firm's PACAP mentioned above. However, PACAP increases variability in innovation consequences under augmenting EO, while RACAP is prepared by selecting and retaining routines in internal firms required for tackling variability. For greater accomplishment within increasing recombinant uncertainty, firms should possess the competency to transform new knowledge and integrate it with available resources and ability (Fleming, 2001). The transformation is an essential element of RACAP. It enables firms to review their explanation and understanding of commercialization probability and results in cooperation, rearrangement, and recombination with available core proficiency (Zahra & George, 2002). Moreover, the exploitation element of RACAP facilitates firms to utilize novel resources to form new products. The advantages from increasing variation in innovation can be comprehended under a higher RACAP, seeing that it can to confine familiarity traps by bringing in knowledge recombinations from remote technical fields, keeping away from maturity traps by stimulating dependable and predictable knowledge-conversion processes, and decreasing propinquity traps by restricting the disposition to utilize known knowledge domains (Ahuja & Lampert, 2001). Exploitative learning is involved in RACAP, which enables firms to administrate and employ augmenting knowledge variations (Camisón & Forés, 2010). Firms select routines to illustrate and commercialize practicable innovations from a wide boundary of competent innovation

alternatives, considering the transformation and exploitation components of RACAP (Mueller, Volery, & Siemens, Von, 2012). Given that transformation insists on firms to pick out knowledge recombinations that promptly transfer to available resources and competency, RACAP enhances a firm's capacity to forsake less valuable initiatives and benefits from innovation opportunities which are proficiently more attainable (Foss, Lyngsie, & Zahra, 2013).

On behalf of high EO firms proactively instituting innovations into markets, RACAP is able to achieve trials, internal learning, and rapid adaptation (Sapienza, Autio, George, & Zahra, 2006). Zahra and George (2002: 778) cited that the transformation component of RACAP empowered firms to originate new perceptual schema and change existing innovation routines. This perspective places importance on effective knowledge transfer (Jane Zhao & Anand, 2009), and resource flexibility to respond to market needs via rapid adaptation (Meyers, Sivakumar, & Nakata, 1999). As such, RACAP supports firms that administrate variation in innovation by magnifying the possibility of utilizing efficiently valuable innovations and engendering firm performances. Therefore, the hypothesis is proposed as follows:

Hypothesis5a: Entrepreneur orientation positively moderates the relationship between realized absorptive capacity and innovation

2.6 Conceptual Model and Hypotheses

Based on the literature review and hypotheses formulated previously, this research is primarily focused on investigating the effect of network ties, two components of knowledge ACAP, and innovation. In addition, EO shows its moderating role in the relationship between the two components of knowledge ACAP and innovation. This research focuses on new firms in the Thai agricultural manufacturing context. In addition, Table 5 has shown research hypotheses in summary and Table 6 shown operational definitions of all variables in this research.

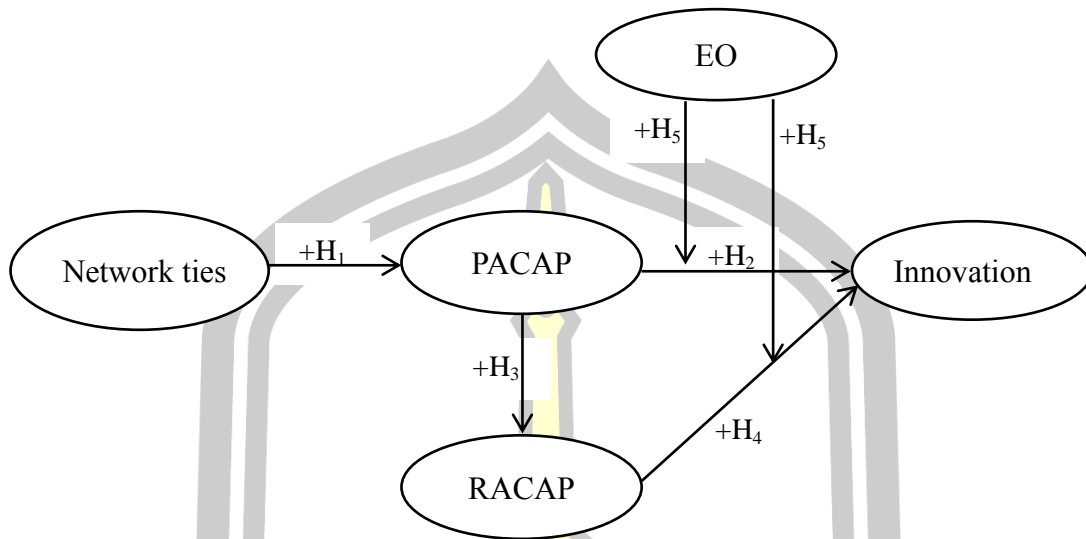


Figure 1 Conceptual framework

Table 5 Research hypotheses in summary

Hypotheses	The statement
H ₁	Network ties are positively related to PACAP.
H ₂	PACAP is positively related to innovation.
H ₃	PACAP is positively related to RACAP.
H ₄	RACAP is positively related to innovation.
H _{5a}	EO positively moderates the relationship between PACAP and innovation.
H _{5b}	EO positively moderates the relationship between RACAP and innovation.

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Table 6 Operational definitions

Constructs	Operational definitions	Sources
A new firm	A firm whose length of operation is less than ten years.	Pirolo and Presutti (2010)
Innovation	A new firm's generation and development of new products. When a firm manufactures a product, it is new to the firm and market. It may achieve commercial success.	Johannessen et al. (2001) and Lichtenthaler (2009)
Network ties	The relationships between startups and external knowledge sources by interaction, frequency of contacts, and emotional intensity of the relationship.	Granovetter (1973) and Gulati (1995).
PACAP	A firm's capability of identifying, recognizing, and acquiring external knowledge that is critical to its operations, and then analyzing, processing, interpreting, and understanding the knowledge obtained from external sources.	Zahra and George (2002)
RACAP	A firm's capability to develop and refine the routines that facilitate the combination of existing knowledge and newly acquired and assimilated knowledge.	Zahra and George (2002)
EO	The methods, practices, and styles that managers use to act entrepreneurially.	Covin and Slevin (1989)

CHAPTER III

RESEARCH METHODOLOGY

This chapter presents the approach in which this research was operationalized to answer the research questions defined in chapter 1. This research was based on a positivist paradigm. Both qualitative and quantitative approaches were adopted to guide the research design and the methods for data collection. As such, the first research question was answered by a case study, and two research questions were answered by a survey questionnaire that was distributed to new firms in the Thai agricultural manufacturing industry. The following sections explain the selected research paradigm, methods, procedures of the data collection, and operationalization of both case study research and survey measures and analyses. The last section of this chapter provides the testing reliability and validity.

3.1 The Research Paradigm

What all research in the world is determinedly related to be what investigation is and how research is conducted, especially in a set of beliefs and feeling (Denzin & Lincoln, 2011). This determination supplies a paradigm, an interpretive framework, relevantly associated with implementation based on a set of beliefs (Guba, 1990). That is to say, the selected paradigm affects related research on conduct, delineation, analysis, and interpretation (Bryman & Bell, 2007).

Three major precepts of the paradigm dissimilarity are: (1) the ontology, related to the philosophical study of the characteristics of being, reality or existence, and relations, is the perception in the instruction of reality, (2) how we happen to know the relationship between the researcher and what is being examined are part of the epistemology, and (3) how we come to know but how much more practical is in nature are part of the methodology. In consequence of the methodology concentrates on the particular methods within a research process, the methods intend accumulating knowledge about the world. Epistemology and methodology are relevant to each

other: one is associated with the philosophy of how we know the world, and the other is related to the practice.

3.1.1 Positivism and social constructionism

In the previous section investigated, the research paradigm commence with two contrary philosophical positions, namely positivism and social constructionism (Bryman & Bell, 2007; Easterby-Smith & Thorpe, 2002; Guba, 1990). Positivism is the truth or philosophy of science fundamental to the perspective which is in not only a social science but also a natural one. Information stems from perceptible experiences and rational and mathematical examinations of such data together with the exceptional source of all trustworthy knowledge. That is to say, positivism presumes that valid knowledge (truth) takes place merely in scientific questions. Accordingly, a reality out there is assumed by the positivist paradigm in order to study, capture, and understand. Ontologically, the fact of positivistic research is external and objective while the epistemological supposition of the positivist researcher is that “knowledge is only of significance if it is based on monitoring of this external reality” (Easterby-Smith & Thorpe, 2002: p.28). That is, positivistic researchers suppose character of an objective analyst, establishing detached interpretations by the data independent of respondents. Therefore, a deductive method to calculate the concept being investigated by quantitative data is stressed, and the testimonies of hypotheses are under to empirical tests, in order to testify or disprove the proposition under cautiously regulated circumstances (Bryman & Bell, 2007; Easterby-Smith & Thorpe, 2002; Guba, 1990).

In contrast, the ontological hypothesis which is concerned over the classifications of being supposed in social constructionism is that “reality is not objective and exterior, but is socially constructed and given meaning by people” (Easterby-Smith & Thorpe, 2002: p.29). Hence, epistemologically, the social reality within this paradigm is specified by social actors related to individuals that their actions or reactions are reckoned instead of objective and external determinants; that is to say, determinants of the constructivist paradigm are included that multiple realities take place ad they are dependent for their forms and contents to the persons

who possess them. Therefore, touching the research focus, the comprehensible method, is highlighted, to conceive what actors are thinking and feeling. Subsequently, researchers carry out the social constructivist paradigm to make effort to diverse forms of participative enquiry to adapt the subjective scope of social actions, seeing that it is taken. The complicated qualities of human mind or the known are able to be unpacked by way of these processes (Bryman & Bell, 2007; Easterby-Smith & Thorpe, 2002; Guba, 1990). As a result, the researchers participate in what is being examined and the observation interpretations arise from the actors themselves.

3.2 Research Methodology

The former section explains the ontological and epistemological judgments, accompanied by making a decision expecting the research strategy which influences on a research design that supplies a framework for gathering and data analysis subsequently under the approaches that are most suited to attaining the research objectives in a particular study. Lots of research designs have been specified that they are adequate or suitable for being applied in qualitative and quantitative research, included with : (a) survey research, (b) experimental design, and (c) the case study) (Bryman & Bell, 2007; Easterby-Smith & Thorpe, 2002), and each of these is expounded below.

First, survey research is prevalently utilized in social science studies, and its efficient application counts on a considerably structured method to data collection (Bryman, 2004). It is done best supposed that researchers realize what sort of information is advisable for providing the clarification in accordance with the interested phenomena and in case that the provisional questions can be measured in order to ensure that the questions deliver the same meaning for the various informants (Bryman, 2004; Robson, 2002). Hence, the conformity concerning the measure and measurement validity has been set up for a concept. Actually it reflects the concept that is assumed to be denoting, and it is a major motive for a researcher in order to portray or summarize the study (Bryman, 2004; Bryman & Bell, 2007). Invariably, obvious comprehension is need for researchers to realize the measurements related to the issues of interest which are established to select well-

tested measures to ameliorate the measure validity. From a pilot survey operated, obtaining access to a large sample size in the capacity of the target population and mobilizing a proper sampling method are essential for enhancing the consistency of the measure so as to increase the confidence level which researchers are able to deduce outcomes to a wider population (Bryman & Bell, 2007). Moreover, the category survey research can be separated into cross-sectional and longitudinal designs, relating to a survey which gathering all data directed towards the study emerges at a single point promptly, while the other is implicated to a process which the sample is surveyed doubly (Bryman & Bell, 2007). Therefore, employing cross-sectional survey data is only possible to investigate the pattern of connection among the studied variables; however, expanding the research to make the longitudinal data result in observing changes of causal influences respecting the variables all the time.

Second, the purpose of research along is to do experimental design and to investigate the experimental operation of an independent variable through comparing two samples: one receives the treatment (the experimental group) and the other does not receive the treatment (the control). Before After the experimental manipulation, the dependent variable is measured; moreover, dissimilarity discovered between the two groups is featured to independent variable operation. The control condition together with a random process which is subject to experimental and control groups augmented the internal validity of the research in order that the summary respecting an existing causal relation between the independent and dependent variables is able to be depicted more positively. Furthermore, the appropriateness for an experimental design is the most so long as the application to the manipulation process is utilized for a test of single or few treatments so as to be consistent with the independent variables, in order to bring out the connection between this treatment/s and the dependent variable. The research framework is subject to a causal modeling process a range of knowledge ACAP and EO are supposed or hypothesized to attain influential matters on innovation. Therefore, the experimental approach comes out in order to offer an effective alternative of research design for utilization in this examination.

Third, the case study approach is the same as survey research, whereas it is dissimilar touching its focus (Bryman & Bell, 2007). Case study research means one of distinct forms of social science research. A preferred method is essential for doing

case study research because it will be compared to the other ones within circumstances when (1) major research questions place importance on "how" or "why", (2) a researcher rarely has little or no control over behavioral incidents, and (3) the study highlights on a contemporary phenomenon. As analyzed, a case study looks into a contemporary phenomenon (the "case") in its real-world statement, especially so long as the extent between phenomenon and context may not be truly evident. For another thing, a case study lays out data collection aspects, for instance, data do triangulation and help express the remarkable technical condition by which the case study will gain more variables of interest than data points (Yin, 2013). Events, people, or positions are the objects of interest which researchers normally take this approach and concentrate on providing an in-depth demonstration of the unusual aspects in the case and illustrating research questions as well as, the relationships of the study variables, in the case study and in the organization's structure (Denzin & Lincoln, 2011). To this end, it was the objective of this research to explain how to acquire new knowledge in order to create new firms' products and the aim was to investigate the linkages of the constructs that was the setting for the investigation among constructs namely network tie, knowledge ACAP, EO, and innovation at new agricultural firms.

Hence, the researcher considers the approaches are most appropriate to apply that is both the case study approach and the survey research for the research. However, the researcher realized the disadvantages that may arise from using both approach, particularly regarding the reliability and accuracy of the measures. Simultaneously, on the basis of previous, the researcher has referred to those studies for developing concept in this research.

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3.3 Research Method

3.3.1 Case study research

Prominent scholars such as Yin (2013) and others identify case study research is a research method. The nature of case study research comprises twofold (Yin, 2013) : (1) The case study is an empirical investigation that examines contemporary phenomena ("cases") in depth and in the context of the real world, particularly when the boundaries between phenomena and context may not be clear; and (2) conducting of case study to cope with the technical situation that is outstanding and to do this, there may be variables that are interesting and different from data points, and as one result. Case study relies on evidence from multiple sources; moreover, in order to a triangulating fashion and as another result by converging data. In essence, the definitions of twofold which cover the scope and qualifications of case study, show that case study research includes a comprehensive approach - covering the design logic, data collection techniques and specific approaches of data analysis.

3.3.1.1 Different types of case study research

To answer the first research questions, qualitative case study research is best answered. Hence, the case and its boundaries have been considered what type of case study will be conducted. Based on Baxter and Jack (2008) study, the authors describe a variety of case studies that Yin (1993) and Stake (1995) use different terms. On the one hand, Yin (1993; 2013) categorizes case studies are explanatory, exploratory, or descriptive that also differentiates between single, holistic case studies and multiple-case studies. In contrast, Stake (1995) point out that the case study is intrinsic, instrumental, or collective.

This research adopts multiple-case study research based on Yin (1993; 2013) that suits for this research to gain insight knowledge and deep understandings on ACAP can is a medium for linking external knowledge sources with a new firm's innovation in Thailand. In a multiple case study, the researcher is exploring several cases in order to understand the similarities and differences between the cases. Yin

(1993) point out how multiple case studies able to be applied to either, "(a) predicts similar results (a literal replication) or (b) predicts contrasting results but for predictable reasons (a theoretical replication)" (p. 47). Yin (1993) proposed the case study is a method of choices for investigating a complex interaction a phenomenon and a context. Qualitative method can be applied to harvest the intricate details and deep understandings in regard to phenomenon and human perspectives such as feelings, emotions, thought processes (Strauss & Corbin, 1998). In addition, a semi-structured interview and within-case and cross-case analysis are the two best possible methods used for data collection, inquiry analysis, and the creation of knowledge.

3.3.1.2 Research design

Case study method describe the belief that there are many cases in the social world in which participants / key informants are experts in creating understanding of specific queries in natural words. In doing so, the researcher aware the potential disadvantages of using this method, especially concerning the reliability and validity of the measures. However, this research based on measures' previous research and most of the concepts referred (Eisenhardt & Graebner, 2007; Larsson, 1993; Yin, 2013), thus the potential problems with the accuracy of these things can be eliminated. In order to the quality of any empirical social research, this research base on Yin (2013) four tests that are construct validity, internal validity, external validity, and reliability. Follow as:

a) Construct validity: identify correct operational measures for the concepts being studied. In this research, the construct validity was tested by using multiple evidence sources, establish chain's evidence and key informants who review draft case study report.

b) Internal validity: seeking to building a causal relationship in which certain conditions are believed to lead to other conditions that are different from counterfeit relationships. In this research, the internal validity was tested by using pattern matching, explanation building and use logic models.

c) External validity: defining relationships the domain to which the study 'can be generalized. In this research, the external validity was tested by using theory in sing case studies and replication logic in multiple case studies.

d) Reliability: demonstrating that the operations of a study such as the data collection procedures can be repeated. In this research, the reliability was tested by using case study protocol.

3.3.1.3 Case selection

In the present research, the researcher conducted a cross-case analysis, which has similarities and differences to gain insight from the objective of the research. The results show that the case study used interviews to compare the theory (Schuler, Tarique, & Jackson, 2004) and the possibility to gain a new insight of using knowledge to achieve innovation from all selected cases. To answer the first research question, each case was based on the following criteria: (1) the firm is less than 10 years old, (2) the firm is independent (i.e., not a subsidiary), (3) the firm produces processed agricultural products in the agricultural manufacturing sector, and (4) the firm is related to (a) awards, (b) well-known, or (c) a learning source. Therefore, Cases A to F are selected in this research. The details are as follows:

Case A

The rice production and processing execution organization has been established for seven years. Before launching the organization, the owner operated another business which was in the agricultural field. When the owner saw rice products being displayed in an agricultural product exhibition, he became interested in this field. Thereafter, the owner studied the information regarding rice products. It was started by finding information, contacting people, and asking informants. At the initial steps, the firm started the business by rice selling. Then selling rice became more serious and growing. The owner resigned from his previous job and started his rice processing operation by focusing on increasing the price and value of the processed rice products. The founder learned and searched for the processes of rice. The first processed rice product launch was instant rice beverage. After that, the owner studied other knowledge sources to develop processed products and diversify

his products. The founder handled the researching and testing development of these processed rice products in the organization.

The firm achieved success. It has more opportunities to grow because it always develops products, consisting of production processes, product manufacturing models, and new product releases. Nowadays, the firm no longer manufactures instant rice beverage because the founder considers that the instant rice drink is the same product as other organizations. Therefore, the firm has four main processed rice products, consisting of food (rice cereal, rice germ powder) and nonfood (facial day cream and serum). Raw rice without any processing methods is also sold in a developed package. Another factor that drove the firm to success is the founder who always learns and takes the risk, as seen from the budget for research and development to extend the brand to the cosmetic industry. There is a plan to extend this direction for products by hiring research and development centers.

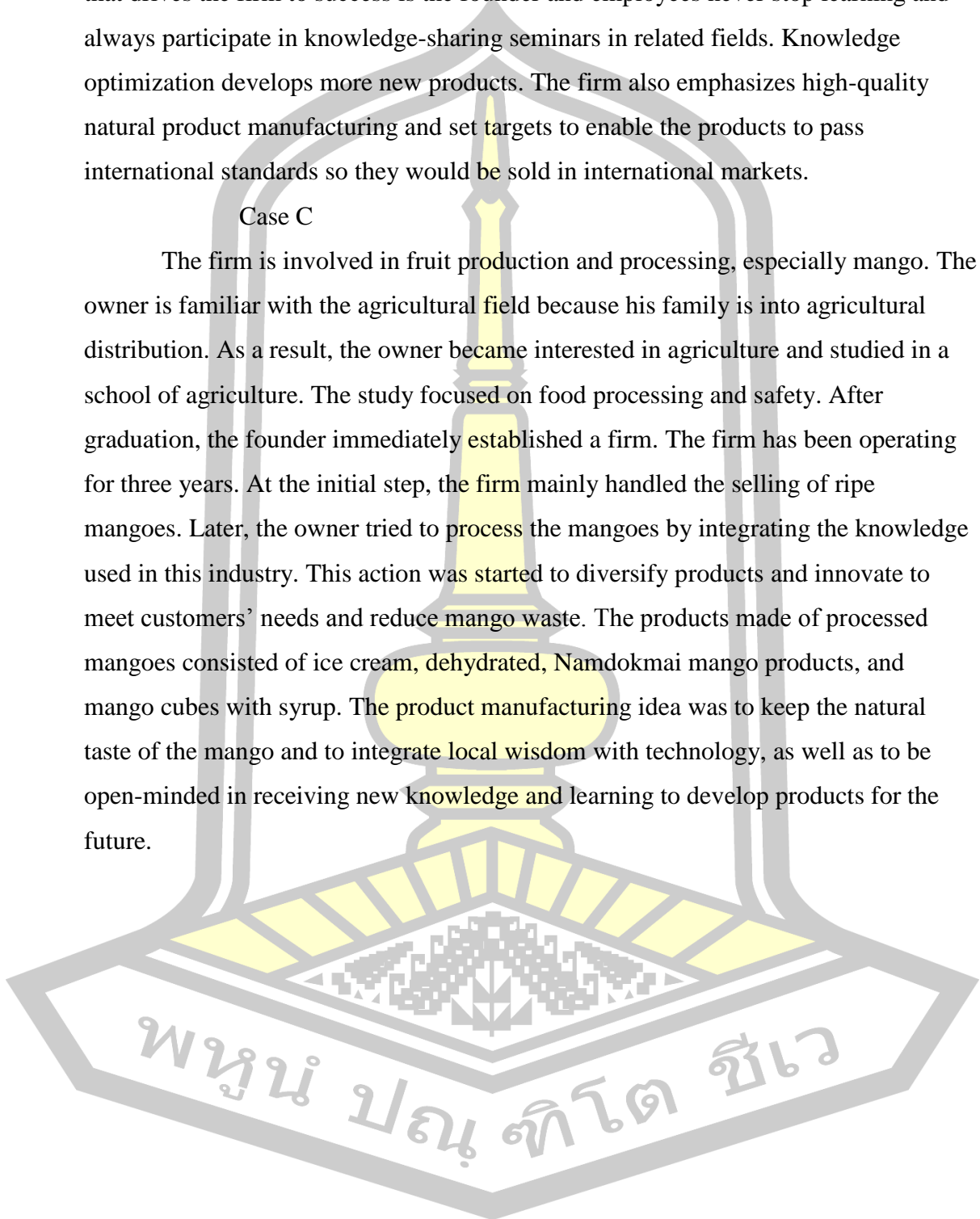
Case B

The firm is involved in herbal production and cosmetics processing. The owner graduated in the agricultural field and was employed by the Bhumirak Dhamachart Natural Center Project. The development ideas and theory used by the firm were inspired by His Majesty King Bhumibol Adulyadej, in terms of agriculture, environment, and energy to disseminate the Royal Initiative. Inspired by these ideas and working experiences, the owner wanted to use his knowledge and mentioned experiences to come back and develop his birthplace. Moreover, there were seminars conducted with the support of agricultural firms. Finally, the owner resigned from his job and returned to his birthplace. With his eight-year agriculture experience, the owner started to operate the business. During the initial steps, there were land improvement and usage of knowledge and experience to develop and apply to the natural material production of products without chemicals. The focus was on organic production, consisting of soap, shampoo, and lipstick. These organic products provide diversity of the product lines. The products were tested and approved by many firms, such as the Regional Medical Sciences Center and Green Product Standard to Ecology Friendly. The products do not need high-technology manufacturing processes, but they are organic and require minimum chemical optimization. This is to provide the best high-quality products to consumers. Customers can select products based on the

features that suit them. The firm has been established for three years. The key factor that drives the firm to success is the founder and employees never stop learning and always participate in knowledge-sharing seminars in related fields. Knowledge optimization develops more new products. The firm also emphasizes high-quality natural product manufacturing and set targets to enable the products to pass international standards so they would be sold in international markets.

Case C

The firm is involved in fruit production and processing, especially mango. The owner is familiar with the agricultural field because his family is into agricultural distribution. As a result, the owner became interested in agriculture and studied in a school of agriculture. The study focused on food processing and safety. After graduation, the founder immediately established a firm. The firm has been operating for three years. At the initial step, the firm mainly handled the selling of ripe mangoes. Later, the owner tried to process the mangoes by integrating the knowledge used in this industry. This action was started to diversify products and innovate to meet customers' needs and reduce mango waste. The products made of processed mangoes consisted of ice cream, dehydrated, Namdokmai mango products, and mango cubes with syrup. The product manufacturing idea was to keep the natural taste of the mango and to integrate local wisdom with technology, as well as to be open-minded in receiving new knowledge and learning to develop products for the future.



Case D

The firm is involved in vegetable production and processing. At first, the owner was not from the agricultural field and did not have agricultural knowledge. Nevertheless, the founder was a bit familiar with the field because his parents had run an agricultural business. The organization has been founded for five years. The owner's reason for starting the business was that he was exhausted from working in the big city. The owner wanted to come back to his birthplace and start a new career. The owner first started a business selling domestic animals, but it was not successful. The owner started again and ventured into vegetable planting, but the prices of vegetables were too low. The owner lost profits in this field as well. With these failures, the owner started learning and observing markets and other products, including their features and popularity. The owner searched for methods to solve the problems he encountered from his failed businesses. Finally, production and processing of vegetables became the solutions. These solutions would increase the value and prices of processed products. After this realization, the owner started vegetable processing. The main products consisted of salad dressing and veggie drinks with the combination of other materials to gain more product diversity.

Nowadays, the owner handles continual research and development, especially in improving watering processes and land management. The improvement helps in planting more vegetables, and product processing is developed to increase the product lines and development of product types. Today, the organization has more income and a more optimized operation. The firm still maintains its business status.

Case E

The firm is involved in the production and processing of cordyceps, which has the medicinal uses of a mushroom. The owner did not have agricultural knowledge before and worked in another field which was not relevant to agriculture. When the owner's parents became ill, a person recommended the advantageous features of cordyceps, that is, it can mitigate and eventually heal the owner's parents' sickness. When the owner witnessed the good results and benefits of cordyceps, he began to study and find information about it. In the beginning, the owner did not produce cordyceps to sell. The owner produced it for his family's use only. Later, the owner saw a business opportunity when other people became interested in cordyceps. Thus,

the owner started a business selling cordyceps, and it became more serious when the owner set up a manufacturing line. The manufacturing processes focused on organic cordyceps farming. The initial produce was only dried cordyceps. Then it developed into cordyceps capsule and pure cordyceps powder. Nowadays, the owner tries to develop high-quality production processes and meet factory standards and get certifications on product quality and distribution. The firm has been operating for six years. The business approach is to grow stable. However, the firm focuses on highly natural products without dangerous chemical contamination. The firm aims to produce full-nutrient cordyceps which will be selected and manufactured to be great golden cordyceps supplement that provides good effects to health.

Case F

The firm involves goat milk production and processing. The business was started because the owner looked for a more stable job than his routine job in the big city. Thus, the owner decided to start running an agricultural business, but the owner needed to start at the first step: agricultural land and knowledge. The owner did not have any agricultural background.

The owner started learning and finding ways to handle an agricultural business by following the principles of Royal Initiative Agriculture by His Majesty King Bhumibol Adulyadej. It was about a sufficient economy and self-reliance. Given the abundance of goat livestock, the owner decided to capitalize on the growth of the goat milk market. This market was still in its infancy stage, so competitors were still few. Moreover, goats are not difficult to look after. Taking care of goats requires low investment, and it could be started using a small business model. During the first years of the business, the owner was confronted with many problems, consisting of animal epidemiology, farm management system, and marketing channels. Despite the challenges, the owner tried to solve each problem. The firm has been operating for four years. It has two main services, namely, wholesaling and shop delivery of raw and processed goat milk, pasteurized goat milk, yogurts, cheese, and pudding. Furthermore, goat milk was used to process cosmetics, such as bar soap, liquid soap, and lotion. The vision of the business is to produce quality natural products and maintain sustainable agriculture which is simple but effective. In addition, the business aims to create high-quality agricultural products.

3.3.1.4 Data source

The case study can be performed through analysis based on primary and secondary data from multiple sources that support the development of the theory (Yin, 1993). The core sources of empirical data in this research were semistructured interviews with the key informant who is the owner or manager. To supplement, support, and verify the interviews, the secondary data from external sources were used to obtain a considerable amount of archival data related to learning. This methodology was appropriate for ensuring data triangulation (Eisenhardt, 1989). The process of data collection composed of three main stages.

Stage 1 was 2-3 round preliminary observations and conducted the interviews.

Stage 2 provided the outcome of these interviews and crosschecked with secondary data (e.g., publish via public media, award, and diploma of external training).

Step 3 was other rounds of interviews for clarifications and collecting more data until the researcher has received data saturation.

3.3.1.5 Semistructured interview

A semistructured interview is fit for investigating complex matters, conducted by nature, uniqueness, or disputation. Researchers generally apply this method to obtain detailed information of an informant's beliefs, realizations, or accounts related to a particular topic (Smith, 1995). A list of open-ended questions is used in a semistructured interview so that follow-up questions could be asked. Participants can bring up other necessary details, which are not included in the original directions, via the open-ended interview (Denzin, 1970 cited by Silverman, 1993). Fixing the sequence of questions is suitable for all participants. Open-ended questions also allow more flexibility for both an interviewer and an interviewee because they can delve into some interesting issues in the interview or the interviewer can obtain other essential details. The questions, nevertheless, should be determined in a rational order and should have responsive boundaries. They should be left later in the interview when the interviewee is more untroubled and comfortable to communicate to the

interviewer (Smith, 1995). This research is based on Zahra and George's (2002) ACAP model that explains the absorption of knowledge which leads to a new firm's innovation. Three states were part of Zahra and George's (2002) ACAP model: (1) knowledge source, (2) two components of ACAP, and (3) innovation. These constructs were adopted and illustrated in the conceptual framework of this research. Moreover, the extension of interest in network ties and EO from the review of literature discussed in the previous chapter was applied in the guideline of the semistructured interview and the semistructured interview shown in Table 7.

Table 7 The semistructured interview

Constructs	Questions
Two components of ACAP	1. What kind of knowledge is used as a basis for producing new products? 2. Where do you acquire this knowledge? 3. How do you exploit this knowledge?
Network ties	4. What methods are used to obtain knowledge from external sources? 5. How frequently do you interact with those external sources? 6. How close is the working relationship between your firm and those external sources?
EO	7. What are the reasons that you produce new products? 8. How are your characteristics of working? 9. When you face obstacles or problems, how do you solve it?
innovation	10. What feedbacks have you received on introducing new products to the market? 11. How does your product stand out or differ from general products or competitors in the market?

3.3.1.6 Data analysis

The data analysis employed here approaches common to qualitative, inductive research studies (Yin, 1993). The following steps used to analyze the narrative transcripts, which are adapted from the work of Potter and Wetherell (1987).

Step 1: Reading the transcripts. This allows the researcher to experience as reader and also become aware of "what a text is doing".

Step 2: Coding through reading the transcripts repeatedly by identifying all instances of reference to the discursive object which for this research is 'stress causal relationship'. This step is to ensure all material which is potentially relevant is included. The example of coding shows in Table 8.

Table 8 The example of coding

Key words of constructs	Illustrative examples of statement
Network ties: contact, still contact, adverbs of frequency e.g. always and often, familiar, close, well known	Case B: "In the initial time of business, we contacted government offices, such as BIZ CUBE, which allowed us to participate in training, and the offices supported and advised us about distribution channels. I always participated in training when I first started." Case F: "The first farm where I purchased the first three goats . . . when I had problems about goat's disease and any symptoms and I contacted the farm, the farm owner always gave us good advice."

Table 8 The example of coding (continued)

Key words of constructs	Illustrative examples of statement
<p>PACAP: capture, follow, search, observe continuous and up-to-date, analyze, interpret, and understand external information and knowledge</p>	<p>Case A: “Our loyal customers suggested that rice can be manufactured into cosmetics. When many customers tell us something, we will analyze and study their suggestions.”</p> <p>Case C: “When our customers and suppliers give feedbacks about adding flavor, I understand those feedbacks, but I couldn’t produce it because I realized the strengths in our product.”</p> <p>Case E: “We followed up and made information updates, such as setting up manufacturing standards with the Ministry of Public Health and contacting the Chamber of Commerce about international markets.”</p>
<p>RACAP: share, combine, improve, refine, leverage and exploit the knowledges</p>	<p>Case D: “When I learned how to plant, I tried to manage the internal organization procedure to be more systematic by using the knowledge I gained from participating in training.”</p>
<p>EO: the first mover, search or posture for opportunities, be ahead of other competitors, planning in the future, risk taking and trial and error</p>	<p>Case A: “When we produced cereals made from rice raw materials, my staff and I had tried trial and error for six to eight months to get the perfect mix that has good taste, good shape, and good taste.”</p> <p>Case B: “The local products are not the competitors. We are better because ours are real organic and are certified chemical free . . . Our exact targeted market is the international market, especially in Europe. We are planning to develop manufacturing standards to be of international quality. We have got all in Thailand.”</p>

Table 8 The example of coding (continued)

Key words of constructs	Illustrative examples of statement
Innovation: new product, new idea, newness, the generation and development of new products, and achieving of new products	Case A: “The new product received a good reception among our current and new customers.” Case F: “When we talk to our suppliers and customers, new ideas to create new products happen, such as flavor and new materials. This is a factor to make different and new products.”

Step 3: Categorizing codes through rereading transcripts repetitively, looking for patterns both the features shared by accounts and the differences in the content and form of accounts, themes, etc.

Step 4: Identifying discursive strategies for example, disclaiming, footing, metaphors, analogies, etc. and subject positions by looking into the rhetorical context or argumentative organization of talk.

Step 5: Forming, refining and validating how these effects coherently fit together in explaining or supporting the findings.

Step 6: Reporting the conclusion, validation procedures, specific parts or aspects of the extracts so that the reader can assess the researcher's interpretations.

To summarize, this researcher has relied on both within-case and cross-case analyses. The researcher looked for within-case and cross-case similarities and differences to gain insightful knowledge from research objectives. Tables 8 to 9 illustrate some parts of the results to compare constructs in the exploration of six case studies. The results provide insight on the comprehensive theoretical and phenomenon in the Thai agricultural manufacturing context from selected cases. The findings of the exploration context indicate that firms need to tie external sources that enhance critical knowledge, and then this knowledge supports the firm's innovation through a set of organizational routines and exploitation of knowledge. External sources

identified as being the most important are suppliers, customers, and government. The findings also indicate styles that managers use to act entrepreneurially; this means EO can enhance innovation. Consequently, the findings strongly confirm the conceptual framework in this research. Apart from these results, Figure 2 illustrates the research design used to answer the first research question, and then the findings were examined by a survey to answer the two other research questions.

Table 9 results illustrate the comparison of knowledge source and network ties of Case A to Case F based on Granovetter (1983), Levin and Cross (2004) and Kostopoulos et al. (2011). The results show that external sources and receiving knowledge and information are different among the six cases selected. Based on the results, suppliers, customers, government, and local partners are the most important external sources. First, suppliers provide an introduction and often offer suitable and appropriate alternatives, such as introducing new and better raw materials. Especially in some firms that have no previous knowledge, suppliers are an important source. When a firm is familiar with a supplier, there are always suggestions, methods, and initial consultations. Second, customers provide knowledge because relationships with customers are not limited to their importance as consumers. They are also a link to the wider market, linking firms with other customers. Feedback from customers is something that a firm must consider to develop better products. Third, in the beginning, a firm relies on government agencies such as in training entrepreneurs and events to be a distribution channel. Finally, local partners who run businesses in the local area and have been working for a long time provide advice on management and marketing because of their expertise and familiarity in the agricultural business in the area.

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Table 9 Comparing network ties of Case A to Case F

Knowledge source	Case	Network ties	Characteristics of receiving
		Frequency of contact / The emotional intensity	
Customers	Case A	Normally/Acquaintance	Feedbacks and recommendations such as expanding product line
	Case B	Often/Acquaintance	Feedbacks and marketing
	Case C	-	-
	Case D	Sometimes/	Feedbacks
	Case E	-	-
	Case F	-	-
Suppliers	Case A	Often/ Familiarity	Several suggestions such as how to mix components
	Case B	Often/Acquaintance	Recommendations such as introducing newness and better raw materials.
	Case C	-	-
	Case D	-	-
	Case E	-	-
	Case F	Often/ Familiarity	Specialized agricultural knowledge

Table 9 Comparing network ties of Case A to Case F (continued)

Knowledge source	Case	Network ties	Characteristics of receiving
		Frequency of contact / The emotional intensity	
Government	Case A	Occasionally/Distance	Supporting for R&D
	Case B	Occasionally/Distance	Administration and marketing
	Case C	-	-
	Case D	-	-
	Case E	Often/Acquaintance	Training, administration and marketing
	Case F	Seldom /Distance	Some agricultural knowledge
Universities	Case A	-	-
	Case B	Occasionally/Distance	Training for product quality
	Case C	-	-
	Case D	-	-
	Case E	Occasionally/Distance	Participated in production training for beginning
	Case F	-	-

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Table 9 Comparing network ties of Case A to Case F (continued)

Knowledge source	Case	Network ties	Characteristics of receiving
		Frequency of contact / The emotional intensity	
Local partners	Case A	-	-
	Case B	-	-
	Case C	Usually/Familiarity	Administration and marketing
	Case D	Often/Acquaintance	Specialized agricultural knowledge
	Case E	-	-
	Case F	-	-

Table 10 provides organizational routines and processes based on Zahra and George, (2002) and presents issues based on four dimensions: acquisition, assimilation, transformation, and exploitation. The results show that their activities, organizational routines, and processes were met in the context of study in accordance with the theory, although Table 8 provides some activities of the six cases.

Table 10 Comparing two components of absorptive capacity of Case A to Case F

Concern issues	Cases	Characteristics
PACAP: Acquisition	Case A	The firm continuously follows up key customers' satisfaction to improve their products.
	Case B	In the production process, it is necessary to have a deep understanding of the materials used.

Table 10 Comparing two components of absorptive capacity of Case A to Case F (continued)

Concern issues	Cases	Characteristics
PACAP: Acquisition	Case C	According to knowledge received from an experienced person, the product distribution channels were adjusted after getting suggestions, such as location searching and outlet opening.
	Case D	When some problems occur, the experts who have specialized skills or have knowledge of each other are contacted to get advice.
	Case E	There are not many places which are specialized centers. The firm attempts to seek a reliable institution.
	Case F	The information must be confirmed that it is reliable and accurate.
Assimilation	Case A	After getting any suggestion or feedback, there have to be considerations about possibilities or about trying something new.
	Case B	Any processing is difficult. Thus, the firm learns intently for quality and standard manufacturing.
	Case C	Knowledge gained must be analyzed for advantages and disadvantages that are suitable for the firm.
	Case D	Working procedures, information notices, and division duties are provided to make the same understanding in the organization.
	Case E	For understanding, it takes time because of lack of knowledge background.

Table 10 Comparing two components of absorptive capacity of Case A to Case F (continued)

Concern issues	Cases	Characteristics
PACAP: Assimilation	Case F	Some received knowledge as technical terms and unfamiliar contents; there is a need to search again.
RACAP: Transformation	Case A	The firm launches a product to the market. If it doesn't receive a good response from target customers, the product is canceled.
	Case B	The received information needs to be considered with the available materials to plan for the processing directions.
	Case C	Someone's recommendation is not the main factor in making products because the products need to remain unique.
	Case D	There is a consultation after testing a new formula so that everyone has the same understanding and any mistakes are avoided.
	Case E	After the principal learning, the firm rearranges and adjusts to our own methods.
	Case F	Learning by doing helps us to see where problems occur.
Exploitation	Case A	There are many improvements of procedures and proportions to create the most unique products.
	Case B	There are formula improvements and product proportion adjustments. Sometimes this formula is developed to be a new product.
	Case C	The management system still needs to be developed to be more flexible.

Table 10 Comparing two components of absorptive capacity of Case A to Case F (continued)

Concern issues	Cases	Characteristics
Exploitation	Case D	External knowledge facilitates the adjustment to use procedures that are currently suitable for the firm.
	Case E	Even through training, it must be adopted to create a process that is suitable for the firm.
	Case F	The principles have been applied in the farm. Because of the different farm environments, we have to find the most suitable point.

Table 11 presents a comparison of EO based on Covin and Slevin (1989) and Pérez-Luño et al. (2011). This comparison shows the practices, methods, and decision-making styles used in the six cases. In addition, the findings show that all cases have the characteristics of trial and error, whether in trying to find the most suitable ingredients or in implementing a methodical management in the organization.

Table 11 Comparing entrepreneurial orientation of Case A to Case F

Concern issues	Case	Characteristics
EO: Working style; Risk taking; proactive	Case A	There are feasibility tests and growth trend measurements. Thus, the investment has been done to create new products. Many analyses and tests are conducted before launching a product to the market. The information is used to support the processes because if any mistakes occur, the cost is higher.

Table 11 Comparing entrepreneurial orientation of Case A to Case F (continued)

Concern issues	Case	Characteristics
EO: Working style; Risk taking, proactive	Case B	The organization grows slightly and continuously because information learning and experiments to create quality products take time.
	Case C	The owner believes that successful business comes from many factors. Thus, every step needs to be done carefully, from the beginning to the end, such as oven and equipment. Information learning must be done carefully before placing orders. Even if prices are high, they are worth to purchase.
	Case D	The program is used to support management, including an accounting program. In addition, the program is used to reduce documentation time. The business is able to manufacture as targeted to expand the market. There was a factory expansion which has been inspected and received quality manufacturing certification.
	Case E	To achieve the goals of both volume and quality of production, the owner plans to expand the plant with standards.
	Case F	The growing trend caused the farm to expand, in terms of increasing the number of goats. Moreover, more goat feeders are employed to ensure the feeding processes. There is always additional learning to develop the management system which affects better goat milk quality and ensures the processing of high-quality products.

Finally, Table 12 shows that based on Johannessen et al. (2001) and Lichtenthaler (2009). The results indicate that all cases are able to achieve innovation through generating and developing new products, and then such products achieved commercial success. Furthermore, the results are consistent with the proposed definition in this research.

Table 12 Comparing innovation of Case A to Case F

Concern issues	Case	Characteristics
Innovation: Achieving the innovation	Case A	The products are attractive to both new and old customers. The products have a lot of orders.
	Case B	The products had a good feedback because they are naturally made.
	Case C	Sales increase. The new product satisfies customers. Customers like the unique taste.
	Case D	Although the product is not new in the market, the taste of a variety of products satisfies the customers.
	Case E	There are some products that are quite new. There is a demand for these products in both domestic and foreign markets.
	Case F	The product is quite new to both the customer and the market, so it the quality must be accepted.

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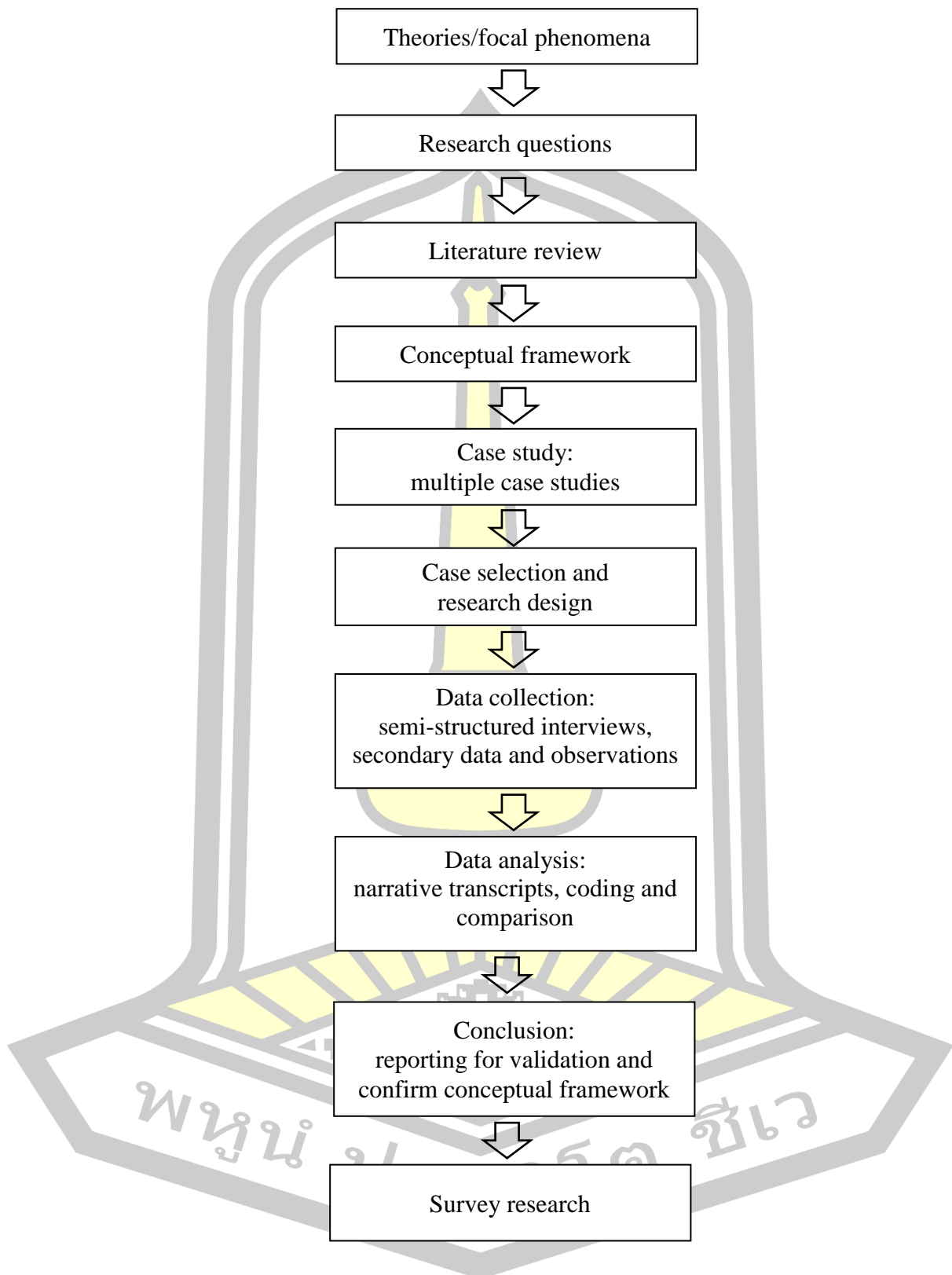


Figure 2 Stage conducted research

3.3.2 Survey research

3.3.2.1 Participating organizations, sample and procedure

a) Participating organizations

In the context of study, the frame was obtained from the Office of SMEs Promotion (OSMEP) of Thailand, which is the government agency for the registration and promotion of business. The samples from the directory cover all business registrations so that the information obtained can be generalized to a local population of Thailand. In addition, the sample was focused on the agricultural manufacturing industry. To analyze new firms, this research prefers to base on an objective criterion, that is, the age of firms. Thus, there are three sampling criteria: the firms had to be (1) less than 10 years old, (2) independent (i.e., not a subsidiary), and (3) involved with processed agricultural products in agricultural manufacturing.

b) Sample and procedure

Based on the criteria, there are 1,654 new firms that are registered in the category of agricultural manufacturing in the period 2010–2017. The target respondents are new firms that manufacture processed agricultural products. To ensure the legitimacy of the target respondents, the researcher cross-checked details by making phone calls confirming the firms' activities and existence. Thus, a total of 946 new firms were the target respondents. The researcher distributed 946 survey questionnaires to all these firms, and the key informant was the owner/CEO/manager who was required to fill in the questionnaires.

3.3.2.2 Developing questionnaire

This research employs questionnaire as a survey instrument. The questionnaire is considered one of the most effective research tools for creating a number of pre-research information. When the questionnaire is well designed and structured, it can reduce errors in the responses. To ensure the reliability and relevance of the questionnaire to this research, all measurement items for each construct are based on existing scales in literature. These measurement items and scales are formatted in a questionnaire to collect data on the knowledge process by the target respondents.

Given that the questionnaire was based on an existing scale which is English, the draft of the English version was translated into Thai. To check for accuracy, the double-blind back translation process was conducted (Sinaiko & Brislin, 1973). Back translation was used to guarantee that the key informants who are native speakers of the target language can understand the same meaning as in the original language. To be consistent, the original language (English) and the target language (Thai) were used. Before pretesting the questionnaire, a committee consisting of academic researchers compared and evaluated the two versions of the questionnaire. The questionnaire had a few corrections, and the researcher improved it. After the translation was complete, the final Thai-version questionnaire was then presented to ensure that future respondents comprehended all questions. Appendix C described all variables' items in the full-scale questionnaire survey and Table 13 shows all original items of five main constructs in this research.

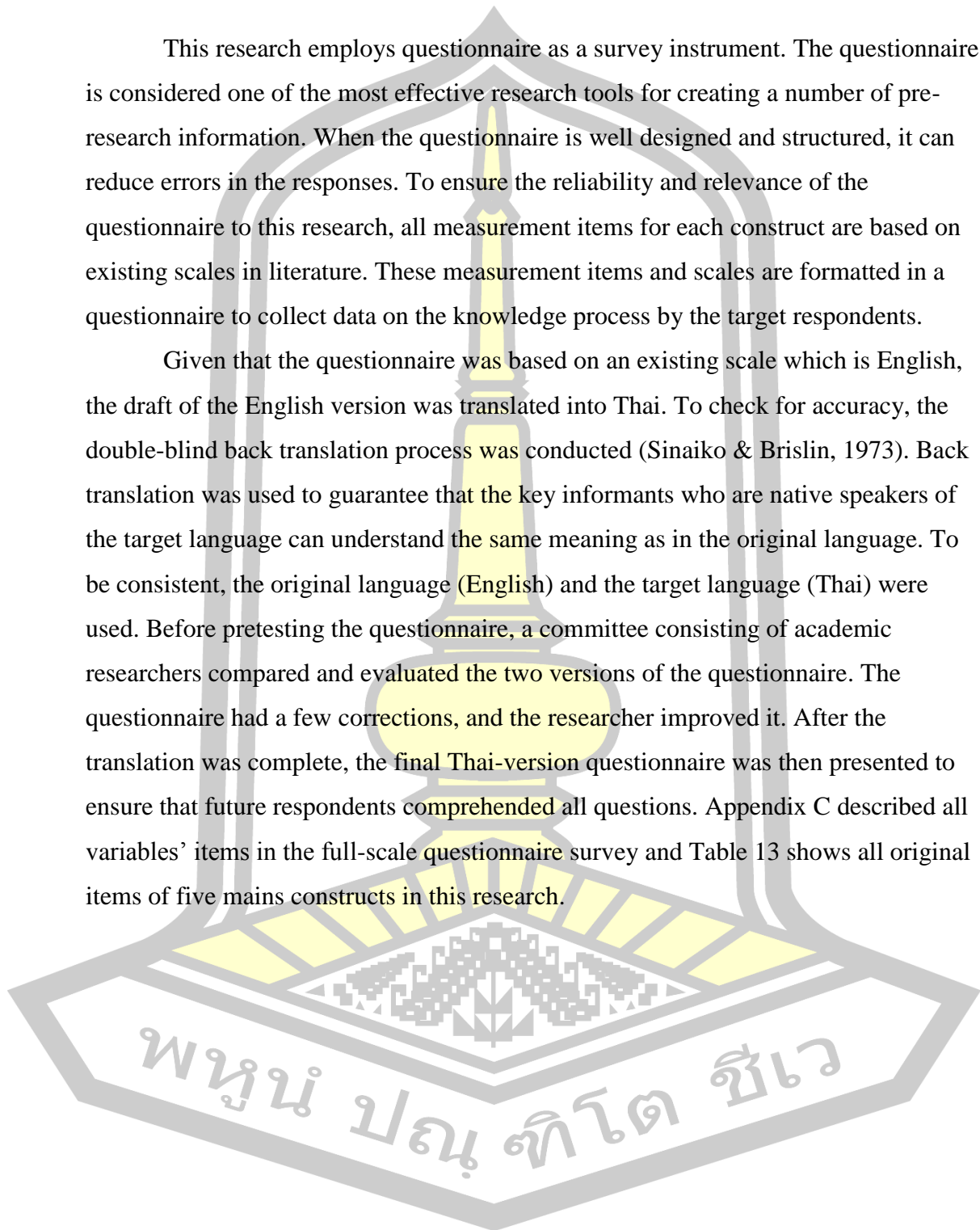


Table 13 The items of five mains constructs

Item code	Innovation
Inno1	The overall performance of our new product development program has met our objectives.
Inno2	From an overall profitability standpoint, our new product development program has been successful.
Inno3	Compared with our major competitors, our overall new product development program is far more successful.
Inno4	Newness to firm
Inno5	Newness to market
Item code	Potential absorptive capacity
PA1	Capacity to capture relevant, continuous and up-to-date information and knowledge on current and competing competitors.
PA 2	Degree of management orientation towards waiting to see what happens, instead of concern for and orientation towards their environment to monitor trends continuously and wide-rangingly and to discover new opportunities to be exploited proactively.
PA 3	Importance of cooperation with external sources as a member or sponsor to create knowledge and innovations.
PA 4	Effectiveness in establishing programs oriented towards the internal development of knowledge acquisition of competences from external sources.
PA 5	Capacity to assimilate new knowledge and innovations that are useful or have proven potential.
PA 6	Ability to use staffs' level of knowledge, experience and competencies in the assimilation and interpretation of new knowledge.

Table 13 The items of five mains constructs (continued)

Item code	Potential absorptive capacity
PA 7	The firm benefits when it comes to assimilating the basic, key business knowledge and technologies from the successful experiences of businesses in the same industry.
PA 8	Ability to develop knowledge management programs, guaranteeing the firm's capacity for understanding and carefully analyzing knowledge and technology from other organizations.
Item code	Realized absorptive capacity
RA1	Capacity of the company to use information in order to improve information flow, develop the effective sharing of knowledge and foster communication between members of the firm, including virtual meetings between professionals who are physically separated—Internet B2E portals, email, teleworking etc.
RA2	Firm's awareness of its competences in innovation, especially with respect to capability to eliminate obsolete internal knowledge, thereby stimulating the search for alternative innovations and their adaptation.
RA3	The organization's capacity to use and exploit new knowledge in the workplace to respond quickly to environment changes.
RA4	Degree of application of knowledge and experience acquired in the technological and business fields prioritized in the firm's strategy that enables it to keep itself at the technological leading edge in the business.
RA5	Ability to respond to the requirements of demand or to competitive pressure, rather than innovating to gain competitiveness by broadening the portfolio of new products, capabilities and technology ideas.

Table 13 The items of five mains constructs (continued)

Item code	Network ties
NT1	There is close, personal interaction among members
NT2	There is high reciprocity among members
NT3	There is mutual trust among members
Item code	Entrepreneurial orientation
EO1	Firm is very often the first business to introduce new products/services, administrative techniques, operating technologies, etc.
EO2	Firm typically initiates actions that competitors then respond to
EO3	Firm have a strong tendency to be ahead of other competitors in introducing novel ideas or products
EO4	Firm have a strong proclivity for high-risk projects with chances of very high returns compared with projects with normal and certain rates of return.
EO5	Firm believe that owing to the nature of the environment, bold, wide-ranging acts are necessary to achieve the firm's objectives.)
EO6	When confronted with decision-making situations involving uncertainty, firm typically adopts a cautious, "wait-and-see" posture in order to minimize probability of making costly decisions as compared with a bold, aggressive posture in order to maximize the probability of exploiting potential opportunities [REVERSED].

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3.3.2.3 Measurement of the variables

This research aims to investigate the underlying factors of network ties, ACAP, EO, and innovation by taking the perspective/perception of new firms. The quantitative research setting for the empirical analysis will be based on primary data obtained by a survey questionnaire. As suggested by Patton (2002), the outputs from the in-depth interviews will help determine the appropriate questions and also confirm the related measures. In this research, there are five sets of variables to be measured. The dependent variable is innovation, and the independent variables are network ties, PACAP, and RACAP. The moderator variable is EO.

a) Innovation

Prior studies, innovation measure number of new product, measure of innovation is a dummy variable innovation or patent counts (e.g., Fosfuri & Tribó, 2008; Huang et al., 2015; Kostopoulos et al., 2011; Yli-Renko et al., 2001). However, an empirical study on innovation should not rely on only a single or a few innovation-related items which such like the above studies (Kim, Kumar, & Kumar, 2012). Hence, this research used multi-item that adapt items form previous studies. Items rely on Johannessen et al. (2001) and Lichtenthaler (2009). These items reflect definition's innovation in this research which refers to the creation of new products that can achieve commercial success. It comprises three items which all items are measured on a seven-point scale Likert-type scale (1= "strongly disagree," 7 = "strongly agree").

b) Network ties

This research adapts the network ties concept to obtain an overview of the most important ties of the firms. The items were to ask specific questions for relationship with the important external knowledge sources mentioned to determine ties and knowledge acquisition strategy. This research adapted measurement from Granovetter (1983) and Levin and Cross (2004). Network ties were operationalized as

a multidimensional construct consisting of the extent of the degree of closeness, the frequency of contact, the emotional intensity. By using a seven-point scale Likert-type scale (1= "strongly disagree," 7 = "strongly agree").

c) Potential absorptive capacity and realized absorptive capacity

This research employs Camisón and Forés' (2010) measurement; they contribute to the literature on ACAP by the creating and validating two scales to measure PACAP and RACAP which are the components of the ACAP construct. They found that the results confirm the validity of the proposed scales and support their consolidation as a commonly used instrument with which to measure ACAP. Hence, in this research adapt Camisón and Forés' (2010) items, PACAP, there are four items involve capacity to capture relevant, continuous and up-to-date information and knowledge from external source which refer to acquisition and there are four items of assimilation which indicate the understanding and interpretation of new knowledge. RACAP comprise transformation indicate using information into develop the effective sharing of knowledge, improve information flow which it consists three items and exploitation indicate application of knowledge and experience acquired which it consists three items. There are 13 items on a scale of 1 to 7, designed from "very low" and "very high which evaluate firm's capacity to value, identify, acquire, assimilate, transform and exploit new external knowledge.

d) Entrepreneurial orientation

The measurement of EO based on a Covin and Slevin (1989) scale which is a combination of original and adopted items from Miller and Friesen (1978) and Khandwalla (1976). This research comprised two dimensions. First, risk-taking has three items that reflect its' definition. With risk-taking constitute the willingness to do a lot of resource projects which the cost of failure may be high. It also largely reflects the tried-and- error that unable to predict its results. Another one, proactiveness, there are three items that refers to the posture of anticipation and implementation of future needs and demands in the market. Therefore, creating the first influential advantage

will face competitors. With a proactive view, the company proactively takes advantage of new opportunities. All items are measured on seven-point scale on which 1 is “strongly disagree” and 7 is “strongly agree”

e) Control variables

There are two main variables are controlled. First, experience, Cohen and Levinthal’s (1990) have argued the ACAP concept is path-dependent because experience and prior knowledge enhance to utilize new knowledge. Firms gain experience through exposure to, impact of, and knowledge of particular capabilities and skills. Likewise, Zahra and George (2002) have proposed that when a firm has succeeded in other area, it is directly knowledge to influence on capacity in the future. As such experience as a control variable (1=have agricultural experience, 0= no have agricultural experience). Second, R&D, Cohen and Levinthal (1990) also found that the role of R&D is important to innovation process of firms. R&D has demonstrated more likely impact on ACAP and innovation (Lin 2003). Thus, R&D was included a control variable in this research (1=have R&D expenditure, 0=no have R&D expenditure).

3.3.2.3 Data analysis

The analysis employed in this research, first, to obtain valid results and conclusions for this research, reliability and validity were established such as the reliability of scale (Cronbach’s alpha) and exploratory factor analysis in order to assess unidimensionality and internal consistency. The items are analyzed to investigate the validity and reliability of the measurement items pertaining to key research variables. All scale items are defined and accepted on the basis of the conventional guidelines by Nunnally (1978). Following this, the analysis to test hypotheses is split into two parts: 1) the analyses were conducted using structural equation modeling, 2) the analysis moderating effect were conducted using the hierarchical regression analysis. Below are details of each analysis and also provide the rationale for using hierarchical regression analysis is the appropriate statistics

being used to test the hypotheses of moderating effect instead of structural equation modeling.

a) Validity

In this research, validity is appropriate for accurately confirming the concept or construct of the research. Two types of validity, content validity and construct validity were tested.

First, content validity is the extent to which the items of the scales sufficiently reflect the interrelated theoretical domains (Green, Tull, &Albaum, 1988). Moreover, Nunnally and Bernstein (1994) argue that content validity is the scales containing items which are adequate to measure what is intended. The content validity relies on subjective interpretation of the appropriateness of the items to the construct under study, the former from the point of the researcher gleaning knowledge from the literature, and the latter from professional academics. The result of item-objective congruence (IOC) equals $0.64 \geq 0.50$ is acceptable (Green et al., 1988; Turner & Carlson, 2003). In this research there is content validity sufficiency by considering the expert opinion on the overall index of item objective congruence (IOC) is 0.65 from three professionals who have experience in this area were requested to verify and advise as to the instrument.

Second, construct validity refers to harmony, and the internal consistency of a theoretical concept and a specific concept which are used for measures and instruments (Trochim, 2006). This research tests the validity of the instrument to confirm that a measure or set of measures accurately represents the concept of research. To test the construct validity developed from prior research, this research used confirmatory factor analysis (CFA) (Carlo & Randall, 2002). Moreover, the Fornell and Larcker's (1981) criterion suggest that assessment of the degree of shared variance between the latent variables of the model, the convergent validity of the measurement model can be evaluated by the Average Variance Extracted (AVE). AVE measures the level of variance captured by a construct versus the scale due to measurement error. Although generally AVE is higher than 0.5, it is acceptable (Fornell & Larcker, 1981). However, Hair et al. (2009) recommends that AVE is higher than 0.5 but it can accept 0.4 because Fornell and Larcker (1981) suggest that if AVE is less than 0.5, but composite reliability is higher than 0.6, the convergent

validity of the construct is still adequate. Composite reliability (CR) is a less-biased estimate of reliability than Cronbach's alpha, CR is greater than 0.70 (Nunnally & Bernstein, 1994), which indicates that the items in each latent variable had sufficient consistency to explain the latent variables. Therefore, construct validity of the measurement models was a test.

b) Reliability

Reliability is the level of the measurement in the questionnaire that is true, and observed variables that are error-free, which designate the degree of internal consistency between the multiple variables (Hair et al., 2010). Cronbach's alpha coefficients have to be greater than 0.70 (Nunnally, 1978).

c) Structural equation modeling (SEM)

In this research SEM is used for hypotheses testing because it is a multivariate technique combining aspects of multiple regression and also factor analysis to estimate a series of interrelated dependence relationships simultaneously (Hair, Anderson, Tatham, & Black, 1995). Following Byrne (2001) and Arbuckle and Wothke (1999), this research uses two steps in which a measurement model is developed and evaluated separately from the full SEM, which is simultaneously composed of measurement and structural relations. In addition, the measurement model in conjunction with the structural model makes possible a comprehensive confirmatory assessment of construct validity (Bentler, 1978).

d) Test of structural model

After a measurement model has been used, the structural model is conducted to find out which sets of one or more dependences relate to the model constructs. A series of dependent relationships are examined simultaneously. It is particularly suitable for the model that one dependent variable becomes an independent variable in

subsequent dependent relationships (Hair et al., 1995). In other words, the structural model is a suitable statistical technique to examine and test for ACAP as mediator.

e) Assessment of model fit

A chi-square test and goodness-of-fit indices are conducted to investigate the model fitting. In brief, the model will fit if these conditions are met: 1) Absolute fit index (χ^2/df) or ratio of chi-square to the degree of freedom should be between 3 and 5 as recommended by Byrne (2001); 2) the incremental fit index (IFI) and Tucker-Lewis coefficient (TLI) are above 0.90 (Hair et.al., 1998); 3) comparative fit index (CFI) should be more than 0.90 (Bentler, 1978); and 4) Root Mean Square Error of Approximation (RMSEA) is recommended the value less than 0.1 (MacCallum et al., 1996) but preferable if less than 0.08 and 0.05 (Browne & Cudeck, 1993).

f) Hierarchical regression analysis

To test moderating effect with postulated hypotheses, the hierarchical regression analysis is applied, especially through employing hierarchical regression, Cohen, Cohen, West, and Aiken (2003) expressed that one could realize how much variation in the dependent variable could be delineate by one or a set of new independent variables, above all, described by an earlier set. Definitely, the coefficient estimates (β coefficients and constant) could be applied to institute a prediction equation and build predicted scores on a variable for additional analysis. One was able to prove the significance of the difference of two R^2 's to define if totaling an independent variable to the model helped illustrate the variation in the dependent variable indispensably.

A variable is a moderator that changes the direction or strengthens of relationship between a predictor and a variable outcome. As a result, a moderator effect shows nothing more than an interplay by mean of which the effect of one variable relies on upon the level of the other one. Interaction effects are crucial no less for intervention studies than for many other cases; therefore, researchers pay attention to if relations between predictor and outcome variables are stronger for some people

than for others (e.g., Aiken, West, & Reno, 1991). The property of imperative moderators touching relations between predictors and outcomes illustrates enhancing the boundary of research inquiry which is the core of theories in social science (Frazier, Tix, & Barron, 2004).

In consequence, researchers are able to propose the identical variables as a moderator or a mediator counting on their research questions in conformance with the theory. Researchers can additionally apply multiple regression to investigate moderator effects if the predictor or moderator variables are categorical (e.g., sex or education) or continuous (e.g., perception). Aiken et al. (1991) mentioned that, for this reason, the analysis of variance (ANOVA) procedures also able to be applied, after not only the predictor but also moderator variables had been categorical.

Likewise, by the time one or both variables are tested on a continuous scale, regression procedures that maintain the continuous aspect of the variables which are obviously preferred over utilizing cutting points (e.g., median splits) to construct artificial groups so as to compare correlations between groups or investigate interaction effects by means of employing ANOVA. Nevertheless, the application of hierarchical regression techniques has commonly been contributed by statisticians throughout the conduct of comparing correlations between groups as long as the group of variables are naturally categorical (e.g., sex or race), for diverse correlations between groups may mirror differential variances between groups rather than true moderator effects (e.g., Aiken & West, 1991; Baron & Kenny, 1986). In this research, both predictor and moderator variables are incessant. This research utilizes hierarchical regression analysis for examining hypotheses as statisticians mentioned.

Several authors mention that other statistical methods should be more suitable in that limited circumstances intrinsically in the least ordinary square regression stemming from hierarchical regression analysis (e.g., Aiken & West, 1991; Baron & Kenny, 1986). The application of SEM has been contributed to be applied to be an approach to regulate the measurement lacking of unreliability, In accordance with Frazier et al. (2004: pp.119-120), SEM can be employed to inspect interplay associated with both categorical and continuous variables. So long as one variable is classified, a multiple-group approach can be utilized in the involvement between the indicator and the outcome estimated separately for the multiple groups. Particularly,

the comparison of an unconstrained model with a constrained model is examined (in which the paths are constrained to be equal across groups). In the event that an unconstrained model is a better proper to the data, there is verification of moderation (i.e., different relations between the indicator and the outcome across groups). Nonetheless, SEM techniques for inspecting interactions between continuous variables are complicated, and there is little general agreement respecting which a lot of methods are the best. To testing the individual variables with the overall effect, it is important to compare the effects (Tanriverdi & Venkatraman, 2005). When analyzed together, the individual effects should be exhausted by the overall effect. Thereby, a moderator variable is a continuous rate precise for testing hypotheses by way of hierarchical regression analysis, in this research. Procedures steps having a case in court for analyzing the data (see details in Chapter 4) comprise of creating or converting indicators and moderator variables; such as coding categorical variables, coring or measuring continuous variables, or both, creating product definitions, and assembling the equation.

3.3.2.4 Pretest

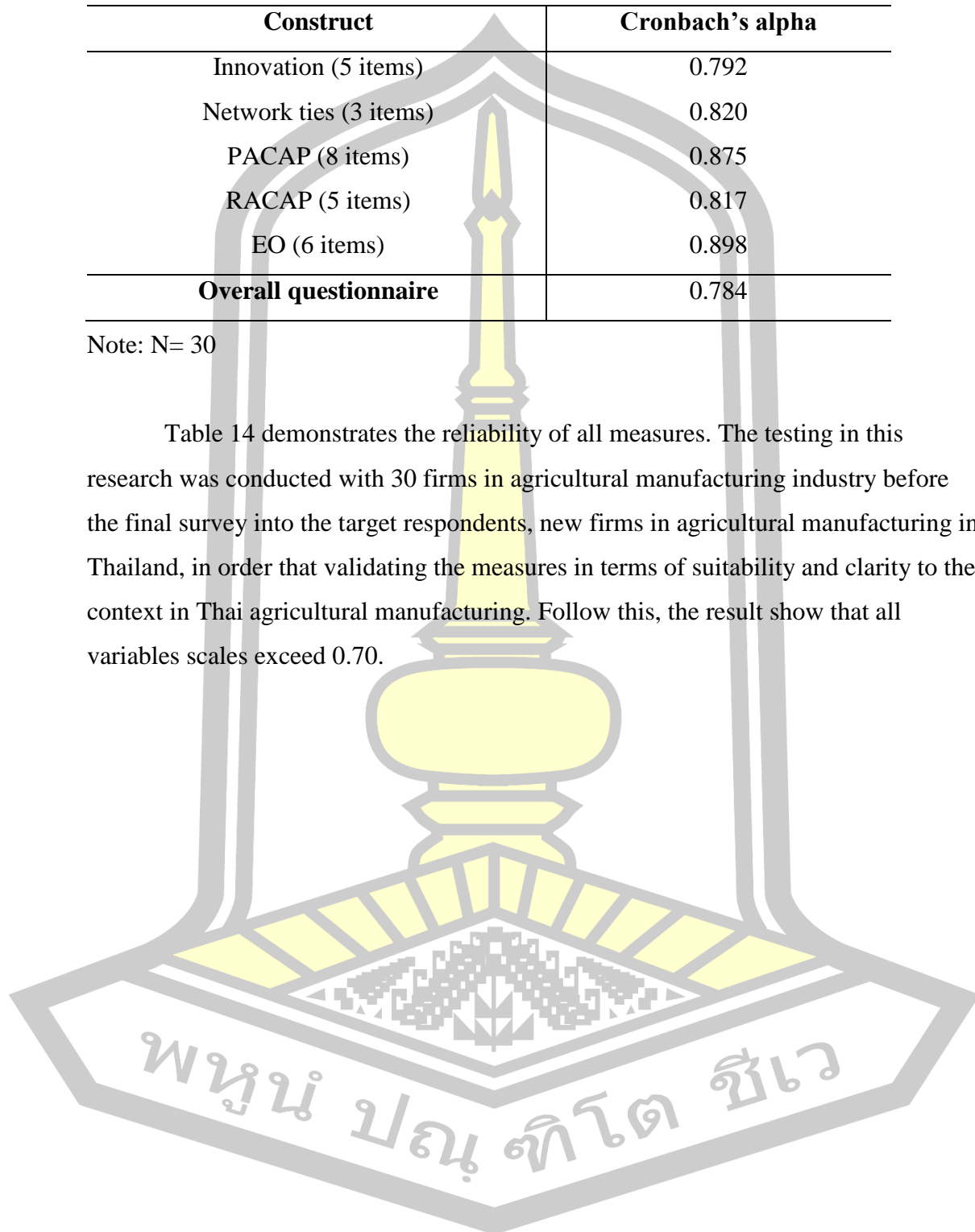
The pretest is conducted with the objective of ensuring the interpretability of the questionnaire items and to finalize the questionnaire. The required sample size of the pretest is between 20 and 50 cases (Sudman, 1976). For internal consistency, tests are conducted with Cronbach's alpha coefficient analyses. This coefficient also provides a summary measure of the inter-correlation existing among a set of items. A high and low value of Cronbach's alpha directly indicates high and low internal consistency. Reliability for all variables scales exceed 0.70, the threshold or cut off point as recommended by Nunnally (1978).

Table 14 Reliability coefficients of the main constructs

Construct	Cronbach's alpha
Innovation (5 items)	0.792
Network ties (3 items)	0.820
PACAP (8 items)	0.875
RACAP (5 items)	0.817
EO (6 items)	0.898
Overall questionnaire	0.784

Note: N= 30

Table 14 demonstrates the reliability of all measures. The testing in this research was conducted with 30 firms in agricultural manufacturing industry before the final survey into the target respondents, new firms in agricultural manufacturing in Thailand, in order that validating the measures in terms of suitability and clarity to the context in Thai agricultural manufacturing. Follow this, the result show that all variables scales exceed 0.70.



CHAPTER IV

RESULTS

The prior chapter presented the research methods which include sample selection and data collection procedure to confirm the conceptual framework of the case study. Moreover, survey research, data analysis, and hypothesis testing were described. This chapter illustrates the results of the hypothesis testing. This chapter is divided into three parts: (1) the respondent characteristics, the sample characteristics, and the correlation analysis are presented to increase understanding of the sample characteristics; (2) the hypothesis testing and the results are detailed; and (3) the summary of the hypothesis testing and discussions of results are provided.

4.1 Respondent Characteristics

The new firms selected for this survey fulfill the three criteria of participating organizations mentioned in the prior chapter. After cross-checking for data accuracy, the survey resulted in 188 usable questionnaires for analysis. In this research, the respondents are owners, managers, and supervisors who possess the most comprehensive knowledge regarding the firm's overall activity, strategy, competitive environment, and performance. The descriptive statistics are used to show the characteristics of the respondents in Table 15. This table consists of the main characteristics of the respondents (e.g., raw material, operational period, number of employees). The information focuses on the characteristics of identifying the most important external sources, R&D, and experience.

New firms are based on OSMEP and DBD of Thailand, which are government agencies that divide firms' duration of operation in the agricultural industry into new firms and the manufacturing sector. Table 15 illustrates the characteristics of the respondents. Among a total of 188 new firms, 70 firms (37.2 %) produced products that were processed from vegetable and fruit raw materials, 31 firms (16.5 %) from meat (i.e., chicken, fish, and pork), 29 firms (15.4%) from animals' milk, 21 firms (11.2 %) from vegetable and animal oils (e.g., coconut oil, palm oil), 19 firms

(10.1 %) from herbs, and 18 firms (9.6 %) from grains and flour (e.g., rice flour).

As the target sample focuses on new firms, all respondents are not less than 10 years old. There are 62 firms (33%) that have operated for less than three years, 82 firms (43.6%) between three and six years, and 44 firms (23.4%) between seven and ten years.

Firm size is reflected in the number of employees. Small firms have less than 50 employees, and 167 respondent firms (88.83%) have less than 50 employees. Among 167 firms, 104 respondent firms (62.27%) have less than 10 employees. A total of 18 respondent firms (9.57%) that have between 50 and 150 employees are reflected as medium-sized firms. A total of 3 firms (1.6%) have more than 150 employees, and these firms are reflected as big-sized enterprises. Moreover, 110 respondents (58.5%) are owners. The majority of the respondents (55 respondents, 29.3%) hold the position of manager. Moreover, 19 respondents (10.1%) are supervisors, and 4 respondents (2.1%) hold other positions such as team lead or staff.

This research focused on not only the importance of external sources of knowledge but also its effect on firms' innovation. R&D and experience can enhance innovation, but some new firms may not have it. Thus, questions about R&D and experience are asked. The specific information of 188 respondents is as follows.

Questions about R&D showed that the majority of the respondents (126 firms, 67%) do not have R&D, and 62 firms (33%) have R&D. Moreover, among the 62 firms that do have R&D, are asked that new product development expenditure is approximately a percentage of total sales income. The majority of the respondents (26 firms or 41.93%) have sales income between 20 percent and 40 percent. A total of 15 firms (24.19%) have sales income of less than 20 percent, 10 firms (16.13%) between 61 percent and 80 percent, 6 firms (9.78%) between 41 percent and 60 percent, and 5 firms (8.06%) between 81 percent and 100 percent.

All 188 respondents were asked whether they have agricultural experience. A total of 122 respondents (64.9%) have agricultural experience and 66 respondents (35.1%) have none. Among the 122 respondents who have agricultural experience, 48 respondents (39.34%) have agricultural experience for less than a year, 42 respondents (34.43%) one to five years, 17 respondents (13.93%) more than ten years, and 15 respondents (12.29%) five to ten years.

In sum, the respondents come from new firms that are less than ten years in operation and are from the agricultural manufacturing sector. Most firms' products are processed from vegetable and fruit raw materials. The majority of the respondents are small firms, and the respondents are owners. Besides, most firms have a long experience in the agricultural industry but have little focus on R&D.

Table 15 Characteristics of respondents

Characteristics		Frequency	Percent
Raw materials	Vegetable and fruit	70	37.2
	Meat	31	16.5
	Animals milk	29	15.4
	vegetable and animal oils	21	11.2
	Herb	19	10.1
	Grains and flour	18	9.6
Operational period	Less than three years.	62	33.0
	Three to six years	82	43.6
	Seven to 10 years.	44	23.4
Number of employee	Less than 10 employees	104	55.3
	10-50 employees	63	33.5
	51-100 employees	12	6.4
	101-150 employees	6	3.2
	More than 150 employees	3	1.6

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Table 15 Characteristics of respondents (continued)

Characteristics		Frequency	Percent
Respondents	Owner	110	58.5
	Manager	55	29.3
	Supervisor	19	10.1
	Other (team lead, staff)	4	2.1
R&D	Have	62	33
	No have	126	67
Experience	Have	122	64.9
	No have	66	35.1

Note: N= 188

4.2 Exploratory Factor Analysis (EFA)

Because ACAP which is main construct based on Zahra and Grogh (2000), for measurement validity, unidimensionality is explored by principle factor analysis. EFA with varimax rotation is performed to determine the number of dimensions underlying the construct and also to confirm whether the number of conceptualized dimensions can be verified empirically (Churchill, 1979). Varimax rotation is recommended since it would imply uncorrelated factors (Rossiter, 2002). According to Hair et al. (1998), the factors with eigenvalue exceeding one are considered as significant and accepted as powerful measurement items; since the eigenvalue criterion indicates that the individual factor accounts for the variance of at least a single variable whether it is retained for interpretation. Item scales were validated using principal components factor analysis. Later, Hair, Bush, & Ortinau (2006, p. 129), Hair recommends that “although factor loadings of ± 0.30 to ± 0.40 are minimally acceptable, values greater than ± 0.50 are generally considered necessary for practical significance.” In most applications, components factor analysis arrives at essentially identical results if the number of variables exceeds 0.30 or the communalities exceed 0.60 for most

variables. All things considered to confirm the overall construct and the factors with eigenvalue less than one are disregarded.

The Kaiser-Meyer-Olkin (KMO) measure, which is used to determine whether the data is adequate for a factor analysis, is performed. Hair et al. (1998) recommend that a KMO of 0.80 or higher is considered meritorious while a KMO of less than 0.50 is unacceptable. The Bartlett's test of Sphericity is also conducted to test the significance of the corresponding correlation matrix together with the KMO test. A p-value of less than 0.05 indicates a significant correlation among all items and indicating that the CFA is appropriate for the analysis of that particular dataset (Hair et al., 1998).

Table 16 Factor analysis for unidimensionality

Construct	Code item(s)	Components factor analysis		KMO	Barlett's test (Sig)
		1	2		
ACAP:				.914	.000
PACAP	P1	.656			
	P2	.739			
	P3	.699			
	P4	.665			
	P5	.802			
	P6	.761			
	P7	.787			
	P8	.730			
RACAP	R1		.687		
	R2		.765		
	R3		.814		
	R4		.818		
	R5		.747		

Note: N= 188

EFA is performed on two components of ACAP constructs: PACAP, RACAP. The results of the measurement are in Tables 16 illustrated. The results show that all components factor analysis exceeds 0.60. The Kaiser-Meyer-Olkin values of measures exceeded the recommended value of 0.80 (Hair et al., 1998), and Barlett's test of sphericity reached a statistically significant value ($p < 0.001$) (Barlett, 1954), which indicated that the data were appropriated for construct. Table 16 indicates the constructs together with all items that are analyzed for testing hypotheses in this research.

4.3 Confirmatory Factor Analysis (CFA)

CFA is one type of factor analysis that as statistical procedure for examining relations between sets of observed and latent variables (Byrne, 2001). About measurement, a pure CFA model refers to measurement model in which there is unmeasured covariance between each possible pair of latent variables and also the measurement model is that part of the SEM dealing with latent variables and their indicators. This is considered as a reflective model, which means that the measurement items are caused by their latent construct while latent construct is not caused by the items. Therefore, any items can be removed if the results of the assay are not satisfactory or not appropriate for the model evaluation and it does not change the meaning of the construct (Jarvis, MacKenzie, & Podsakoff, 2003).

At appropriate of the model, assessment of model fit should derive out of a variety of aspects and be based on several criteria that be able to assess model fit from a diversity of aspects (Byrne, 2001). This research follows the criteria of goodness-of-fit indexes that take a more pragmatic approach to the evaluation process. One of the first fit statistics to address this problem is the χ^2 /degree of freedom ratio, which appears as CMIN/DF in AMOS output file. Many alternative indexes of fit were considered as criteria for evaluation model-fitting such as TLI, CFI, RMSEA, etc. These conditions, generally referred to as the subjective, practical or ad hoc index, are generally used as complement to the χ^2 statistic. In this research, the conditions of important fit indexes used for model assessment are selected as follows:

a) Absolute fit index (CMIN/DF): This is the ratio of chi-square to the degree of freedom. According to Maruyama (1997), this index is used to explain whether the residual or unexplained variance remained after model fitting is appreciable. This ratio should be less than 5.00 but it is preferred to fall beneath the recommended level of 3.00 (Byrne, 2001).

b) The incremental fit index (IFI) and Tucker-Lewis coefficient (TLI): These are called a non-normed fit index (NNFI) which are relative indices addressing the question of how well the proposed model explains the set of observed data when comparing with other possible models (Hu & Bentler, 1999). The recommended level of these fit indices is above 0.90 (Hair et al., 1998).

c) Comparative fit index (CFI): The value for CFI ranges from 0 to 1 and is derived from the comparison of a hypothesized model with the independence model. It has complete covariance measurements in the data. A value >0.90 is considered proxy of a well-fitting model (Bentler, 1992).

d) Root Mean Square Error of Approximation (RMSEA): This is recognized as one of the most informative criteria for creating a covariance variance model. The RMSEA considers about the error in estimating the population response of a good model for unknown parameters; nonetheless, optimally chosen parameter values, fit the population covariance matrix if it is available (Byrne, 2001). The recommended level is less than 0.05 or, at least, less than 0.08 (Browne & Cudeck, 1993). MacCallum, Browne and Sugawara (1996) discussed these cut-points and note that RMSEA values ranging from 0.08 to 0.10 indicate mediocre fit.

e) P-value: CFA is necessary and important to get a valid structural model. Initially, it is used to test convergent validity and the reliability of the constructs. The convergent validity assesses the degree to which two measures of the same construct are correlated (Hair et al., 1998). By using CFA, convergent validity can be performed by evaluating the parameter estimates and p-values. The high value of parameter estimates and the significance of statistical p-value < 0.05 are the key evaluation criteria recommended by Anderson and Gerbing (1988).

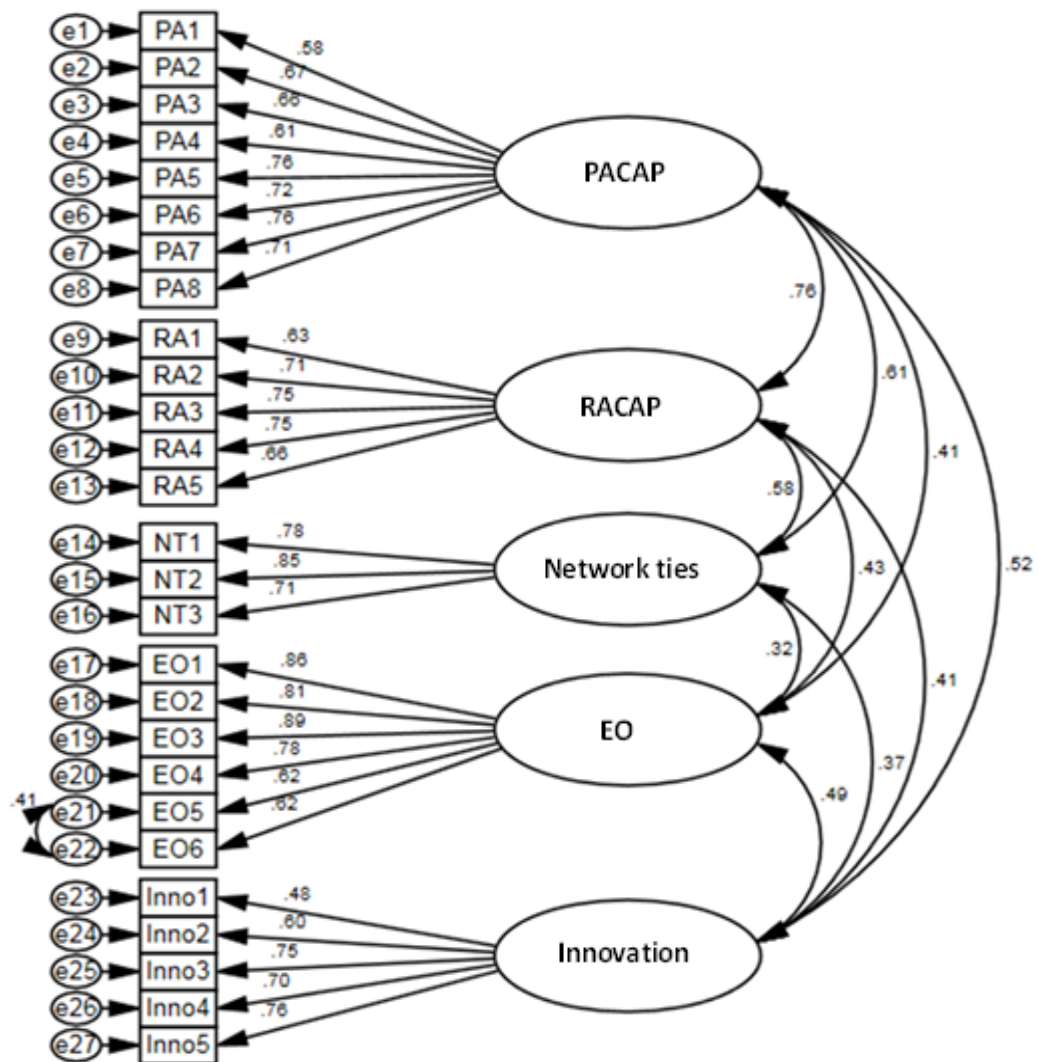


Figure 3 The confirmatory factor analysis

$$\chi^2 = 31.858, df = 19, \chi^2/df = 1.677, p = 0.032, IFI = 0.979, TLI = 0.968, CFI = 0.978, RMSEA = 0.060$$

Figure 3 illustrate that CFA is conducted for all latent variables in this research. The result of CFA for all variables suggests that this measurement model fits the data well. The CMIN/DF index is equal to 1.677, which is below the referable threshold of 3.00. The other fit indices are all satisfactory although, p-value is below 0.06. At higher than the cutoff point of 0.90 (IFI= 0.979, TLI= 0.968, CFI= 0.978).

The RMSEA index (0.060) is under the 0.10 recommended by MacCallum et al. (1996). All regression coefficients between each measurement item and its corresponding dimension in the first-order confirmatory factory analysis are significant at the p-value < 0.001 level, with values ranging from 0.48 to 0.89.

Table 17 Factor loading, composite reliability and average variance extracted

Item	Factor loading	CR	AVE
PACAP:			
PA1	0.58	0.88	0.50
PA2	0.67		
PA3	0.66		
PA4	0.61		
PA5	0.76		
PA6	0.72		
PA7	0.76		
PA8	0.71		
RACAP:			
RA1	0.63	0.83	0.50
RA2	0.71		
RA3	0.75		
RA4	0.75		
RA5	0.66		
Network ties:			
NT1	0.78	0.83	0.61
NT2	0.85		
NT3	0.71		

Table 17 Factor loading, composite reliability and average variance extracted
(continued)

Items	Factor loading	CR	AVE
EO:			
EO1	0.86	0.92	0.64
EO2	0.81		
EO3	0.89		
EO4	0.78		
EO5	0.62		
EO6	0.62		
Innovation:			
Inno1	0.48	0.80	0.45
Inno2	0.60		
Inno3	0.75		
Inno4	0.70		
Inno5	0.76		

Table 17 shows that testing the construct validity. All variable have a factor loading is higher than 0.4 (Hair et al., 2006), which indicates that the measurement model is completely satisfactory. Moreover, CR is greater than 0.70 (Nunnally & Bernstein, 1994) and AVE is higher than 0.40 (Hair et al., 2009) and the AVE exceed 0.5 (Fornell & Larcker, 1981). Therefore, all variable not will be deleted from the model and the results provide evidence for validity.

4.4 Correlation Analysis

In this research, there are two purposes for testing correlation on all variables by a bivariate correlation analysis of Pearson's; (1) exploring the relationships among variables, (2) verify the multicollinearity problem which exists when inter-correlation between independent variables exceeds 0.80 (Hair et al., 2000). Thus, the bivariate

correlation procedure is scaled to a two-tailed test of statistical significance as $p < 0.01$. The results of all variables are shown in Table 18.

Table 18 Descriptive statistics and correlation matrix of all constructs

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Mean	5.39	5.22	5.55	5.54	5.18	0.33	0.65
S.D.	0.97	1.09	0.90	0.89	1.17	.471	.479
(1) Innovation	0.792 ^a						
(2) Network ties	0.315**	0.820 ^a					
(3) PACAP	0.439**	0.535**	0.875 ^a				
(4) RACAP	0.353**	0.489**	0.655**	0.820 ^a			
(5) EO	0.420**	0.303**	0.415**	0.434**	0.898 ^a		
(6) R&D	0.050	0.072	0.101	0.091	0.009	n.a	
(7) Experience	0.067	0.069	0.076	0.049	0.109	0.042	n.a

Note: N= 188

**Correlation is significant at the 0.01 level (2-tailed).

^a Cronbach's alpha for this variable is exceed 0.70 as recommended by Nunnally (1978)

n.a =not applicable

Accordingly, Table 18 shows that network ties have significant positive relationships with innovation ($r = 0.315$, $p < 0.01$). Two components of ACAP, PACAP variables is significantly related to innovation ($r = 0.439$, $p < 0.01$) and also significantly related to network tie ($r = 0.535$, $p < 0.01$). RACAP variables is significantly related to innovation ($r = 0.353$, $p < 0.01$) and also significantly related to PACAP ($r = 0.655$, $p < 0.01$). The moderating effect of EO has correlations with innovation, PACAP and RACAP ($r = 0.420$, 0.415 , and 0.434 , $p < 0.01$). In addition, the results also show that the relationships among variables, the correlations among all variables in the conceptual model are in the range of 0.315 to 0.655 at $p < 0.01$,

which is lower than 0.8 (Hair et al., 2010). Hence, the results point out that this research without the multicollinearity problems and also indicating an acceptable level of reliability.

4.5 Hypotheses Testing and Results

Structural equation modeling analysis (SEM) and the regression analysis were employed to investigate the hypothesized relationships in this research. About SEM, this analysis use to investigate the relationship of hypothesis 1 to hypothesis 4. Another one, the regression equation is best explains for moderating effect of EO which is hypothesis 5. This research also includes two control variables of R&D and experience in the analysis. The results of descriptive statistics and hypotheses testing are discussed as follows:

4.5.1 Structural equation modeling analysis

In order to test the hypotheses proposed in this research, a SEM is performed. SEM is a statistical methodology based on Byrne (2001) that employ a confirmatory; such as approach to the analysis of a structural theory bearing on some phenomenon, hypothesis testing. The SEM takes two important terms of the analysis: 1) a series of structural equations provide the causal processes under study, and 2) these structural relations can be modeled pictorially to enable a clearer conceptualization of the theory under study (Byrne, 2001). In addition, SEM offers a unique analysis as well as considers the questions of both measurement and prediction (Kelloway, 1998).

In this research, AMOS (Analysis of Moment Structures) version 22 is used to assess the construct measures and model fitting. AMOS is the analysis of mean and covariance structures. AMOS provides numerous benefits, such as easy method of use, flexibility, and many additional options (i.e., treatment of missing data, multigroup invariance analysis, and bootstrapping). The method approach used in AMOS is based on maximum likelihood estimation (MLE) and thus is theoretically based (Arbuckle & Wothke, 1999). Moreover, AMOS is based on the MLE, it is required the data meet specific assumptions such as the relevant of continuous and

normality distributed endogenous variables. Therefore, preliminary checks of necessary assumptions are required.

SEM is divided into two-stage process. In the first stage, the measurement model is evaluated by using CFA. This stage includes the assessment of construct validity by the method of parameter estimation in each construct measurement model. It deals with the latent variables and their indicators to provide a confirmatory assessment of convergent and discriminant validity (Anderson & Gerbing, 1988). In the second stage, a structural model is provided to capture the estimation of the measurement models and their structural/path relations. This stage is also used for assessment of nomological validity. This two-stage analysis has advantages, avoiding the interaction of the measurement and structural model, and reducing the number of estimated parameters.

4.4.1.1 Structural equation modeling assumption checks

SEM requires assumptions to access the powerful and flexible process. Since SEM normally assumes linear relationships (Hair et al., 1998), the sample size, normal distribution, correlations and multicollinearity among latent constructs must be checked to ensure dataset qualification before performing SEM. According to prior analysis which in Table 18 which involve with correlation analysis, the results showed that no multicollinearity problems in this research. About sample size issue is discussed as follows:

a) Sample size

In general, structural equation model requires a relatively large sample size for the robustness of parameter estimation. Comrey and Lee's (1992) study recommended that a sample size of 200 is fair while 300 are good. Hair et al. (1998) suggest that sample size (n) of more than 200 is relatively large if there are many factors affecting the required sample size. However, Anderson and Gerbing (1988) suggest that 150 sample size to be sufficient for analysis using structural equation statistics. In that case, the proposed research model in this research, 150 sample size is considered as

most appropriate. This means the structural equation modeling requires a sample size of 150 thus the 188 sample size of this research presents no problem and meets the requirement of sample size in SEM.

b) Normal distribution

Normal distribution is conducted by the assessment of Kolmogorov-Smirnov (K-S) statistical test. The result of the K-S test on each construct is largely significant ($p\text{-value} < 0.05$), indicating a non-normal distribution of data. However, the visual inspection of the Q-Q plots for each construct illustrates no severe violations of normality as all points clustered around the straight diagonal line. In sum, the test of normality shows the normal distribution of the data for both endogenous variables in structural model.

4.5.1.2 The structural model

This process is the second stage of the SEM following measurement model stage. After the measurement model has shown the links between the latent variables and the observed measures; such as the confirmatory factor analysis model, the structural model depicts the links among the latent variables themselves. In fact, the measurement model and the structural model are two components of the full latent variable model. The full or complete model means allowing for the specification of regression structure among the latent variables. Thus, in this model, the researcher able to set hypothesis that indicates the impact of one latent construct on another in the modeling of causal direction.

Normally, this is the stage of model parameter estimation and the examination of structural relationship among hypothesized constructs. To provide a rigorous and meaningful analysis, this research uses the method of model assessment by including all measurement items in the model as first factors. This transforms the hypothesized conceptual model of this research into an AMOS graphics program. Figure 4 shows the overview diagram of not only the measurement model but the structural model as base model.

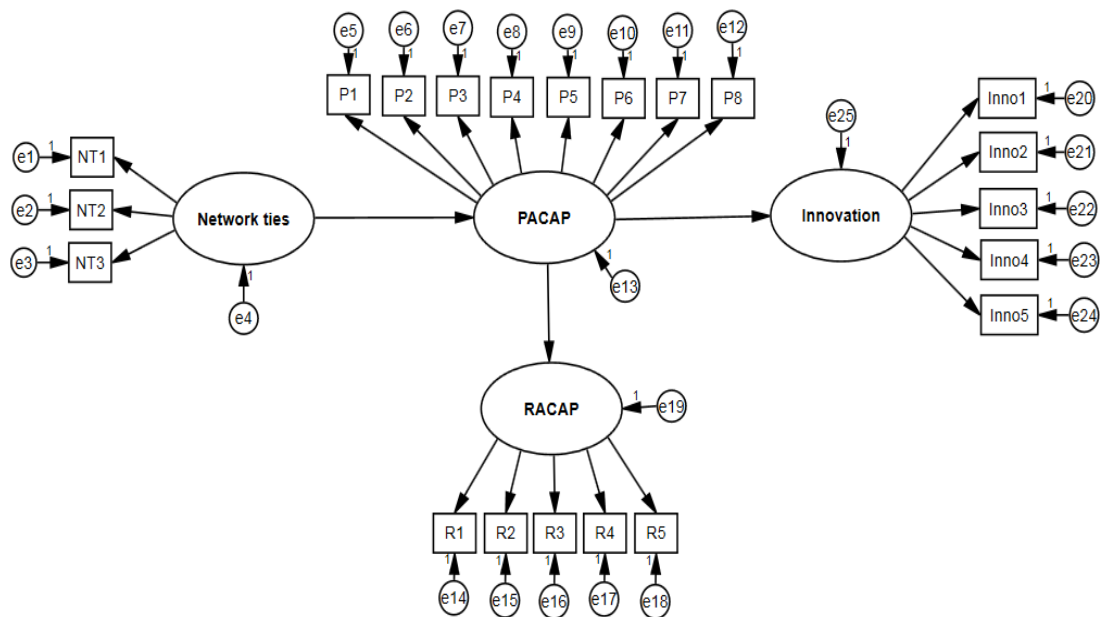


Figure 4 Structural model of main effect

4.5.1.3 Hypotheses testing

a) Main hypotheses testing

The results of four main hypotheses, as previously discussed, the proposed model shows the structural relationships among all constructs. Thus, Hypothesis 1 to Hypothesis 4 can be tested. This research concentrates on both PACAP and RACAP which are two components of ACAP construct, its external antecedents, and its consequences, the overall hypotheses examine the details of the ACAP construct in each dimension. Hypothesis 1 tested the direct effects of antecedents which is network tie on PACAP. Hypothesis 2 tests the impact of PACAP on its consequence (innovation). Meanwhile, Hypothesis 3 tests PACAP on RACAP. Hypothesis 4 also tests RACAP on its consequence (innovation).

Based on the proposed model and hypothesis 1 to hypothesis 4, the structural model is constructed and the parameters estimated. The result of model assessment and parameter estimation is illustrated in Figure 5. To easily observe the model fitting

results, the fit indices from the results of the proposed model are compared to the threshold/cutoff points as recommended by researchers, shown in Table 19.

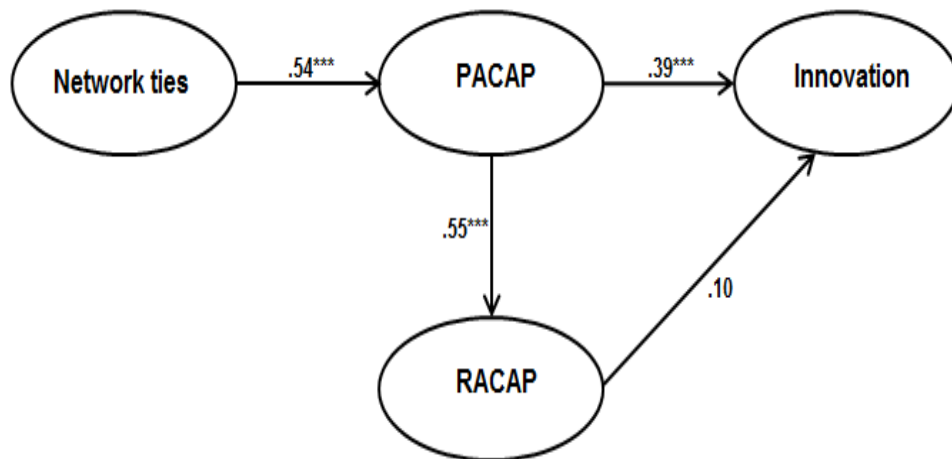


Figure 5 The structural model for main hypotheses testing

Table 19 Comparison of goodness-of-fit index of proposed model and the recommended points

Goodness-of-fit indices	The cutoff point	Proposed model
CMIN/DF (χ^2/df)	< 2.00	1.161
p-value	> 0.05	0.319
IFI	> 0.90	0.994
TLI	> 0.90	0.989
CFI	> 0.90	0.994
RMSEA	< 0.10	0.029

Since the assessment of model fitting uses the same criteria as the CFA or measurement model, the four main fit indices, CMIN/DF (χ^2/df), p-value, IFI, TLI, CFI, and RMSEA, are used to investigate the structural model fitting. Then the hypothesized model is estimated to examine structural relationship. The AMOS output results in Table 19 reveal that the model has relatively good fit with CMIN/DF (χ^2/df) = 1.161, p = 0.319, IFI = 0.994, TLI = 0.989, CFI = 0.994, RMSEA = 0.029

As previously mentioned, the relationship among network ties, two components of ACAP and innovation is explored and evaluated. With the main criteria, all hypotheses are tested by analyzing the t-value at a significance level of 0.05 or less. Table 20 summarizes the relationships in the initial structural model with the results of parameter estimation and test of significance (p-value).

Table 20 Main effect: parameter estimation and the significance test

Hypotheses	Estimated relationship		S.E.	C.R.	p-value
	coefficients				
	Unstandardized	Standardized			
H ₁ : Network ties → PACAP	0.441	0.535	0.051	8.667	0.000
H ₂ : PACAP → Inno	0.419	0.385	0.093	4.529	0.000
H ₃ : PACAP → RACAP	0.547	0.552	0.063	8.642	0.000
H ₄ : RACAP → Inno	0.113	0.103	0.093	1.210	0.226

Note: 1. Estimated relationship coefficients here mean unstandardized/standardized regression weight; S.E. means standard error; C.R. is critical ratio; β is unstandardized/standardized regression coefficient

2. t-value is significant at *** p-value < 0.001

1) Network ties and potential absorptive capacity

The main hypothesis aims to test the main effects of the proposed constructs. This reveals that there is significance in the structural relationship between network tie and PACAP (H1) at p-value < 0.001. Network ties are significantly and positively related to PACAP (t-value = 8.667, p-value = 0.000). Also, the unstandardized coefficients of the structural path are consistent with the prediction in both direction and magnitude. For estimated regression weight, network tie is positively related to PACAP with path standardized coefficient (β) of 0.535. Comparing to the unstandardized coefficients, standardized coefficients are better capable of representing the relative contribution of the predictors in explaining endogenous variables. In other words, the standardized coefficient of cooperation shows the power

of the effect on PACAP. The result of the standardized coefficient of network tie indicates the contribution of network tie largely explains PACAP. Therefore, hypothesis 1 is accepted.

2) Potential absorptive capacity and innovation

The result of this test reveals a positive and significant relationship between PACAP and innovation (H2). PACAP is significantly and positively related to innovation (t-value = 4.529, p-value = 0.000). Comparing to the unstandardized coefficients, the standardized coefficient of PACAP is not high with positive direction ($\beta = 0.385$) and it has dropped from unstandardized coefficients ($\beta = 0.419$) but it still indicates the contribution of PACAP largely explains innovation by significance at p-value < 0.001. However, PACAP is positively and significantly related to innovation. Therefore, hypothesis 2 is accepted.

3) Potential absorptive capacity and realized absorptive capacity

The result of structural model reveals that PACAP has a dramatically significant relationship with RACAP (t-value = 8.642, p-value = 0.000). It is positively related to RACAP as hypothesized with the high standardized coefficient (β) of 0.552 in all constructs. Comparing to the unstandardized coefficients, the standardized coefficient of PACAP is high with positive direction ($\beta = 0.552$) although it only slightly increased from unstandardized coefficients ($\beta = 0.547$). However, PACAP is positively and significantly related to RACAP at p-value < 0.001. Therefore, hypothesis 3 is accepted.

4) Realized absorptive capacity and Innovation

Final hypothesis in SEM testing, hypothesis 4 tests the relationship between RACAP and innovation. The result of this test reveals a positive but not significant (t-value = 8.642, p-value = 0.000). The standardized coefficient of RACAP is not very high with positive direction ($\beta = 0.103$). Compared to that of RACAP ($\beta = 0.103$), the

path coefficient of RACAP has only power predictive of innovation. However, it indicates the contribution of RACAP is not significantly determines innovation. Therefore, hypothesis 4 is rejected.

Going beyond hypothesis testing, this research proposes two components of ACAP as black box; namely, PACAP and RACAP are mediator. In order to better understand the strong mediating effect of PACAP and RACAP, the research elaborates and provides further testing for manifest discussion. Testing mediating effect of PACAP and RACAP, PACAP mediates the relationship between network tie and innovation and RACAP mediates the relationship between PACAP and innovation.

According to testing mediating effect, this research based on Baran and Kenny's (1986) criteria which it is divided two parts. First testing PACAP as mediator, following criteria;(1) the network ties need to significantly affects the PACAP, (2) network ties need to significantly affects innovation in the absence of PACAP, (3) PACAP has a significant unique effect on innovation, and (4) the effect of network ties on innovation shrinks upon the addition of PACAP to the model. Second, testing RACAP as mediator, following criteria;(1) the PACAP need to significantly affects the RACAP, (2) PACAP need to significantly affects innovation in the absence of RACAP, (3) RACAP has a significant unique effect on innovation, and (4) the effect of PACAP on innovation shrinks upon the addition of RACAP to the model.

These criteria are able to use to informally judge whether or not mediation is occurring. The test for mediation can be performed using two steps. The first, using SEM analyses direct, indirect, and total effects in. This step provides coefficients of all exogenous and mediating factors together with the predictive indicator such as R^2 of each variable. Thus, to evaluate mediation effect testing, the research run SEM to new paths network ties, the two components of ACAP and innovation variables were estimated the assessment of model fitting in Figure 6 and Table 21 show the results of parameter estimation for testing mediating effect.

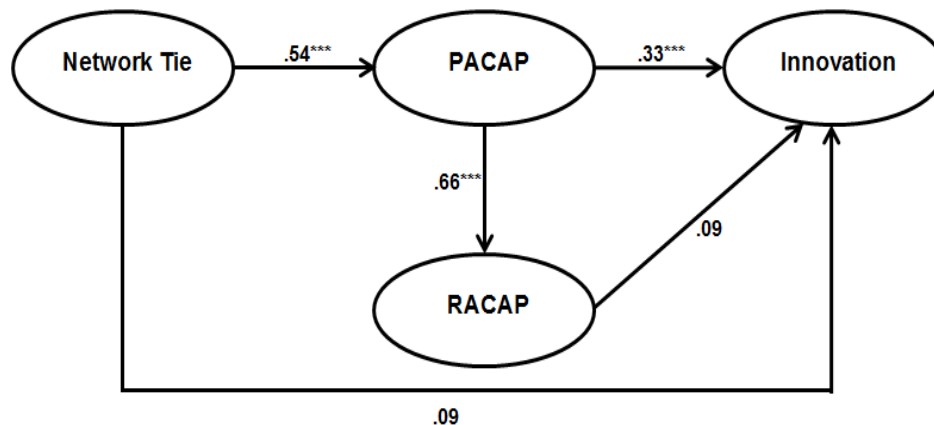


Figure 6 Structural model for mediation effect testing

The testing in Table 21 reveals that the relationship between network ties and innovation is not statistically significant. It is not surprising because the reason has been discussed in Chapter I (see in the section 1.2). As such, this research did not hypothesize this relationship. Another one, the relationship between PACAP and innovation was tested in hypothesis 2 PACAP is positively and significantly related to innovation.

Table 21 Parameter estimation for testing mediating effect

Relationship paths	Estimated relationship coefficients		S.E.	C.R.	p-value
	Unstandardized	Standardized			
	Network ties → PACAP	0.441			
PACAP → Inno	0.355	0.329	0.103	3.440	0.000
PACAP → RACAP	0.649	0.655	0.055	11.864	0.000
RACAP → Inno	0.100	0.092	0.094	1.066	0.286
Network ties → Inno	0.084	0.094	0.069	1.218	0.223

Note: 1. Estimated relationship coefficients here mean unstandardized/standardized regression weight; S.E. means standard error; C.R. is critical ratio; β is unstandardized/standardized regression coefficient

2. t-value is significant at *** p-value < 0.001

Table 22 shows the effects of mediating; direct effects, indirect effects, and total. The results demonstrate that the direct and indirect among network ties, the two components of ACAP and innovation. At PACAP as mediator, the network tie can influence innovation through PACAP by the regression coefficients for the indirect relationship is estimated at 0.185. Also at RACAP as mediator, PACAP can influence innovation through RACAP by the regression coefficients for the indirect relationship is estimated at 0.065. The significance of these mediating effects can be further tested by the Sobel test as recommended by MacKinnon, Warsi, and Dwyer (1995).

Table 22 The effects of mediation

Relationship paths	Unstandardized			Standardized			z
	Direct	Indirect	Total	Direct	Indirect	Total	
Network ties → PACAP	0.441	0.000	0.441	0.535	0.000	0.535	-
Network ties → Inno	0.084	0.185	0.269	0.094	0.209	0.303	3.202***
PACAP → Inno	0.355	0.065	0.421	0.329	0.060	0.390	1.060
PACAP → RACAP	0.649	0.000	0.649	0.655	0.000	0.655	-
RACAP → Inno	0.100	0.000	0.100	0.092	0.000	0.092	-

MacKinnon et al. (1995) suggested that using the Sobel test which testifies a mediator variable significantly carries the influence of an independent variable to a dependent variable. Formulae for the tests provided here were drawn from MacKinnon and Dwyer (1994) and from MacKinnon and et al. (1995):

$$\text{Sobel test equation, } z\text{-value} = a(b)/\text{SQRT}(b^2(s_a^2) + a^2(s_b^2))$$

Where; a = unstandardized regression coefficient for the association between independent variable and mediator.

s_a = standard error of a.

b = raw coefficient for the association between the mediator and the dependent variable (when the independent variable is also a predictor of the dependent variable).

s_b = standard error of b .

The reported p-values are drawn from the unit normal distribution under the assumption of a two-tailed z-test of the hypotheses 5 and 6 that the mediated effect equals zero in the population. The calculation is based on the results in Table 21 for the significance of the mediating effect. Substituting for an equation for the network tie can influence innovation through PACAP. This results in Sobel test equation:

$$Z\text{-value} = 0.441(0.355)/\text{SQRT}(0.355^2(0.051^2) + 0.441^2(0.103^2))$$

The calculated z-value is 3.202 which it indicates that the mediating effect of PACAP is significant at p-value < 0.001. Therefore, PACAP is mediator.

Likewise, substituting for an equation for the PACAP can influence innovation through RACAP. This results in Sobel test equation:

$$Z\text{-value} = 0.646(0.100)/\text{SQRT}(0.100^2(0.055^2) + 0.646^2(0.094^2))$$

The calculated z-value is 1.060 which it indicates that the mediating effect of RACAP is not significant (a two-tailed z-test is 0.289). Therefore, RACAP not is mediator.

4.5.2 Hierarchical regression analysis

In this research, EO is moderator which moderates both the relationship between PACAP and innovation and also moderates the relationship between RACAP and innovation. These relationships are hypothesis 5a and hypothesis 5b. In the analysis of moderator was tested by using the regression analysis to investigate the hypothesized relationships in this research.

To analysis the moderating effect procedure suggested by Aiken and West (1991). They have suggested, before testing regression of the interaction terms, both

the independent variables and moderating variable need to create mean-centering to alleviate the potential problem of multi-collinearity. They also provide the notice that cross-product interaction terms may be highly correlated which suggests multi-collinearity and bring to problems with assessing the relative importance of main effects and interaction effects. Thus, it is desirable to employ centered variables which often alleviate a multi-collinearity problem. Thus, this research follows a three-stepped analysis in the first step; on Models 1-3, two controls (R&D and experience) were entered. Subsequently, the main effects of PACAP, RACAP and EO were tested by the analyzing the interaction effects of PACAP x EO. Similarly, this research ran a three-stepped analysis for RACAP is moderator variable, finally, the Models 4 shows the analysis of the interaction effects of RACAP x EO.

Before using the hierarchical regression analyses, the independent variables were investigated for multi-collinearity. The results of the variance inflation factor or VIF that are maximum VIF within the models (1.387), which were well below the cut-off of 10 indicating no serious concern involve with multi-collinearity (Hair et al., 2006). It recommends that the estimated beta(s) are well established in the following regression models.

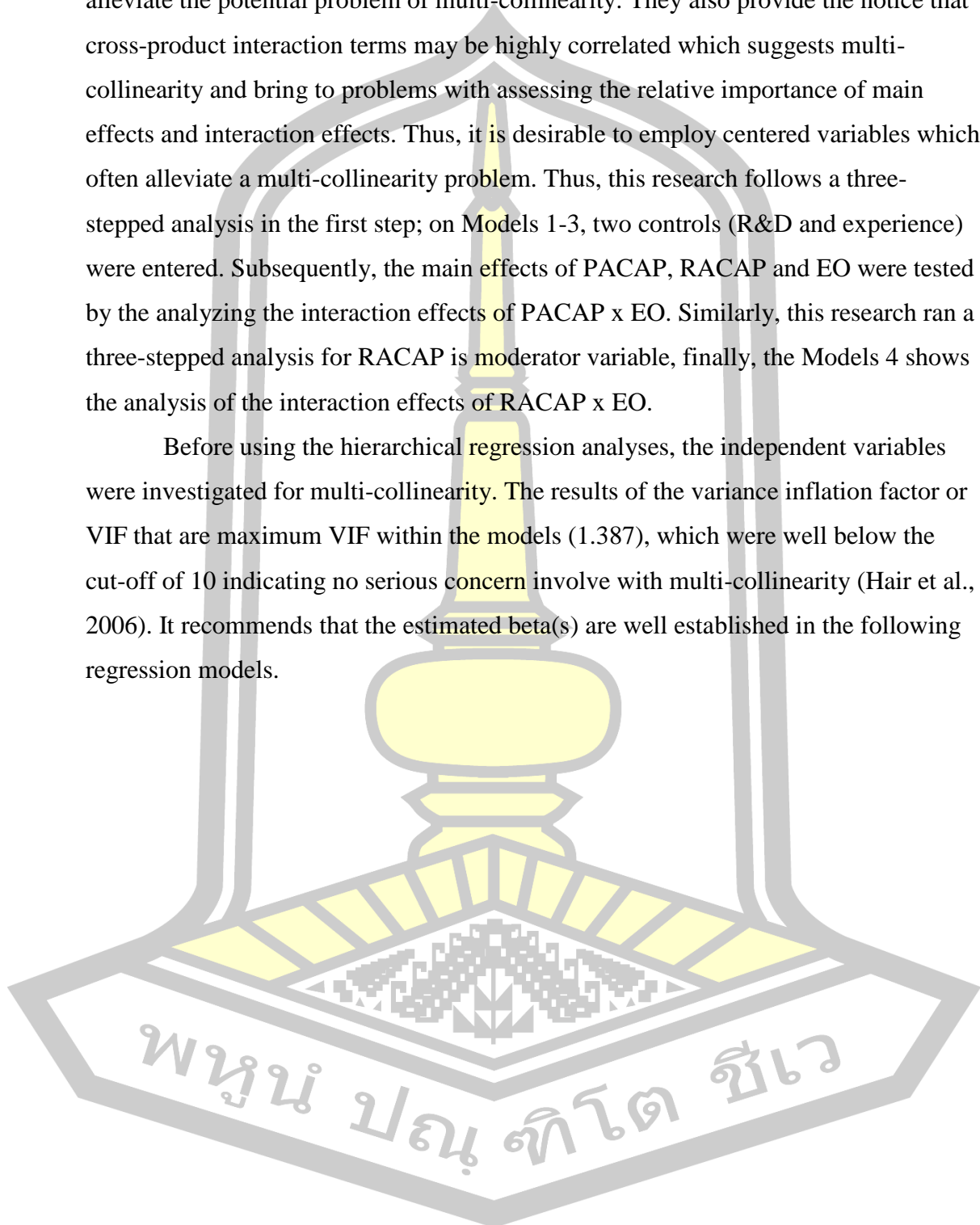


Table 23 Results for regression of moderating effect

Variables	Innovation			
	Model 1	Model 2	Model 3	Model 4
Control variables				
R&D	.048	.082	.081	.087
Experience	.065	.120	.126*	.123
Main effects				
PACAP		.334***	.339***	.367***
RACAP		.015	.045	.020
EO		.295***	.336***	.319***
Interaction effects				
PACAP*EO			.147*	
RACAP*EO				.131
R²	.007	.283	.300	.297
Adjusted R²	.004	.264	.276	.273
F	.630	18.068***	12.909***	12.731***

Note: Standardized regression coefficients are reported, N=188 Significant at

* $p \leq .05$; *** $p \leq .001$

Table 23 shows the regression results on innovation. The results for Model 3 shows that moderating effect of PACAP has a significant positive effect on innovation and Model 4 shows that moderating effect of PACAP has a significant positive effect on innovation. Notice, R^2 of the interaction term at each model, when EO was added, R^2 changes which it beyond the main effects.

As the results for Model 3 show that PACAP and EO independently influence innovation. Furthermore, The results for hypotheses 5a, the inclusion of the interaction between PACAP and EO in Model 3 does provide a significant regression coefficient or explain additional variance in innovation ($\beta_{PACAP} = .339$, $p \leq .001$; $\beta_{RACAP} = .045$, n.s.; $\beta_{EO} = .336$, $p \leq .001$; $\beta_{PACAP * EO} = .147$, $p \leq .05$; Adjusted $R^2 = .276$; $F = 12.909$, $p \leq .001$). Therefore, hypothesis 5a is accepted.

The results in Model 4 do show that RACAP strength and EO independently influence innovation performance. The addition of the interaction between RACAP and innovation does not generate a significant regression coefficient for the interaction, nor does the interaction add any explained variance ($\beta_{\text{PACAP}} = .367, p \leq .001$; $\beta_{\text{RACAP}} = .020, \text{n.s.}$; $\beta_{\text{EO}} = .319, p \leq .001$; $\beta_{\text{RACAP} * \text{EO}} = .131, \text{n.s.}$; Adjusted $R^2 = .273$; $F = 12.731, p \leq .001$), the results do not support hypothesis 5b stating that EO moderates the effect of RACAP and innovation. Therefore, hypothesis 5b is rejected.

In order to better explain the form of interaction effects reported in the above hierarchical regression analysis, a plotting the graph of the interaction effects are shown in Figure 10, using one standard deviation above and below the mean to capture high and low EO (Aiken & West, 1991). This method can help explain the interpretation of the effects of two continuous predictive variables. Model predicts innovation (Y) from the additive effects of PACAP (X) and EO (Z), assuming no moderation. From unstandardized coefficients this research finds the following:

$$\text{Predicted } Y = \hat{Y} = B_0 + B_1X + B_2Z + B_3XZ$$

$$\text{Equation 1: } \hat{Y} = 5.132 + 0.392 (\text{PACAP}) + 0.285(\text{EO}) + 0.089(\text{PACAP} \times \text{EO})$$

In order to test interaction effect for each individual, EO is substituted by one standard deviation in equation: for Z

Substituting for an equation for EO one standard deviation above the mean, the standard deviation of EO as +1.176 in the equation. This results in:

Equation 2: innovation

$$= 0.497(\text{PACAP}) + 5.467, \text{ for all those } +1 \text{ SD above the mean on EO}$$

Substituting for an equation for EO one standard deviation at the mean, the standard deviation of EO as 0 in the equation. This results in:

$$\text{Equation 3: innovation} = 0.392(\text{PACAP}) + 5.132$$

Substituting for an equation for EO one standard deviation at the mean, the standard deviation of EO as -1.176 in the equation. This results in:

Equation 4: innovation

$$= 0.287(\text{PACAP}) + 4.797, \text{ for all those } -1 \text{ SD below the mean on Z}$$

Actual values of innovation can now be calculated by substituting values of predictor PACAP, that values are computed for PACAP at the mean, one standard deviation above the mean, and one standard deviation below the mean (SD of PACAP = 0.903).

Table 24 illustrates the significant interaction effect and separates regression lines that are computed, plotted, and tested for individual one standard deviation above the mean values on predictor, EO (for H5a), at the mean of EO, and one standard deviation below the mean of predictor EO (Aiken & West, 1991). Then, this research plotted the interaction effects in the graphs shown (see Figure10), using one standard deviation above and below the mean to capture high and low EO practices as shown details in Table 24 (Aiken & West, 1991).

Table 24 The interaction values for plotting

Innovation	PACAP on -1S.D.	PACAP mean	PACAP on +1S.D.
on High EO	5.019	5.467	5.916
on EO on mean	4.778	5.132	5.486
on Low EO	4.537	4.797	5.135

Figure 7 illustrates the findings for the relative innovation when considering EO as the moderating variable. The effect of PACAP on innovation better, it is dependent on EO. Hence, hypothesis 5a is supported. Accordingly, EO strengthens the relationship between PACAP and innovation when EO is high.

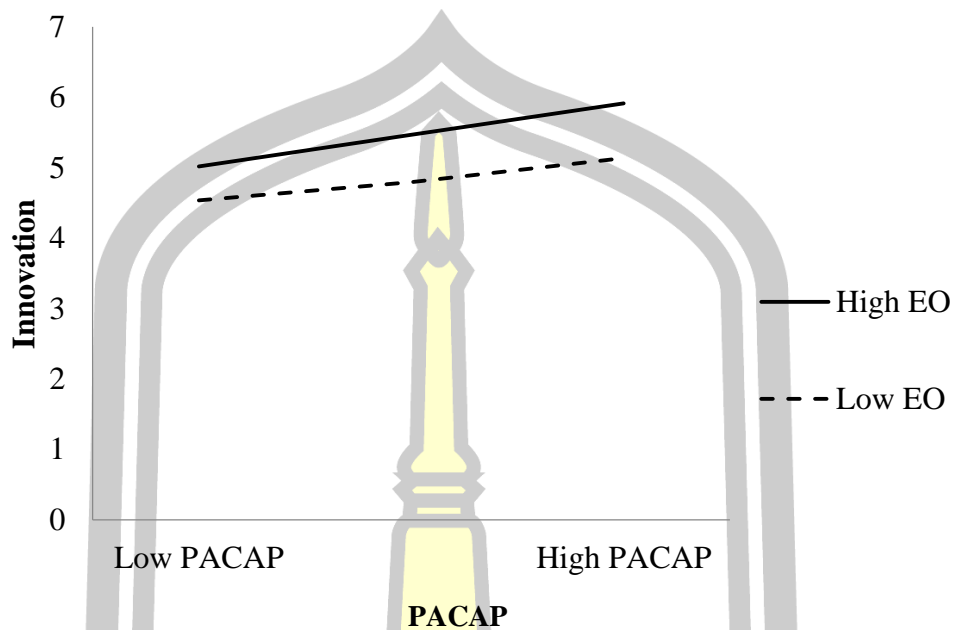


Figure 7 Interaction effects of entrepreneurial orientation on PACAP and innovation

Table 25 Summary of hypotheses testing results

Hypotheses	The statement	Results
H ₁	Network ties are positively related to PACAP.	Accepted
H ₂	PACAP is positively related to innovation.	Accepted
H ₃	PACAP is positively related to RACAP.	Accepted
H ₄	RACAP is positively related to innovation.	Rejected
H _{5a}	EO positively moderates the relationship between PACAP and innovation.	Accepted
H _{5b}	EO positively moderates the relationship between RACAP and innovation.	Rejected

CHAPTER V

DISCUSSIONS AND CONCLUSION

This chapter provides discussions and the conclusion of this research. The chapter first starts with discussions about the theoretical and managerial contributions of this research. The discussions are based on the results of the proposed hypotheses, which were empirically tested through SEM and hierarchical regression analysis. The results of the exploration in the context of study are also discussed. This research provides the future research agenda which increases the body of literature. Finally, the conclusion encompasses the overview to conduct this research.

5.1 Discussion

The purpose of this research was to investigate the relationships among network ties, ACAP, and innovation and to determine if EO moderated the effect of ACAP on innovation. The findings show that network ties have a positive direct effect on PACAP, which is a component of ACAP. PACAP has a positive direct effect on RACAP. The results of testing the mediating effect of PACAP showed that PACAP can mediate the relationship between network ties and innovation. The findings also show that EO moderates the effect of PACAP on innovation. By contrast, the finding shows that RACAP has no significant effect on innovation, and EO cannot moderate the effect of RACAP on innovation. These findings provide not only theoretical contributions but also managerial contributions.

5.1.1 Theoretical Contributions

This research has been inspired by ongoing debates regarding the link of network ties, knowledge ACAP, and innovation at the firm level. This research has adopted the lens of KBV and social capital theory through network ties, ACAP, and

innovation to address the gaps in the literature. This research therefore contributes fourfold.

First, scholars have argued that ACAP remains ambiguous (e.g., Volberda et al., 2010). Volberda et al. (2010) reviewed the underlying theories and empirical studies of ACAP. They pointed out that the emergence of ACAP from the actions and interactions of antecedents is unclear, and its impact on outcomes in the future, such as innovation, firm performance, and competitive advantage, is also unclear. Simultaneously, with a few exceptions, ACAP's capability as a black box refers to both organizational routines and processes (Lewin et al., 2011).

This research is aimed at gap-filling. The main gaps in the ACAP conceptual model have been filled, such as the simultaneous testing of two main components, knowledge sources that refer to network ties, and innovation. To better understand the strong mediating effect of ACAP, the research elaborates and provides additional testing to confirm ACAP as a black box. Consequently, the findings advance the ongoing conversation on the relationship between networks ties, ACAP, and innovation: (1) network ties significantly influence PACAP, and PACAP has a significant positive effect on innovation; (2) the finding also provides further support on the importance of PACAP and RACAP; and (3) PACAP mediates the relationship between network ties and innovation. Moreover, to confirm ACAP as a black box, this research also tested the mediating effect of the two components of ACAP. The finding showed that PACAP significantly mediates the relationship between network ties and innovation. Thus, this finding strongly proves that PACAP is an absolute mediator. On the other hand, RACAP does not mediate the relationship between PACAP and innovation. These findings are consistent with previous studies researches (e.g., Ali & Park, 2016; Tzokas et al., 2015). Ali and Park (2016) argued that PACAP enhances the firm's ability to acquire new external knowledge and then assimilate received knowledge from external sources into new products, processes, management, and innovation. On the other hand, knowledge obtained from external sources is necessary for ACAP to recognize, assimilate, and apply (Ferrerias-Méndez et al., 2015). Recently, studies have pointed out that interorganization as an antecedent has received academic attention (Ferrerias-Méndez et al., 2015; Enkel & Heil, 2014; Roberts, 2015).

This research contributes insight into evident that awareness of external knowledge to a linkage process of knowledge from the network as knowledge source, affects innovation. Meanwhile, critical knowledge is not always easily available through external sources; however, it is widely acknowledged, which fosters a need for creating knowledge internally (Nonaka, 1994). This empirical test also shows that the gap regarding the ACAP concept is filled and supports the claim that well-managed ACAP, particularly PACAP, is a tool that mediates the effect of knowledge from the network as knowledge source on innovation. This research also provides insight into a firm's network is knowledge source that antecedent of ACAP. When a firm has network ties that it frequently contacts, a firm will acquire quality knowledge. Cohen and Levinthal (1990) and Grant (1996) raised the issue of knowledge aggregation by potential recipients because according to them, there is a need for the recipient's knowledge ACAP, which involves their ability to add new knowledge to existing knowledge.

Second, in the literature, scholars have argued that organizational age has a distinguished influence (e.g., Kotha et. al., 2011; Zou et. al., 2018). However, previous studies have generally determined that age is a control variable. Hence, this research is specific to new firms. The results showed that network ties are important because new firms often have incomplete knowledge to achieve innovation. The case study also pointed out that network ties are essential in acquiring external knowledge at the early stage. Likewise, in the strategical and entrepreneurship literature about the organizational life cycle, each stage needs to indicate a unique and strategic context that influences the nature and extent of a firm (Hite & Hesterly, 2001). Consequently, the research contribution provides the idea that network ties are a strategy of new firms at the early stage of the organizational life cycle. In other words, a new firm needs network ties as an appropriate strategy. New firms depend on external sources to acquire new knowledge and to achieve innovation. In addition, this research provides insight into the ACAP perspective, that is, when a firm is able to keep contact with a variety of networks which represent access to diverse knowledge, this point reflects that the firm has high skills in searching and identifying useful knowledge. As such, ACAP can be more oriented to explore diverse knowledge from contacts to ascertain new opportunities and realize the effectiveness of knowledge by

realizing the difference in networks (García-Villaverde, Parra-Requena, & Molina-Morales, 2018; Zhang & Wu, 2013).

Third, this research proves that EO moderates the relationship between PACAP and innovation because it is suited to the practices, methods, and decision-making styles of owners or managers to act as entrepreneurs. Figure 7 illustrates that PACAP will increase innovation. When EO is higher, the firm has the ability to analyze, interpret, and understand new knowledge acquired from external sources, which will encourage the organization to increase innovation. When the firm uses an appropriate method of operation, there is a good decision-making model to have new knowledge management. This finding is consistent with previous research showing that ACAP is a mechanism for knowledge acquisition and that assimilation becomes effective when EO is well developed. Wales, Parida, and Patel, (2013) suggested that higher EO and higher ACAP can result in higher performance. Wiklund and Shepherd (2003) argued that EO emphasizes an important style of a firm's approach. Their study suggested that based on knowledge-based resources, the ability to discover knowledge and exploit the knowledge gained has a positive relationship with the efficiency of the company because EO enhances this relationship. In addition, EO can foster the introduction of new product-market entries to influence and moderate firm performance (Lumpkin & Dess, 1996; Miller, 2011).

Accordingly, this manifestation contributes to EO literature. EO is an important procedure because it encourages innovation. At present, a few studies have explored the role of EO as a moderator which sufficiently influences outcomes. The present research goes beyond previous studies and recent conversations concerning the relationship between EO and firm performance; moreover, Appendix A (Table 3A) shows that most recent empirical studies have focused on EO as an independent variable. Consequently, the present research shows that EO can moderate some relationships, particularly innovation. Therefore, the contribution of this research is it demonstrates EO as a moderator. Likewise, EO is regarded as a managerial attitude that focuses on creating strategies to direct the actions and processes of the firm.

Fourth, this research contributes contextually diverse evidence that can be applied in the literature of both ACAP and innovation. The previous studies related to ACAP and innovation, have focused on the context in high-medium technology

industries including both studying abroad and in Thailand (see in the section 1.2). Although ACAP and innovation have already been studied in Thailand, there are still a few studies about these subjects, particularly the framework presented in the current research. This research thus focuses on new firms in Thai agriculture. Consequently, this study supports the findings in the relevant context (Gellynck et al., 2015; Tepic et al., 2012). For example, Gellynck et al. (2015) argued that in agricultural and rural areas, farmers will be able to absorb and apply knowledge from their key knowledge providers and use it for innovation.

This research provides insight regarding the phenomenon in context and provides evidence from non-high technological firms. Indeed, this research proposed a theoretical framework which involves network ties, ACAP, EO, and innovation. These constructs can enhance the capabilities of new agricultural firms so they can achieve innovation; particularly, this research provides insight of this framework through the case study. The findings from exploring the real context showed that this framework contributes to the comprehensive theoretical and practical perspectives in the context of study. Likewise, this research expands previous studies that focused on the context in high-medium technology industries (e.g., Fosfuri & Tribó, 2008, Leal-Rodríguez et al., 2014). It also contributes to the low-technology context by considering ACAP and innovation.

Simultaneously, this research adopts KBV and social capital theory to proceed in the process that is the basis of the presentation of the conceptual framework. This research contributes both perspectives because the results found that the new firms accumulate knowledge through searching, acquiring, and learning knowledge from external sources and also entrepreneurial activities as a driving force in developing and achieving innovation. These two perspectives have divergent concerns with the roots of value creation, with KBV stressing the externally accumulated knowledge to achieving innovation (Cohen & Levinthal, 1990; Molina-Morales et al., 2014; Subramanian et al., 2018) while social capital theory emphasizes its relational characteristics with external entities (García-Villaverde et al., 2018). Hence, both theories should be synthesized because new firms should develop firm-value knowledge which is obtained from external knowledge sources.

Although this research values the two components of ACAP to achieve innovation, the results only support the significant influence of PACAP. On the contrary, the results show that RACAP does not significantly affect innovation and that EO cannot moderate the relationship between RACAP and innovation. This condition suggests that RACAP that it reflects is a capability of internalization and conversion and exploitation deals with the application of knowledge as well as usage and implementation in reality. These capabilities relate to leveraging the knowledge that has been absorbed and creating new processes by transforming knowledge into operations. As such, RACAP is more difficult to occur. Although the results show that PACAP influences RACAP, at the early stage, the new firm has an insufficient capability to develop and refine the routines that enhance combining not only existing knowledge but also newly acquired and assimilated knowledge. New firms do not have the time to develop organizational decision-making rules, routines, and sequences that can be utilized and reconstructed continuously and are thus faced with novelty in production and inexperience in many other areas (Choi & Shepherd, 2005). Therefore, the firm cannot convert knowledge to enhance performance and yield competitive advantage, particularly innovation.

5.1.2 Managerial Contribution

The previous section, this research provided in response to academic aspects with its findings having theoretical contributions. This research also provided contribution to managerial aspects, particularly for managers in the new firm and government. The findings offer important managerial contributions, as discussed in the following paragraphs.

Frist, managers should strengthen ACAP, particularly placing emphasis on the PACAP role. Developing the capability of a firm to have PACAP means recognizing, acquiring, analyzing, processing, interpreting, and understanding knowledge obtained from external sources. Managers must focus on these capabilities because these help sort, filter, and choose which knowledge is important or redundant. Wherever a firm has insufficient ACAP, it is the cause of the decline of innovation (Ferrerias-Méndez, Fernández-Mesa, & Alegre, 2016). Firms with well-developed capabilities are likely

to better adopt new knowledge and internalize this knowledge. Using a firm's knowledge base and skills is essential in achieving innovation. The finding of PACAP influencing innovation underscores the crucial and necessary role of acquisition and assimilation capability to enhance the new firm's competitiveness, particularly in the Thai agricultural context. Thus, a new firm should create and continually develop their PACAP to sustain innovation. Similarly, in the future, managers should be aware how to develop RACAP whenever the firm will move into the mature stage. PACAP is used to acquire and analyze new learning while RACAP facilitates a firm to develop new knowledge or change its existing processes and the role of recodification of knowledge after the firm adopts the absorption process to innovate better.

Second, this research provides support for the importance of networks in external knowledge sources, particularly in the findings of the case study. The important external sources are composed of suppliers, customers, government, and local partners. Each source is important and has implications that enhance various knowledge. Thus, managers should strengthen the firm's interaction with external knowledge sources. Managers should have access to a variety of knowledge (Xie et al., 2018). Simultaneously, managers should realize that the firm should not only build relationships with external sources through interaction, frequency of contacts, and connection but also provide access to critical information resources, with consideration that desired knowledge can be obtained from any external source. Moreover, the firm faces obstacles of absorbing knowledge; thus, knowledge is difficult to understand and interpret. Managers can overcome this obstacle by building close relationships with external knowledge sources. Rather than spend time to self-study, relying on the network as a source of knowledge to receive, in addition to a variety of knowledge, may also receive technical terms. However, managers should be wary about building excessive relationships that may cause increased expenditures (Ferrerias-Méndez et al., 2016).

Third, the result shows that to achieve innovation, managers must be aware of EO. EO can stimulate such innovation. The EO concept implies not only the strategic posture but also strategic decision-making practices (Anderson et al., 2015; Wales et al., 2013). As such, EO can be more oriented to posture and identify new opportunities in launching a new product through planning, decision-making, and

process planning, which are important to facilities managing various knowledge and utilizing received knowledge from external sources. Thus, managers will be able to find methods and improve organizational processes that are better and suitable for the organization. In other words, managers should emphasize on developing EO that generates synergies and allows external knowledge acquisition and assimilation of the incorporated knowledge. These processes are important to new firms because deficiencies in learning processes may be just as harmful as having an incomplete ACAP (Argote et al., 2003; Marsh & Stock, 2006), and then innovation may not improve. In addition, managers should focus on retaining acquisition and assimilating external knowledge as well as EO when attention is on creating an innovation. When firms face intense competition, managers can focus on pursuing EO, particularly being proactive and taking risks, to overcome constraints and enhance innovation (Kotabe et al., 2014).

Fourth, this research focuses on new firms in the agriculture context in Thailand. The findings show that the government plays an important role in external knowledge source which affects new firms' innovations. This finding supports the government in terms of policies that are launched to encourage new firms. In Thailand, there was more registration from agricultural units and government units. For example, OSMEP and the Ministry of Agriculture and Cooperatives emphasize new firm development, especially in the agricultural industry. Although in the past the government launched policies to support organizations, such as SME plan (No. 4) trying to impel new firms, their problems were still found (OSMEP, 2017). This research found that the government office is one of external knowledge sources supporting organizations' goal to achieve innovation as the country moves toward Thailand 4.0. This research will be a model that can support government offices to know about the needs of a new firm's knowledge. The finding also indicates that new firms need knowledge about the process or activity of running a business which are needed to be specially promoted by the government.

Therefore, government offices are the center where community meetings can be held to create a relationship among networks (customers, suppliers). Communities meet and exchange ideas to gain opportunities for their organizations, such as exchanging of technology, high-quality commercial organization matching, and

business matching. That is because business matching creates many benefits for a new firm, such as (1) reducing cost, because if the owners need to do everything by themselves, there will be many workloads and costs; (2) opening a new market, because it supports product distribution to wider areas and new targets; (3) becoming more competitive, because getting professional business partners can help to support businesses' strength and develop negotiation skills; and (4) becoming successful faster, because new firms grow slowly at the beginning, but good business partners can help them to step forward faster. Furthermore, the government can relieve the suffering of new firms by offering financial liquidity through financial policy, tax policy, and other advantages and also providing equal opportunities that the firms can easily access (Zhai, 2018).

5.2 Future Research Agenda

This research achieves its objectives and completely answers all questions and makes both theoretical and managerial contributions. Future research should not only overcome the limitations but also extend the body of knowledge in this particular area.

First, this research concentrates on new firms, and the empirical results prove that at the early stage, network ties are significant. Indeed, in the results of the case study, Case F, the supplier who sells material is the main advice since the beginning. At present, the firm maintains frequent contact with its supplier. On the other hand, its tie with government agencies is minimal; however, during its first two years of business, the firm had frequent contact with government agencies for support. Similarly, some case studies indicate that some sources of external knowledge lose contact with firms over time. Thus, the present research focuses on new firms which depend on external knowledge sources. Over time firms grow, mature, or cease to exist, which may show different results depending on network ties. Cross et al. (2001) argued that the strengths and weaknesses of ties do not always have a positive effect on the growth of new firms, but its importance can depend on both the type of goal and performance of the organizational life cycle. Therefore, replicated research using a longitudinal study is suggested in the future to overcome this limitation. The

longitudinal study may focus on something that is interesting, such as how, in each stage, the network ties will provide different results. In addition, future research may focus on determining which important external source the firm should build a network tie with and at what context. Although the present research found the important external source through the case study, future research should confirm this finding with a quantitative research.

Second, this research only focuses on the firm as a recipient, that is, the firm receives knowledge from external sources. The findings show that network ties are important to achieve innovation because the firm can leverage external knowledge. Networks can be regarded as a set of contacts that firms can build relationships with. Although when this point of view is considered, the relationship of each person and what happens within them often lacks a relationship with themselves, a rapid decline in links within a network that has a focal interest (Chetty & Stangl, 2010). The sum of the involved dyadic relations, it may consider that take place within dyadic business relationships about their connectedness with other relationships in future research. Dyadic analysis focuses on the nature of the relationship between the two linked firms. The important point in the dyadic aspect is the understanding of the nature of the relationship between actors in terms of relational characteristics, such as the strength of ties (Granovetter, 1973). Likewise, analyzing the interorganizational or interfirm level involves ties between organizations or firms such as buyer-supplier relationships and strategic alliances (Zaheer, Gözübüyük, & Milanov, 2010).

Third, a part of the capability of RACAP involves internalization that facilitates firms' innovation (Cepeda-Carrion et al., 2012; Zahra & George, 2002). However, the results show that RACAP does not affect innovation. To realize internalization, future research should attempt to emphasize the effectiveness of coordination mechanisms in intraorganizational networks. Based on intraorganization, the collaboration actions among employees constitute regarding knowledge transfer as important for being a diversity of knowledge of inputs being an input factor of various knowledge and also facilitates reducing related problems into the absorption of knowledge (Moreira, Moreno, & Morales, 2018; Wang, Wang, & Liang, 2014). Simultaneously, future research should consider social network. A social network concerns two or more actors (persons) who are connected through one or more

relationships, which enhance both ACAP and innovation (Carnabuci & Diószegi, 2015; Moreira, Markus, & Laursen, 2018).

Finally, this research concentrates on knowledge at the firm level that is obtained from external sources. Based on the conceptual framework, the antecedent is network ties at the firm level. Apart from this aspect, there might be antecedents at the individual level that may affect knowledge ACAP by processing of social interactions (e.g., Tortoriello, 2015). At the individual level, employees interact with external sources via communicating; likewise, employees behave the exploratory learning which their motivations and cognitive abilities drive for identifying new external knowledge (Lane et al., 2001; Roberts, 2015) and then acts of employees to accomplish goals of the firm (Martinkenaite & Breunig, 2016). Future research should consider the multilevel antecedents through the antecedent that is represented in this research combined with employees at the individual level.

5.3 Conclusion

This research sheds light on the roles of the two components of ACAP in the literature, and the links of relevant constructs which constitute network ties, two components of ACAP, EO, and innovation have been conducted through both quantitative and qualitative research in the Thai agricultural context of study. This research was conducted based on KBV and social capital perspectives. The results of quantitative and qualitative research complete the objectives of this research and answer the research questions. Consequently, this research contributes to the substantial body of knowledge in knowledge ACAP, EO, network ties, and innovation perspective. This research also provides implications for new firms in the context of study.

Based on the ACAP framework, the relationship between network ties and ACAP is identified. The relationship between the components of ACAP and its consequence, innovation, is proposed, and the conceptual model of ACAP consisting of the relationships among these constructs is developed by applying Zahra and George's (2002) conceptual model and previous literature. To develop a better understanding of the ACAP reconceptual model and to explore the relationships of

network ties of external knowledge sources, components of ACAP, and innovation, which are the main effects, four objectives and two EO objectives to a moderator role are proposed. These conceptual propositions manifest in the Thai agricultural manufacturing industry which is selected as the context of study; particularly, new firms in this study have less than 10 years of operation. They manufacture agricultural products by passing added value as processed goods, and the new firms introduce new products into the current markets.

To understand the contemporary phenomenon in depth and within its real-world context, the case study based on Yin (2013) was conducted to answer the first research questions. Six cases were selected based on the criteria presented in this research and based on cross-case analysis, which has the same similarities and differences to gain insight from the objectives of the research. The researcher conducted the interviews using a set of semistructured questions in a face-to-face setting and analyzed the narrative transcripts by coding the outcome of these interviews, cross-checking the details, and validating how these effects coherently fit together in explaining or supporting the findings.

The findings strongly confirm the conceptual framework; moreover, the findings show that suppliers, customers, government, and local partners are the important external knowledge sources. These knowledge sources play a critical role in enhancing knowledge. A case study was analyzed to understand the phenomenon in the context of study. New firms need to develop new products, which is gained through innovation. It is thus expected that knowledge absorption capabilities are already present within new agricultural firms. In addition, integration among network tie members is encouraged and routinely present. There is a relationship between firms and their important external knowledge sources. It also provides several actions/activities of cooperation and connections that are suitable for external knowledge receiving and then take advantage of this knowledge to achieve firms' innovation.

To test all propositions, the sample was focused on the agricultural manufacturing industry. To analyze new firms, this research defined the criteria of new firms, that is, they should be in operation for less than 10 years. The three characteristics of new firms are (1) less than 10 years, (2) independent (i.e., not a

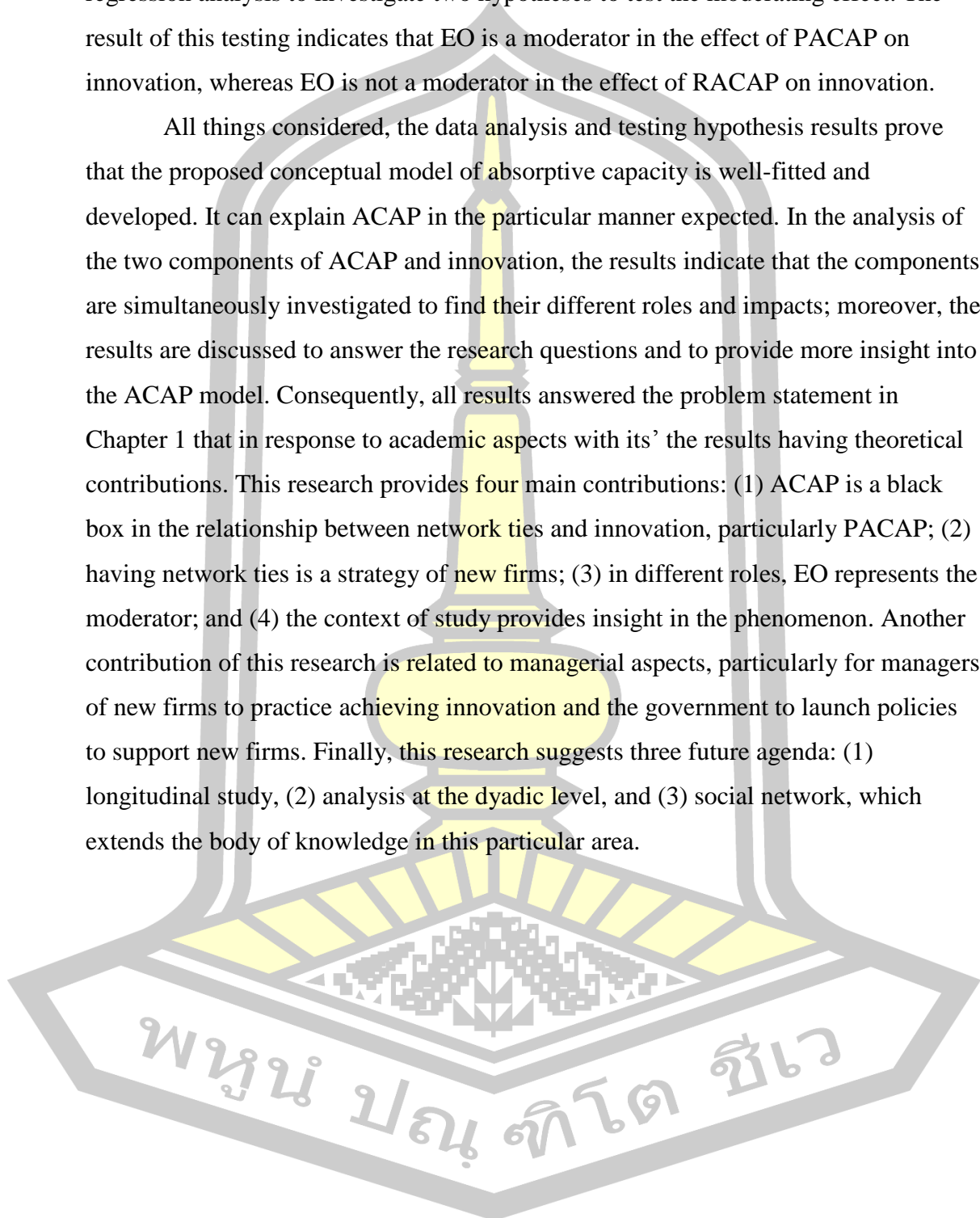
subsidiary), and (3) involved with processing agricultural products. The developed questionnaire was distributed to 946 new agricultural firms in Thailand, with 188 usable for data analysis. Using the set of questionnaires, data analysis was conducted and used for hypothesis testing. In the data analysis, respondent characteristics are shown and explained with descriptive analysis. The measurement of reliability and validity of all constructs and items analysis are then evaluated. The results are satisfactory with a fairly high range of reliability and adequate range of validity with total variance explained; likewise, these measures are appropriate to use for further analysis.

In the hypothesis testing, the proposed research model was constructed using SEM and hierarchical regression analysis, which are well suited to analyzing data via the confirmatory approach for inferential purposes. In addition, the use of the SEM approach allows the incorporation of both unobserved and observed variables. It also helps to evaluate the point and/or interval indirect effect of the relationship. To find the mediating effect, SEM was conducted again. Moreover, to clear the test moderation effect, this research employed hierarchical regression analysis. Testing using the mean center of the variables studied interaction effect requires reducing the multicollinearity, effects of the individual predictors at the mean of the sample, and average effects of each individual predictor across the range of the other variables.

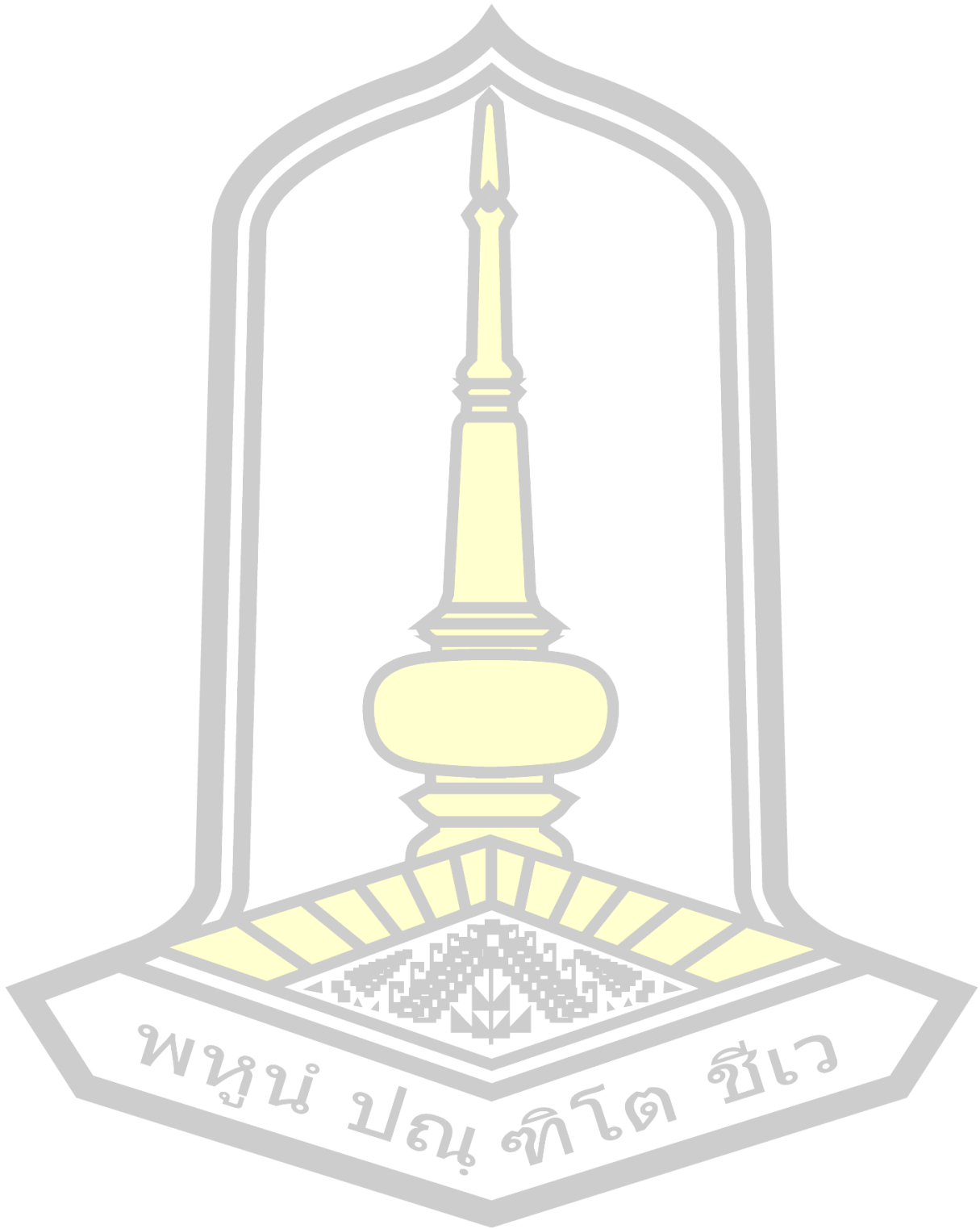
The results of this testing were supported, namely, four hypotheses were accepted while two hypotheses were rejected. The results were divided into two parts. The first part used the structural model to investigate the main effect hypotheses and significance of the mediating effect. First, the result shows that network ties are significant in PACAP; this result is consistent with the argument in this research that external knowledge sources significantly influence PACAP, which is the first part of Zahra and George's (2002) model. Second, PACAP has a significant positive effect on innovation. Third, the result also supports the importance of PACAP and RACAP. Fourth, the exception is the paths from RACAP to innovation. To complete the gap in the literature, this research tested the mediating effect of the two components of ACAP. Both were investigated to show the strong, effective intervening role of the two components of ACAP. The findings show that PACAP significantly mediates the relationship between network ties and innovation while RACAP does not mediate the

relationship between PACAP and innovation. The second part employs hierarchical regression analysis to investigate two hypotheses to test the moderating effect. The result of this testing indicates that EO is a moderator in the effect of PACAP on innovation, whereas EO is not a moderator in the effect of RACAP on innovation.

All things considered, the data analysis and testing hypothesis results prove that the proposed conceptual model of absorptive capacity is well-fitted and developed. It can explain ACAP in the particular manner expected. In the analysis of the two components of ACAP and innovation, the results indicate that the components are simultaneously investigated to find their different roles and impacts; moreover, the results are discussed to answer the research questions and to provide more insight into the ACAP model. Consequently, all results answered the problem statement in Chapter 1 that in response to academic aspects with its' the results having theoretical contributions. This research provides four main contributions: (1) ACAP is a black box in the relationship between network ties and innovation, particularly PACAP; (2) having network ties is a strategy of new firms; (3) in different roles, EO represents the moderator; and (4) the context of study provides insight in the phenomenon. Another contribution of this research is related to managerial aspects, particularly for managers of new firms to practice achieving innovation and the government to launch policies to support new firms. Finally, this research suggests three future agenda: (1) longitudinal study, (2) analysis at the dyadic level, and (3) social network, which extends the body of knowledge in this particular area.



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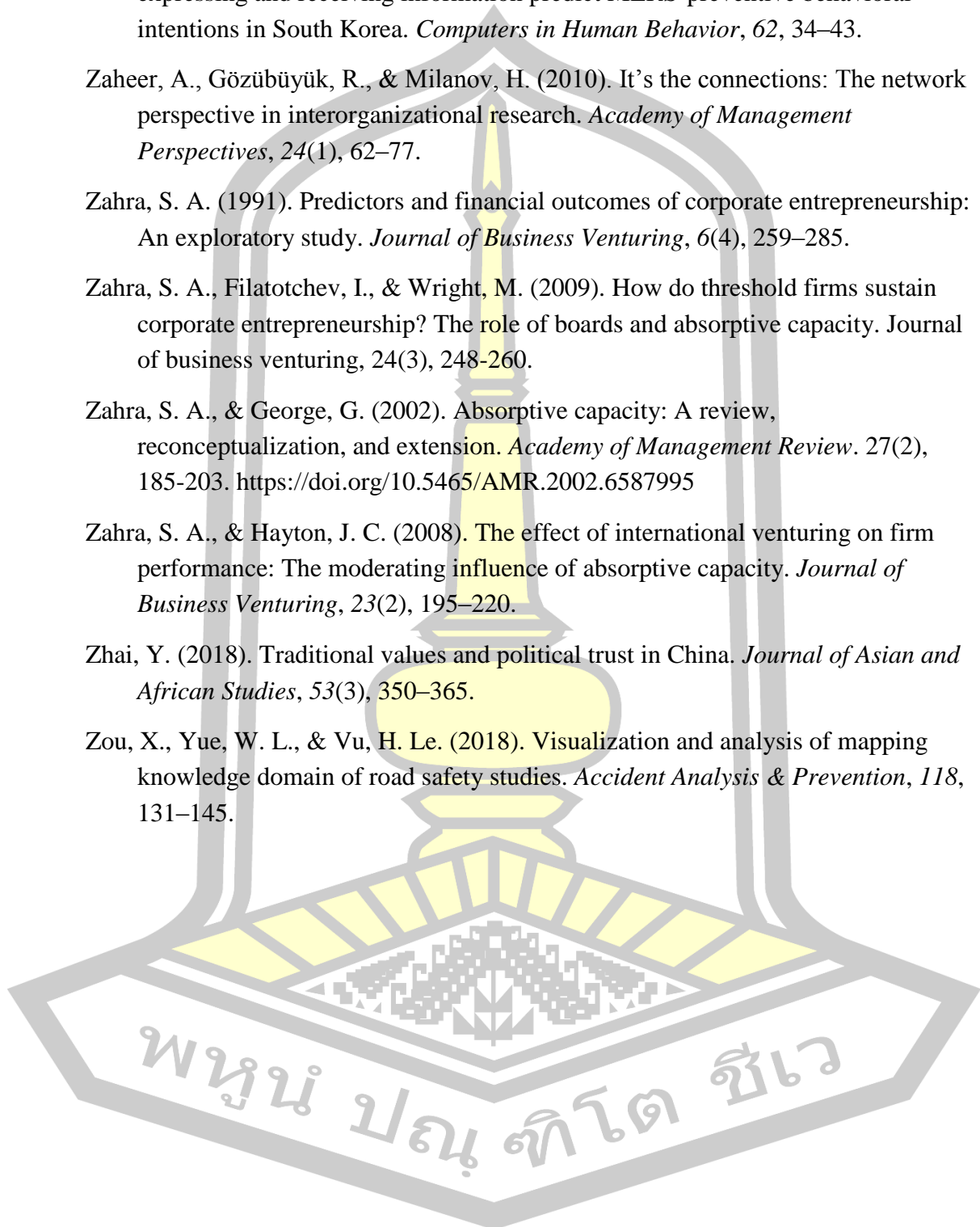
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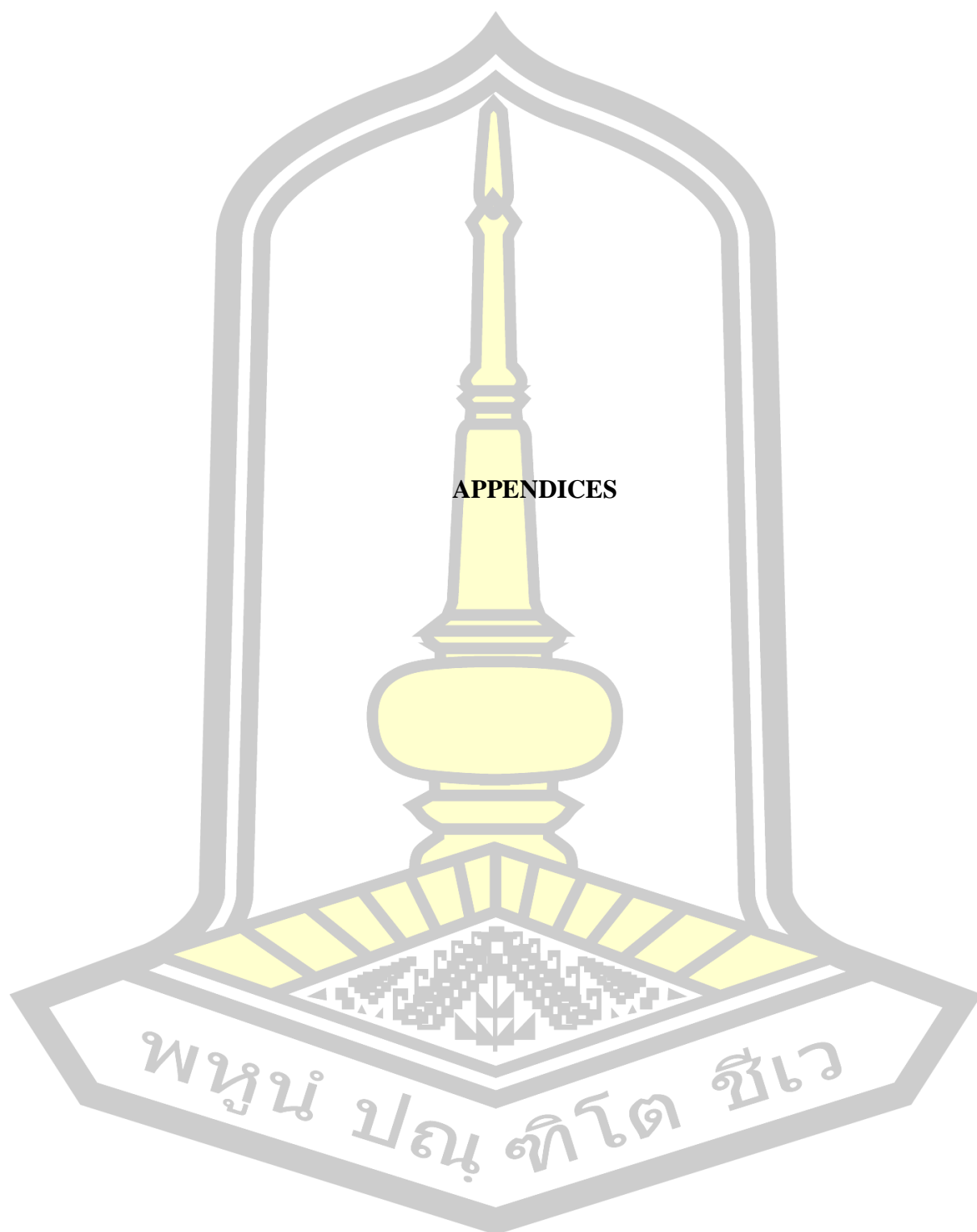
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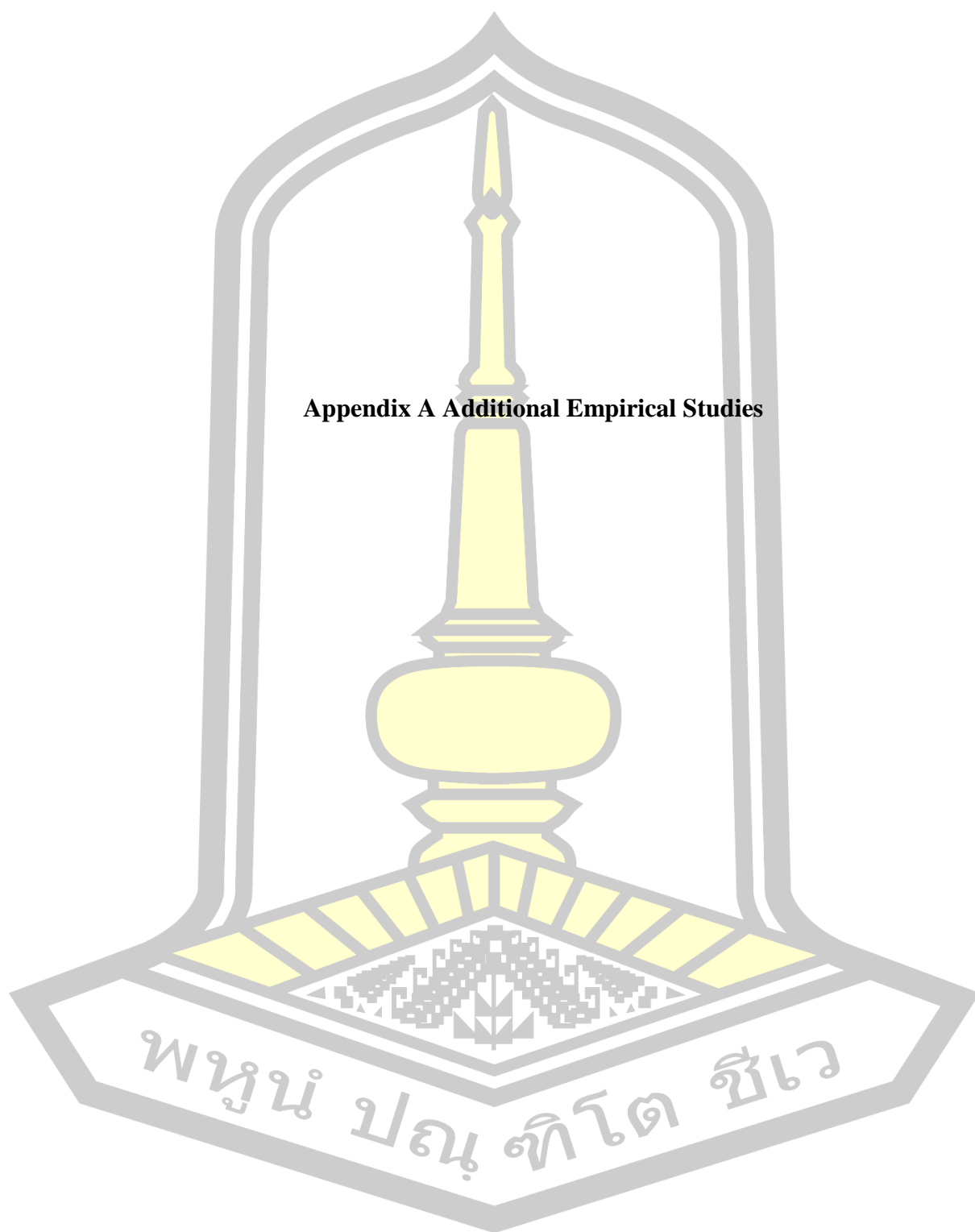
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APPENDICES

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Appendix A Additional Empirical Studies

Appendix A: Additional Empirical Studies

Table A1: Empirical studies of networks and ACAP (in during 2001-2017)

Authors (Year)	Research objectives	Networks measures	Samples	ACAP measures	Results
Yli-Renko et al. (2001)	To examine the effects of social capital in key customer relationships on knowledge acquisition and knowledge exploitation.	Customer network ties with two statements reflecting the degree to which the key customer relationship provides the young technology-based firm with a network of customer contacts	180 young technology-based firms in the UK	Knowledge acquisition reflects the technological and market knowledge that a young technology-based firm may acquire from the key customer.	Social interaction and network ties dimensions of social capital are indeed associated with greater knowledge acquisition.

Authors (Year)	Research objectives	Networks measures	Samples	ACAP measures	Results
Chen (2004)	To examine the effects of knowledge attribute, alliance characteristics, and firm's absorptive capacity on the performance of knowledge transfer.	The alliance construct includes two variables: alliance form and partner interaction.	137 alliance cases in six industries (e.g. computer, communications) in Taiwanese.	Items that reflect the extent of the firm's ability to assimilate and replicate new knowledge gained from external sources.	Knowledge transfer performance is positively affected by the explicitness of knowledge and firm's ACAP.
McEvily and Marcus (2005)	To explore the external acquisition of competitive capabilities through the embedded ties that firms form in networks and alliances.	Embedded ties with its lead customer and lead supplier in terms of joint problem solving, information sharing, and trust.	234 job shop manufacturers operating industries in US (e.g., electroplating, coating and painting).	Being acquired through a multistage, organizational process.	The role of joint problem solving with suppliers in facilitating the acquisition of competitive capabilities.

Authors (Year)	Research objectives	Networks measures	Samples	ACAP measures	Results
Kotabe et al. (2011)	To explore the effects of managerial ties with government officials and foreign MNC partners on knowledge acquisition and investigate how the acquired knowledge affects firms' new product market performance.	Based on Peng and Luo's (2000) study and developed a scale to investigate top managers' business ties with foreign MNC partners.	121 emerging multinational corporations from China	RACAP to reflect both knowledge transformation and exploitation.	Knowledge acquisition could only enhance new product market performance with the presence of RACAP.
Laursen et al. (2012)	To study geographically localized social capital affects a firm's ability to innovate through various external channels.	Based on social capital-social interaction	2,413 Italian manufacturing firms from 21 regions	External R&D acquisition, captured by externally acquired R&D.	A high degree of localized social capital is complementary to firms' investments in internal R&D.

Authors (Year)	Research objectives	Networks measures	Samples	ACAP measures	Results
Lucena and Roper (2016)	To aim of this study is to examine how firms realize the benefits associated with a diverse range of technology alliances.	R&D collaboration or market-based arrangements – may have a differentiated impact on firms' knowledge combinative capabilities, and subsequently.	Manufacturing companies across 24 industries, Spain	Multidimensional construct (Zahra and George, 2002; Jansen et al., 2005; Lewin et al., 2011; Roberts et al., 2012).	Firms use their portfolios of technology alliances to form their combinative capabilities, and subsequently, to enhance innovation.
Naqshbandi (2016)	To investigate the mediating role of RACAP in the relationship between managerial ties and open innovation (OI).	Managerial ties with external organizations based on prior studies.	259 middle and top managers working across different sectors in the United Arab Emirates.	Focusing RACAP based on prior studies.	Managerial ties facilitate both in-bound and out-bound OI. Results also establish the mediating role of RACAP in these relationships.

Table A2: Empirical Studies of ACAP and Innovation (in during 2007- 2017)

Authors (Year)	Research objectives	ACAP measures	Samples	Innovation measures	Results
Fosfuri and Tribó (2008).	To explore the antecedents of potential absorptive capacity and PACAP's impact on innovation performance.	The amount of external information available in the environment and the ability of the firm to identify and assimilate it, i.e., its PACAP	2,464 innovative firms in Spain	The percentage of total annual sales and product innovation was measured as a dummy.	R&D cooperation, external knowledge acquisition and experience with knowledge search are key antecedents of a firm's PACAP. PACAP is a source of competitive advantage in innovation

Authors (Year)	Research objectives	ACAP measures	Samples	Innovation measures	Results
Chen, Lin, and Chang (2009)	To explore the positive effects of relationship learning and ACAP on competitive advantages of companies through their innovation performances.	The ability to acquire, to assimilate, to transform, and to exploit knowledge which may determine its levels of organizational innovation and competence	106 the manufacturing industry in Taiwan.	Product, process and overall assessment of organizational innovation on the basis of several criteria that were conceptualized and used in pervious empirical studies of innovation.	Relationship learning and ACAP positively influence upon innovation performances of companies, and further have positive effects on competitive advantages of companies.

Authors (Year)	Research objectives	ACAP measures	Samples	Innovation measures	Results
Lichtenthaler (2009)	To addresses about How do interactions between the learning processes of absorptive capacity influence innovation and performance under different environmental conditions?	The activities that were identified as the critical tasks of the learning processes: Exploratory learning comprises the activities of recognizing and assimilating external knowledge. Transformative learning refers to the activities of maintaining and reactivating knowledge. Exploitative learning comprises the activities of transmuting and applying knowledge.	175 largest firms based on revenues in the following sectors in Germany (e.g. automotive, machinery, semiconductors, electronics).	Adapted from prior studies (Dyer& Song, 1997; Song, Dyer, & Thieme, 2006).	Exploratory, transformative, and exploitative learning have complementary effects on innovation and performance. The results emphasize the multidimensional nature of ACAP, and they help to explain interfirm discrepancies in profiting from external knowledge.

Authors (Year)	Research objectives	ACAP measures	Samples	Innovation measures	Results
Moilanen 2014	To study ACAP plays a mediating role between different external knowledge inflows and innovative performance	R&D activities, Share of highly educated (the share of employees with university degrees), Learning activities, and Knowledge management	firms located in North Norway	Innovation performance is here related to product innovation.	ACAP as an important mediator for transforming external knowledge inflows into higher innovative performance if include all SMEs in the sample. External knowledge inflows have a much stronger direct effect on innovation performance for non-R&D firms and leave a weak mediating effect of ACAP.

Authors (Year)	Research objectives	ACAP measures	Samples	Innovation measures	Results
Huang et al. (2015)	To attempt to differentiate the effect of R&D personnel on firm innovation from the effect of R&D expenditures on firm innovation.	Departing from Zahra and George's (2002) study, using the number of R&D employees to measure ACAP by asking respondents to provide the number of scientists and engineers in their R&D department.	165 firms in the Taiwan's information and communication technology industry.	Using patent stock to measure a firm's innovation performance.	ACAP partially mediates the relationship between R&D investment and firm innovation. ACAP accounts for 36% effects of R&D investment on firm innovation

Authors (Year)	Research objectives	ACAP measures	Samples	Innovation measures	Results
Lawson (2015)	To develops a theoretical model investigating how a strategic supplier's technical capabilities impact focal firm new product advantage and how firms combine different resources to gain this advantage.	Based on Ettlle and Pavlou's (2006) measure which focuses on the integration, the exploitation, the routines and the firm's ability to identify, value, and import knowledge from the particular supplier.	153 R&D intensive manufacturing firms in UK	Based on Song and Parry (1997), assess firm's new product compared with those of competitors' products such as unique features, quality, and meeting customers' needs.	Supplier has strong technical capabilities; investments. Firms can combine different resources and capabilities to achieve superior performance.
Ail and Park (2016)	To builds and tests an integrated model to investigate the relationship among PACAP, RACAP, innovative culture.	Based on Flatten, Engelen, Zahra, and Brettel (2011).	Survey, 195 from a multiple industrial sector in Korea	Based on Liao et al. (2007), technical aspects of innovation consist of product and process innovation, whereas non-technical aspect consists of management innovation	PACAP and RACAP happen in sequence and influence organizational innovation directly and through the intervening variable innovative culture.

Table A3: Empirical Studies of EO and ACAP-Related performance (in during 2007 - 2017)

Authors (Year)	Research objectives	EO measures	Samples	Results
Pérez-Luño et al. (2011)	To examines how EO and the environmental dynamism in which firms operate are key aspects to understand why firms tend to generate or adopt innovations	Base on Covin and Slevin's (1989) scale: innovativeness, proactiveness and risk-taking.	400 firms in Spain (e.g. Chemical firms, Manufacture of motor vehicles, Manufacture of other transport equipment).	Proactivity and risk taking influenced the number of innovations generated and the extent to which firms favor generation over adoption and that environmental dynamism moderates one of these relationships.
Zhao, Li, Lee, and Chen, (2011)	To examine the relationship among EO, experimental learning (EL) and acquisitive learning (AL), and firm performance.	Base on Covin and Slevin's (1989) scale: innovativeness, proactiveness and risk-taking.	607 manufacturing firms in China	EO was positive related to EL but had an inverse U-shaped relationship with AL.

Authors (Year)	Research objectives	EO measures	Samples	Results
Real, Roldán, and Leal (2014)	To test the role of organizational learning as mediator of the relationship between entrepreneurial orientation and learning orientation in business performance	Covin and Slevin's (1989) scale: innovativeness, proactiveness and risk-taking.	140 Spanish industrial sectors in which technological competences are central.	Organizational learning partially mediates the relationship between EO and performance and fully mediates the link between learning orientation and performance. However, in total effect, EO effect on performance.
Alegre and Chiva (2013)	To analyze the relationships between EO, organizational learning capability (OLC), innovation performance, and firm performance.	Covin and Slevin's (1989) scale: innovativeness, proactiveness and risk-taking.	182 Italian and Spanish ceramic tile producers.	OLC and innovation performance should be enhanced by managers in order to boost the positive EO-performance link

Authors (Year)	Research objectives	EO measures	Samples	Results
Kreiser, (2013)	To test a non-mono tonic influence of innovativeness, proactiveness, and risk-taking on SME performance.	Covin and Slevin's (1989) scale: innovativeness, proactiveness and risk-taking.	1,668 SMEs in nine countries (e.g. Australia, Costa Rica, Finland, and Swede) across 13 different industries.	Innovativeness and proactiveness displayed predominantly positive U shaped relationships with SME performance.
Wales, Parida, and Patel (2013)	To examine the possibility of diminishing financial returns associated with higher levels of ACAP as well as the potential moderating role that EO may have on this relationship	Covin and Slevin's (1989) scale: innovativeness, proactiveness and risk-taking.	285 technology-based SMEs in Sweden.	EO moderates the ACAP performance relationship, enhancing financial gains at lower levels of ACAP and mitigating the decline in financial performance at higher levels of ACAP. Further, with higher EO, higher ACAP can be achieved before financial returns diminish.

Authors (Year)	Research objectives	EO measures	Samples	Results
Anderson and Eshima (2013)	To investigate the moderating influence of firm age and intangible resources on the EO–firm growth relationship among small to medium sized enterprises (SMEs) in Japan.	Covin and Slevin's (1989) scale: innovativeness, proactiveness and risk-taking.	207 SMEs in Japan.	The relationship between EO and firm growth is strongest among younger SMEs. Additionally, the relationship between EO and firm growth is strongest among younger SMEs that have higher levels of intangible resources than their peers.
Engelen et al. (2014)	To study connects the RBV and its dynamic capability extension to introduce ACAP as a moderator of the relationship between EO and firm performance.	Covin and Slevin's (1989) scale: innovativeness, proactiveness and risk-taking.	219 SMEs in Germany.	ACAP strengthens the EO–performance relationship in turbulent markets.

Authors (Year)	Research objectives	EO measures	Samples	Results
Sciascia et al. (2014)	To address this research gap studying how ACAP can act as a key factor determining the effectiveness of EO in such a context.	Covin and Slevin's (1989) scale: innovativeness, proactiveness and risk-taking.	103 SMEs in low- and medium-tech (LMT) industries based, Italy.	EO has a positive effect on firm performance when coupled with high levels of both Potential and Realized ACAP.
Stenholm, Pukkinen, and Heinonen (2016)	To examine that and how entrepreneurial activity mediates the relationship in family and nonfamily businesses	Covin and Slevin (1989) and Lumpkin and Dess (2001)	532 family businesses and 224 non-family businesses food industry in Finland.	Both directly and indirectly associated with firm growth via entrepreneurial activity. This association does not exist in nonfamily businesses. Furthermore, risk taking does not influence family business growth even if it does in nonfamily businesses.

Appendix B Full-Scale Questionnaire Survey in Thai



Appendix B: the full-scale questionnaire survey in Thai



MAHASARAKHAM
UNIVERSITY

แบบสอบถาม

เครือข่ายธุรกิจ ความสามารถในการเรียนรู้ และ นวัตกรรมขององค์กร

ใคร่ขอความร่วมมือจากท่านในการกรอกแบบสอบถามนี้
ข้อมูลดังกล่าวจะถูกเก็บเป็น **ความลับ**
โดยนำไปวิเคราะห์และประมวลผลเพื่อประโยชน์ทางวิชาการเท่านั้น
กรุณาตอบแบบสอบถามโดยเลือกคำตอบที่ **ตรงตามความรู้สึกที่แท้จริงของท่าน**

คำชี้แจง:

- 1) วัตถุประสงค์ของการตอบแบบสอบถามในครั้งนี่คือ เพื่อทำการศึกษาถึงแหล่งที่มาของความรู้ที่จะทำให้องค์กรนำมาปรับใช้ในการผลิตสินค้าใหม่
- 2) ขอให้ท่านตอบคำถามทุกข้อ โดยการตอบแบบสอบถามนี้ใช้เวลาประมาณเพียง 10 นาที

กรุณาส่งคืนแบบสอบถามภายในวันอาทิตย์ที่ 30 กันยายน 2561

ส่วนที่ 1 ข้อมูลทั่วไปเกี่ยวกับสินค้าใหม่

คำชี้แจง กรุณาใส่เครื่องหมาย (✓) ในช่องตัวเลือกหรือตัวเลขสำหรับคำตอบของท่านในแต่ละข้อคำถามต่อไปนี้

1. สินค้าหลักของท่านมาจาก

- การแปรรูปจากเนื้อสัตว์
 การแปรรูปจากผลไม้และผัก
 การแปรรูปจากนม
 การแปรรูปจากน้ำมันแลไขมันจากพืชและสัตว์ (เช่น น้ำมันจาก มะพร้าว, ปาล์ม)
 การแปรรูปจากเมล็ดธัญพืช และการผลิตแป้ง (เช่น แป้งข้าวเจ้า)
 อื่น ๆ โปรดระบุ

2. องค์กรของท่านมีค่าใช้จ่ายในการวิจัยและพัฒนาสินค้าใหม่หรือไม่

- มี
 ไม่มี

ส่วนที่ 2 นวัตกรรม

คำชี้แจง ขอให้ท่านประเมินนวัตกรรมที่แสดงถึงความสำเร็จของสินค้าใหม่ในองค์กรของท่าน ด้วยการใส่เครื่องหมาย (✓) ในช่องตัวเลขสำหรับคำตอบของท่านที่ตรงกับระดับความสำเร็จ โดย 1 = น้อยที่สุด และ 7 = มากที่สุด

นวัตกรรม	น้อยที่สุด ← → มากที่สุด						
	①	②	③	④	⑤	⑥	⑦
1. ความสำเร็จในภาพรวมของสินค้าใหม่เป็นไปตามที่คาดหวังไว้	①	②	③	④	⑤	⑥	⑦
2. กำไรจากการขายสินค้าใหม่ถือว่าประสบความสำเร็จ	①	②	③	④	⑤	⑥	⑦
3. สินค้าใหม่ประสบความสำเร็จมากกว่าคู่แข่ง	①	②	③	④	⑤	⑥	⑦
4. สินค้าใหม่มีความแปลกใหม่ต่อองค์กรของท่าน	①	②	③	④	⑤	⑥	⑦
5. สินค้าใหม่มีความแปลกใหม่ต่อตลาด	①	②	③	④	⑤	⑥	⑦

ส่วนที่ 3 ความสามารถในการเรียนรู้

คำชี้แจง ขอให้ท่านแสดงความคิดเห็นเกี่ยวกับความสามารถในการเรียนรู้ ด้วยการใส่เครื่องหมาย (✓) ในช่องตัวเลขที่ตรงกับระดับความคิดเห็นของท่าน โดย 1 = ไม่เห็นด้วยอย่างยิ่ง และ 7 = เห็นด้วยอย่างยิ่ง

ความสามารถในการเรียนรู้	← ไม่เห็นด้วยอย่างยิ่ง ————— เห็นด้วยอย่างยิ่ง →						
	①	②	③	④	⑤	⑥	⑦
1. ท่านสามารถค้นหาข้อมูลได้ทันเหตุการณ์และทันต่อการแข่งขันกับคู่แข่ง	①	②	③	④	⑤	⑥	⑦
2. ท่านสามารถติดตามแนวโน้มของสภาพแวดล้อมภายนอก เช่น แนวโน้มตลาด เพื่อเป็นโอกาสในการสร้างประโยชน์กับองค์กรของท่าน	①	②	③	④	⑤	⑥	⑦
3. ท่านให้ความสำคัญในการร่วมมือกับหน่วยงานภายนอกเพื่อให้ได้ความรู้ใหม่	①	②	③	④	⑤	⑥	⑦
4. ท่านสามารถพัฒนาองค์กรโดยใช้ความรู้ที่ได้รับจากภายนอก	①	②	③	④	⑤	⑥	⑦
5. ท่านสามารถเข้าใจความรู้ใหม่ที่จะเป็นประโยชน์ต่อองค์กรได้อย่างรวดเร็ว	①	②	③	④	⑤	⑥	⑦
6. ท่านคิดว่าพนักงานในองค์กรสามารถเรียนรู้และเข้าใจเกี่ยวกับความรู้ใหม่ที่ได้รับได้อย่างรวดเร็ว	①	②	③	④	⑤	⑥	⑦
7. ท่านได้รับแนวทางการทำธุรกิจที่สำคัญและความรู้ใหม่ๆจากการเรียนรู้ประสบการณ์ของคนอื่นที่ประสบความสำเร็จ	①	②	③	④	⑤	⑥	⑦
8. ท่านมีวิธีการจัดการความรู้ซึ่งจะช่วยให้มีความสามารถในการทำความเข้าใจและวิเคราะห์ความรู้ที่ได้จากแหล่งภายนอกอย่างรอบคอบ	①	②	③	④	⑤	⑥	⑦
9. ท่านมีวิธีการการกระจายความรู้และข้อมูลข่าวสารภายในและวิธีในการติดต่อประสานงานของพนักงานให้ดียิ่งขึ้น เช่น การใช้แอปพลิเคชัน	①	②	③	④	⑤	⑥	⑦

ส่วนที่ 3 ความสามารถในการเรียนรู้

ความสามารถในการเรียนรู้	ไม่เห็นด้วย อย่างยิ่ง	←	→	เห็นด้วย อย่างยิ่ง			
10. ท่านยอมรับแนวทางวิธีการใหม่เข้ามาแทนที่วิธีการที่ล้าหลังในการผลิตสินค้า	①	②	③	④	⑤	⑥	⑦
11. ท่านสามารถใช้ประโยชน์จากข้อมูลข่าวสารและความรู้ใหม่ ๆ เพื่อปรับตัวต่อการเปลี่ยนแปลงของสิ่งแวดล้อมภายนอกได้	①	②	③	④	⑤	⑥	⑦
12. ท่านใช้ความรู้และประสบการณ์ที่ได้รับมาปรับใช้ในกลยุทธ์ขององค์กร	①	②	③	④	⑤	⑥	⑦
13. ท่านสามารถตอบสนองความต้องการของตลาดหรือแรงกดดันจากการแข่งขันด้วยการขยายสินค้าใหม่ ด้วย ความสามารถและแนวคิดด้านเทคโนโลยีใหม่	①	②	③	④	⑤	⑥	⑦

ส่วนที่ 4 เครือข่ายธุรกิจ

คำชี้แจง ขอให้ท่านแสดงความคิดเห็นเกี่ยวกับความสัมพันธ์กับเครือข่ายธุรกิจที่เป็นแหล่งความรู้ที่สำคัญมากที่สุด ด้วยการใส่เครื่องหมาย (✓) ในช่องตัวเลขที่ตรงกับระดับความคิดเห็นของท่าน โดย 1 น้อยที่สุด และ 7 = มากที่สุด

ความสัมพันธ์กับเครือข่ายธุรกิจ	น้อยที่สุด	←	→	มากที่สุด			
1. ท่านติดต่อกับแหล่งของความรู้อยู่เสมอ	①	②	③	④	⑤	⑥	⑦
2. ท่านใกล้ชิด/คุ้นเคยกับแหล่งของความรู้	①	②	③	④	⑤	⑥	⑦
3. ท่านเชื่อถือ/ไว้วางใจในแหล่งของความรู้	①	②	③	④	⑤	⑥	⑦

ส่วนที่ 5 ลักษณะของการดำเนินงาน

คำชี้แจง ขอให้ท่านแสดงความคิดเห็นเกี่ยวกับลักษณะการดำเนินงานของท่าน ด้วยการใส่เครื่องหมาย (✓) ในช่องตัวเลขที่ตรงกับระดับความคิดเห็นของท่าน โดย

1 = ไม่เห็นด้วยอย่างยิ่ง และ 7 = เห็นด้วยอย่างยิ่ง

ลักษณะการดำเนินงาน	← ไม่เห็นด้วยอย่างยิ่ง ————— เห็นด้วยอย่างยิ่ง →						
	①	②	③	④	⑤	⑥	⑦
1. องค์กรของท่านมักจะเป็นเจ้าแรกในการนำเสนอสินค้าใหม่	①	②	③	④	⑤	⑥	⑦
2. องค์กรของท่านมักจะเริ่มดำเนินการหากคู่แข่งชั้นออกสินค้าใหม่	①	②	③	④	⑤	⑥	⑦
3. องค์กรของท่านมีแนวโน้มที่จะเหนือกว่าคู่แข่งชั้นในการนำเสนอ สินค้าใหม่	①	②	③	④	⑤	⑥	⑦
4. องค์กรของท่านกล้าที่จะเสี่ยงในการออกสินค้าใหม่หากจะได้รับผลตอบแทนที่สูง	①	②	③	④	⑤	⑥	⑦
5. ท่านเชื่อว่าลักษณะของสิ่งแวดล้อมและการดำเนินการที่หลากหลายจะเป็นสิ่งสำคัญที่ทำให้ธุรกิจบรรลุเป้าหมาย	①	②	③	④	⑤	⑥	⑦
6. เมื่อเจอกับสถานการณ์ที่ไม่แน่นอน ท่านมักจะระมัดระวังในการตัดสินใจด้วยการติดตามและดูสถานการณ์ไปก่อน	①	②	③	④	⑤	⑥	⑦



ส่วนที่ 6 ข้อมูลทั่วไปขององค์กรและตัวท่าน

1. รูปแบบการจดทะเบียนการค้าขององค์กร

<input type="radio"/> บุคคลธรรมดาที่จดทะเบียนพาณิชย์	<input type="radio"/> บริษัทจำกัด
<input type="radio"/> ห้างหุ้นส่วนจำกัด	<input type="radio"/> ห้างหุ้นส่วนสามัญ
2. จำนวนพนักงานในองค์กร

<input type="radio"/> น้อยกว่า 10 คน	<input type="radio"/> 10 – 50 คน	<input type="radio"/> 51 – 100 คน
<input type="radio"/> 101-150 คน	<input type="radio"/> มากกว่า 150 คน	
3. ระยะเวลาในการดำเนินงานขององค์กร

<input type="radio"/> น้อยกว่า 3 ปี	<input type="radio"/> 3 – 6 ปี	<input type="radio"/> 7 - 10 ปี	<input type="radio"/> มากกว่า 10 ปี
-------------------------------------	--------------------------------	---------------------------------	-------------------------------------
4. ตำแหน่งของท่านในองค์กร

<input type="radio"/> เจ้าของกิจการ	<input type="radio"/> ผู้จัดการ	<input type="radio"/> หัวหน้างาน	<input type="radio"/> อื่นๆ โปรดระบุ
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.....
5. ท่านมีประสบการณ์ด้านการเกษตรมาก่อนการเริ่มต้นองค์กรนี้หรือไม่

<input type="radio"/> เคย	<input type="radio"/> ไม่เคย
---------------------------	------------------------------

ขอขอบพระคุณที่ท่านช่วยสละเวลาอันมีค่า ต่อการมีส่วนร่วมในการวิจัยครั้งนี้

ท่านสามารถสอบถามรายละเอียดเพิ่มเติมได้ที่ผู้วิจัยโดยตรง
 รัญญา ญาณพิบูลย์ ที่อีเมล tanyanarthana@gmail.com หรือ เบอร์มือถือ 095-4153946

พหุบัณฑิต ชีวะ



Appendix C Letter for Permission



ที่ ศธ 0530.10/ 14๗4

คณะกรรมการบัญชีและการจัดการ
มหาวิทยาลัยมหาสารคาม
ตำบลขามเรียง อำเภอกันทรวิชัย
จังหวัดมหาสารคาม
44150

29 สิงหาคม 2561

เรื่อง ขอบความอนุเคราะห์กรอกแบบสอบถาม

เรียน ประธานบริษัท /ผู้จัดการ

ด้วย นางสาวธัญญา ญาณพิบูลย์ รหัสนิสิต 58010961004 นิสิตระดับปริญญาเอก หลักสูตร
ปรัชญาดุษฎีบัณฑิต (ปร.ด.) สาขาวิชาการจัดการ คณะกรรมการบัญชีและการจัดการ มหาวิทยาลัยมหาสารคาม
กำลังศึกษาวิทยานิพนธ์ เรื่อง “เครือข่ายทางธุรกิจ ความสามารถในการดูดซับความรู้และนวัตกรรม ผลกระทบ
ตัวแปรแทรกของการมุ่งเน้นผู้ประกอบการขององค์กรใหม่” ซึ่งเป็นส่วนหนึ่งของการทำวิทยานิพนธ์หลักสูตร
ปรัชญาดุษฎีบัณฑิต (ปร.ด.) และการศึกษาในครั้งนี้ได้เน้นให้นิสิตศึกษาข้อมูลด้วยตนเอง ดังนั้น เพื่อให้การจัดทำ
วิทยานิพนธ์เป็นไปด้วยความเรียบร้อยและบรรลุวัตถุประสงค์ คณะกรรมการบัญชีและการจัดการ มหาวิทยาลัย
มหาสารคาม จึงใคร่ขออนุญาตให้ นางสาวธัญญา ญาณพิบูลย์ ศึกษาและเก็บรวบรวมในรายละเอียด
ตามแบบสอบถามที่แนบมาพร้อมนี้

คณะกรรมการบัญชีและการจัดการ มหาวิทยาลัยมหาสารคาม หวังเป็นอย่างยิ่งว่าจะได้รับความอนุเคราะห์
จากท่านในการให้ข้อมูลในครั้งนี้เป็นอย่างยิ่ง และขอขอบคุณมา ณ โอกาสนี้

ขอแสดงความนับถือ

(รองศาสตราจารย์ ดร.สุรอรณ หวังเจริญเดช)

รองคณบดีฝ่ายวิชาการ รักษาการแทน

คณบดีคณะกรรมการบัญชีและการจัดการ

มหาวิทยาลัยมหาสารคาม

งานวิชาการระดับบัณฑิตศึกษา

คณะกรรมการบัญชีและการจัดการ มหาวิทยาลัยมหาสารคาม

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