THE RELATIONSHIP BETWEEN KNOWLEDGE-ORIENTED LEADERSHIP, CUSTOMER KNOWLEDGE MANAGEMENT, INNOVATION QUALITY AND FIRM PERFORMANCE IN THAI SMES

PORNTHIP CHAITHANAPAT

A THESIS SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY (MANAGEMENT)
COLLEGE OF MANAGEMENT
MAHIDOL UNIVERSITY
2021

Thesis
entitled

THE RELATIONSHIP BETWEEN KNOWLEDGE-ORIENTED LEADERSHIP, CUSTOMER KNOWLEDGE MANAGEMENT, INNOVATION QUALITY AND FIRM PERFORMANCE IN THAI SME S

.....
Ms. Pornthip Chaithanapat
Candidate

.....
Asst. Prof. Sirisuhk Rakthin,
Ph.D.
Advisor

.....
Assoc. Prof. Vichita Ractham,
Ph.D.
Dean
College of Management
Mahidol University

.....
Prof. Roy Kouwenberg,
Ph.D., CFA
Program Chair
Doctoral of Philosophy Program in Management
College of Management
Mahidol University

Thesis
entitled

THE RELATIONSHIP BETWEEN KNOWLEDGE-ORIENTED LEADERSHIP, CUSTOMER KNOWLEDGE MANAGEMENT, INNOVATION QUALITY AND FIRM PERFORMANCE IN THAI SME S

was submitted to the College of Management, Mahidol University
for the degree of Doctor of Philosophy (Management)
on
March 18, 2021

.....
Ms. Pornthip Chaithanapat
Candidate

.....
Assoc. Prof. Minna Rollins,
Ph.D.
Chairperson

.....
Asst. Prof. Sirisuhk Rakthin,
Ph.D.
Advisor

.....
Assoc. Prof. Mark Speece,
Ph.D.
Committee member

.....
Assoc. Prof. Vichita Ractham,
Ph.D.
Committee member

.....
Assoc. Prof. Vichita Ractham,
Ph.D.
Dean
College of Management
Mahidol University

.....
Asst. Prof. Chanin Yoopetch,
Ph.D.
Committee member

ACKNOWLEDGEMENTS

Undertaking this Ph.D. has been one of the most noteworthy, life-changing experiences for me and it would not have been possible without the support and guidance that I received from many people.

First and foremost, I would like to express my sincere gratitude to my advisor, Asst. Prof. Dr. Sirisuhk Rakthin Ph.D. for the continuous support of my Ph.D. study and related research. I would like to thank for her patience, motivation, and invaluable advice during my Ph.D. study. Without her insightful comments and suggestions, it would not be possible for me to complete my Ph.D.

I would also like to extend my deepest gratitude to Assoc. Prof. Dr. Chanin Yoopetch Ph.D., who convinced me to pursue my doctoral degree, for his unwavering support and belief in me. My academic success would not have been possible without his encouragement and nurturing.

I would like to thank Professor Roy Kouwenberg for giving me this opportunity to study Ph.D. at this prestigious university, College of Management Mahidol University, and for his technical support and guidance on my study throughout these years. Special appreciation goes to Assoc. Prof. Dr. Minna Rollins – chairman and external committee of my Ph.D. dissertation for her constructive recommendations and other Ph.D. thesis committee: Assoc. Prof. Dr. Vichita Ractham, Assoc. Prof. Dr. Chanin Yoopetch, and Assoc. Prof. Dr. Mark Speece, not only for their insightful comments, but also for their questions that incented me to widen my research from various perspectives.

Last but not the least, I would like to express my very profound gratitude to my parents, brother, boyfriend, and team for supporting me spiritually and providing me with unfailing support throughout my years of study and through the process of researching and writing this dissertation. Thank you.

Pornthip Chaithanapat

THE RELATIONSHIP BETWEEN KNOWLEDGE-ORIENTED LEADERSHIP, CUSTOMER KNOWLEDGE MANAGEMENT, INNOVATION QUALITY AND FIRM PERFORMANCE IN THAI SMEs

PORNTHIP CHAITHANAPAT 5949603

Ph.D. (MANAGEMENT)

THESIS ADVISORY COMMITTEE: ASST. PROF. SIRISUHK RAKTHIN, Ph.D., ASSOC. PROF. MINNA ROLLINS, Ph.D., ASSOC. PROF. VICHITA RACTHAM, Ph.D., ASST. PROF. CHANIN YOOPETCH, Ph.D., ASSOC. PROF. MARK SPEECE, Ph.D.

ABSTRACT

This dissertation research examines knowledge-oriented leadership (KOL) and customer knowledge management (CKM) in small and medium-sized enterprises (SMEs) in Thailand. This thesis includes a literature review and provides empirical evidence for the proposed research model showing that marketing performance, financial performance, and operational performance of SME firms could improve by adopting knowledge-oriented leadership (KOL), customer knowledge management (CKM), and innovation quality. First from the literature context, this study makes the case for the need to examine the relationships among KOL, CKM, innovation quality, and firm performance (marketing performance, financial performance, and operational performance). Second, this study provides strong evidence of the mediating roles for two variables (CKM and innovation quality) and shows that CKM mediates in the relationship between KOL and innovation quality, while innovation quality mediates the relationship between CKM and firm performance (marketing performance, financial performance, and operational performance). Third, this study examines the moderating effect of competitive intensity in the relationship between CKM and innovation quality. Finally, this study provides theoretical implications for the use of academics and managerial implications for the use of SMEs' managers and owners regarding KOL, CKM, and innovation quality.

KEYWORDS: Knowledge-oriented leadership (KOL)/ Customer knowledge management (CKM)/ Innovation quality/ Firm performance/ SMEs,

133 pages

CONTENTS

CONTENTS (cont.)

CONTENT (cont.)

CONTENT (cont.)

LIST OF TABLES

LIST OF FIGURES

LIST OF ABBREVIATIONS

Abbreviations	Terms and Meanings
CKM	Customer Knowledge Management
CRM	Customer Relationship Management
KM	Knowledge Management
KOL	Knowledge-oriented Leadership
SMEs	Small and Medium Enterprises

CHAPTER I
INTRODUCTION

1.1 Introduction

Due to the change from the industrial revolution to a knowledge revolution, firms today tend to emphasize knowledge as a key factor in success. Knowledge has become one of the chief assets that firms can possess to achieve not only competitive advantage, but also continuous improvements and other benefits in the long run. To achieve a competitive advantage, it is crucial for firms to identify and capture customer knowledge. To survive and grow sustainably in this competitive business era, firms must prioritize knowledge (Fidel et al., 2018; Pil & Holwelg, 2003). Therefore, this is the best time for firms to consider adopting knowledge-oriented leadership. Through knowledge-oriented leadership, employees can explore and exploit knowledge. Knowledge-oriented leaders will encourage learning and support a learning environment that tolerates errors (Donate & Sánchez de Pablo, 2015; Williams & Sullivan, 2011). When firms have a supporting leader in terms of acquiring and sharing knowledge, employees will be able to learn best.

Since knowledge is considered one of the most noteworthy assets for firms today to manage, it is important for them to manage not only rudimentary knowledge, but also customer knowledge. This not only helps firms to be able to improve their products and services, but also helps firms emphasize the importance of meeting the needs of their customers. Many scholars place the importance of knowledge resources at the strategic forefront and knowledge resources are the claimed to be the only factor for firms to differentiate themselves from their competitors (Drucker, 1964; Wilhelm et al., 2013). Du Plessis and Boon (2004) have suggested that understanding the needs, demands, and behaviours of customers could be gained through the integration of knowledge management (KM) and customer relationship management (CRM), which is also known as customer knowledge management (CKM). The concept of CKM is when firms see the significance of

customers as a source of the firm's knowledge. In this way, the implementation of CKM emerges when firms can change their customers from passive product receivers to active knowledge partners and generate co-created knowledge, which is critically important (Gibbert et al., 2002; Wilhelm et al., 2013). CKM is the management practice and dynamic capability that firms have related to the generation, protection, and sharing of customer knowledge (Alegre et al., 2013; Fidel et al., 2018). It is considered as a tactical resource for firms such as SMEs to create value for their customers and the key to creating a competitive advantage in the long run. Firms that can utilize CKM will be able to improve their performance (marketing, financial, and operational performance) (Centobelli et al., 2019; Fidel et al., 2018; Taherparvar et al., 2014).

Another key resource for a firm's success is the extent of its innovativeness. In the last two decades, intense competition and technology play a dramatical role in shaping the business industry, making innovation more important than ever. Many studies highlight the importance of innovation and how it influences firm performance (Bigliardi, 2013; Hult et al., 2004). Since innovation can bring about competitive advantage for not only large firms but also small ones, the impact of innovation on firm performance has been a classical subject of study.

In the developing world, SMEs play a vital role creating job opportunities and boosting the economy. Globally, SMEs are around 90% of all businesses and 50% of employment. In emerging countries, 7 out of 10 proper occupations are generated by SMEs (World Bank, n.d.). As one of the emerging economies, SMEs in Thailand accounted for 99.70% of all companies and employed 78.48% of the total employment in 2016. They play a significant role in the economy both in terms of employment and the GDP, where they produced 42.5% of the country's GDP in 2017 (OSMEP, 2017). Many researchers agreed that even though SMEs encounter limitation of resources, they are still considered effective innovators (Bigliardi, 2013; Rosenbusch et al., 2011).

As it is recognized that today knowledge in general alone is not ample for a firm to gain a competitive advantage, this study examined knowledge-oriented leadership (KOL), CKM, and innovation quality of SMEs in Thailand. This study investigated whether CKM and innovation quality influence firm performance (marketing, financial, and operational performance). Before conducting an

empirical study, it is essential to understand the concepts of KOL, CKM, and innovation quality.

1.2 Research Gap and Future Research

This study develops a research model to examine the relationships among KOL, CKM, innovation quality, and firm performance (marketing performance, financial performance, and operational performance), and the moderating effect of competitive intensity in SMEs in Thailand. It generates several contributions to the literature by examining KOL, CKM, innovation quality, and firm performance.

First, this paper creates a better understanding of KOL, CKM, and innovation quality variables in the context of SMEs, investigating whether KOL, CKM and innovation quality can affect firm performance (marketing, financial, and operational performance). This fills in the research gap of Fidel et al. (2018), who suggested that consequence variables of CKM such as financial performance could be further studied.

Second, this paper studies the relationship between KOL and innovation quality of Thai SMEs by examining the mediating role of CKM. In other words, this study determines whether CKM may mediate the effect of KOL and innovation quality.

Third, this paper studies the relationship between CKM and firm performance (marketing, financial, and operational performance) in SMEs by examining the mediating role of innovation quality. In other words, this study analyses whether innovation quality may mediate the effect of CKM and firm performance. This fills in the research gap of Fidel et al. (2018) who recommended future studies to examine the mediating effect of innovation orientation.

Fourth, this paper studies the moderating role of competitive intensity in the relationship between CKM and innovation quality in SMEs. This fills in the research gap of Taherparvar et al. (2014), who suggested that the effect of moderating variables could be studied to complete their research model, and Zahari et al. (2019), who suggested that other external factors such as competition could be included.

Fifth, this study is empirically tested in an emerging economy – Thailand. This fills in the research gap of many studies that suggest testing the variables in

developing countries where these studies are rare (Al-Sa'di et al., 2017; Fidel et al., 2018; Donate & Sánchez de Pablo, 2015).

Finally, this paper is a multidisciplinary study that integrates management and marketing concepts. The constructs are also used in the organizational context of SMEs as this study empirically tests the relationships of the variables in SMEs.

In this paper, a comprehensive view of KOL, CKM, innovation quality, firm performance (marketing, financial, and operational performance), and competitive intensity is discussed. Besides contributing to the literature gap of KOL, CKM, innovation quality, and firm performance, the aim of this paper is to study the mediating effects of: (1.) CKM and (2.) innovation quality. This paper is one of the very few researches in the literature that studies CKM as a mediator on the relationship of KOL and innovation quality; innovation quality as a mediator on the relationship of CKM and three areas of firm performance; and competitive intensity as a moderator on the relationship of CKM and innovation quality. In addition, this research provides a more coherent picture of the variables – KOL, CKM, innovation quality, and firm performance that no studies have ever done before.

Since the examination of all variables - KOL, CKM, innovation quality, firm performance altogether is still missing from the current research literature, a comprehensive research model of this study provides a more coherent picture of the variables, which is useful for future studies. In addition, this study provides useful insights regarding how SMEs can implement KOL, CKM, and innovation quality to enhance SME's firm performance.

This paper is divided into six main sections: introduction, literature review, methodology, results, discussion, and conclusion. In each section, seven main variables (KOL, CKM, innovation quality, marketing performance, financial performance, operational performance, and competitive intensity) are discussed.

CHAPTER II
LITERATURE REVIEW

2.1 Introduction

2.1.1 Knowledge

Knowledge is considered the new capital and an important asset for firms to manage since it can improve business performance and create a competitive advantage. Drucker (1992) claimed that knowledge is possibly the only sustainable source for a firm's competitive advantage. The main difference between information and knowledge is that knowledge lies in the use of information; meanwhile, knowledge is the information that people use (Nonaka & Konno, 1998). Binney (2001) investigated the instruments that businesses can use to systematically organize knowledge and suggested the knowledge map, the decision table, the decision tree, case-based technology, data mining, CRM, TQM, business intelligence, benchmarking, and the portal as some of the examples.

So far there is still no general agreement concerning the definition of knowledge, while many queries are still unsolved. From one viewpoint, knowledge is seen and treated as an entity or object embedded in a firm's regulations; undoubtedly, knowledge is distinguished from information through its functional differences (Tzortzaki & Mihiotis, 2014). Unlike information, Nonaka (1994)—a KM leading expert—viewed knowledge as the beliefs, commitments, viewpoints, purposes, and action connected directly to the values of the company and the commitment of employees. Davenport and Prusak (1998) defined knowledge and information as a combination of past experiences, personal values, information in a context, and opinions of experts. These factors together create a base for evaluating the "gathering up" of novel experiences and information. Brooking (1996) defined knowledge as information depending on the action taken, the data given, and information. Many taxonomies have been created for knowledge in the past decades. Popular terms from "The Knowledge-

Creating Company" by Nonaka's and Takeuchi (1995) have been used widely in other KM studies—tacit (implicit) knowledge and explicit (or articulable) knowledge—where both are complementary.

2.1.2 Knowledge Management

With efficient and effective management of knowledge, a firm can improve its performance and create a competitive advantage. Aho and Uden (2013) have stated that the management of customer knowledge is an integration of knowledge management (KM) and customer relationship management (CRM) notions. Knowledge management varies according to different contexts and can be examined from many standpoints. De Jarnett (1996) defined knowledge management as creating knowledge, which also includes interpreting knowledge, spreading or using knowledge, and retaining and refining knowledge. Gold et al. (2001) described knowledge management as a strategy to more actively leverage knowledge to create value and to improve the efficiency of the firm, which provides the firm with a new way to achieve tacit and explicit knowledge sharing. Gibbert et al. (2002) suggested that knowledge management is when firms aim to unlock and assimilate the knowledge of their employees about the customers, sales processes, and research and development to support them to share their knowledge with their co-workers.

Gold et al. (2001) proposed organizational capability theory, approaching the effectiveness of knowledge management from the viewpoint of organizational capability. They indicated that the tendency to effectively manage the knowledge of a firm is based on knowledge infrastructure capabilities (cultural, structural, and technological capability) and knowledge process capabilities (knowledge acquisition, conversion, application, and protection). To maintain knowledge management capability, firms must implement their activities with rigor, clarity, effectiveness, and efficiency (Desouza & Awazu, 2005).

Studying the KM framework, Lin (2007) categorized KM into three dimensions: enablers, processes, and outcomes. Enablers are factors such as the individual (or human), organizational, and technological capabilities that enhance the knowledge management mechanism in the firms. Processes are the actions of gathering, disseminating, and utilizing experience, skills, and contextual information within the

firm. Outcomes are the results of how firms effectively implement KM practices to achieve a competitive advantage, which include results such as firm performance, innovation capability, and service quality (Lin, 2007).

Concerning knowledge management, Al-Athari and Zairi (2001) found that most employees in both the private and public sectors viewed their knowledge in terms of power and as private. However, most employees in governmental companies protect their knowledge to secure their positions; meanwhile, most employees in the private organisations believe that their knowledge is an organisation's asset (Al-Athari & Zairi, 2001). Another important aspect of knowledge is knowledge about customers (Gibbert et al., 2002; Taherparvar et al., 2014).

In this paper, the definition of Gold et al. (2001) is followed, where KM is a means where firms can actively leverage knowledge as well as achieve tacit and explicit knowledge to create value and to improve the firm's efficiency.

2.1.3 Theoretical Background

By applying the resource-based theory and knowledge-based theory, the researcher arrived at the variables and the theoretical model. Both theories allow one to understand how firms can survive and improve their performance through strategic resources such as KOL and CKM to enhance their performance and achieve a competitive advantage.

Based on the traditional resource-based theory, many past studies claimed that firms with better market orientation will result in better performance since they really know what their customers want and need, the competencies and strategies of their competitors, room for improvement, and about the industry as a whole (Hult & Ketchen, 2001; Jaworski & Kohli, 1993; Morgan et al., 2009). Resource-based theory provides a complete view of how firms utilize their resources and their ability to create basic needs for production, to produce products and services, and to sell those products and services (Young et al., 2000). The theory also explains how a firm can outperform its competitors by "pulling" its resources to improve performance (Wernerfelt, 1984; Barney, 1991). Resource-based theory proposes that these strategic resources will assist firms in carrying out strategies to achieve a competitive advantage.

Based on the knowledge-based theory, Grant (1996) suggested that among resources, knowledge is the most valuable strategic resource that a firm possesses. Following the theoretical background, this study considers CKM as a strategic resource for SMEs to achieve a competitive advantage since it can create value for the firm and customers (Gibbert et al., 2002). As a result of the occasional lack of human capital in SMEs and limitations in existing knowledge, SMEs sometimes have a commitment to obtain knowledge externally (Desouza & Awazu, 2005; Robson & Bennett, 2000). In this study will demonstrate that KOL and CKM are the key sources of generating a competitive advantage that improves firm performance in SMEs.

2.2 Knowledge-oriented Leadership (KOL)

2.2.1 Definition of Knowledge-oriented Leadership

KOL is defined as how the management level shows an attitude, mindset, or action that encourages the activities of knowledge generation, allocation, and exploitation within an organization (Mabey et al., 2012; Naqshbandi & Jasimuddin, 2018). Knowledge-oriented leaders improve, display, teach, appreciate, and give rewards when it comes to new ideas (Ho, 2009; Naqshbandi & Jasimuddin, 2018; Ribiere & Sitar, 2003). It usually occurs when leaders are perceived as actively engaging and committing to support the knowledge and learning activities within the firm (DeTienne et al., 2004). In a knowledge-intensive company, leaders should lead through a knowledge lens so that employees can explore and exploit knowledge. Instead of introducing negative actions, knowledge leaders should give recognition and rewards to their employees whenever they try to transfer, share, or apply knowledge in the firm (Ribiere & Sitar, 2003). Knowledge leaders should give clear messages about the expectations they have for their employees regarding the goals of the firms and incentives. Leaders should also guide knowledge workers to learn and use knowledge to achieve the overall goals of the firm (Ribiere & Sitar, 2003; Donate & Sánchez de Pablo, 2015).

Many researchers have claimed that KOL is a combination of two styles of leadership, transformational and transactional leadership, together with communication

and motivational factors (Donate & Sánchez de Pablo, 2015; Ribiere & Sitar, 2003). However, Baškarada et al. (2017) claimed that transactional leadership and transforming leadership is two different styles of leadership which is useful for different situations. Transactional leadership is best used for institutionalizing, reinforcing, and refining existing knowledge while transformational leadership is best used for challenging the current situation of the firm (Baškarada et al., 2017; Jansen et al., 2009).

KOL is when the management of the firm can communicate with employees clearly about the objectives of the company and expectations in terms of their work, while motivation such as rewards is a supplementary factor (Donate & Sánchez de Pablo, 2015; Williams & Sullivan, 2011). The main aims for a knowledge-oriented leader are to act as advisor and role model for the employees, encourage learning by challenging workers, promote training and incentives, as well as support a learning environment that tolerates errors (Donate & Sánchez de Pablo, 2015; Williams & Sullivan, 2011).

The definition of KOL of DeTienne et al. (2004), Donate and Sánchez de Pablo (2015), Ribiere and Sitar (2003) will be adopted here, where KOL is when the management team is perceived as being actively engaged in and committed to supporting a learning environment that tolerates errors and gives rewards.

2.2.2 Dimensions of Knowledge-oriented Leadership

According to Matošková et al. (2018), KOL can be viewed according to two main dimensions: the quality of the superior's managerial skill and official knowledge sharing support. The managerial skill is a quality that superiors with KOL possess that enhances knowledge sharing within an organization, while KS support is when employees within the organization perceive that their superiors encouraged KS practices; for this reason, they are more cooperative and engaged in the activities. On the other hand, Yang et al. (2014) studied KOL based on three main areas: leadership skills; cooperation and trust; and knowledge integration and innovation. Similarly, both studies discussed the qualities that reside in leaders and the support from employees that could bring about better firm performance.

2.3 Customer Knowledge Management (CKM)

Many scholars place the importance of knowledge resources at the strategic forefront, and knowledge resources are claimed to be the only factor for firms to differentiate themselves from their competitors (Drucker, 1964; Wilhelm et al., 2013). Focusing on the knowledge-based view, internal knowledge resources from employees and firms' processes are considered the main elements for firms' successes (Davenport et al., 1998). Nevertheless, external knowledge from other stakeholders such as customers and business partners has been overlooked by many firms on a strategic level. Although many firms optimize customer knowledge on an operational level, for example, combining as much customer knowledge as possible as ideas for improvement, many times they cannot strategically make use of the knowledge to close the knowledge gap (Wilhelm et al., 2013; Zack et al., 2009). Therefore, the implementation of CKM where firms can convert customers from passive product receivers into active knowledge partners is critically important (Gibbert et al., 2002; Wilhelm et al., 2013).

2.3.1 Definition of Customer Knowledge Management

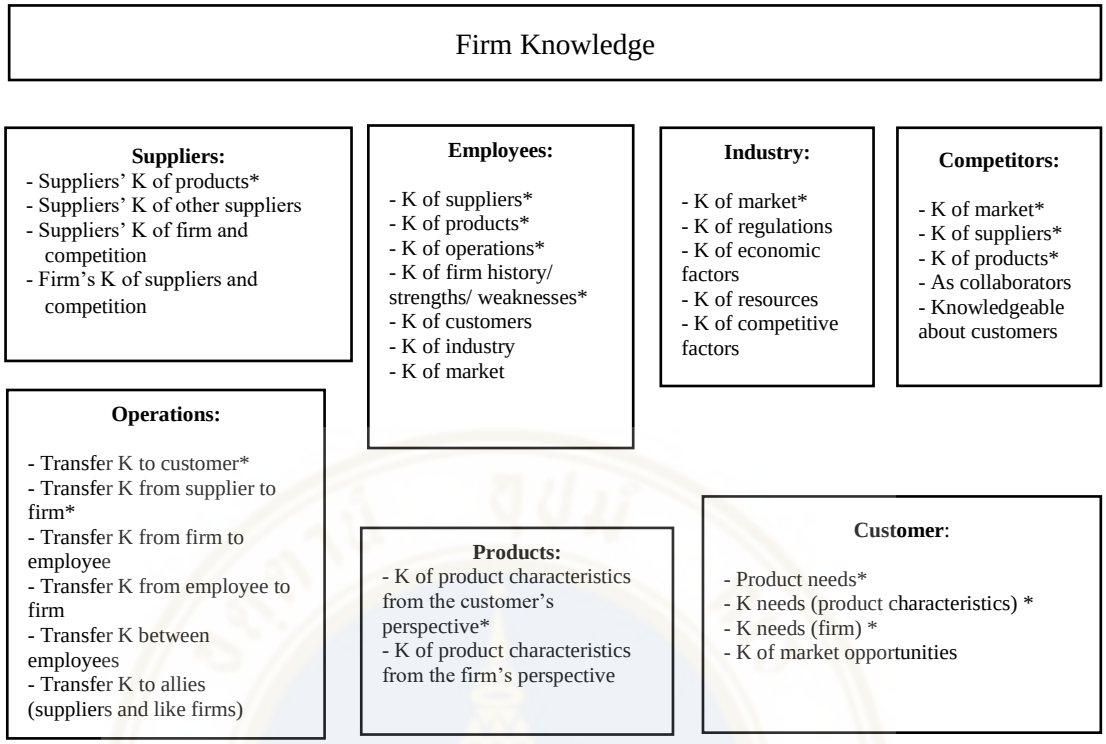
Customer knowledge is the value, experience, and perception of the customers resulting from the interaction between the firm and customers (Gebert et al., 2002), and there are three dimensions of customer knowledge—knowledge about customers, knowledge for customers, and knowledge from customers (Gebert et al., 2003). The management of customer knowledge exists when firms can create priceless leverages and first-hand interaction with their customers (Jaziri, 2019). Sofianti et al. (2010) claimed that firms that highlight the importance of CKM will no longer view their customers as the passive receivers of the products or services they offer; instead, they will consider their customers as their knowledge partners. They defined CKM as the on-going process of generating, sharing, and using customer knowledge within the organization between the firm and its customers. Similar to the ideas of Sofianti et al. (2010), Khosravi and Hussin (2016) claimed that for CKM to become effective, it relies heavily on how well a firm can create and manage its relationship with its customers to obtain, transfer, and utilize customer knowledge for the benefits of the customers and the firm. Khosravi and Hussin (2016) argued that CKM is not only a customer

relationship management tool—it is a strategic planning procedure where firms are able to obtain, generate, and integrate customers, while Jaziri (2019) claimed that customer knowledge management is profoundly rooted in a process-orientation. Based on Wang and Yu (2010), CKM is when customer knowledge has been organized in such way that it can create more valued customers for the firm through the utilization of information technology (IT). Using IT, efficient CKM is deemed to be the root for firms to wisely extend their customer knowledge to build a valuable customer relationship as well as to strengthen customer loyalty (Chen & Su, 2006; Wang & Yu, 2010). For some scholars, CKM is viewed according to two main dimensions: the management practices and dynamic capabilities that firms possess related to the generation, protection, and sharing of customer knowledge (Alegre et al., 2013; Fidel et al., 2018).

Gibbert et al. (2002) further explained that CKM is knowledge that resides in the customers, and firms can gain this knowledge from customers as well as share and expand it. It is the creation of new knowledge-sharing platforms and processes between companies and their customers. Lin (2007) claimed that this tangible approach can be recognized through different types of customer behavior: tacit or explicit, declarative or facts, and procedure or process. In accordance with the notions of García-Murillo and Annabi (2002), CKM is most common when salespersons and customers interact while this activity can in fact lead to sales, customer loyalty, and the development of new products.

Although the term "customer knowledge management" was initially mentioned in Gamble et al.'s (2001) paper, it was found in the present study that the paper actually discussed the concept of customer relationship management instead of CKM. By interviewing senior staff from 10 companies in the travel industry, who are responsible for customer relationship management (CRM) and strategy development, the paper found that barriers to CRM are strategic vision, customer knowledge or needs, and technology. This is similarly to Rowley's (2002) ideas, who categorized customer knowledge into two dimensions: knowledge about customers and knowledge possessed by customers. Focusing only on the first aspect, however, it was found that the customer knowledge that appeared in the paper was not CKM but rather CRM. Likewise, Dennis et al. (2001) also discussed how data mining can manage knowledge about customers regarding shopping centres.

For this paper, the definition developed by García-Murillo and Annabi (2002) and Gibbert et al. (2002) will be used. García-Murillo and Annabi (2002) first highlighted the significance of customers as a source of a firm's knowledge and proposed a conceptual model that integrates customer knowledge as a part of the firm's knowledge. In their model, they revealed how firms can benefit from interacting with customers and proposed the procedure of exchanging knowledge between customers, the firm, and other stakeholders. The scholars identified the sources of knowledge and the knowledge fragments that firms should acquire and disseminate as part of their customer knowledge strategies, as can be seen in Figure 2.1. Unlike earlier papers that emphasized customer databases and transactions, their paper focused on interactions with customers as the source of knowledge, which is similarly to the idea presented in the present writing. By directly interacting with customers, firms can understand customers pain points, needs, and preferences, which could better explain the reason behind why customers do what they do (García-Murillo & Annabi, 2002). Similarly, Gibbert et al. (2002) defined CKM as the knowledge that resides in the customers where firms not only gain this knowledge from customers but also share and disseminate it. This means that CKM is the creation of new knowledge-sharing platforms and processes between firms and their customers. Gibbert et al. (2002) also believed that with effective CKM, organizations can benefit from market opportunities before their rivals and produce economic value both for themselves and their stakeholders, especially their customers. They also claimed that CKM cannot only bring about an increase in customer satisfaction and improved customized products and services, but it can also in return generate actual income for the firms and monetary compensation for customers.



* = knowledge that can be useful to customers; K = knowledge

(Source: García-Murillo & Annabi, 2002)

Figure 2.1 Components of Firm Knowledge

2.3.2 Relationships of CKM, KM, and CRM

For most people, CKM may be just another name for CRM or KM; however, CKM management team members need different approaches and key factors if compared to CRM and KM. Unlike CRM, which focuses on "knowledge about customers," CKM managers are most concerned about "knowledge from customers," which is the knowledge residing in their customers (Gibbert et al., 2002). This means that they view that their customers are knowledgeable, so they interact with their customers to gain more knowledge. At the same time, CKM managers will encourage their staff to share their knowledge rather than holding their knowledge to themselves.

Customer relationship management is a process of obtaining, preserving, and associating with selected customers to create better value for them and benefits for the company. It requires an integration of marketing, sales, and the customer service of the firm to achieve greater efficiency and effectiveness in delivering customer value (Parvatiyar & Sheth, 2001). It is when a firm retains its present customers as well as

endures a good lasting relationship. For Verhoef and Donkers (2001), CRM enables firms to invest in potential customers that are likely to be more valuable to the firms and lessens investments in customers that are less valuable. Peppers et al. (1999) stated that CRM is when firms are willing and able to adapt according to each individual customer. This includes what the customers tell the firms and what the firms recognise about the customers. Meanwhile, Chen and Popovich (2003) defined CRM as the amalgamation of three main factors—people, process, and technology—to manage, retain, and develop customer relationships; and Zablah et al. (2004) viewed CRM according to five main dimensions: process, strategy, philosophy, capability, and technology.

Unlike the customer relationship management in the past, CRM today usually involves the use of technology to manage large numbers of customers with the aim to acquire and retain more potential customers (Payne & Frow, 2005). Garrido-Moreno et al. (2010) defined CRM as a business strategy where a firm can manage and ensure value-creating relationships with its customers based on knowledge. For Gibbert et al. (2002), CRM is when firms use their information technology to ease the processes within the firm. They mine knowledge about the customers within the database to build lasting relationships with them. To ensure CRM in a firm, however, it is important for a firm to have a proper organizational culture and leadership style. In this paper, a definition similar to that of Gibbert et al. (2002) was adapted, where CRM is when firms adopt information technology to help them "mine" knowledge about their customers in their database to ensure long-lasting relationships. Gibbert et al. (2002) summarized the differences between KM, CRM, and CKM in Table 2.1. They believed that CKM managers have different mindsets about their customers.

Table 2.1 CKM versus KM and CRM

	CKM	KM	CRM
Knowledge sought in	Customer experience, creativity, dissatisfaction with products or services	Employee, team, company, network of companies	Customer database
Rationale	Gaining knowledge directly from the customer, as well as sharing and expanding this knowledge	Unlock and integrate employees' knowledge about customers, sales processes, and Research and Development	Mining knowledge about the customer in company's database
Objectives	Collaboration with customers for joint value creation	Efficiency gains, cost-saving, and avoidance of re-inventing the wheel	Customer base nurturing, maintaining company's customer base
Metrics	Performance against competitors in innovation and growth, contribution to customer success	Performance against budget	Performance in terms of customer satisfaction and loyalty
Benefits	Customer success, innovation, organizational learning	Customer satisfaction	Customer retention
Role of customer	Active, partner in value-creation process	Passive recipient of product	Captive, tied to product/ service by loyalty scheme
Corporate role	Emancipate customers from passive recipients of products to active co-creators of value	Encourage employees to share their knowledge with their colleagues	Build lasting relationships with customers

(Source: Gibbert et al., 2002)

2.3.3 Antecedents of CKM

There are several factors that enable CKM in the firm. Even though the benefits of CKM are recognized, CKM cannot be effectively implemented without the commitment of the senior management, strong communications, a company-supporting culture, and customer management skills (Attafar et al., 2013).

To achieve successful CKM practices, Khosravi and Ab (2018) claimed that framing new routines and changing organizational structure are highly recommended. According to Khosravi and Ab (2018), the antecedent factors of CKM can be categorized into three main groups: organizational factors, human factors, and technological factors. The authors studied 66 papers during the period of 2003 to 2016 using seven main databases and found that the most frequently studied enablers of CKM were culture (an organizational factor), a collaboration system (a technological factor), and CRM technology infrastructure (a technological factor). Meanwhile, the least-mentioned antecedents in the past literature were intellectual property (a human factor), program champion (an organizational factor), and trust (a human factor) (Khosravi & Ab, 2018). The authors carefully studied the CKM enablers from the past literature and categorized them into key 18 factors under three main categories, as shown in Table 2.2. On the other hand, Dimitrova et al. (2009) suggested that CKM can be effective by using two factors: the quality of information sharing and the strong relationships between firms and customers.

Table 2.2 Antecedents of CKM

I. Organizational factors	II. Human factors
1. Customer-centric culture	1. Individual competencies and skills
2. Cross-functional cooperation	2. Individual motivation
3. CKM strategy development	3. Provide privacy for customers
4. CK-oriented business practice	4. Respect for intellectual property
5. Community of practice	5. Trust between customers and company

(Source: Khosravi & Ab, 2018)

Table 2.2 Antecedents of CKM (cont.)

I. Organizational factors	II. Human factors
6. Key customer support	
7. Program champion (change agent)	III. Technological factors
8. Reward system	1. Collaboration system
9. Senior management support	2. CRM technology infrastructure
10. Training	
11. Customer involvement	

(Source: Khosravi & Ab, 2018)

Gibbert et al. (2002) suggested that one approach to motivating CKM is to create interactivity between firms and customers through interactive multimedia technology such as websites. They mentioned how a bricks and mortar company like Holcim, an international cement company, was able to create an e-commerce solution for their customers where not only transactions could be made, but also a knowledge-sharing platform was created for the members of the cement community (i.e. concrete producers, distributers, engineers, and architects).

2.3.4 Challenges of CKM

Salojärvi et al. (2010) pointed out that the challenge of CKM is when the company lacks a systematic process, and Davenport et al. (2001) indicated that using customer knowledge is still a stumbling block for many companies today. The questions "What would be the incentives for customers to share their knowledge with the company they bought products or services from?" and "What are the costs of implementing the CKM practices that firms will encounter?' are still not clearly answered. This is similar to the work of Jaziri (2019), who stated that the main obstacle to CKM is to understand the customers' perceptions, which are creative and useful for the company's future.

Gibbert et al. (2002) claimed that the two factors that could really influence the effectiveness of CKM are cultural challenge (an organizational factor) and competency challenge (a human factor). Cultural challenge was considered most fundamental for most CKM managers since it would be very difficult for firms to implement CKM if the firms still viewed their customers as the source of revenue but

not knowledge. Companies that encountered this challenge could show reactions such as "corporate narcissism" (they believe that they know more than the customers), "no critical perspective," and "corporate shyness" (accepting customer knowledge at face value) (Gibbert et al., 2002). On the other hand, a competency challenge is when firms are not ready in terms of the skills and processes required for interactivity.

2.3.5 Five Styles of CKM

Gibbert et al. (2002) studied over two dozen companies in various industries (medicinal, financial services, measurement, chemicals for farming, telecommunications, and beverages) and found that even though most firms viewed themselves as being customer-oriented, only a few were able to manage their valuable resources, which is the knowledge existing in their customers, effectively. They proposed the concept of 5 different styles of CKM: prosumerism, mutual innovation, team-based co-learning, communities of practice, and joint intellectual property (IP) management, as shown in Table 2.3.

Table 2.3 Five Styles of CKM

Style/ Characteristic	Prosumerism	Team-based Co-learning	Mutual Innovation	Communities of Creation	Joint IP/Ownership
Focus	Developing tangible assets and benefits	Creating corporate social capital	Creating new products & processes	Mission-specific Professional expertise	Tangible customer IP sharing
Objective	Improved products & resulting benefits	Facilitate team learning for dealing with systemic change	Create max. return from new ideas	Obtain & explicate professional expertise	Max. returns on IP (jointly)
Processes	Pre-, concurrent- & post-production integration	Teamwork, empowerment, case development, quality programs	Idea fairs; brainstorming; customer Incubation	Best practices CoP's, expert networks	Apprenticeships Formal training programs On job training

(Source: Gibbert et al., 2002)

Table 2.3 Five Styles of CKM (cont.)

Style/ Characteristic	Prosumerism	Team-based Co-learning	Mutual Innovation	Communities of Creation	Joint IP/Ownership
Systems	Planning, control and decision supply systems	Knowledge sharing systems, digital 'nervous' systems, customer visits in teams	Idea generation support systems	Expert systems, shared e-workspaces, group support systems	Group IP support, systems
Performance Measures	Effectiveness & efficiency, customer satisfaction & success	Systems productivity, quality, customer satisfaction & success	ROI from new products & processes, customer success	K-sharing behavior, timeliness of decisions, Rate of hyperlinked results	Value of new IP, incremental ROI on new revenue streams
Case Examples	Quicken; IKEA	Amazon.com; Xerox, Holcim, Mettler Toledo	Silicon Graphics, Ryder	Microsoft; Sony; eBay, Holcim	Skandia
Intensity of Interaction	Relatively low	Low to high	Relatively low	Relatively high	Relatively high
Type of Knowledge	More explicit	Explicit and tacit	More tacit	More tacit	More explicit

(Source: Gibbert et al., 2002

2.3.6 CKM and Absorptive Capacity

For many authors, CKM is highly related to absorptive capacity as they believe that customer knowledge is one of the key elements that rely on the absorptive capacity of the company (Jaziri, 2019; Salojärvi & Saino, 2006; Zahra & George, 2002). Skotis et al. (2013) claimed that the lack of the customer knowledge absorptive capacity in a company is one of the most significant barriers to CKM. According to the study of Khosravi and Nilashi (2018) regarding CKM in the Enterprise Software development companies, they found that even in this industry the rate of customer knowledge absorption and application is considered low and still immature. When firms focus on the capabilities of customers such as product-improving cultures and outgoing coordination, however, the marketing method called "external knowledge absorption" emerges (Berghman et al., 2006; Dimitrova et al., 2009; Lopez-Nicolas & Molina-

Castillo, 2008). Therefore, it is essential for every firm to acquire customer knowledge and to combine this with the potential of the team to seek more information and to absorb knowledge in the highly competitive business world.

2.3.7 CKM in the Context of SMEs

CKM is a combination of practices and skills where firms have to create, conserve, and share knowledge regarding their customers (Alegre et al., 2013). Firms that invest in knowledge management will survive and maintain their competitive advantage even in times of crisis. Due to the shortage of human resources and capital, most SMEs are obliged to exploit external knowledge and optimize their existing knowledge within the organization (Desouza & Awazu, 2005; Fidel et al., 2018; Robson & Bennett, 2000).

According to Fidel et al. (2018), SMEs can become successful with CKM with two main antecedents: customer orientation and innovation orientation. The authors believed and found that with these resources (CKM, customer orientation, and innovation orientation), SMEs can expand their capabilities and bring about positive outcomes, particularly in marketing. They studied these variables by applying the resource-based view theory and the knowledge-based approach (Fidel et al., 2018). Fidel et al.'s results showed that customer orientation activities lead to more CKM in the company since they have a total effect on the variables. They studied that in SMEs CKM can improve innovation and marketing results. In addition, they suggested that CKM could be improved through CKM practices, such as utilizing customer databases and software, setting up meetings with customers, and interviewing them. On the other hand, SMEs could also obtain information about their customers to gain CKM dynamic capabilities through events, fairs, and industry news. This means that SMEs should work on employing CKM practices and achieving CKM dynamic capabilities to retain their competitive advantage. Although there are prior studies that examined CKM for organizations and projects (Lin et al., 2012; Sofianti et al., 2010; Yang et al., 2014), there is a relatively small number of studies that have examined CKM in the context of SMEs.

2.3.8 Dimensions of Customer Knowledge

Customers can be one of the greatest external sources of knowledge for firms. To gain a competitive advantage, firms must be able to see the importance of new knowledge from external sources, such as customers. For Cohen and Levinthal (1990), the competency to gain knowledge from external sources is known as "absorptive capacity." On the other hand, Wilhelm et al. (2013) defined customers as "strategic" or "strategic customers" from a knowledge-based viewpoint since they reasoned that customers could fill knowledge gaps for firms as well as add value. Strategic customers are no longer people that merely purchase and use the products or services of the firms, known as passive receivers, but they are people that cooperate and add value to the firms, known as knowledge partners.

Sun (2010) defined customer knowledge as the active unification of the customer's experience, values, beliefs, and specialization, which are needed, evolved, and absorbed in the transaction and interaction processes between companies and customers. Meanwhile, Gebert et al. (2002) defined customer knowledge as the customers' values, experiences, and perceptions resulting from the interaction between the firm and its customers.

In a paper by García-Murillo and Annabi (2002), they viewed customer knowledge according to two main dimensions: (1) knowledge that customers possess regarding the problems relevant to the products or services they want to buy; and (2) knowledge that firms should have to help customers make decisions regarding purchases. Even though most of the time firms provide knowledge to customers, many times customers provide information knowledge to firms (García-Murillo & Annabi, 2002). Smith and McKeen (2005) introduced another dimension of customer knowledge: co-created knowledge. This is knowledge that can be obtained during the interaction between the firm and its customers. On the other hand, Gebert et al. (2003) categorized customer knowledge according to three dimensions: knowledge about customers, knowledge for customers, and knowledge from customers. Wilhelm et al. (2013) called the dimensions of customer knowledge "customer knowledge flows" and studied the collaboration between firms and customers in three dimensions similar to Gebert et al. (2003).

2.3.9 Knowledge about Customers

According to Gebert et al. (2003), knowledge about the customer is the investigation of the past customers' data and information within an organization. This knowledge is related to customer relationship management. Firms that want to gain this knowledge keep records of their customers' basic data related to the products or services purchased (Jaziri, 2019; Sofianti et al., 2010; Sun, 2010). This helps firms to better understand their customers' personal preferences and behaviours. Salomann et al. (2005) indicated that knowledge about the customer is one of the oldest KM activities, where firms collect and analyse the knowledge they have retrieved about customers. This knowledge is most useful when firms try to understand what motivate customers to make purchases and what some of the strategies are that firms can use to attract the customers. Knowledge about customers concerns not only their demographics (age, gender, address, etc.), but it also includes information about the customers' transactions that reflect their preferences and purchasing behaviours (Wilhelm et al., 2013). Firms that can manage and analyze this customers' knowledge efficiently can maintain a good relationship with them (customer relationship management) and ensure customer loyalty (Gebert et al., 2003). However, Wilhelm et al. (2013) claimed that this kind of customer knowledge is considered less strategic since it is on an operational level (for marketing and sales). Although it could help firms identify strategic customers, "knowledge about customer" is less strategic if compared to "knowledge for customers" and "knowledge from customers."

2.3.10 Knowledge for Customers

Knowledge for the customer is knowledge that satisfies the needs of customers usually about products, markets, and suppliers (Gebert et al., 2003). According to Sun (2010), this knowledge domain includes everything that a company could and would provide to the customer, for example, information about the products and services that the company offers. Customers are supported by the firms in the purchasing cycle, where knowledge about the products and services is provided. Besides the existing knowledge that customers have regarding the firms and their products, firms can also provide knowledge that customers lack to influence their purchasing decisions. For this reason, the knowledge that customers are expected to receive from firms should

be defined in advance to close their knowledge gaps (Wilhelm et al., 2013). Some examples of the demanded knowledge that firms should provide their customers concern the range, structures, and processes of the products and services that the firms offer. Other information that firms could share with their customers to satisfy their needs concerns markets and distributers (Garcia-Murillo & Annabi, 2002; Wilhelm et al., 2013). With knowledge for customers, the latent need for knowledge by customers can be fulfilled. This will not only help customers be able to make quicker and better buying decisions, and help firms generate sales, but it will also help customers be able to make use of the products and services at the optimum level.

2.3.11 Knowledge from Customers

Since knowledge is considered one of the most noteworthy assets for firms today to manage, it is highly important for firms to manage not only rudimentary knowledge but also customer knowledge. Knowledge from customers is usually found in the customers' responses or feedback (Gebert et al., 2003). Through interactions with the staff, knowledge can be gathered from customers, and this knowledge is a concept where a tacit form of knowledge from customers' real experience can be found (Helkkula & Pihlstrom, 2010; Jaziri, 2019; Nonaka, 1994). Desouza and Awazu (2005) defined knowledge from customers as the understandings, perceptions, opinions, thoughts, notions, and information that firms obtain from its customers. In other words, it is when firms attempt to better understand the emotional and functional factors of the interaction: what their customers know, have experienced, need, and feel about the firms and their products or services (Sun, 2010). For many firms, knowledge from customers is gathered for innovation. Through interaction with customers, firms are able to identify the needs of the customers for continuous improvement, both for existing and new products (Garcia-Murillo and Annabi, 2002). Many studies have mentioned how this dimension of customer knowledge can lead to innovation for firms since customers are now viewed as a key indicator for the value creation process instead of just being passive product receivers as in the past (Chesbrough, 2003; Wilhelm et al., 2013). Gibbert et al. (2002) called this kind of customer act as "prosumerism," where customers are the actively-empowered knowledge partners and act as idea creators. Wilhelm et al.

(2013) claimed that the needs, feedback, as well as complaints from customers can be combined into a resource for firms to add value and to come up with new strategies.

2.3.12 KOL and CKM

Leadership in a learning organization is critical, especially when subordinates view their superiors as active supporters in their learning activities. Without a leader that emphasizes the significance of KM initiatives, employees will not see the importance of KM (DeTienne et al., 2004). To encourage CKM, it is crucial for a firm to have leaders with knowhow. Leaders with KOL will be able to communicate the strategies of the firm to their subordinates as well as explain their expectations and roles to them. When leaders direct and encourage their teams to obtain and assimilate knowledge, which brings about knowledge searches and usage into present knowledge, it is called "inbound open innovation" (gaining knowledge from external sources and selecting it according to a business model) (Chesbrough, 2003; Donate & Sánchez de Pablo, 2015; Naqshbandi & Jasimuddin, 2018). On the other hand, Knowledge-oriented leaders will also encourage the team to jump into new knowledge and take risks to exploit the knowledge to be commercialized in the market, which is known as "outbound open innovation" (Chesbrough, 2003; Naqshbandi & Jasimuddin, 2018).

Since CKM would not be possible regardless of the commitment of senior management (Attafar et al., 2013), while it was also found in the present study that this is actually closely related to the antecedents of CKM (program champion or change agent, a reward system, and senior management support) proposed by Khosravi and Ab (2018), it is believed that CKM has a certain relationship with the knowledge-oriented leadership style within a firm. To ensure effective CKM, therefore, the management teams of firms need to enhance the learning-oriented culture and share visions with everyone that customer retention is important within the organization (Hammami & Triki, 2011). According to Nonaka et al. (2000), leadership plays a vital role in the knowledge-creation process and they associate the process and the environment. Leadership provides vision, creates energy, and encourages continuous spiral learning in an organization (Nonaka et al., 2000; Owusu-Manu et al., 2018). According to Owusu-Manu et al. (2018), knowledge leadership is an essential driver that facilitates knowledge transfer and improves knowledge creation in the organizations. In Yang et

al.'s (2014) empirical study of knowledge leader leadership, CKM, and firm performance the in the project context in Taiwanese high-tech industry, the researchers found that there are relationships among knowledge leadership, CKM, project, and firm performance where knowledge leadership positively affects CKM. Extending prior studies, this paper addresses the influence of KOL on CKM in the context of SME firms and suggests the following hypothesis is expected:

Hypothesis 1: Knowledge-oriented leadership (KOL) has a positive and significant effect on customer knowledge management (CKM) in SME firms.

2.4 Innovation Quality

2.4.1 Innovation

The term 'innovation' was founded as a broad appeal in the literature back in the 1900s from Schumpeter's study (1934). According to Hult et al. (2004), innovation can be anything ranging from a new product or service, a new production or operating process, to a new structure or administrative system. Bigliardi (2013) defined innovation as "a complex phenomenon that involves the production, diffusion and translation of knowledge in new or modified products or services, or the development of new production or processing techniques" (p. 245-246). Innovation emerges when new knowledge has been generated to accelerate firm performance. Innovation is considered as closely related in the case of SMEs since they have the competence to carry out adaptations effectively and support innovation (Gallego et al., 2013; Hanna & Walsh, 2008). Innovation involves improving the operating process and developing novel products and services (Plessis, 2007).

2.4.2 Innovation Capability

Innovation capability distinguishes firms from their competitors and helps firms to overcome challenging situations (Chesbrough, 2006; Taherparvar et al., 2014). Many past studies mentioned how innovation is a key factor to firm success and superior performance (Srinivasan et al., 2009, Weerawardena et al., 2006). According to Eisenhardt & Martin (2000), "capabilities are routines through which managers alter

their resource base—acquire and shed resources, integrate them together, and recombine them" (p. 1107) Capabilities create barriers from competitors to imitate and help firms enhance their performance (DeSarbo et al., 2007).

2.4.3 Dimensions of Innovation Capability

Ngo and O' Cass (2013, p.1134) categorized innovation literature into two main dimensions: technical innovation, which includes "developing new services, service operations and technology"; and non-technical innovation which includes "managerial, market, and marketing". The authors claimed that although the latter dimension received less attention, both dimensions are crucial in increasing the firms' products and services to achieve better firm performance. They believed that innovation capability enhances firm performance and studied the relationship among service innovation, customer participation, and service quality.

Fidel et al. (2018) highlighted two phases of innovation: (1) innovation orientation and (2) innovation capacity. Innovation orientation, also known as innovation initiation, is when a firm has a culture of actively seeking for its staff to be open to innovation by encouraging them to generate, participate and try new ideas at work (Hurley & Hult, 1998). Innovation capacity, also known as innovation implementation, is when a firm can successfully use new ideas, processes, or products without having resistance to adoptions of innovations; it is a process when firms can adapt and respond to changes through continuous innovation (Fidel et al., 2018; Hurley & Hult, 1998).

Following Wang and Wang (2012), Taherparvar et al. (2014) discussed two dimensions of innovation: (1) innovation speed and (2) innovation quality. Innovation speed is the time between the starting point of development and the time when products and services have been distributed into the market or commercialized. Innovation speed indicates the capability of a firm in speeding up actions and duties compared to its competitors (Allocca & Kessler, 2006; Taherparvar et al., 2014; Wang & Wang, 2012). Innovation quality is how well recently launched products or services meet the needs and expectations of customers (Taherparvar et al., 2014). Innovation quality reflects the total innovation performance in every area within a firm by comparing the result with the potential and considering the process on how the result has been achieved (Haner,

2002; Wang & Wang, 2012). In this study, the researcher will be focusing only on innovation quality, which is one of innovation capability's dimension from Wang and Wang (2012) and Taherparvar et al. (2014), since it can reflect the overall innovation performance in every area within a firm.

2.4.4 Definition and Dimensions of Innovation Quality

Innovation has a compelling relation to newness, creativity, and unconventionality while quality is linked to standardization, low tolerance, and systematic process (Haner, 2002). Evaluating innovation quality allows managers and owners to examine their activities in relation to their goals. Innovation quality allows firms to make a statement about the total innovation performance in every level within an organization by "comparing the result, being it a product, process or service innovation, with the potential and considering the process on how the result has been achieved" (Haner, 2002, p.34).

There are three levels of innovation quality: product or service level, process level, and firm level. Regarding product or service level, innovation quality is identified through measuring variables like total amount, efficiency, features, reliability, timing, costs, value to the customers, innovation degree, complexity, and many other variables (Haner, 2002; Wang & Wang, 2012). This means innovation quality consists of all measures concerning new, innovative products or services. It reflects how well a firm is at looking for innovation in terms or product or service level. In terms of process level, innovation quality reflects how well a firm is looking for process innovation involving all measures which affect the quality of new processes and how this quality has been accomplished. In respect to the firm level, the principle is like the other two levels as it focuses on potential, procedure, and result. However, determining innovation quality at the firm level may be more difficult due to the higher degree of complexity, difficulty to determine the catalysts, and the need to assemble soft issues (Haner, 2002). Therefore, this study adopts the definition of innovation quality by Haner (2002), Taherparvar et al. (2014), and Wang and Wang (2012) where innovation quality is the total innovation performance in every level within an organization.

2.4.5 CKM and Innovation Quality

Knowledge management is an important factor in innovation activities. Past research has studied knowledge management and its effect on innovation (Alegre et al., 2011; Andreou et al., 2007; Forcadell & Guadañillas, 2002; Lin et al., 2012; Tarí & García-Fernández, 2011). However, customer knowledge and information have been increasingly important when many firms today shift their focus to open innovation and customer-driven innovation (Chesbrough, 2006; Taherparvar et al., 2014). Customers are considered as the possessors of important knowledge and the contributors of ideas for better innovation (Gorry & Westbrook, 2013). Magnusson (2003) claimed that customers have an external view on firms that can contribute to more practical ideas. Taherparvar et al. (2014) asserted that firms currently place more importance on connect and develop (C & D) than on research and development (R & D). This 'connect and develop' suggests that ideas from customers are more creative and useful than ideas from internal stakeholders such as staff, manager, and owner. These ideas contribute to innovation speed and innovation quality (Magnusson, 2003; Sakkab, 2002; Taherparvar et al., 2014).

Fidel et al. (2018) found that CKM directly and positively affects firm's innovation capacity in 210 Spanish SMEs. Lin et al. (2012) empirically proved that CKM has a positive impact on innovation performance. Furthermore, Taherparvar et al. (2014) discovered a positive influence of customer knowledge management on innovation quality in 35 private banks in Iran. From these studies, I propose the following hypothesis:

Hypothesis 2: Customer knowledge management (CKM) has a positive and significant effect on innovation quality (INNOV) in SME firms.

2.4.6 KOL and Innovation Quality

KOL is a combination of transformational and transactional leadership styles while including other qualities related to communication and motivating skills (Ribiere & Sitar, 2003). Therefore, Donate & Sánchez de Pablo (2015) claimed that KOL is an essential element for firms to achieve innovation performance through effective knowledge management. Studying the association between KOL, open innovation, and knowledge management in the international business context based in

France, Naqshbandi and Jasimuddin (2018) found that KOL has a positive direct effect on open innovation. In an empirical study regarding KOL, knowledge management behavior, and innovation performance in the context of project-based SME firms in Pakistan, Zia (2020) found that KOL positively affects project-based innovation performance. Like other studies above, Sadeghi and Rad (2018) studied the relationship between KOL and knowledge management and innovation performance and found positive significant effects of KOL on innovation performance. From these studies, the researcher proposes the following hypothesis:

Hypothesis 3: Knowledge-oriented leadership (KOL) has a positive and significant effect on innovation quality (INNOV) in SME firms.

2.5 KOL, CKM, and Innovation Quality: The Mediating Effect of Customer Knowledge Management

When it comes to KM capability processes, KOL has also been recognized for its other functions (e.g. role models, motivators, and facilitators) (Agbor, 2008; Bryant, 2003; Naqshbandi & Jasimuddin, 2018; Vaccaro et al., 2012; Yang, 2007). Many scholars have discussed how KOL is a factor related to beneficial outcomes such as innovation (Bryant, 2003; Garcia-Morales et al., 2006; Naqshbandi & Jasimuddin, 2018). By studying KOL, KM, and open innovation in the international business context, Naqshbandi and Jasimuddin (2018) examined the mediating role of KM capabilities on the relationship of KOL and open innovation. They found that a high level of KOL can improve KM capability and open innovation outcomes. In other words, KOL positively affects KM capability and open innovation while KM capability was also found to mediate the relationship between the two variables, KOL and open innovation (Naqshbandi & Jasimuddin, 2018). According to Jansen et al. (2006), KOL is a critical element that has an impact on KM activities to improve innovation performance, especially in companies that are technology-intensive where they need to explore and exploit knowledge to deal with changes in the market (Donate & Sánchez de Pablo, 2015). Donate and Sánchez de Pablo (2015) explored the mediating effect of knowledge management practices in the relationship between KOL and innovation

performance. Their findings reflect that even though knowledge management practices are essential for innovation performance, KOL also supports knowledge practices in the firm.

Even though many empirical studies have examined the mediating role of KM in the relationship between KOL and innovation, investigation of CKM as the mediator is still lacking. As KOL is a driving force for CKM, this leadership style will contribute to an indirect effect with innovation quality; therefore, this study suggests the following hypotheses:

Hypothesis 4: Customer knowledge management (CKM) plays a mediating role in the relationship between knowledge-oriented leadership (KOL) and innovation quality (INNOV) in SME firms.

2.6 Firm Performance

Researchers and practitioners give various meanings and measurements for firm performance. According to Hamon (2003), firm performance is an indicator that reflects how well an enterprise achieves its objectives. Antony and Bhattacharyya (2010b) said firm performance is a means to measure how well companies are managed and to what extent the companies' values can be delivered to their customers and stakeholders. Ngo and O' Cass (2013) defined firm performance as an evaluation of a firm's success in the industry through financial and non-financial indicators.

Sink and Tuttle (1989) described the performance measure as the interrelationship between six main performance criteria: effectiveness, efficiency, quality, productivity, innovation, and profitability. However, Antony and Bhattacharyya (2010a) suggested that the problem with this model is to find a common objective measure for all dimensions. They suggested that firm performance needs to be evaluated on various levels: the organizational level, the key process level, and the work unit level. Therefore, Antony and Bhattacharyya (2010b) proposed a firm performance model that includes creativeness, innovativeness, productivity, efficiency, effectiveness, competitiveness, and profitability, to be measured at both the organizational level and work unit levels.

In Milana and Maldaon's study (2015), firm performance was measured through an instrument that evaluates the perceptions of employees regarding the firm's performance concerning customer satisfaction, employee productivity, service quality, and the development of new products or services.

According to Rai et al. (2006), the performance of a business unit is best assessed through competition. Tippins and Sohi (2003) proposed four dimensions of firm performance measures: relative profitability, ROI, customer retention, and total sales growth. Jin-Nan et al. (2011) also measured firm performance but in the area of sales generation, logistics cost decreases, improved staff productivity, and improved customer service, while García-Morales et al. (2012) identified four firm performance dimensions, namely ROA, ROE, return on sales, and market share and sales growth. On the other hand, Zack et al. (2009) proposed five measures of firm performance: innovation, the rate of new product development, customer satisfaction, customer retention, and operating costs.

There is no consensus among researchers on the firm performance indicators and there are different variables to measure performance in SMEs. Although financial performance is viewed as the heart of the firm's efficiency (Nuryakin & Ardyan, 2018), financial performance alone cannot reflect how well the firm performs. In the meantime, many scholars have suggested that marketing performance is the key factor in the firm's success (Clark, 1999; Nuryakin & Ardyan, 2018; O'Sullivan et al., 2009). Although several studies have investigated the relationship between CKM and firm performance, few studies have conducted empirical research examining the relationship between CKM and marketing performance in the past (Fidel et al., 2018; Soliman, 2011). It is also found that financial and operational performance are often used to measure firm performance in the knowledge management field (Al-Sa'di et al., 2017; Fugate et al., 2009; Gholami et al., 2013; Venkatraman & Ramanujam 1986). However, Zack et al. (2009) suggested that using financial performance as the only firm performance indicator or aggregate financial and non-financial performance together as the firm performance indicator in the study may account weak relationships as found in the studies of Kalling (2003) and (Lee and Choi, 2003). To measure firm performance, therefore, this study chooses marketing, financial, and operational performance to measure how well companies are managed (Antony and Bhattacharyya, 2010b).

2.6.1 Marketing Performance

Marketing performance, which is also known as marketing results and market efficiency, measures how firms can accomplish their objectives related to markets; for example, the market share, revenues, customer acquisition, and customer loyalty (Fidel et al., 2018; Vorhies & Morgan, 2005). Santos et al.'s (2013) study shows that the engagement of customers has a positive influence on customer outcomes (customer satisfaction, and loyalty) and firm performance (revenues and market share). Early papers measured marketing performance by focusing on the results of marketing endeavours at producing financial outcomes for the firm (Clark, 1999). Voss and Voss (2000) suggested indicators like sales turnover, number of customers, sales, and profit growth to evaluate marketing performance of a firm. Among marketing performance indicators, Salojärvi et al. (2010) claimed that sales growth is the most noteworthy indicators to measure SME firms' success in a long run. It is evident that marketing performance determiners are often related to financial-based measurement indicators. According to Clark (1999), marketing performance measurement has evolved in three directions in the past, from (1) financial to non-financial performance measurements, (2) from productivity (output) to contribution (input) measurements, and (3) from single-dimension to multidimensional measurements.

From the past literature, this study defines marketing performance as market-based indicators compared to its competitors, measuring how well the firm can achieve their goals related to the market (Fidel et al., 2018; Vorhies & Morgan, 2005). Indicators to measure marketing performance include market share growth, customer acquisition, customer retention, sales to existing customers, and customer satisfaction (Fidel et al., 2018).

2.6.2 Financial Performance

It is evident that firm performance is a multidimensional construct, but many times financial performance is viewed as the heart of the firm's efficiency and effectiveness (Nuryakin & Ardyan, 2018; Venkatraman & Ramanujam, 1986). Venkatraman and Ramanujam (1986) claimed that financial performance is an outcome-based determiner for firms to indicate whether their economic goals have been achieved. The system of measurement involves accounting-based and market-based scales. Total

sale of a firm is commonly used to indicate firm's financial performance since it tells the direct earnings the firm received from customers. Many studies in the past used total sales and profitability as the financial performance indicators (Baker & Sinkula, 1999; Newbert, 2008; Ngo & O' Cass, 2013). Other examples of financial performance include indicators such as return on investment (ROI), return on assets (ROA), return on sales, and sales growth (Venkatraman & Ramanujam, 1986; Zahari et al., 2019). However, Day and Fahey (1988) suggested that ROI is not enough to evaluate the financial performance of a firm; cash flow should also be included. Inman et al. (2011) viewed financial performance indicators as firm's ROI, return on sales, profit and profit growth compared to its competitors.

In this study, the financial performance is the financial-based indicators which reflect how well the firm has achieved their economic goals. The indicators are sales, return on investment (ROI), profit, profit growth, business growth, and cash flow (Day & Fahey, 1988; Govindarajan & Kopalle, 2006; Inman et al., 2011; Khamwon & Speece, 2005; Lin & Chen 2007; Venkatraman & Ramanujam, 1986).

2.6.3 Operational Performance

Operational performance is also an indicator for assessing firm performance (Taherparvar et al., 2014; Wang & Wang, 2012). It is referred to non-financial indicators that emphasizes on operating key success factors that could bring about financial performance (Venkatraman & Ramanujam, 1986). Operational performance is also known as the progress the firm made in response of changes in the competitive business world (Flynn et al., 2010). It indicates how well a firm respond to the changing environment compared to its competitors (Lai et al., 2014; Liu et al., 2013). Tan et al. (2007) defined operational performance as "the output or result achieved due to unique operational capabilities" (p. 5137). Operational performance can also be recognized as the service quality of a firm; through superior product and service quality, firms could offer better customer value (Menon et al., 1997; Tatikonda & Montoya-Weiss, 2001). Manikas and Terry (2010) viewed operational performance in two dimensions: internal performance and process performance. Ketokivi and Schroeder (2004) measured operational performance in many dimensions to mirror internal operations of a firm, which include product, process quality, efficiency, and productivity. Wang and Wang

(2012) measure operational performance through customer satisfaction, firm's efficiency and responsiveness, and cost management. On the other hand, Venkatraman and Ramanujam (1986) viewed operational performance as product-market outcomes such as firm's efficiency, product and service development, and market share. Ou et al. (2010) suggest that development of product life cycle and reduction in costs are example indicators firms can measure operational performance.

In this study, operational performance is the non-financial indicators which reflect how efficient the firm can operate and respond to the market compared to its competitors, focusing on the internal operation (Flynn et al., 2010; Ketokivi & Schroeder, 2004; Lai et al., 2014; Liu et al., 2013; Ou et al., 2010; Taherparvar et al., 2014; Wang & Wang, 2012). Adapted from Taherparvar et al (2014) and Wang & Wang (2012), the determinants used in this study include customer satisfaction, development of products and services, cost management, responsiveness, past performance, and management.

2.6.4 Innovation Quality and Marketing Performance

Since SMEs are small, they can easily and flexibly adapt and change to meet the needs of the market and satisfy their customers. SMEs often encounter restriction in resources; however, they are considered as successful innovators (Verhees & Meulenberg, 2004). Categorizing innovation in four dimensions: product innovation, process innovation, marketing innovation, and organizational innovation, Afriyie et al. (2019) studied the relationship between innovation and marketing performance in SME service firms while having transformational leadership (TL) as the moderator. The researchers found that a significant positive effect exists in the relationship between the two constructs while transformational leadership positively moderates the relationship. Sok et al. (2013) developed a unified model to examine the combined effect of marketing, innovation, and learning capabilities on firm performance. They found a positive relationship among the variables while the capabilities interact with each other leading to synergy. Aksoy (2017) examined the relationship between the constructs of innovation that lead to firms' marketing performance, focusing only on the effect of product innovation on marketing performance in SME firms. The researcher suggested that innovation product provided customers with superior value; thus, it contributes to

SME firms better marketing performance. To fill in the research gap of Fidel et al. (2018) who empirically studied the effects of customer orientation and CKM on innovation and capacity and marketing performance, but did not examine the relationship between innovation capacity and marketing performance, this study proposes the following hypothesis:

Hypothesis 5a: Innovation quality (INNOV) has a positive and significant effect on marketing performance (MK) in SME firms.

2.6.5 Innovation Quality and Financial Performance

Although differing views exist in the literature, recent studies suggest that a positive relationship between innovation and financial performance exists. Walker (2004) reviewed 30 empirical studies (from 1984 to 2003) on innovation and firm performance and concluded that in most papers, innovation has a positive influence on firm performance. According to Bigliardi and Dormio (2009), innovation is the main influencing factor for firms to succeed, grow, and generate high income. In a later study, Bigliardi (2013) examined the effect of innovation on financial performance of 98 SME firms in the food machinery industry and found that higher levels of innovation increased financial performance. Jansen et al.'s (2006) study indicates that exploitative innovation leads to better financial performance. Wang and Wang (2012) studied knowledge sharing, innovation, and firm performance, particularly on operational and financial performance, in 89 high technology firms in China. They found that innovation quality has no direct effect on operational performance but has a significant positive effect on financial performance. In other words, innovation quality improves the financial performance of a firm. Studying the effects of innovation types on firm performance in 184 manufacturing firms in Turkey, Gunday et al. (2011) asserted that the most important element for a firm's total sales is organizational innovation. This concurs with Lin and Chen (2007) who studied innovation and firm performance in Taiwanese SME firms. Although many empirical relationships between innovation and financial performance have been investigated, few studies considered the direct effects of innovation quality on financial performance. In this study, I propose the following hypothesis:

Hypothesis 5b: Innovation quality (INNOV) has a positive and significant effect on financial performance (FIN) in SME firms.

2.6.6 Innovation Quality and Operational Performance

Lai et al. (2014) examined the relationship between KM practices on innovation and between innovation and firm operational performance among Malaysian SMEs in the manufacturing and services industry and found that a positive relationship exists between innovation and operational performance. Investigating the relationship between firm innovation capability and performance in Finnish SMEs, Saunila (2014) found that innovation capability has a significant and positive effect on operational performance. Nguyen (2020) recently studied the relationship between leader–member relationship quality and operational performance while having job satisfaction and innovation as the mediators in Vietnamese processing companies. The author hypothesized and found that innovative work behaviours positively influence operational performance of the firm. Studying CKM, innovation capability, and firm performance, Taherparvar et al. (2014) found that CKM has a positive significant effect of innovation quality on both financial and operational perspectives of firm performance. Unlike other studies, Wang and Wang (2012) found no direct significant impact of innovation quality on operational performance in their study of the relationship between knowledge sharing, innovation, and firm performance. From an analysis of these past studies, this paper proposes the following hypothesis:

Hypothesis 5c: Innovation quality (INNOV) has a positive and significant effect on operational performance (OPER) in SME firms.

2.6.7 CKM and Marketing Performance

To test the relationships among customer collaboration, innovation orientation, and CKM in terms of marketing results, Fidel et al. (2015) used three theories, namely SDL theory, resource-based theory, and organizational learning theory, in their study. Studying 210 SMEs in Valencia, which is the third major city in Spain, Fidel et al. (2015) found that CKM had a stronger relationship with marketing results than customer collaboration had with marketing results. Meanwhile, customer collaboration was seen to have an indirect influence on marketing results through CKM.

Lastly, customer collaboration is a more significant factor of CKM if compared to innovation orientation. Nuryakin and Ardyan (2018), for example, studied marketing performance in Indonesian SMEs focusing on four dimensions: (1) sales growth, (2) increasing of product offerings, (3) increasing of product values, and (4) market coverage. Only few empirical studies investigated the relationship between CKM and marketing were conducted by Soliman (2011) and Fidel et al. (2018); thus, this presents an opportunity for this paper to contribute to the literature in this area. Both studies demonstrated that there is a positive relationship between CKM and marketing performance. For this reason, the following hypothesis is presented:

Hypothesis 6a: Customer knowledge management (CKM) has a positive and significant effect on marketing performance (MK) in SME firms.

2.6.8 CKM and Financial Performance

According to Fallatah (2018), firms that generate more valuable knowledge are anticipated to have better financial performance than firms that generate less valuable knowledge. Forstenlechner et al. (2009) confirmed that knowledge management activities contributed positive financial results (fee income, productivity, and cost transparency), even for law firms. Interestingly, Zack et al.'s (2009) study found that knowledge management practices have no influence on financial performance regarding return on assets or equity and profit. Luhn, Aslanyan, Leopoldseder, and Priess (2017) studied knowledge management processes in Austrian firms and found that there was a positive relationship with financial performance in terms of economic value added, net profit, market share, and return on investment. In this paper, the following is claimed:

Hypothesis 6b: Customer knowledge management (CKM) has a positive and significant effect on financial performance (FIN) in SME firms.

2.6.9 CKM and Operational Performance

Although Ngo and O'Cass (2013) studied the indirect effect of customer participation on operational performance, only a few papers (Taherparvar et al., 2014) have studied the direct effect of CKM on operational performance. In this study, six items of operational performance were adapted from Taherparvar et al. (2014) and

Wang and Wang (2012). The operational performance indicators include the satisfaction level of customers, improvement of products and services, managing costs, responsiveness of staff, performance in the past, and the management team. Taherparvar et al.'s (2014) study confirmed that CKM has a significant positive effect on operational performance. This means that if firms adopted CKM, they would have better firm performance. Therefore, the next hypothesis is proposed:

Hypothesis 6c: Customer knowledge management (CKM) has a positive and significant effect on operational performance (OPER) in SME firms.

2.7 The Mediating Effect of Innovation Quality

Many past studies have mentioned how CKM can enhance firm performance indirectly through innovation capability (Garcia-Murillo and Annabi, 2002; Gibbert et al., 2002; Gebert et al., 2003; Taherparvar et al., 2014). Since CKM is considered as external KM associated to customers (Zhang, 2011), prior studies in the KM area could also be adopted in the CKM area (Taherparvar et al., 2014). Ferraresi et al. (2012) studied effective knowledge management (KM), strategic orientation, innovativeness, and business performance among 241 Brazilian companies investigating whether KM leads to strategic orientation to improve innovativeness and whether the three factors lead to better firm performance. Interestingly, the researchers found that no significant direct relationship exists between KM and innovativeness; however, the relationship is significant when mediated by strategic orientation. In addition, effective KM also has no direct impact on firm performance, but the relationship was significant only when mediated by strategic orientation and innovativeness. Fidel et al. (2018) found that firms can combine and utilize three strategic resources, namely CKM, customer orientation, and innovation orientation, to improve firm performance, such as innovative capabilities and marketing results. Besides a positive direct effect of CKM on financial and operational performance, Taherparvar et al.'s (2014) study also proved the mediating effect of innovation capability in the relationship between CKM and firm performance. The researchers found that there is a mediating effect of innovation capability between CKM and firm performance as well as a significant indirect effect of CKM on firm performance

through innovation capability. Based on this discussion, I posit the following hypotheses:

Hypothesis 7a: Innovation quality (INNOV) mediates the relationship between customer knowledge management (CKM) and marketing performance (MK) in SME firms.

Hypothesis 7b: Innovation quality (INNOV) mediates the relationship between customer knowledge management (CKM) and financial performance (FIN) in SME firms.

Hypothesis 7c: Innovation quality (INNOV) mediates the relationship between customer knowledge management (CKM) and operational performance (OPER) in SME firms.

2.8 Competitive Intensity: The Moderating Effect of Competitive Intensity

2.8.1 Definition of Competitive Intensity

Competitive intensity is when firms encounter competition in the industry (Jaworski & Kohli, 1993). This situation involves rivalry among firms in the same industry in which the firms' performances mostly suggests the action of industry players, leading to conditions of uncertainty and unpredictability (Auh and Menguc, 2005). According to Porter (1980), competitive intensity is reflected through price wars, intense advertising, various products and services firm offers, and extra services. Anning-Dorson (2016) contends that competitive intensity occurs when there is rivalry among business units, promotional wars, competitive actions and offers within a specific market. As there is a greater degree of competition in the market today, firms will have to deal with uncertainty more frequently. In this study, competitive intensity is referred to as the degree of competition firms are facing in the industry related to cutthroat competition, promotional wars, price competitions, competitive moves (Anning-Dorson, 2016; Grewal & Tansuhaj, 2001; Jaworski & Kohli, 1993). Competitive intensity is when the business environment involves more pressure for better products

and services at lower prices, which usually leads firms to lower profits (Jansen et al., 2006; Matusik & Hill, 1998).

2.8.2 The Moderating Effect of Competitive Intensity

Therefore, many researchers believe that CKM can be harmful when competitive intensity increases since the competitiveness in the market can decrease the knowledge resources for innovation quality especially for SME firms. In an intense competitive environment, customers can easily and quickly switch to other products and service providers. This makes SME firms' attempts to engage with their customers more difficult; therefore, CKM-innovation relationship will likely be affected. Although there is an empirical study supporting the moderating effect of competitive intensity in the relationship between knowledge management and innovativeness (Kmieciak & Michna, 2018), there is still no empirical study that has investigated the moderating effect of competitive intensity on the CKM and innovation quality. Despite the possible positive effect of CKM on innovation quality, a crucial market condition like competitive intensity may negatively moderate this relationship. Therefore, the following hypothesis is proposed:

Hypothesis 8: Higher level of competitive intensity (COMP INT) decreases the influence of customer knowledge management (CKM) on innovation quality (INNOV).

2.9 Proposed Conceptual Framework

With an extensive literature review of CKM, KOL, firm performance, and competitive intensity, the model in Figure 2.2 is proposed to show the relationships of all the variables that were examined in the study.

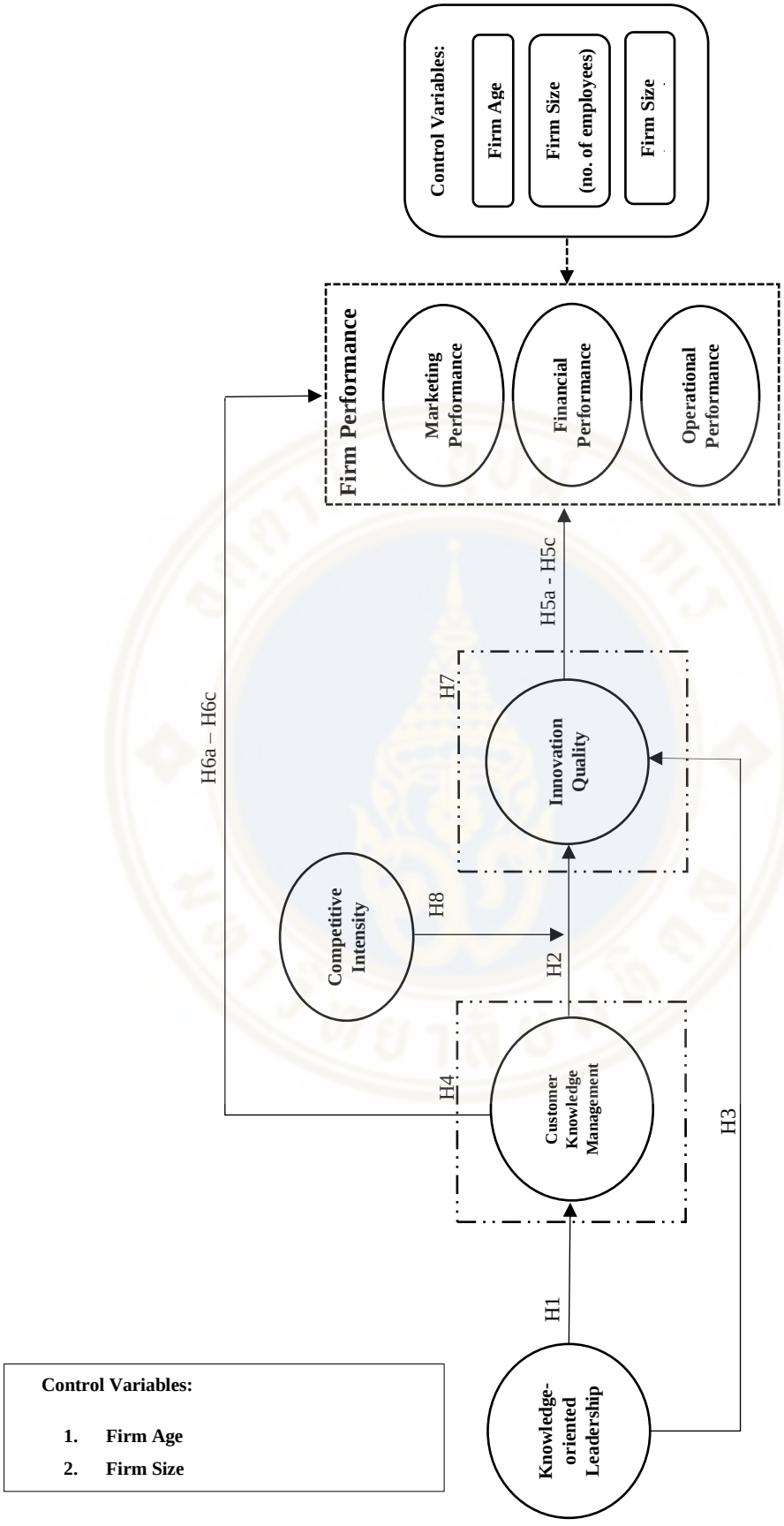


Figure 2.2 Proposed conceptual framework

CHAPTER III
METHODOLOGY

This chapter discusses the research design, and the research methodology to test the research model. This chapter is divided into two main parts: research design and data analysis. The sub-topics include questionnaire development, sample and data collection, validity and reliability, and the structural model.

3.1 Research Design

To test the research model, the researcher adopted the web-based online questionnaire survey to collect the data and investigated the hypotheses through structural equation model method.

To form the questionnaire, the researcher went through a comprehensive list of literature reviews on KOL, CKM, innovation quality, firm performance, and competitive intensity. After drafting the questionnaire, the researcher asked at least three field experts to revise the questions.

After all items are finalized, the online surveys were distributed to 30 respondents in a pilot study to test and refine the questions ensuring reliability.

3.1.1 Questionnaire Development

The questionnaire was comprised of five main parts. Background information of the respondents and the firm were asked through 10 questions in the first part. 7 items regarding knowledge-oriented leadership in the second part, 13 items concerning customer knowledge management in the third part, and 5 items concerning innovation quality in the fourth part. There are 5 items for marketing performance, 12 items for financial, and 6 items for operational performance in the last part. For competitive intensity, there are 4 items in this section. The questionnaire is shown in Appendix A.

All items were measured on the seven-point Likert scale in a positive direction. This means that the higher are the values of the responses, the more the respondents agreed with the questions. The researcher used an interval scale from 1 point (very poor) to 7 points (excellent) to assess financial performance. For the other variables, the researcher used an interval scale from 1 point (strongly disagree) to 7 points (strongly agree).

The questionnaire was submitted to the ethical committee of the Mahidol University Institutional Review Board (MU-IRB) for ethical review to confirm research ethics before the pilot study and distribution.

The questionnaires were translated into the Thai language by the researcher. To make sure that the translation is accurate, the method of back-translation method was be used. Another Thai faculty member, who specializes in marketing, revised the questionnaire. After the questionnaire has been revised, the researcher validated it by asking five managers and owners, who are not the sample, to do the questionnaire in the Thai version. This helps check for the readability and comprehension of the questionnaire. After gathering feedback from managers and owners, the questionnaire was revised accordingly. The researcher conducted a pre-test with the questionnaire with at least three field experts, who are multilingual, to revise the questions. The researcher addressed whatever changes there are before distributing the questionnaire in the pilot study.

In the pilot study, the questionnaires were distributed to 30 respondents. This helps the researcher check for ambiguity in the language that may occur in the questionnaire. The responses from 30 respondents reflected their understanding concerning the items in the questionnaire. Their responses and feedback were gathered for further revision and items were revised if necessary.

3.1.2 Sample

The data were gathered from SMEs that were previous or are existing members of Business Networking International, or BNI, in Thailand. BNI Global is the world's leading organization in business networking and referral, which brings entrepreneurs from different industries together. There are over 240,000 BNI members in more than 8,600 chapters around the world (BNI Global, n.d.). According to BNI

Global (n.d.), the organization generated $13.6 billion US dollars of revenue for its members in 2017 through referrals.

BNI Global was first established in 1985 by Mr. Ivan Misner, while BNI Thailand was first introduced in 2006 by Mr. Kollakit Thalerngnawachart. There are currently around 45 chapters and more than 1500 members in Thailand. Over 13 years, the BNI members in Thailand have been able to deliver up to 27,000 million baht in revenue for its members through referrals (BNI Thailand, n.d.). Since BNI is a trustworthy organization which gathers SMEs of different industries together and joining BNI requires several complicated criteria and assessment, it is believed that BNI is a reliable source of sample. In terms of representing Thailand, BNI has 45 chapters with over 1500 members in many provinces in Thailand, including Chiang Mai, Chiang Rai, Khon Kaen, Phuket, Korat, and Phitsanulok. Therefore, it is expected that the sample could represent SMEs in Thailand.

Since each BNI chapter comprises SME owners or managers from different professions and industries, while the organization's core values are givers gain, lifelong learning, traditions plus innovation, positive attitude, building relationships, accountability, and recognition, the researcher chose BNI members (previous and existing) as the respondents for this study. The researcher applied the purposive sampling technique in collecting the data for this study.

This study adopts a new definition of SMEs based on the redefined terms from OSMEP (2017) regarding the criteria of SMEs (employment and revenue), which are firms that (Prachachat News, 2018):

- Employ not more than 200 people in the manufacturing industry; employ not more than 100 people in the trade and service industry.
- Earn a sales revenue not more than 500 million baht in the manufacturing industry; earn a sales revenue not more than 300 million THB in the trade and service industry.

The definitions of SMEs categorized into micro, small, and medium enterprises are shown in the table below.

Table 3.1 Definition of the SME

		Micro	Small	Medium
Manufacturing	**Employees**	1 – 5 people	6 – 50 people	51 – 200 people
	Revenue per year (baht)	Not more than 1.8 million	More than 1.8 – 100 million	More than 100 – 500 million
Trade and Service	**Employees**	1 – 5 people	6 – 30 people	31 – 100 people
	Revenue (baht)	Not more than 1.8 million	More than 1.8 – 50 million	More than 50 – 300 million

3.1.3 Sample Size

To calculate the minimum sample size of this study, the sample size recommendations in PLS-SEM for a statistical power of 80% provided by Hair et al. (2016) was followed, which is the rule of thumb in the statistical power analyses for multiple regression models. Since this study has the maximum number of arrows pointing at a construct at four, at the minimum R-squared values of 0.10 and 0.25 in the structural model for a significance level of 5%, this study should have 137 and 65, observations, respectively. If the significance level is 10% at the R-squared values of 0.10 and 0.25, the sample size would be 111 and 53, respectively. If the significance level is 1% at the R-squared values of 0.10 and 0.25, the sample size would be 191 and 91, respectively. These are the sample sizes recommended in PLS-SEM for a statistical power of 80% and a specific complexity level of the PLS path model (Hair et al., 2016). In this study, the researcher uses the significance level of 5%, at the R-squared values of 0.10. Therefore, since the maximum number of arrows pointing at a construct in the measurement and structural models is four, the researcher needed 137 observations to achieve a statistical power of 80% for detecting R-squared values of at least 0.10 (with a 5% probability of error).

3.1.4 Data Collection

To meet the statistical requirements, a convenient sampling method was used for data collection. The researcher sent the web-based online questionnaire to

previous and existing BNI members, who are either the owners or managers of the enterprise. Notification in advance and reminders were made to encourage the respondents' participation.

The researcher exceeded the recommendation for minimum sample size, which is 137 observations. The web-based online questionnaire survey was administered to 731 respondents within six weeks. The researcher sent a friendly reminder three days after the first distribution to the respondents to increase the response rate and the second reminder was sent again five days after the first reminder. The whole process of data collection was approximately eight weeks. Although online questionnaire surveys were administered to 731 respondents, not every respondent answered the questionnaire survey. Out of 731 respondents, 303 answered the online questionnaire survey. Since not every response was a qualified response, the researcher cleaned the collected data by deleting responses that were not totally completed and responses that did not provide any insights. After cleaning the data, the researcher received 283 valid responses in total, which is about 38.71% valid response rate. The number of valid responses is ample for further data analysis.

3.1.5 Demographic Profiles

In this section, the demographic profile of the sample in this study is discussed. The demographic items include gender, job position, work experience, tenure, firm status, annual sales revenue, industry, firm age, and firm size.

Gender

Among the BNI respondents (n=283), 135 respondents (47.7%) were male, and 148 respondents (52.3%) were female.

Table 3.2 Gender

	Frequency	Percent
Male	135	47.7
Female	148	52.3
Total	283	100.0

Job Position

In terms of job position, the majority of the sample was the owner of the firm. Business owner (77.7%) made up the highest percentage of the sample followed by general manager (6.7%), sales manager (6.4%), and marketing manager (5.3%). The remainder of the sample were finance/ accounting manager (2.5%) and other (1.4%). Examples of other job positions include sales supervisor and assistant marketing manager.

Table 3.3 Job Position

	Frequency	Percent
Business Owner	220	77.7
General Manager	19	6.7
Sales Manager	18	6.4
Marketing Manager	15	5.3
Finance/ Accounting Manager	7	2.5
Other	4	1.4
Total	283	100.0

Work Experience

Most respondents have working experience of 6 – 10 years (35.7%) and 1 – 5 years (25.1%). Seventeen point 3 percent (17.3%) of the respondents have more than 20 years of working experience. The rest of the respondents have working experience of 11-15 years (13.3%) and 16-20 years (8.8%).

Table 3.4 Work Experience

	Frequency	Percent
1 - 5 years	71	25.1
6 - 10 years	101	35.7
11 - 15 years	37	13.1
16 - 20 years	25	8.8
More than 20 years	49	17.3
Total	283	100.0

Tenure with Current Firm

Regarding the number of years respondents have been working for their current firms, most respondents have worked for the current firm 1 – 5 years and 6 – 10 years, 44.5% and 32.5%, respectively. 9.9% of respondents have worked for the current firm 11 – 15 years, 6% more than 20 years, and 5.3% 16 – 20 years. Only 1.8% of the respondents have worked in their current firms less than 1 year.

Table 3.5 Tenure with Current Firm

	Frequency	Percent
Less than 1 year	5	1.8
1 - 5 years	126	44.5
6 - 10 years	92	32.5
11 - 15 years	28	9.9
16 - 20 years	15	5.3
More than 20 years	17	6.0
Total	283	100.0

Firm Status

In terms of firm status, most firms in this study are private limited company (48.4%), followed by enterprise/sole proprietorship (39.6%) and partnership/joint venture (12%).

Table 3.6 Firm Status

	Frequency	Percent
Enterprise/Sole proprietorship	112	39.6
Private limited company	137	48.4
Partnership/Joint venture	34	12.0
Total	283	100.0

Annual Sales Revenue

According to the new definition of SMEs from OSMEP (2017), the criteria of SME revenue should be not more than 500 million THB in the manufacturing industry and not more than 300 million THB in the trade and service industry. The results showed that most firms earned 10,000,001 - 20,000,000 THB (14.5%) followed by less than 1,800,000 THB (14.1%) and 5,000,001 - 10,000,000 THB (13.8%). Up to 11.3% of the sample earned 100,000,001 - 300,000,000 THB and 11% earned 3,000,001 - 5,000,000 THB. The remainder of the respondents earned 300,000,001 - 500,000,000 THB and 50,000,001 - 100,000,000 THB, at 5.7% and 4.2% respectively.

Table 3.7 Annual Sales Revenue

	Frequency	Percent
Less than 1,800,000 THB	40	14.1
1,800,001 - 3,000,000 THB	35	12.4
3,000,001 - 5,000,000 THB	31	11.0
5,000,001 - 10,000,000 THB	39	13.8
10,000,001 - 20,000,000 THB	41	14.5

Table 3.7 Annual Sales Revenue (cont.)

	Frequency	Percent
20,000,001 - 50,000,000 THB	37	13.1
50,000,001 - 100,000,000 THB	12	4.2
100,000,001 - 300,000,000 THB	32	11.3
300,000,001 - 500,000,000 THB	16	5.7
Total	283	100.0

Industry

For industry, the sample group has a similar percentage in all industries ranging from 2.5% – 12%. Although most firms fall under Other (12.7%), many firms are Business Consulting (10.2%). Apparel & Fashion Products and Health, Wellness & Beauty have the same percentage at 8.8% while Food and Beverages has 8.5%. The remaining industries have less than 8% which include Automotive and Logistics (7.8%), Education and Training (7.4%), Manufacturing (7.1%), Equipment and Building Materials (7.1%), Media and Marketing (5.3%), IT Solutions (5.3%), Real Estate (4.6%), Architecture, Interior, and Décor (3.9%), and Hotel and Travel (2.5%).

Table 3.8 Industry

	Frequency	Percent
Apparel & Fashion products	25	8.8
Health, Wellness and Beauty	25	8.8
Food and Beverages	24	8.5
IT Solutions	15	5.3
Business Consulting	29	10.2
Manufacturing	20	7.1
Automotive and Logistics	22	7.8
Media and Marketing	15	5.3

Table 3.8 Industry (cont.)

	Frequency	Percent
Real Estate	13	4.6
Equipment and Building Materials	20	7.1
Architecture, Interior, and Decor	11	3.9
Hotel and Travel	7	2.5
Education and Training	21	7.4
Other	36	12.7
Total	283	100.0

Firm Age

Concerning firm age, respondents were asked to indicate the number of years the firm has been established. Most firms were established 1 – 5 years (35%), 6 – 10 years (25%), and more than 20 years (22%). Other firms were established 16 – 20 years and 11 – 15 years, at 10% and 8% respectively.

Table 3.9 Firm Age

	Frequency	Percent
1 - 5 years	99	35%
6 - 10 years	71	25%
11 - 15 years	23	8%
16 - 20 years	29	10%
More than 20 years	61	22%
Total	283	100.0

Firm Size

According to OSMEP's (2017) criteria of SME size, SME firms should be employing not more than 200 people in the manufacturing industry and not more than 100 people in the trade and service industry. In the sample, most firms employ 6 - 30 people (45.9%) and 1 - 5 people (29.3%). Among the respondents in this sample, 12%

employ 51 - 100 people, 8.5% employ 31 - 50 people, and 4.2% employ 101 - 200 people.

Table 3.10 Firm Size

		Frequency	Percent
Valid	1 - 5 people	83	29.3
	6 - 30 people	130	45.9
	31 - 50 people	24	8.5
	51 - 100 people	34	12.0
	101 - 200 people	12	4.2
	Total	283	100.0

3.1.6 Measures and Variables

The theorized model includes constructs related to KOL, CKM, innovation quality, marketing performance, financial performance, operational performance, and competitive intensity. Firm age, firm size (no. of employees), and firm size (revenue) are the three control variables in this study.

Independent and Dependent Variables

Knowledge-oriented Leadership

To assess knowledge-oriented leadership, seven items were adapted from Donate and Sánchez de Pablo (2015), who developed the items from the KM and leadership literature measures. Therefore, the items involve the aspects of the interaction between the leader and subordinates in the firm and how the leader encourages a learning environment through his or her leadership. The items also consider situations when the leader encourages accountability among team members and when the leader is a role model for sharing and utilizing knowledge (Donate & Sánchez de Pablo, 2015; Nonaka & Takeuchi, 1995). The items also assess the role of leaders when they evaluate their team members based on tolerating mistakes and encouraging learning instead of outcomes, creating expectations concerning the quality of the work to promote innovativeness, leading by being a role model, and rewarding team members who participate in distributing and applying new knowledge (Donate & Sánchez de Pablo,

2015). The items use 7-point Likert scales anchored with "strongly disagree" and "strongly agree."

Customer Knowledge Management

In terms of customer knowledge management, SMEs must demonstrate knowledge about customers, knowledge for customers, and knowledge from customers (Garcia-Murillo & Annabi, 2002; Gibbert et al., 2002; Gebert et al., 2003; Taherparvar et al., 2014), as indicted earlier. With knowledge from customers and knowledge about customers, SMEs would be able to realize customers' altering needs. With knowledge from customers, at the same time, firms would be able to better understand the market, come up with new ideas, and improve existing products and services (Garcia-Murillo and Annabi, 2002). With knowledge for customers, SMEs would be able to communicate essential information to their customers (Taherparvar et al., 2014). The CKM scale adapted in this study was developed by Taherparvar et al. (2014), who adopted the work from Garcia-Murillo and Annabi (2002), Gibbert et al. (2002), and Gebert et al. (2003).

There are three parts of CKM in the questionnaire as indicated above. In the first part regarding knowledge about customer, five out of seven items were adapted from Taherparvar et al. Knowledge about customer was collected to understand if firms were aware of the customers' backgrounds and needs. The items included the extent to which the firm has been informed about the customer's background, number of referrals, requirements and prerequisites, demands and requests, and problems.

In terms of knowledge for customer, four items were adapted from Taherparvar et al. Knowledge for customer reflects whether the firm provides all necessary information for its customers. The questions incorporate the extent to which the firm provides information about current products and services for customers, information about new products and services for customers, the benefits of new products and services for customers, and information to help customers make better decisions.

In the last part of CKM, four items were adopted to examine knowledge from customer. Knowledge from customer is investigated to see if firms acquired new knowledge and opinions from customers through interaction. The questions include the extent to which the firm asks customers about current service quality, the competitors' service quality, their required services, and customers' ideas for developing products

and services. All of the items in these scales were measured with 7-point Likert scales anchored with “strongly disagree” and “strongly agree.”

Innovation Quality

To measure innovation quality, this study adapted the items from Taherparvar et al. (2014) and Wang and Wang (2012). All five items were measured through 7-point Likert scales anchored with “strongly disagree” and “strongly agree.” The items include how well a firm generates new ideas, develops new product and service, launches new product and service, uses new technology and equipment, and solves customers’ problems.

Marketing Performance

Although some authors consider market share as a non-financial indicator used in strategic marketing (Baker & Sinkula, 1999), the marketing performance in this study measures the extent firms achieve their goals and objectives in terms of the market. To measure marketing performance, Fidel et al.’s (2018), adopted Vorhies and Morgan’s (2005), and Soliman’s (2011) scale were adapted. The items in this study consist of market share, sales revenue, acquiring new customers, and retaining existing customers. Each question uses 7-point Likert scales anchored with “strongly disagree” and “strongly agree.”

Financial Performance

Examples of widely-used financial indicators are sales revenue and profit, as they show the amount of income that firms receive directly from customers (Lin & Chen, 2007; Newbert, 2008; Ngo & O’ Cass, 2013). Although Taherparvar et al. (2014) studied CKM and firm financial performance, the study was in the context of the bank industry. Therefore, their financial performance items are not suitable for the present study. Here the financial performance indicators from Inman et al. (2011) were adapted, which reflect sales, return on investment, profit, and profit growth. Other two financial indicators items: business growth (Khamwon & Speece, 2005) and cash flow (Day & Fahey, 1988) were also adapted. The items were compared to the overall performance of the firm in the past two years and the average competitor in the past two years, and the items were measured using 7-point Likert scales anchored with “very poor” and “excellent.”

Operational Performance

Operational performance was measured through the 6-item "firm's operational performance" scale developed by Taherparvar et al. (2014) and Wang and Wang (2012). The items include customer satisfaction, product development, cost management, service quality through responsiveness, past performance, and management. Each respondent was asked to rate firm performance compared to the main competitors using operational performance metrics. The items use 7-point Likert scales anchored with "strongly disagree" and "strongly agree."

Competitive Intensity

To assess competitive intensity, four items were adapted from Grewal and Tansuhaj (2001), who adapted the items from Jaworski and Kohli's (1993) work. This study measures competitive intensity through self-report data like other studies in the past (Anning-Dorson, 2016; Chan et al., 2012; Feng et al., 2019; Kmieciak & Michna, 2018; Ndubisi et al., 2020). Therefore, secondary data was not collected since data collected from the respondents was anonymous. The adpated items of competitive intensity reflect cutthroat competition, promotion wars, strong price competition, and new competitive moves. Each item uses 7-point Likert scales anchored with "strongly disagree" and "strongly agree."

Control variables

Firm Size (no. of employees and revenue)

The relationship among KOL, CKM, innovation quality, and firm performance (marketing performance, financial performance, and operational performance) should be analyzed, while controlling the traits of the firm such as firm age and firm size. In the present research model, firm age and firm size were included as control variables since they were found to affect firm performance. Prior empirical studies supported the claim that firm size is one of the most influencing factors on firm performance (Becherer et al., 2003; Laforet, 2009; Nuryakin & Ardyan, 2018). The value of firm size is the number of employees and revenue.

Firm Age

Another contextual factor that was controlled for is firm age. Although Nuryakin and Ardyan (2018) empirically found that firm age has no effect on SMEs marketing performance, Rosenbusch et al. (2011) claimed that the age of the firm is the

contextual factor of a firm's performance. Therefore, this study included firm age as the control variable. The value of firm age was measured according to the number of years that the firm has been in business.

Other variables

Other variables were measured to reflect the respondents' demographics. Standardized questions were adopted namely gender (male = 1, female = 2). Other demographic variables were coded categorically, job position (Business Owner = 1, General Manager = 2, Sales Manager = 3, Marketing Manager = 4, Finance/Accounting Manager = 5, Other = 6), working experience (Less than 1 year = 1, 1-5 years = 2, 6-10 years = 3, 11-15 years = 4, 16-20 years = 5, More than 20 years = 6), tenure (Less than 1 year = 1, 1-5 years = 2, 6-10 years = 3, 11-15 years = 4, 16-20 years = 5, More than 20 years = 6), firm status (Enterprise/Sole proprietorship = 1, Private limited company = 2, Partnership/Joint venture = 3), annual sales revenue, sector of industry, and industry. The items selected to measure the constructs are summarized in Table 3.1 below.

Table 3.11 Constructs Measurement and Items

Construct	*Items/ Indicators*	*Authors*
Knowledge-oriented Leadership (KOL)	Our management, …creates a responsible employee and teamwork environment. (KOL1) … is open and tolerates mistakes. (KOL2) …facilitates to achieve firm's objectives. (KOL3) …promotes learning from experience. (KOL4) …behaves as advisers and monitor. (KOL5) …promotes the knowledge acquisition. (KOL6) …rewards employees. (KOL7)	Adapted from (Donate & Sánchez de Pablo, 2015)

Table 3.11 Constructs Measurement and Items (cont.)

Construct	*Items/ Indicators*	*Authors*
Customer Knowledge Management (CKM)	Our firm has been informed about …customer's background. (CKM_KAB1) …number of customer's referrals. (CKM_KAB2) …customer's requirements and prerequisites. (CKM_KAB3) …customer's demands and requests. (CKM_KAB4) …customer's problems. (CKM_KAB5) Our firm provides information …about current products and services. (CKM_KFO1) …about new products and services. (CKM_KFO2) …about benefits of new products and services. (CKM_KFO3) …so, customers make better decisions. (CKM_KFO4) Our firm asks customers about …current service quality. (CKM_KFR1) …competitor's service quality. (CKM_KFR2) …their required services. (CKM_KFR3) Gaining customer's ideas affects the development of the new products and services. (CKM_KFR4)	Adapted from Garcia-Murillo & Annabi (2002); Gibbert et al. (2002); Gebert et al. (2003); Taherparvar et al. (2014)
Innovation Quality (INNOV)	Our firm has good performance in … generating new ideas. (INNOV1) … developing new product or service. (INNOV2) …launching new product or service. (INNOV3) … using new technology and equipment. (INNOV4) … solving customers' problems. (INNOV5)	Adapted from (Taherparvar et al., 2014; Wang & Wang 2012)
Marketing performance (MK)	Compared to our main competitors, our firm has higher …growth of our market share (FIRM_MK1) …growth of our sales revenue (FIRM_MK2) …acquisition of new customers (FIRM_MK3) …increase in sales to existing customers (FIRM_MK4) … customer satisfaction (FIRM_MK5)	(Adapted from Fidel et al., 2018; Soliman, 2011)

Table 3.11 Constructs Measurement and Items (cont.)

Construct	*Items/ Indicators*	*Authors*
Financial performance (FIN)	In the past two years, Sales (FIRM_FIN1) Return on Investment (FIRM_FIN2) Profit (FIRM_FIN3) Profit Growth (FIRM_FIN4) Business Growth (FIRM_FIN5) Cash Flow (FIRM_FIN6) Compared with competitor in the past two years, Sales (FIRM_CFIN1) Return on Investment (FIRM_CFIN2) Profit (FIRM_CFIN3) Profit Growth (FIRM_CFIN4) Business Growth (FIRM_CFIN5) Cash Flow (FIRM_CFIN6)	FIRM_FIN1 & FIRM CFIN1 Adapted from Lin & Chen, 2007; FIRM_FIN2, FIRM_FIN3, FIRM_FIN4, FIRM_CFIN2, FIRM_CFIN2, FIRM_CFIN4 Adapted from (Inman et al. 2011; Venkatraman & Ramanujam, 1986) FIRM_FIN5) FIRM_CFIN5) Adapted from Khamwon & Speece (2005) FIRM_FIN6) FIRM_CFIN6) Adapted from Day and Fahey (1988)

Table 3.11 Constructs Measurement and Items (cont.)

Construct	*Items/ Indicators*	*Authors*
Operational performance (OPER)	Compared to our main competitors, our firm has ...higher customer satisfaction. (FIRM_OPER1) …development of products and services. (FIRM_OPER2) …superior cost management. (FIRM_OPER3) …superior responsiveness of our firm. (FIRM_OPER4) …superior past performance of our firm. (FIRM_OPER5) …superior management. (FIRM_OPER6)	Adapted from Wang & Wang (2012); Taherparvar et al. (2014);
Competitive Intensity (COMP_INT)	In our industry, …competition is cutthroat. (COMP_INT1) …there are many "promotion wars". (COMP_INT2) …strong price competition is well known. (COMP_INT3) …we hear of a new competitive move almost every day. (COMP_INT4)	Adapted from (Grewal &; Tansuhaj, 2001; Jaworski &; Kohli, 1993)

3.2 Research analysis

After the data were collected from the sample group, an analysis was made. Data analysis is when researchers look for meaning from the data (Spradley 1980). To assess the research model, the researcher used partial least squares (PLS), which is a multivariate analysis technique, to test the structural models (Barroso et al., 2010). The reason for using PLS is because it is suitable when many latent variables are studied, but when the size of the sample is not big (Chin, 2010). In this part, the statistical method and the data analysis will be explained in detail.

3.2.1. Statistical Method

Structural equation modelling is one of the most advanced practical statistical analysis techniques recently used in the social science field. In this study, SEM was used to assess the psychometric properties of the scales and to test the research model and hypotheses. SEM is a class of multivariate techniques that merge factor analysis and regression (Hair et al., 2016). Multivariate analysis includes using statistical methods that simultaneously examine many variables. In this study, the

variables represent measurements related to managers and owners in SME firms obtained from surveys, or primary data. The SEM can perform confirmatory factor analysis and multiple regression analysis simultaneously. In other words, it enables the researcher to test the relationships among the measured variables and latent variables as well as among the latent variables at the same time. Since this study involves multiple latent variables such as KOL, CKM, and firm performance, SEM is a suitable statistical analysis technique for the study. This technique is helpful since the goal is to describe all the relationships of the constructs. In addition, SEM can test various interrelated relationships of the latent variables or unnoticed concepts while adjusting for error measurements in the estimation process (Chin, 1998; Hair et al., 2006). SEM is a second-generation technique that overcomes the weaknesses of first-generation methods such as primarily exploratory and primarily confirmatory technique (Hair et al., 2016).

Although the most widely-used method is covariance-based SEM (CB-SEM), variance-based partial least squares SEM (PLS-SEM or PLS path modelling) has become a vital research method today. Many leading journals in the marketing and strategic management disciplines use PLS-SEM, for example, the MIS Quarterly (Hair et al., 2016). PLS-SEM has many advantages over CB-SEM, especially in social science research. According to Reinartz et al. (2009), "PLS requires only half of the observations to achieve a given level of statistical power compared to methods based on covariance with maximum likelihood" (p. 334). It is also useful when the sample size is small, data are non-normally distributed, model relationships are estimated, and the model is complex with many indicators such as mediator and moderator (Hair et al., 2016). PLS-SEM can easily cope with reflective measurement models, formative measurement models, and single-item constructs, with no identification problems, making it applicable in many research situations (Hair et al., 2016). Reinartz et al. (2009) stated that "PLS should be the method of choice for all situations in which the number of observations is below 250" (p. 342).

Furthermore, PLS-SEM is appropriate for this study since it is mainly used to develop a theory in exploratory research, as it is primarily exploratory while CB-SEM is primarily confirmatory. This means that the model helps to predict and does not support any existing theory. It does this by concentrating on clarifying the variance in the dependent variables when examining the model (Hair et al., 2016). To sum up, CB-

SEM is confirmatory and useful when examining the hypotheses of existing theories and concepts, while PLS-SEM is exploratory and useful when the researcher is looking for latent patterns in the data when there is no or little previous knowledge on how the variables are associated (Hair et al., 2016).

An example of a related paper that used PLS-SEM is Fidel et al.'s (2018) study, which examines the role of innovation orientation as a mediator between customer orientation and CKM in SMEs. Another paper that used PLS-SEM was by Vukšić et al. (2015), who explored the link between knowledge management processes and customer relationship management (CRM) performance. Another empirical study that used PLS was conducted by Mehdibeigi et al. (2016), who studied the effect of customer knowledge management on organizational agility and effectiveness. From these examples, it is evident that PLS-SEM is widely used in the marketing research field, in studies related to CKM, and in the SME context.

3.2.2. Data analysis

Following Chin (2010), the researcher analysed the PLS model using a two-step approach. First, the researcher assessed the reliability and validity of the measurement model, which specifies the relationships between the observable variables and theoretical concepts. Second, the study assessed the structural model to examine how the causal relationships identified in the proposed model are related with the collected data. The researcher used a single software package, SmartPLS, which is available for download at http://www.smartpls.de. (Ringle et al., 2005).

Measurement Model Evaluation

In the first step, three kinds of validity were evaluated, which include content validity, convergent validity, and discriminant validity. To ensure content validity, the researcher used measurement items adapted from existing scales. The researcher also conducted a pilot study with 30 respondents before fully launching the questionnaire survey. To make sure that convergent validity exists, the researcher assessed it by testing Cronbach's alphas, composite reliability, and average variance extracted (AVE). The values that are accepted in the literature are 0.70, 0.70, and 0.50 respectively (Fornell & Larcker, 1981a). To test discriminant validity, the researcher compared the square root of the AVE with the correlations among the latent construct

constructs before analysing the relationships among the constructs and between indicators and constructs (Fornell & Larcker, 1981).

Structural Model Evaluation

After the construct measures are confirmed as reliable and valid, the researcher assessed the structural model results. Following Hair et al. (2016), the researcher assessed the structural model regarding collinearity issues, the significance and relevance of the structural model relationships, the level of R-squared, the effect sizes of f-squared, the predictive relevance q-squared, and the q-squared effect sizes. The study also performed a bootstrap analysis to estimate the significance of the path coefficients (Chin, 1998). To assess how well a model is performing in the PLS-SEM analysis, the researcher looked at the values of the path coefficients, their level of significance, and the R-squared values (Chin, 2010). Unlike the CB-SEM approach, PLS has no appropriate goodness-of-fit measures for the models (Hulland, 1999). Therefore, the structural model was evaluated by assessing the R-squared values and the size of the structural path coefficients. To become significant and meaningful, the path coefficients should be 0.20 or above, but ideally more than 0.30 (Chin, 1998).

CHAPTER IV
RESULTS

4.1 Results

To test the hypotheses simultaneously, I used a variance-based structural equation modeling technique known as PLS-SEM. When testing moderation, PLS-SEM analyses moderated relationships adopting continuous interaction terms by multiplying the indicators of the interacting factors instead of comparing dichotomized groups (Chin et al., 2003) First, I assessed the psychometric properties of the measurement instrument: item reliability, internal consistency reliability, convergent validity, and discriminant validity (Fornell & Larcker, 1981).

4.1.1 Analysis of the Measurement Model

In my model, I had KOL, CKM, innovation quality, competitive intensity, marketing performance, financial performance, operational performance, firm age, and firm size as the indicators. These indicators were inserted into the Smart PLS 2.0 application (Ringle et al., 2005). I followed the approach of Fornell and Larcker (1981b) where the measurement model would be examined through the item reliability, construct reliability, convergent validity, and discriminant validity.

Item Reliability

To measure item reliability, the values of Cronbach alpha were used. The values help describe how all items in the test evaluate the same concept or construct and how each item is related within the test (Tavakol & Dennik, 2011). The higher the value of alpha, the more the items are correlated. Therefore, Cronbach's Alpha was used to assess the reliability test of the summated scale, or item reliability in this study (Hair et al., 2016). Items with the alpha coefficient below 0.60 are considered as items with low factor loading and undesirable (Churchill & Peter, 1984). Although Hair et al. (2016) suggested that factor loading of 0.40 is acceptable in exploratory studies, this study used 0.60 as a threshold (Hair et al., 2016). As Nunnally (1978) claimed that an alpha value

of 0.60 is considered as acceptable, two items in CKM (CKM_KAB2, and CKM_KFR2) were dropped out of the construct. After dropping out two items from CKM, the remaining items were presented in the Measurement Model. At this point, Cronbach's alpha coefficient of all items has a minimum of 0.6, which is acceptable (Nunnally, 1978). After deleting some items, the remaining items in the following table and figure show that loadings are more than 0.60 as recommended.

Internal Consistency Reliability

To measure internal consistency reliability, or construct reliability, I investigated Cronbach's alpha and composite reliability. The measurement model table shows that Cronbach's alpha coefficient of each construct ranged from 0.853 to 0.950, meaning all constructs are acceptable according to the recommended threshold value of 0.70 (Fornell & Larcker, 1981a).

Since Hair et al. (2016) claimed that Cronbach's alpha is responsive to the number of items in the same construct and underestimate internal consistency reliability, composite reliability is also considered in this study. In terms of composite reliability, all values ranged from 0.896 to 0.956, which is more than the recommended value of 0.70; hence, the constructs in my model are acceptable (Hair et al., 2016). This means all seven constructs namely KOL, CKM, innovation quality, marketing performance, financial performance, operational performance, and competitive intensity are reliable measures.

Convergent Validity

To assess convergent validity, the minimum threshold of average variance extracted (AVE) should be more than 0.50 (Bagozzi & Yi, 1988). In the measurement model table, AVE was in the range of 0.510 to 0.769, which exceeded the minimum threshold value of 0.50, confirming convergent validity.

Table 4.1 Measurement Model

Latent Variable	Indicators	Loads	Cronbach's Alpha	Composite Reliability	Convergent validity (AVE)
Customer Knowledge Management	CKM_KAB1	0.624	0.903	0.919	0.510
	CKM_KAB3	0.708			
	CKM_KAB4	0.683			
	CKM_KAB5	0.680			
	CKM_KFO1	0.734			
	CKM_KFO2	0.751			
	CKM_KFO3	0.797			
	CKM_KFO4	0.773			
	CKM_KFR1	0.743			
	CKM_KFR3	0.724			
	CKM_KFR4	0.620			
Competitive Intensity	COMP_INT1	0.789	0.853	0.898	0.689
	COMP_INT2	0.881			
	COMP_INT3	0.802			
	COMP_INT4	0.844			
Firm Age	FIRM_AGE	1.000	1.000	1.000	1.000
Financial Performance	FIRM_CFIN1	0.804	0.950	0.956	0.647
	FIRM_CFIN2	0.827			
	FIRM_CFIN3	0.852			
	FIRM_CFIN4	0.880			
	FIRM_CFIN5	0.870			
	FIRM_CFIN6	0.845			
	FIRM_FIN1	0.785			
	FIRM_FIN2	0.706			

Notes: Items CKM_KAB2, and CKM_KFR2 were dropped from the scale after measurement purification.

Table 4.1 Measurement Model (cont.)

Latent Variable	Indicators	Loads	Cronbach's Alpha	Composite Reliability	Convergent validity (AVE)
	FIRM_FIN3	0.738			
	FIRM_FIN4	0.778			
	FIRM_FIN5	0.811			
	FIRM_FIN6	0.736			
Marketing Performance	FIRM_MK1	0.783	0.861	0.900	0.643
	FIRM_MK2	0.797			
	FIRM_MK3	0.787			
	FIRM_MK4	0.820			
	FIRM_MK5	0.821			
Operational Performance	FIRM_OPER1	0.683	0.899	0.922	0.666
	FIRM_OPER2	0.798			
	FIRM_OPER3	0.854			
	FIRM_OPER4	0.862			
	FIRM_OPER5	0.892			
	FIRM_OPER6	0.791			
Firm Size	FIRM_SIZE	1.000	1.000	1.000	1.000
Innovation Quality	INNOV1	0.908	0.924	0.943	0.769
	INNOV2	0.923			
	INNOV3	0.898			
	INNOV4	0.872			
	INNOV5	0.778			

Notes: Items CKM_KAB2, and CKM_KFR2 were dropped from the scale after measurement purification.

Table 4.1 Measurement Model (cont.)

Latent Variable	Indicators	Loads	Cronbach's Alpha	Composite Reliability	Convergent validity (AVE)
Knowledge Oriented Leadership	KOL1	0.837	0.907	0.927	0.645
	KOL2	0.841			
	KOL3	0.863			
	KOL4	0.829			
	KOL5	0.773			
	KOL6	0.777			
	KOL7	0.688			

Notes: Items CKM_KAB2, and CKM_KFR2 were dropped from the scale after measurement purification.

Discriminant Validity

Before analyzing the relationships among the constructs and between indicators and constructs, I calculated the square roots of AVEs and compared them with the correlations among the latent constructs to test discriminant validity (Fornell & Larcker, 1981). As shown in the table below, the square roots of AVEs in diagonal are more than the 0.7 minimum threshold and all values are more than the correlations among the latent constructs. In other words, the square root of each construct's AVE is more than its correlation with other constructs, indicating discriminant validity.

Table 4.2 Descriptive Statistics and Correlation Matrix

	AGE	CKM	COM INT	FIN	INNOV	KOL	MK	OPER	SIZE - EMPLOYEE	SIZE - REVENUE
AGE	***1.000***									
CKM	-0.026	***0.714***								
COM INT	0.060	0.312	***0.830***							
FIN	-0.030	0.443	0.234	***0.804***						
INNOV	-0.135	0.526	0.231	0.568	***0.877***					
KOL	-0.103	0.692	0.244	0.396	0.480	***0.803***				
MK	0.042	0.583	0.277	0.704	0.506	0.468	***0.802***			
OPER	-0.027	0.487	0.181	0.710	0.638	0.387	0.684	***0.816***		
SIZE - EMPLOYEE	0.520	0.038	0.080	0.101	0.003	0.006	0.179	0.106	***1.000***	
SIZE - REVENUE	0.427	0.058	0.109	0.179	0.001	0.018	0.126	0.165	0.550	***1.000***

After assessing the measurement model and all psychometrics properties, the item reliability, internal consistency reliability, convergent validity, and discriminant validity of all constructs confirm that they are strong enough to be used for assessing the structural model.

Since this study uses self-report data where variables were measured with the same instrument, the concern of common method bias (CMB) may arise (Podsakoff et al., 2003). To address this issue, the researcher ensured the anonymity of the respondents and the confidentiality of the information collected. Although common method bias does not seem to be a threat to the validity of the results when using PLS (Chin et al., 2012), I decided to detect the possibility of having common method bias by using the Lindell and Whitney (2001) marker variable assessment test. The results showed that all significant effects of the independent variables and their effects on the dependent variables, the coefficients of the corresponding bivariate correlations are still significant at $p < 0.05$ when partialing out an unrelated marker variable (Lindell & Whitney, 2001). This means the common method effect is not a threat to the results of this study.

4.1.2 Analysis of the Structural Model

For the structural model, the bootstrapping method with 500 randomly generated sub-samples was used in this study to determine the measurement and structural level of statistical significance of coefficients. To assess nomological validity, structural evaluation was conducted to evaluate the size and significance path coefficients and R-squared values of dependent variables (Hair et al., 2016). Apart from the moderating effect of competitive intensity, which has a negative sign, all hypotheses have a positive sign in predicting the relationships; therefore, a one-tailed test was adopted. For the control variables, a two-tailed test is suggested (Kock, 2015).

The results in figure 4.1 indicate that all independent variables explained the dependent variables well. R-square of 0.479 in CKM indicates that 47.9% of the variance in CKM was explained by the independent variable - KOL. Firm performance variables were explained by the latent variables: R^2 for marketing performance = 0.426, R^2 for financial performance = 0.383, and R^2 for operational performance = 0.464. In other words, the variables explain 42.6% of the variance in marketing performance,

38.3% of the variance in financial performance, and 46.4% of the variance in operational performance.

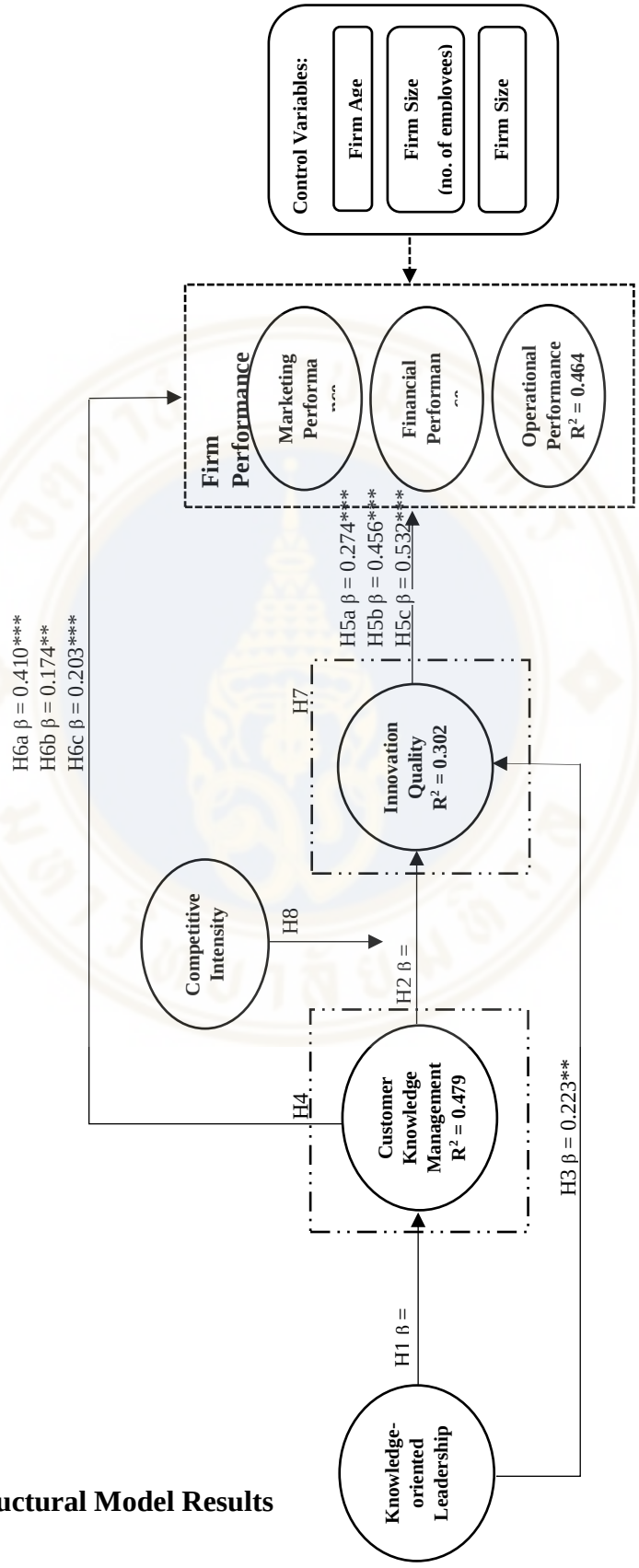


Figure 4.1 Structural Model Results

Since the significance of the model coefficient is determined by t-values, the structural model table shows the t-statistics of path coefficients. The positive and significant effect of KOL ($\beta = 0.692$, $p < .001$) on CKM supports Hypothesis 1, which claimed that knowledge-oriented leadership has a positive and significant effect on customer knowledge management in SME firms. For Hypothesis 2 (customer knowledge management has a positive and significant effect on innovation quality in SME firms), the result indicates that the hypothesis is supported ($\beta = 0.371$, $p < .001$). Hypothesis 3 is supported with a positive and significant effect of KOL ($\beta = 0.223$, $p < .01$) on innovation quality.

In terms of innovation quality and firm performance, there are three hypotheses: marketing, financial, and operational performance. For innovation and marketing performance, I found that innovation quality significantly, positively affects marketing performance. Therefore, Hypothesis 5a is supported ($\beta = 0.274$, $p < .001$). Regarding innovation quality and financial performance, my result shows that innovation quality has a positive influence on financial performance and Hypothesis 5b is supported ($\beta = 0.456$, $p < .001$). For the last relationship between innovation quality and firm performance, my result proves that innovation quality has a positive relationship with operational performance supporting Hypothesis 5c ($\beta = 0.532$, $p < .001$).

From the study's findings, customer knowledge management and the three firm performance indicators show that there are positive significant relationships between the variables. In terms of CKM and marketing performance, Hypotheses 6a is supported where the t values of the relationship are at 6.684 ($\beta = 0.410$, $p < .001$). For Hypothesis 6b, CKM and financial performance also shows a positive significant effect supporting the hypothesis ($\beta = 0.174$, $p < .01$). Regarding CKM and operational performance, the study's result also indicates that CKM positively affects operational performance. Therefore, Hypothesis 6c is supported ($\beta = 0.203$, $p < .001$).

The results also show that innovation quality has the greatest influence on operational performance among the firm performance variables. On the other hand, CKM has the greatest influence on marketing performance among the firm performance variables.

Table 4.3 Structural Model

Hypotheses	Relationship between constructs	Coefficients	T Statistics	Results
H1	KOL → CKM	0.692***	19.399	Supported
H2	CKM → INNOV	0.371***	4.467	Supported
H3	KOL → INNOV	0.223**	2.769	Supported
H5a	INNOV → MK	0.274***	4.785	Supported
H5b	INNOV → FIN	0.456***	8.080	Supported
H5c	INNOV → OPER	0.533***	10.286	Supported
H6a	CKM → MK	0.410***	6.684	Supported
H6b	CKM → FIN	0.174**	2.470	Supported
H6c	CKM → OPER	0.203***	3.432	Supported
Control variables	AGE → MK	0.003	0.054	
	AGE → FIN	-0.052	1.047	
	AGE → OPER	-0.028	0.572	
	SIZE – EMP → MK	0.150**	3.220	
	SIZE – EMP → FIN	0.020	0.346	
	SIZE – EMP → OPER	0.030	0.755	
	SIZE – REV → MK	0.010	0.187	
	SIZE – REV → FIN	0.173**	3.003	
	SIZE – REV → OPER	0.151**	2.917	

Notes: *p < 0.05; **p < 0.01; ***p < 0.001

(one-tailed test for hypotheses and two-tailed test for control variables).

4.1.3 Mediation Analysis

After analysing all direct relationships between independent variables and dependent variables, the indirect effects were evaluated. I applied bootstrap routines to test the significance of the indirect effect. In Smart-PLS, the bootstrap routines provide the direct effects; however, I needed to compute the bootstrapping results for the combination of the indirect effect (a × b) using Microsoft Excel. I used the standard error of a × b obtained from the bootstrap statistic to determine the pseudo t-test and assess whether the indirect effect a × b is significant or not. From the pseudo t-value, I also calculated the p value (Nitzl et al., 2016). From these calculations, the indirect effects are demonstrated in Table 4.4.

To explain 'why' in the model, the research tested the mediation effect and followed Zhao et al. (2010) to determine (1) the significance of the indirect effect and (2) the type of mediation. If there is no indirect effect, there is no mediation in the relationship. However, if the indirect effect is significant, I will assess further whether the direct effect is significant or not. With a significant direct effect, the relationship is partially mediated. On the other hand, if the direct effect is not significant, the mediation will be considered as a full mediation, where only indirect effect exists (Hair et al., 2016; Zhao et al., 2010).

Table 4.4 demonstrates that there is a significant indirect effect in the relationship. Since Table 4.3 indicates that there is also significance of the direct effect between KOL and innovation quality, CKM has a partial mediating effect in the relationship between KOL and innovation quality; therefore, H4 is supported ($\beta = 0.257$, $p < .001$). This means innovation quality is more effective due to KOL when having CKM as a mediator.

For other mediations, this study explored the mediating effect of innovation quality in the relationship between CKM and firm performance (marketing, financial, and operational performance). From Table 4.4, the results indicate that there are significant indirect effects of innovation quality in all relationships between CKM and three firm performance constructs. Table 4.3 also shows that there are significant direct effects between CKM and firm performance (marketing, financial, and operational performance). This means innovation quality possesses a partial mediating effect in the relationship between CKM and all three dimensions of firm performance. H7a is

supported (β = 0.102, p < .01) where innovation quality plays a partial mediating effect in the relationship between CKM and marketing performance. Additionally, there is also a partial mediating effect of innovation quality in relationship between CKM and financial performance supporting H7b (β = 0.169, p < .001). Lastly, H7c is supported (β = 0.198, p < .001); innovation quality partially mediates the relationship between CKM and operational performance. In other words, innovation quality partially mediates in the relationship between CKM and marketing, financial, and operational performance. This means firm performance is more effective due to CKM when having innovation quality as a mediator. In summary, all hypotheses are accepted. Partial mediation exists in all hypotheses since the results show significant indirect and direct effects.

Table 4.4 Structural Model: Mediation

H:	Relationship between constructs	Direct effect	Indirect Effect	T statistics	Results	Mediation
H1	KOL → CKM	0.692***		19.399		
H2	CKM → INNOV	0.371***		4.467		
H3	KOL → INNOV	0.223**		2.769		
H4	KOL → CKM → INNOV		0.257***	4.354	Supported	Partial
H5a	INNOV → MK	0.274***		4.785		
H5b	INNOV → FIN	0.456***		8.080		
H5c	INNOV → OPER	0.533***		10.286		
H6a	CKM → MK	0.410***		6.684		
H6b	CKM → FIN	0.174**		2.470		
H6c	CKM → OPER	0.203***		3.432		
H7a	CKM → INNOV → MK		0.102**	3.273	Supported	Partial
H7b	CKM → INNOV → FIN		0.169***	3.918	Supported	Partial
H7c	CKM → INNOV → OPER		0.198***	4.097	Supported	Partial

Notes: *p < 0.05; **p < 0.01; ***p < 0.001

(one-tailed test for hypotheses H1 – H3, H5a – H6c and two-tailed test for H4, H7a-H7c).

4.1.4 Moderation Analysis

To explain 'when' in the model, the research tested the moderation effect. Unlike other studies in the past, this study examines the moderating effect of competitive intensity in the relationship between CKM and innovation quality. Table 4.5 shows that the moderating effect of competitive intensity in the relationship of CKM with innovation quality is significant supporting Hypothesis 8 (β = -0.143, $p < .05$). Hypothesis 8 predicts that higher level of competitive intensity decreases the influence of customer knowledge management on innovation quality. In Table 4.5, the result reveals that the moderation of competitive intensity weakens or negatively moderates the relationship, supporting the hypothesis.

Table 4.5 Structural Model: Moderation

Hypotheses	Relationship between constructs	Coefficients	T Statistics	Results
H8	CKM * COM INT → INNOV	-0.143*	1.714	Supported

Notes: *p < 0.05; **p < 0.01; ***p < 0.001 (one-tailed).

CHAPTER V
DISCUSSION & CONCLUSION

5.1 Discussion

In this study, the researcher examined the relationships among KOL, CKM, innovation quality, and firm performance (marketing performance, financial performance, and operational performance) in SME firms in Thailand. The researcher further examined the role of CKM as a mediator in the relationship between KOL and innovation quality and the role of innovation quality as a mediator in the relationship between CKM and marketing, financial, and operational performance. Unlike previous studies, this study also considered competitive intensity as a moderator in the relationship between CKM and innovation quality.

The results of this study suggest that KOL has a positive influence on CKM. This means SME firms that adopt KOL have more effective CKM. In addition, CKM also shows a positive effect on innovation quality. This reflects that through CKM there will be more innovation quality. KOL also has a positive effect on innovation quality. A positive relationship between innovation quality and three dimensions of firm performance (namely marketing, financial, and operational performance) was also found. This means innovation quality improves SME firms' performance in all three dimensions. Apart from innovation quality, CKM was also found to positively affect marketing, financial, and operational performance. In other words, SME firms that have CKM will have better firm performance. Further investigation in this study also shows that CKM partially mediates the relationship between KOL and innovation quality. Other partial mediation effects found in this study are the mediating role of innovation quality in the relationships between CKM and marketing performance, CKM and financial performance, and CKM and operational performance. Lastly, this study underpinned the moderating role of competitive intensity and proved that it negatively moderates the interaction of CKM and innovation quality. From these findings, I found that the results confirmed prior studies.

Considering the positive relationship between KOL and CKM, this study's result is congruent with many similar empirical studies of Donate and Sánchez de Pablo (2015) and Naqshbandi & Jasimuddin (2018) who studied KOL and KM. The result of this study also confirms Yang et al.'s (2014) finding where firms that adopt knowledge leadership can improve CKM. With KOL, positive cultural orientation towards CKM will emerge. Employees will see the importance of continuous learning, sharing experience and expertise, and innovation (Davenport et al., 1998; Yang et al., 2014). This result also supports DeTienne et al., (2004) who claimed that leadership in a learning organization is important and Attafar et al. (2013) who suggested that CKM would not be possible without supporting management.

Although most previous studies put more emphasis on knowledge management and innovation (Alegre et al., 2011; Andreou et al., 2007; Forcadell & Guadañillas, 2002; Lin et al., 2012; Tarí & García-Fernández, 2011) than CKM and innovation, this study's result indicates that CKM contributes to innovation quality in SME firms. The finding is in line with past academics who claimed that CKM can enhance innovation (Fidel et al., 2018; Gorry & Westbrook, 2013; Taherparvar et al., 2014). This result proves that customer knowledge and information are valuable resources from firms that value innovation (Chesbrough, 2006; Taherparvar et al., 2014). Since customers are the holders and contributors of new ideas and knowledge for firms (Gorry & Westbrook, 2013), especially SMEs, customer engagement and other customer knowledge activities should be encouraged. This study conforms to prior studies (Fidel et al. 2018; Lin et al., 2012; Taherparvar et al., 2014) as they found positive relationships of CKM with innovation.

Apart from CKM, KOL also has shown a positive relationship with innovation quality. This supports Naqshbandi's and Jasimuddin's (2018) study which found that KOL is the key factor for firms to gain innovation performance and that a positive direct effect exists between KOL and open innovation in the international business context. Additionally, the finding of this study complies with Zia's (2020) result, as the researcher found a positive association of KOL and innovation performance in the project-based SME firm context. From these results, SME firms that focus on innovation quality should adopt KOL.

This study has found a positive relationship between innovation quality and marketing performance. This study's finding agrees with Afriyie et al. (2019) who assert that innovation positively affects marketing performance in SME service firms. This study's finding is also in line with Aksoy's (2017) study which found positive influence of product innovation on marketing performance. Finally, the finding of this study also fills in the research gap of Fidel et al. (2018), who empirically studied the effects of customer orientation and CKM on innovation and capacity and marketing performance but did not examine the relationship between innovation capacity and marketing performance. Since often SMEs are considered successful due to the small-scale and adaptability to the market innovators (Verhees & Meulenberg, 2004) and innovation quality can play a critical role in influencing marketing performance, SME firms should put a more emphasis on innovation quality to achieve competitive advantage.

The finding that innovation quality positively affects SMEs' financial performance supports Walker's (2004) conclusion that innovation has a positive influence on firm performance. This result also confirms Bilgliradri's (2013) finding (although Bilgliradri's focused on SME firms in the food machinery industry), which is higher levels of innovation lead to better financial performance. Similar to Wang's and Wang's (2012) empirical study about knowledge sharing, innovation, and firm performance, particularly on operational and financial performance, in high technology firms in China, this study shows that there is a positive association between innovation and financial performance. The results of this study also support other prior research about innovation and financial performance (Jansen et al., 2006; Lin & Chen, 2007). Evidence supports the notion that innovation quality enhances the financial performance of SME firms. First, firms that can launch new and better products with more features could make themselves up to date with market trends, gain more sales, and achieve business growth (Lin & Chen 2007; Kostopoulos et al., 2011; Srinivasan et al., 2009). With innovation quality, launching new products to existing and new customers, firms could also reduce their risk to encountering cash flow problems (Srinivasan et al., 2009).

The study's finding proves that innovation quality can improve various dimensions of firm performance, not only financial outcomes. In contrary to Wang's and Wang's (2012) study that found no direct effect of innovation quality on operational performance, this study shows that there is a positive association between the two

variables. In fact, innovation quality has the greatest influence on operational performance among the firm performance variables. Because innovation quality is the total innovation performance in every level within an organization (Haner, 2002; Taherparvar et al., 2014; Wang & Wang, 2012) while operational performance is the progress the firm made in response of changes, which indicates how well a firm respond to the changing environment compared to its competitors (Flynn et al., 2010; Lai et al., 2014; Liu et al., 2013), both variables support each other best from the definition itself. The result also confirms Lai et al.'s (2014) study that investigated the relationships among knowledge management practices, innovation, and operational performance in SMEs in the manufacturing and services industry and found that a positive relationship exists between innovation and operational performance. This study's results also support other empirical studies in the past (Nguyen, 2020; Saunila, 2014; Taherparvar et al., 2014).

The results of this study also provide strong evidence that CKM can improve marketing performance of SME firms. Although few papers examine the association of the two variables, the results of this study are in line with previous empirical studies (Fidel et al., 2015; Soliman, 2011; Fidel et al., 2018). Santos et al.'s (2013) study shows that the engagement of customers has a positive influence on customer outcomes (customer satisfaction, and loyalty) and firm performance (revenues and market share). Because CKM is the knowledge that resides in the customers where firms not only gain this knowledge from customers but also share and disseminate it (Gibbert et al., 2002), while marketing performance measures how firms can accomplish their objectives related to markets, which means customers, (Fidel et al., 2018; Vorhies & Morgan, 2005); undoubtedly, CKM has the greatest influence on marketing performance among the firm performance variables.

Another dimension of firm performance that CKM was proven to have a positive influence on is financial performance. Since superior financial performance is one of the key performance indicators that most SME firms would like to achieve, this study helps confirm that financial performance could improve through CKM. This study's result is comparable to many empirical studies earlier (Forstenlechner et al. 2009; Luhn et al., 2017). However, it is in contrast with Zack et al. (2009) who suggest

that knowledge management practices have no influence on financial performance regarding return on assets or equity and profit.

Besides marketing and financial performance, CKM is also found to improve operational performance of SME firms. Since Taherparvar et al. (2014) is one of the few papers that studied the direct effect of CKM on operational performance, the result of this empirical is believed to contribute to the literature. In line with Taherparvar et al. (2014), this study found that CKM positively affects operational performance of a firm. By adopting CKM, operational performance such as satisfaction level of customers, improvement of products and services, managing costs, responsiveness of staff, performance in the past, and the management team (Taherparvar et al., 2014; Wang & Wang, 2012) can improve.

In terms of the mediating effect of CKM in the relationship between KOL and innovation quality, the result of this paper extends the literature of KOL, CKM, and innovation quality. Since previous studies focused on KOL, KM, and innovation (Naqshbandi & Jasimuddin, 2018; Jansen et al., 2006; Donate & Sánchez de Pablo, 2015), this study is one of the very few to empirically test CKM as a mediator. Since CKM is considered as external KM associated to customers (Zhang, 2011), the result of this study corresponds to the preceding research that study KM where CKM plays a mediating role in the relationship between KOL and innovation quality (Donate & Sánchez de Pablo, 2015; Jansen et al., 2006; Naqshbandi & Jasimuddin, 2018). This means KOL is a driving force for CKM and KOL and lead to an indirect effect on innovation quality. In other words, even though CKM is important for innovation quality, managers and owners also need to focus on KOL since it is a driver for CKM, and it can indirectly affect innovation quality.

Another mediating effect examined and found in this empirical study is the innovation quality in the relationship of CKM and three dimensions of firm performance (marketing, financial, and operational performance). If considering CKM as external KM associated to customers (Zhang, 2011), the result of this study shows that innovation quality partially mediates the relationship and agrees with many studies in the past (Garcia-Murillo and Annabi, 2002; Ferraresi et al., 2012). This result in this study is most related to Taherparvar et al.'s (2014) and Fidel et al.'s (2018) study, which found that there are both direct and indirect effects of CKM where innovation capability

is the mediator. Since Fidel et al. (2018) studied only the mediating effect of innovation capability in the relationship between CKM and marketing performance while Taherparvar et al. (2014) studied only the mediating effect of innovation capability in the relationship between CKM and financial performance and between CKM and operational performance, the finding of this paper extends the literature of these variables.

This study found that competitive intensity has a negative moderating effect in the relationship of CKM and innovation quality. In other words, a higher level of competitive intensity decreases the influence of customer knowledge management on innovation quality. The rationale for this result could be that SME firms may encounter more difficult situations when competition becomes more intense. Customers might switch to other products or service providers making SME firms unable to effectively engage with their customers; therefore, innovation quality may decline.

5.2 Implications

This study examined the relationship among important strategic resources for SMEs, KOL, CKM, innovation quality and firm performance with the intention to find the role of innovation quality and CKM as the mediating variables as well as the role of competitive intensity as a moderating variable for the proposed model. The results are expected to yield several implications for both the academic and business worlds.

5.2.1 Theoretical Implications

Supporting the knowledge-based theory, the researcher arrived at the conclusion that KOL, CKM, and innovation quality are essential indicators to enhance firm performance particularly in the context of SMEs. In addition to findings in the literature regarding KOL, CKM, innovation quality, and firm performance, this paper proves their associations. The supported conceptual framework of this paper could be used for further studies in other contexts and in longitudinal research. The relationships among the variables found in this study reflect that academics should continue to investigate their associations.

Since this study assesses effects rarely studied in the literature review (1) the mediating effect of CKM in the relationship between KOL and innovation quality, (2) the mediating effect of innovation quality in the relationship of CKM and three dimensions of firm performance, and (3) the moderating effect of competitive intensity in the relationship between CKM and innovation quality), this study and its findings are considered new empirical research that contribute to the literature of the KOL, CKM, innovation, and firm performance variables.

In addition, this study fills in the research gap of Fidel et al. (2018), who suggested that consequence variables of CKM such as financial performance and mediating effect of innovation orientation should be further studied. It also fills in the research gap of Taherparvar et al. (2014), who suggested that the effect of moderating variables could be studied to complete their research model, and Zahari et al. (2019), who suggested that other external factors such as competition should be included. Finally, this study fills in the research gap of many studies that suggest testing KOL, CKM, innovation quality, and firm performance in developing countries where these studies are rare (Al-Sa'di et al., 2017; Fidel et al., 2018; Donate & Sánchez de Pablo, 2015).

5.2.2 Managerial Implications

In addition to the academic implications, this paper also has managerial implications for managers and owners. The study's findings demonstrate how managers and owners can generate better marketing, financial, and operational outcomes through KOL, CKM, and innovation quality.

This paper encourages managers and owners to see the importance of KOL in encouraging CKM and improving firm performance. Managers and owners should understand how important leadership is in bringing about CKM and better firm performance. Managers and owners of SME firms should reconsider their roles in the organization. To enhance a learning environment, managers and owners could consider their roles as being coaches, trainers, facilitators, educators, and mentors (Macneil, 2001). Managers and owners should be the individuals who support the group members in their learning, so they are able to help the firm achieve the goals and objectives. The knowledge-oriented leadership is an important indicator to increase CKM in an

organization. Gerstner and Day (1997) suggest that leadership abilities can encourage mutual influence, open and truthful communication, and more access to resources in a firm.

The expectation is that results of this study encourage SMEs to collaborate more with their customers as they are the key to attaining competitive advantage. Knowledge about customers, knowledge for customers, and knowledge from customers will help managers and owners in SME firms understand how to improve their performance. This allows these managers and owners to better focus on their customer-related activities. Managers and owners will also be able to better optimize their customer databases and practice other CKM activities, such as customer evaluation and interviews. I propose that SME managers and owners should continuously know what their customers want. Asking customers for ideas and suggestions should be a norm for SME firms as customers are one of the best sources of information, and direct interaction with the customers is more important than ever today. With CKM firms will be able to perform better than their competitors, and with effective CKM competitive advantage could be achieved.

In terms of innovation quality, the findings of this study support that CKM can encourage innovation quality, and both can bring about better firm performance. According to the findings of this study, SME managers and owners should ensure that new ideas are generated for product and service development. Meanwhile, new technology and equipment should also be utilized in SMEs (Taherparvar et al., 2014). Finally, solving customer problems efficiently and effectively should also be one of the main key success factors for SME firms to gain competitive advantage. I suggest that managers and owners need to be continually mindful of their customers' needs and wants. SMEs should continue to ask customers for their ideas and use these ideas to better compete in the marketplace by exceeding customers' expectations.

Since innovation quality has the greatest influence on operational performance among the firm performance variables while CKM has the greatest influence on marketing performance among the firm performance variables. The researcher suggests that SME firms that aim to improve operational performance should focus on innovation quality first. On the other hand, SME firms that aim to improve their marketing performance should focus on CKM first.

From the results, however, the researcher suggests that SME firms should not focus only one part or choose to do only one or the other part since the results prove that KOL, CKM, and innovation quality are critical in supporting each other to improve firm performance. Regardless of limited resources, SME firms should adopt KOL, CKM, and innovation quality simultaneously to improve its performance.

Another suggestion SME managers and owners should do carefully and wisely is in terms of resource allocation. With an effective resource allocation, SME firms should be able to adopt KOL, CKM, and innovation quality.

5.3 Limitations & Future Research

Regardless of the contributions this paper offers, there are some limitations this study possesses. Since data were collected from a sample of SME firms that are previous and existing members from various industries in Bangkok, the generalization of the results can be limited. This study also did not investigate the stage of the product life cycle of the firm. Firms with different stage of product life cycle could adopt CKM and innovation quality differently. For example, firms in the introduction and growth stage might focus more on CKM and innovation if compared to maturity stage. As this study is a cross-sectional research, data is collected at the same time. The influence of industry type and market share on CKM is not determined. In other words, there might be a possibility that firms in certain industries or with larger market shares could have more KOL, CKM, or innovation capability than others. For instance, firms in the service industry can have more CKM than the manufacturing industry since they are closer to the customers; therefore, it is more likely that customers will share their knowledge and experience to them. In addition, the importance of CKM may vary from different industries. Since this study proposes only one moderator – competitive intensity, it overlooks the moderating effect of other variables. Therefore, other applicable variables should be considered to facilitate the relationships among the variables.

The findings of this study present direction for future research. Since the research model works in Bangkok, Thailand, the researcher suggests that the model should also be tested in other geographical areas in the future. To examine that KOL, CKM, and innovation quality sustainably improve firm performance, longitudinal

research conducted over multiple points of time should be considered in further studies. The relationships among the variables also need further investigation with qualitative methods. Using the conceptual framework as a foundation to examine SME firms in specific industries like cosmetic industry, lodging industry, and restaurant industry is also recommended. Besides the specific sort of industry, future research could focus on certain stage of the product life cycle. As mentioned earlier, CKM and innovation quality can be more important in certain stage like "introduction and growth stage" than "maturity". Therefore, future research could apply this model with firms at specific stage of the product life cycle or compare CKM between firms with different stages of product life cycle. Other moderators such as organizational structure and organizational learning could also be added into this research model (Chen et al., 2010; Fidel et al., 2018). This study did not consider the perception of other stakeholders on KOL, CKM, and innovation quality; thus, it is suggested that it should be included in the model in future research.

REFERENCES

Afriyie, S., Du, J., & Musah, A. A. I. (2019). Innovation and marketing performance of SME in an emerging economy: the moderating effect of transformational leadership. *Journal of Global Entrepreneurship Research, 9*(1), 40-64.

Agbor, E. (2008). Creativity and innovation: The leadership dynamics. *Journal of Strategic Leadership, 1*, 39–45.

Aho, A. M., & Uden, L. (2013). Strategic management for product development. *Business Process Management Journal, 19*(4), 680-697.

Aho, A. M., & Uden, L. (2013). Customer knowledge in value creation for software engineering process. In *7th International Conference on Knowledge Management in Organizations: Service and Cloud Computing* (pp. 141-152). Springer, Berlin, Heidelberg.

Al-Athari, A., & Zairi, M. (2001). Building benchmarking competence through knowledge management capability-An empirical study of the Kuwaiti context. *Benchmarking: An International Journal, 8*(1), 70-80.

Alegre, J., Kishore S., & Lapiedra, R. (2011). Knowledge management and the innovation performance in a high-tech SMEs industry. *International Small Business Journal 31*(4), 454–470.

Alegre, J., Sengupta, K., & Lapiedra, R. (2013). Knowledge management and innovation performance in a high-tech SMEs industry. *International Small Business Journal, 31*(4), 454-470.

Allocca, M. A., & Kessler, E. H. (2006). Innovation speed in small and medium sized enterprises. *Creativity and Innovation Management, 15*, 279–295.

Al-Sa'di, A. F., Abdallah, A. B., & Dahiyat, S. E. (2017). The mediating role of product and process innovations on the relationship between knowledge management and operational performance in manufacturing companies in Jordan. *Business Process Management Journal*. *23*(2), 349-376.

Andreou, A. N., Green, A., & Stankosky, M. (2007). A framework of intangible valuation areas and antecedents. *Journal of Intellectual Capital, 8*(1), 52–75.

Anning-Dorson, T. (2016). Interactivity innovations, competitive intensity, customer demand and performance. *International Journal of Quality and Service Sciences*.

Antony, J. P., & Bhattacharyya, S. (2010a). Measuring organizational performance and organizational excellence of SMEs – Part 1: a conceptual framework. *Measuring Business Excellence, 14*(2), 3-11

Antony, J. P., & Bhattacharyya, S. (2010b). Measuring organizational performance and organizational excellence of SMEs – Part 2: an empirical study on SMEs in India. *Measuring Business Excellence, 14*(3), 42 – 52

Attafar, A., Sadidi, M., Attafar, H., & Shahin, A. (2013). The role of customer knowledge management (CKM) in improving organization-customer relationship. *Middle-East Journal of Scientific Research, 13*(6), 829-835.

Bagozzi, R. P., & Yi, Y. (1988). On the evaluation of structural equation models. *Journal of the Academy of Marketing Science, 16*(1), 74-94.

Baker, W. E., & Sinkula, J. M. (1999). Learning orientation, market orientation, and innovation: integrating and extending models of organizational performance. *Journal of Market-Focused Management, 4*(4), 295–308.

Barney, J. B. (1991). Firm resources and sustained competitive advantage. *Journal of Management, 17*(1), 99–120.

Barroso, C., Carrión, G. C., & Roldán, J. L. (2010). Applying maximum likelihood and PLS on different sample sizes: studies on SERVQUAL model and employee behavior model. *In Handbook of Partial Least Squares* (pp. 427-447). Springer, Berlin, Heidelberg.

Baškarada, S., Watson, J., & Cromarty, J. (2017). Balancing transactional and transformational leadership. *International Journal of Organizational Analysis*, *25*(3), 506–515.

Becherer, R. C., Halstead, D., & Haynes, P. J. (2003). Marketing orientation in SMEs: Effects of the internet environment. *New England Journal of Entrepreneurship, 6*(1), 13.

Berghman, L., Matthyssens, P. & Vandenbempt, K. (2006). Building competences for new customer value creation: an exploratory study, *Industrial Marketing Management, 35*, 961-73.

Bigliardi, B. (2013). The effect of innovation on financial performance: A research study involving SMEs. *Innovation, 15*(2), 245-255.

Bigliardi, B., & Dormio, A. I. (2009). An empirical investigation of innovation determinants in food machinery enterprises. *European Journal of Innovation Management, 12*(2), 223–243.

Binney, D. (2001). The knowledge management spectrum–understanding the KM landscape. *Journal of Knowledge Management, 5*(1), 33-42.

BNI Global (n.d.) BNI Global. About Us. Retrieved from, https://www.bni.com/about

BNI Thailand (n.d.). BNI Thailand. Retrieved from, http://bnithailand.com/en-TH/index

Brooking, A. (1996). Intellectual Capital: Core Asset for the Third Millennium Enterprise. Thompson International Business Press, London

Bryant, S. E. (2003). The role of transformational and transactional leadership in creating, sharing and exploiting organizational knowledge. *Journal of Leadership & Organizational Studies, 9*, 32–44.

Centobelli, P., Cerchione, R., & Singh, R. (2019). The impact of leanness and innovativeness on environmental and financial performance: Insights from Indian SMEs. *International Journal of Production Economics, 212*, 111-124.

Chan, R. Y., He, H., Chan, H. K., & Wang, W. Y. (2012). Environmental orientation and corporate performance: The mediation mechanism of green supply chain management and moderating effect of competitive intensity. *Industrial Marketing Management, 41*(4), 621-630.

Chen, I. J., & Popovich, K. (2003) Understanding Customer Relationship Management (CRM) People, Process and Technology. *Business Process Management, 9,* 672-688.

Chen, Y.H. & Su, C.T. (2006). A Kano-CKM model for customer knowledge discovery. *Total Quality Management, 17*(5), 589-608.

Chesbrough, H. (2003). The logic of open innovation: Managing intellectual property. *California Management Review, 5*, 33–58.

Chesbrough, H. (2006). Open innovation: a new paradigm for understanding industrial innovation in Chesbrough, H., Vanhaverbeke, W. and West, J. (Eds), Open Innovation: Researching a New Paradigm, Oxford University Press.

Chin, W.W. (1998). The partial least squares approach to structural equation modeling. In G. A. Marcoulides (Ed.), *Modern Methods for Business Research* (pp. 295-358). Mahwah, NJ: Lawrence Erlbaum.

Chin, W. W. (2010). How to write up and report PLS analyses. In '*Handbook of Partial Least Squares*'. (Eds VV Esposito, WW Chin, J Henseler and H Wang) pp. 655–690.

Chin, W. W., Thatcher, J. B., & Wright, R. T. (2012). Assessing common method bias: problems with the ULMC technique. *MIS quarterly*, 1003-1019.

Churchill Jr, G. A., & Peter, J. P. (1984). Research design effects on the reliability of rating scales: A meta-analysis. *Journal of Marketing Research, 21*(4), 360-375.

Cohen, W. M., & Levinthal, D. A. (1990). Absorptive capacity: A new perspective on learning and innovation. *Administrative science quarterly, 35*(1), 128-152.

Davenport, T. H., & Prusak, L. (1998). *Working knowledge: How organizations manage what they know*. Harvard Business Press.

Davenport, T. H., De Long, D. W., & Beers, M. C. (1998). Successful knowledge management projects. *Sloan Management Review 39*(2), 43–57.

Davenport, T. H., Harris, J. G., & Kohli, A. K. (2001). How do they know their customers so well? *MIT Sloan Management Review, 42*(2), 63-63.

Day, G., & Fahey, L. (1988). Valuing Market Strategies, *Journal of Marketing, 52*, 45–57.

De Jarnett, L. (1996). Knowledge the latest thing. Information Strategy. *The Executives Journal, 12*(2), 3-5.

Dennis, C., Marsland, D., & Cockett, T. (2001). Data mining for shopping centres–customer knowledge-management framework. *Journal of Knowledge Management, 5*(4), 368-374.

DeSarbo, W. S., Di Benedetto, C. A., & Song, M. (2007). A heterogeneous resource based view for exploring relationships between firm performance and capabilities. *Journal of Modelling in Management, 2*(2), 103–130.

Desouza, K. C., & Awazu, Y. (2005). Engaging with customer knowledge management. In *Engaged Knowledge Management* (pp. 116-144). Palgrave Macmillan, London.

DeTienne, K., Dyer, G., Hoopes, C., & Harris, S. (2004). Toward a model of effective knowledge management and directions for future research: Culture, leadership, and CKOs. *Journal of leadership & organizational studies*, *10*(4), 26-43.

Dimitrova, V., Kaneva, M., & Gallucci, T. (2009). Customer knowledge management in the natural cosmetics industry. *Industrial Management & Data Systems, 109*(9), 1155–1165

Donate, M. J., & Sánchez de Pablo, J. D. (2015). The role of knowledge-oriented leadership in knowledge management practices and innovation. *Journal of Business Research, 68*(2), 360-370.

Drucker, P. F. (1964). Knowledge worker: new target for management. *Christian Science Monitor*, *10*.

Drucker, P. F. (1992). The New Society of Organizations. *Harvard Business Review, 70*(5), 95-104.

Du Plessis, M., & Boon, J. A. (2004). Knowledge management in e-business and customer relationship management: South African case study findings. *International Journal of Information Management*, *24*(1), 73–86.

Fallatah, M. I. (2018). Does value matter? An examination of the impact of knowledge value on firm performance and the moderating role of knowledge breadth. *Journal of Knowledge Management, 22*(3), 678–695. doi:10.1108/jkm-08-2016-0355

Feng, T., Wang, D., Lawton, A., & Luo, B. N. (2019). Customer orientation and firm performance: The joint moderating effects of ethical leadership and competitive intensity. *Journal of Business Research, 100,* 111-121.

Ferraresi, A. A., Quandt, C. O., dos Santos, S. A., & Frega, J. R. (2012). Knowledge management and strategic orientation: leveraging innovativeness and performance. *Journal of Knowledge Management, 16*(5), 688-701.

Fidel, P., Schlesinger, W., & Cervera, A. (2015). Collaborating to innovate: Effects on customer knowledge management and performance. *Journal of Business Research, 68*(7), 1426-1428.

Fidel, P., Schlesinger, W., & Emilo, E. (2018). Effects of customer knowledge management and customer orientation on innovation capacity and marketing results in SMEs: the mediating role of innovation orientation. *International Journal of Innovation Management, 22*(7), 1-26.

Flynn, B. B., Huo, B., & Zhao, X. (2010). The impact of supply chain integration on performance: A contingency and configuration approach. *Journal of operations management, 28*(1), 58-71.

Forcadell, J. F. & Guadamillas, F. (2002). A case study on the implementation of a knowledge management strategy oriented to innovation. *Knowledge and Process Management 9*(3), 162–171.

Fornell, C., & Larcker, D. F. (1981). Structural equation models with unobservable variables and measurement error: Algebra and statistics.

Fornell, C. & Larcker, D. F. (1981). Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *Journal of Marketing Research, 18*(1), 39–50.

Forstenlechner, I., Lettice, F., & Bourne, M. (2009). Knowledge pays: evidence from a law firm. *Journal of Knowledge Management, 13*(1), 56–68. doi:10.1108/13673270910931161

Fugate, B. S., Stank, T. P., & Mentzer, J. T. (2009). Linking improved knowledge management to operational and organizational performance. *Journal of Operations Management, 27*(3), 247-264.

Gallego, J., Rubalcaba, L., & Hipp, C. (2013). Organizational innovation in small European firms: A multidimensional approach. *International Small Business Journal, 31*(5), 563–579.

Gamble, P., Chalder, M., & Stone, M. (2001). Customer knowledge management in the travel industry. *Journal of Vacation Marketing, 7*(1), 83-91.

García-Morales, V. J., Jiménez-Barrionuevo, M. M., & Gutiérrez-Gutiérrez, L. (2012). Transformational leadership influence on organizational performance through organizational learning and innovation. *Journal of business research*, *65*(7), 1040-1050.

Garcia-Morales, V. J., Llorens-Montes, F. J., & Verdú-Jover, A. J. (2006). Antecedents and consequences of organizational innovation and organizational learning in entrepreneurship. *Industrial Management & Data Systems*, *106*, 21–42.

García-Murillo, M., & Annabi, H. (2002). Customer knowledge management. *Journal of the Operational Research society*, *53*(8), 875-884.

Garrido-Moreno, A., Padilla-Meléndez, A., & Del Águila-Obra, A. R. (2010). Exploring the Importance of Knowledge Management for CRM Success. *World Academy of Science, Engineering and Technology International Journal of Industrial and Manufacturing Engineering*, *4* (6), 629-633.

Gebert, H., Geib, M., Kolbe, L., & Riempp, G. (2002, December). Towards customer knowledge management: Integrating customer relationship management and knowledge management concepts. In *The Second International Conference on Electronic Business* (ICEB 2002) (pp. 296-298).

Gebert, H., Geib, M., Kolbe, L., & Brenner, W. (2003). Knowledge-enabled customer relationship management: Integrating customer relationship management and knowledge management concepts. *Journal of Knowledge Management, 7*(5), 107–123.

Gholami, M. H., Asli, M. N., Nazari-Shirkouhi, S., & Noruzy, A. (2013). Investigating the influence of knowledge management practices on organizational performance: an empirical study. *Acta Polytechnica Hungarica*, *10*(2), 205-216.

Gibbert, M., Leibold, M., & Probst, G. (2002). Five styles of customer knowledge management, and how smart companies use them to create value. *European Management Journal*, *20*(5), 459-469.

Gold, A. H., Malhotra, A., & Segars, A. H. (2001). Knowledge management: An organizational capabilities perspective. *Journal of management information systems*, *18*(1), 185-214.

Gorry, G. A., & Westbrook, R. A. (2013). Customers, knowledge management, and intellectual capital. *Knowledge Management Research & Practice, 11*(1), 92–97.

Govindarajan, V., & Kopalle, P. K. (2006). Disruptiveness of innovations: measurement and an assessment of reliability and validity. *Strategic management journal*, *27*(2), 189-199.

Grant, R. M. (1996). Toward a knowledge-based theory of the firm. *Strategic management journal, 17*(S2), 109-122.

Grewal, R., & Tansuhaj, P. (2001). Building organizational capabilities for managing economic crisis: The role of market orientation and strategic flexibility. *Journal of Marketing*, *65*(2), 67-80.

Gunday, G., Ulusoy, G., Kilic, K., & Alpkan, L. (2011). Effects of innovation types on firm performance. *International Journal of production economics*, *133*(2), 662-676.

Hair, J. F., Black, W. C., Babin, B. J., Anderson, R. E., & Tatham, R. L. (2006). Multivariate data analysis (Vol. 6).

Hair Jr, J. F., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage publications.

Hammami, S. M., & Triki, A. (2011). Exploring the information technology contribution to service recovery performance through knowledge-based resources. *Vine*, *41*, 296–314

Hamon, T.T. (2003). Organizational effectiveness as explained by social structure in a faith-based business network organization. Ph.D. Thesis, Regent University, Virginia Beach, VA.

Haner, U. E. (2002). Innovation quality—A conceptual framework. *International Journal of Production Economics, 80,* 31–37.

Hanna, V., & Walsh, K. (2008). Interfirm cooperation among small manufacturing firms. *International Small Business Journal, 26*(3), 299–321.

Helkkula, A., & Pihlström, M. (2010). Narratives and metaphors in service development. *Qualitative Market Research: An International Journal*, *13*(4), 354-371.

Ho, C.-T. (2009). The relationship between knowledge management enablers and performance. *Industrial Management & Data Systems, 109*, 98–117.

Hulland, J. (1999). Use of partial least squares (PLS) in strategic management research: A review of four recent studies. *Strategic Management Journal, 20*(2), 195-204.

Hult, G. T. M., Hurley, R. F., & Knight, G. A. (2004). Innovativeness: Its antecedents and impact on business performance. *Industrial Marketing Management, 33*(5), 429–438.

Hult G. T. & Ketchen D. J. Jr. (2001). Does market orientation matter? A test of the relationship between positional advantage and performance. *Strategic Management Journal 22*(9), 899 – 906.

Hurley, R. F., & Hult, G. T. M. (1998). Innovation, market orientation, and organizational learning: an integration and empirical examination. *Journal of marketing*, *62*(3), 42-54.

Inman, R. A., Sale, R. S., Green Jr, K. W., & Whitten, D. (2011). Agile manufacturing: relation to JIT, operational performance and firm performance. *Journal of Operations Management*, *29*(4), 343-355.

Jansen, J. P., Van Den Bosch, F., & Volberda, H. (2006). Exploratory innovation, exploitative innovation and performance: Effects of organizational antecedents and environmental moderators. *Management Science, 52*(11), 1661–1674.

Jansen, J. J., Vera, D., & Crossan, M. (2009). Strategic leadership for exploration and exploitation: The moderating role of environmental dynamism. *The Leadership Quarterly, 20*(1), 5-18.

Jaworski B. J. & Kohli A. K. (1993). Market orientation: antecedents and consequences. *Journal of Marketing, 57*(3), 53 – 70.

Jaziri, D. (2019). The advent of customer experiential knowledge management approach (CEKM): The integration of offline & online experiential knowledge. *Journal of Business Research, 94*, 241-256.

Jin-Nan, W., Wei-Jun, Z. & Shu-E, M. (2011). Application capability of e-business, e-business success, and organizational performance: empirical evidence from China. *Technological Forecasting & Social Change,19*, 1-14.

Kalling, T. (2003). Knowledge management and the occasional links with performance. *Journal of Knowledge Management*, 7(3), 67-81

Ketokivi, M., & Schroeder, R. (2004). Manufacturing practices, strategic fit and performance. *International Journal of Operations & Production Management, 24*(2), 171-191.

Khosravi, A., & Ab, R. C. H. (2018). Customer knowledge management antecedent factors: a systematic literature review. *Knowledge and Process Management, 25*, 12-30

Khosravi, A., & Hussin, A. R. C. (2016). Customer knowledge management: development stages and challenges. *Journal of Theoretical & Applied Information Technology*, *91*(2).

Khosravi, A., & Nilashi, M. (2018). Toward software quality enhancement by Customer Knowledge Management in software companies. *Telematics and Informatics, 35*(1), 18-37.

Kmieciak, R., & Michna, A. (2018). Knowledge management orientation, innovativeness, and competitive intensity: evidence from Polish SMEs. *Knowledge Management Research & Practice*, *16*(4), 559-572.

Kock, N. (2015). One-Tailed or two-Tailed P values in PLS-SEM? *International Journal of e-Collaboration (e-Collaboration), 11*(2), 1-7.

Kostopoulos, K., Papalexandris, A., Papachroni, M., & Ioannou, G. (2011). Absorptive capacity, innovation, and financial performance. *Journal of Business Research*, *64*(12), 1335-1343.

Laforet, S. (2009). Effects of size, market and strategic orientation on innovation in non-high-tech manufacturing SME. *European Journal of Marketing,43*(1/2) 188-212.

Lai, C. K. M., Tan, A. K. S., Lai, W. S., & Mangalam, N. A. A. P. J. (2014). Regression modelling of knowledge management success: a new dimension in Malaysian SMEs. *International Journal of Modelling in Operations Management*, *4*(1-2), 116-136.

Lee, H., & Choi, B. (2003). Knowledge management enablers, processes, and organizational performance: An integrative view and empirical examination. *Journal of Management Information Systems, 20*(1), 179-228.

Lin, H. F. (2007). Knowledge sharing and firm innovation capability: an empirical study. *International Journal of Manpower*, 28(3/4), 315-332.

Lin, R. J., Che, R. H., & Ting, C. Y. (2012). Turning knowledge management into innovation in the high-tech industry. *Industrial Management & Data Systems, 112*(1), 42-63.

Lin, C. Y., & Chen, M. Y. (2007). Does innovation lead to performance? An empirical study of SMEs in Taiwan. *Management research news, 30*(2), 115–132.

Lindell, M. K., & Whitney, D. J. (2001). Accounting for common method variance in cross-sectional research designs. *Journal of Applied Psychology, 86*(1), 114.

Lopez-Nicolas, C. & Molina-Castillo, F.J. (2008), Customer knowledge management and e-commerce: the role of customer perceived risk, *International Journal of Information Management*, *28*, 102-13.

Luhn, A., Aslanyan, S., Leopoldseder, C., & Priess, P. (2017). An evaluation of knowledge management system's components and its financial and non-financial implications. *Entrepreneurship and Sustainability Issues, 5*(2), 315-329.

Mabey, C., Kulich, C., & Lorenzi-Cioldi, F. (2012). Knowledge leadership in global scientific research. *The International Journal of Human Resource Management*, *23*(12), 2450–2467.

Macneil, C. (2001). The supervisor as a facilitator of informal learning in work teams. *Journal of Workplace Learning, 13*(6), 246–253.

Magnusson, P.R. (2003). Benefits of involving users in service innovation, *European Journal of Innovation Management, 6*(4), 228-238.

Manikas, I., & Terry, L. A. (2010). A case study assessment of the operational performance of a multiple fresh produce distribution centre in the UK. *British Food Journal*, *112*(6), 653-667.

Matošková, J., Macurová, L., & Tomancová, L. (2018). A link between knowledge sharing and managers' characteristics. *Leadership & Organization Development Journal, 39*(8), 1024-1036.

Matusik, S. F., & Hill, C. W. (1998). The utilization of contingent work, knowledge creation, and competitive advantage. *Academy of Management Review*, *23*(4), 680-697.

Mehdibeigi, N., Dehghani, M., & Mohammad Yaghoubi, N. (2016). Customer knowledge management and organization's effectiveness: explaining the mediator role of organizational agility. *Procedia-Social and Behavioral Sciences*, 230, 94-103.

Menon, A., Jaworski, B. J., & Kohli, A. K. (1997). Product quality: Impact of interdepartmental interactions. *Journal of the Academy of Marketing Science*, *25*(3), 187-200.

Milana, E., & Maldaon, I. (2015). Managerial characteristics and its impact on organizational performance: evidence from Syria. *Business: Theory and Practice*, *16*, 212

Morgan, N. A., Vorhies, D. W., & Mason, C. H. (2009). Market orientation, marketing capabilities, and firm performance. *Strategic Management Journal, 30*(8), 909-920.

Naqshbandi, M. M., & Jasimuddin, S. M. (2018). Knowledge-oriented leadership and open innovation: Role of knowledge management capability in France-based multinationals. *International Business Review*, *27*(3), 701–713.

Ndubisi, N. O., Dayan, M., Yeniaras, V., & Al-hawari, M. (2020). The effects of complementarity of knowledge and capabilities on joint innovation capabilities and service innovation: The role of competitive intensity and demand uncertainty. *Industrial Marketing Management*, *89*, 196-208.

Newbert, S. L. (2008). Value, rareness, competitive advantage, and performance: A conceptual-level empirical investigation of the resource-based view of the firm. *Strategic Management Journal, 29*, 745–768.

Ngo, L. V., & O'Cass, A. (2013). Innovation and business success: The mediating role of customer participation. *Journal of Business Research, 66*(8), 1134–1142.

Nguyen, T. H. (2020). Impact of leader-member relationship quality on job satisfaction, innovation and operational performance: A case in Vietnam. *The Journal of Asian Finance, Economics, and Business*, *7*(6), 449-456.

Nitzl, C., Roldan, J. L., & Cepeda, G. (2016). Mediation analysis in partial least squares path modeling: Helping researchers discuss more sophisticated models. *Industrial Management & Data systems, 116*(9), 1849-1864.

Nonaka, I. (1994). A dynamic theory of organizational knowledge creation. *Organization Science, 5*(1), 14-37.

Nonaka, I., & Takeuchi, H. (1995). *The knowledge-creating company: How Japanese companies create the dynamics of innovation*. Oxford university press.

Nonaka, I., & Konno, N. (1998). The concept of "Ba": Building a foundation for knowledge creation. *California Management Review, 40*(3), 40-54.

Nonaka, I., Toyama, R. & Konno, N. (2000), SECI, Ba and leadership: a unified model of dynamic knowledge creation, *Long Range Planning,33*(1), 5-34.

Nunnally, J. C. (1978). Psychometric Theory (2nd Edition). McGraw-Hill, Inc., New York: NY,

Nuryakin & Ardyan, E. (2018). SMEs' marketing performance: the mediating role of market entry capability. *Journal of Research in Marketing and Entrepreneurship, 20*(2), 122-146.

OSMEP (2017). Office of Small and Medium Enterprises Promotion. SME 4.0 The Next Economic Revolution. Executive Summary White Paper on Small and Medium Enterprises. Retrieved from, http://www.industry.go.th/psd/index.php/2016-05-02-05-17-59/item/download/4061_06092e25c38dc85a170c6bde4a26ddfe

Ou, C. S., Liu, F. C., Hung, Y. C., & Yen, D. C. (2010). A structural model of supply chain management on firm performance. *International Journal of Operations & Production Management*, *30*(5), 526–545.

Owusu-Manu, D. G., John Edwards, D., Pärn, E. A., Antwi-Afari, M. F., & Aigbavboa, C. (2018). The knowledge enablers of knowledge transfer: a study in the construction industries in Ghana. J*ournal of Engineering, Design and Technology*, *16*(2), 194-210.

Parvatiyar, A., & Sheth, J. N. (2001). Customer relationship management: Emerging practice, process, and discipline. *Journal of Economic & Social Research, 3*(2), 1-34.

Payne, A., & Frow, P. (2005) A Strategic Framework for Customer Relationship Management. *Journal of Marketing, 69*, 167-176.

Peppers, D., Rogers, M. & Dorf, B. (1999). Is your company ready for one-to-one marketing? *Harvard Business Review, 77*, 151-60.

Pil, F. K., & Holwelg, M. (2003). Exploring scale: the advantages of thinking small. *MIT Sloan Management Review, 44*(2), 33-39.

Plessis, M. (2007). The role of knowledge management in innovation, *Journal of Knowledge Management, 11*(4), 20-29.

Podsakoff, P. M., MacKenzie, S. B., Lee, J. Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88*(5), 879.

Porter, M. E. (1980). Competitive strategy. New York: Free Press.

Prachachat News (2018). OSMEP drafts green light. Draft Ministerial Regulations. Change the definition of new SMEs. Specify the number of employment no more than 5 people - income up to 1.8 million for Micro Enterprise. [บอร์ด สสว.ไฟเขียว ร่างกฎกระทรวงเปลี่ยนนิยาม SME ใหม่ กำหนดจำนวนการจ้างงานไม่เกิน 5 คน-รายได้ไม่เกิน 1.8 ล้าน สำหรับ Micro Enterprise] Retrieved from, Prachachat News Website, https://www.prachachat.net/finance/news-234016

Rai, A., Patnayakuni, R., & Seth, N. (2006). Firm Performance Impacts of Digitally Enabled Supply Chain Integration Capabilities. *MIS Quarterly, 30* (2), 225-246.

Reinartz, W., Haenlein, M., & Henseler, J. (2009). An empirical comparison of the efficacy of covariance-based and variance-based SEM. *International Journal of research in Marketing, 26*(4), 332-344.

Ribiere, V. M., & Sitar, A. S. (2003). Critical role of leadership in nurturing a knowledge supporting culture. *Knowledge Management Research & Practice, 1*, 39–48.

Ringle, C., Wende, S., & Will, A. (2005). SmartPLS 2.0 (M3) beta software. (Hamburg). http://www.smartpls.de.

Robson, P. J., & Bennett, R. J. (2000). SME growth: The relationship with business advice and external collaboration. *Small Business Economics, 15*(3), 193-208.

Rosenbusch, N., Brinckmann, J. & Bausch, A. (2011). Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. *Journal of Business Venturing 26*(4), 441 – 457.

Rowley, J. (2002). Eight questions for customer knowledge management in e-business. *Journal of Knowledge Management, 6*(5), 500-511.

Salojärvi, H., & Saino, L. M. (2006). Applying absorptive capacity construct to customer related knowledge processing. Frontiers of E-Business Research. http://iceb.nccu.edu.tw/proceedings/2006/defevent/papers/cr1027.pdf.

Salojärvi, H., Sainio, L. M., & Tarkiainen, A. (2010). Organizational factors enhancing customer knowledge utilization in the management of key account relationships. *Industrial Marketing Management, 39*(8), 1395-1402.

Sadeghi, A., & Rad, F. (2018). The role of knowledge-oriented leadership in knowledge management and innovation. *Management Science Letters, 8*(3), 151-160.

Salomann, H., Dous, M., Kolbe, L., & Brenner, W. (2005). Rejuvenating Customer Management: How to Make Knowledge For, From and About Customers Work. *European Management Journal, 23*(4), 392-403.

Sakkab, N. Y. (2002). Connect & develop complements research and develop at P&G, *Research Technology Management, 45(*2), 38-45.

Santos, M., González, C., & Lopez, J. (2013). An assessment of innovativeness in KIBS: Implications on KIBS'co-creation culture, innovation capability, and performance. *Journal of Business & Industrial Marketing, 28*(2), 86–102

Saunila, M. (2014). Innovation capability for SME success: perspectives of financial and operational performance. *Journal of Advances in Management Research*, 11(2), 163-175.

Schumpeter, J. A. (1934). Theory of economic development: An enquiry into profits, capital, interest, and the business cycle. Cambridge, MA: Harvard University Press.

Sink, S. & Tuttle, T. (1989). *Planning and Measurement in your Organization of the Future*. Norcross, Georgia: Industrial Engineering and Management Press

Skotis, A., Katsanakis, I., Macris, A., & Sfakianakis, M. (2013, April). Creating Knowledge within a C-Business Context: A Customer Knowledge Management View. In *Conference on e-Business, e-Services and e-Society* (pp. 264-277). Springer, Berlin, Heidelberg.

Smith, H. A., & McKeen, J. D. (2005). Developments in practice XVIII-customer knowledge management: Adding value for our customers. *Communications of the Association for Information Systems, 16*(1), 36.

Sofianti, T. D., Suryadi, K., Govindaraju, R., & Prihartono, B. (2010, June-July). Customer knowledge co-creation process in new product development. In 2010 *Proceedings of the World Congress on Engineering* (Vol. 1, pp. 1-8). http://www.iaeng.org/publication/WCE2010/WCE2010_pp335-340.pdf

Sok, P., O'Cass, A., & Sok, K. M. (2013). Achieving superior SME performance: Overarching role of marketing, innovation, and learning capabilities. *Australasian Marketing Journal (AMJ)*, *21*(3), 161-167.

Soliman, H. S. (2011). Customer relationship management and its relationship to the marketing performance. *International Journal of Business and Social Science*, *2*(10), 166-182.

Srinivasan, S., Pauwels, K., Silva-Risso, J., & Hanssens, D. M. (2009). Product innovations, advertising, and stock returns. *Journal of Marketing, 73*(1), 24–43.

Spradley, J. P. (1980). Participant Observation. New York: Holt, Rhinehart, and Winston.

Sun, H. (2010). CKM-embedded innovation marketing as success driver for product innovation: Theoretical framework and empirical research.

Taherparvar, N., Esmaeilpour, R., & Dostar, M. (2014). Customer knowledge management, innovation capability and business performance: a case study of the banking industry. *Journal of Knowledge Management, 18*(3), 591-610.

Tan, K. C., Kannan, V. R., & Narasimhan, R. (2007). The impact of operations capability on firm performance. *International Journal of Production Research*, *45*(21), 5135-5156.

Tatikonda, M. V., & Montoya-Weiss, M. M. (2001). Integrating operations and marketing perspectives of product innovation: The influence of organizational process factors and capabilities on development performance. *Management Science*, *47*(1), 151-172.

Tavakol, M., & Dennick, R. (2011). Making sense of Cronbach's alpha. *International Journal of Medical Education, 2*, 53.

Tippins, M. J. & Sohi, R.S. (2003). IT competency and firm performance is organizational learning a missing link. *Strategic Management Journal*, *24*, 745-61.

Tzortzaki, A. M., & Mihiotis, A. (2014). A review of knowledge management theory and future directions. *Knowledge and Process Management, 21*(1), 29-41.

Vaccaro, I. G., Jansen, J. J. P., Van Den Bosch, F. A. J., & Volberda, H. W. (2012). Management innovation and leadership: The moderating role of organizational size. *Journal of Management Studies, 49*, 28–51.

Venkatraman, N., & Ramanujam, V. (1986). Measurement of business performance in strategy research: A comparison of approaches. *Academy of management review*, *11*(4), 801-814.

Verhees, F. J., & Meulenberg, M. T. (2004). Market orientation, innovativeness, product innovation, and performance in small firms. *Journal of Small Business Management*, *42*(2), 134-154.

Verhoef, P. C., & Donkers, B. (2001). Predicting customer potential value an application in the insurance industry. *Decision support systems*, *32*(2), 189-199.

Vorhies, D. W., & Morgan, N. A. (2005). Benchmarking marketing capabilities for sustainable competitive advantage. *Journal of Marketing, 69*(1), 80-94.

Voss, G. B., & Voss, Z. G. (2000). Strategic orientation and firm performance in an artistic environment. *Journal of marketing*, *64*(1), 67-83.

Vukšić, V. B., Bach, M. P., Garrido-Moreno, A., Lockett, N., & Garcia-Morales, V. (2015). Exploring the role of knowledge management practices in fostering customer relationship management as a catalyst of marketing innovation. *Baltic Journal of Management.*

Walker, R. M. (2004). Innovation and organisational performance: Evidence and a research agenda. *Advanced Institute of Management Research Paper*, (002).

Wang, Z. & Wang, N. (2012). Knowledge sharing, innovation, and firm performance. *Expert Systems with Applications, 39*(10), 8899-8908.

Wang, H., & Yu, Z. (2010, May). The research of customer knowledge management in CRM. In *2010 International Conference on Intelligent Computation Technology and Automation* (Vol. 3, pp. 901-904). IEEE.

Weerawardena, J., O'Cass, A., & Julian, C. (2006). Does industry matter? Examining the role of industry structure and organizational learning in innovation and brand performance. *Journal of Business Research, 59*(1), 37-45.

Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal, 5*(2), 171–180.

Wilhelm, S., Gueldenberg, S., & Güttel, W. (2013). Do you know your valuable customers? *Journal of Knowledge Management, 17*(5), 661-676.

Williams, P. & Sullivan, H. (2011). Lessons in leadership for learning and knowledge management in multi-organisational settings. *International Journal of Leadership in Public Services, 7*(1), 6-20

Yang, J. T. (2007). Knowledge sharing: Investigating appropriate leadership roles and collaborative culture. *Tourism Management, 28*, 530–543.

Yang, L.-R., Huang, C.-F., & Hsu, T.-J. (2014). Knowledge leadership to improve project and organizational performance. *International Journal of Project Management, 32*(1), 40–53.

Young, S., Bell, J., & Crick, D. (2000). The resource-based perspective and small firm internationalisation: an exploratory approach. *In International Business* (pp. 79-101). Springer: Palgrave Macmillan, London.

Zablah, A. R., Bellenger, D. N. & Johnston, W. J. (2004) Customer Relationship Management Implementation Gaps. *Journal of Personal Selling & Sales Management, 24*, 279-295.

Zack, M., McKeen, J., & Singh, S. (2009). Knowledge management and organizational performance: an exploratory analysis. Journal of Knowledge Management, 13(6), 392–409.

Zahari, A. S. M., Wahid, K. A. and Mahmood, R. (2019). The Effect of Customer Knowledge Management on Organizational Performance', in Tomé, E. and Kragulj, F. (eds.) Proceedings of the International Conference on Theory and Applications in the Knowledge Economy TAKE 2019. Vienna, Austria. pp. 588–603.

Zahra, S., & George, G. (2002). Absorptive capacity: A review, reconceptualization, and extension. *Academy of Management Review, 27*(2), 185–203.

Zhao, X., Lynch Jr, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research, 37*(2), 197-206.

Zia, N. U. (2020). Knowledge-oriented leadership, knowledge management behaviour and innovation performance in project-based SMEs. The moderating role of goal orientations. *Journal of Knowledge Management, 24*(8), 1819-1839

APPENDICES

APPENDIX A: Questionnaire – English Version

มหาวิทยาลัยมหิดล
Mahidol University

This survey is part of a dissertation that explores the relationships among knowledge-oriented leadership (KOL), customer knowledge management (CKM), and firm performance in Thai Small and Medium Enterprises (SMEs).

Please select one main business that you have been operated more than 2 years to fill in this questionnaire.

Definition:

"SME" means a business with revenue not more than 500 million baht per year and has not more than 200 employees in the manufacturing sector OR a business with revenue not more than 300 million per year and has not more than 100 employees in trade and services sector.

"A firm" means the company you work for or own.

"Customer knowledge" means the knowledge during the interaction between the firm and customers.

Part 1. Background Information

Please circle the appropriate number beside each question to complete this survey.

1. Gender 1) Male	2) Female
2. Your Title (job position) 1) Business Owner 2) General Manager 3) Sales Manager	4) Marketing Manager 5) Finance/Accounting Manager 6) Other: _____ (please specify)
3. Working Experience 1) Less than 1 year 2) 1-5 years 3) 6-10 years	4) 11-15 years 5) 16-20 years 6) More than 20 years

Part 1. Background Information

Please circle the appropriate number beside each question to complete this survey.

4. How long have you been working for your firm? (TENURE)

1) Less than 1 year
2) 1-5 years
3) 6-10 years
4) 11-15 years
5) 16-20 years
6) More than 20 years

5. Firm Status

1) Enterprise/Sole proprietorship
2) Private limited company
3) Partnership/Joint venture

6. Annual Sales Revenue

1) Less than 1,800,000 Baht
2) 1,800,001 - 3,000,000 Baht
3) 3,000,001 - 5,000,000 Baht
4) 5,000,001 - 10,000,000 Baht
5) 10,000,001 - 20,000,000 Baht
6) 20,000,001 - 50,000,000 Baht
7) 50,000,001 - 100,000,000 Baht
8) 100,000,001 - 300,000,000 Baht
9) 300,000,001 - 500,000,000 Baht

7. Sector of Industry (can answer more than 1)

1) Manufacturing
2) Service
3) Wholesale
4) Retail

8. Industry

1) Apparel & Fashion products
2) Health Wellness and Beauty
3) Food and Beverages
4) IT Solutions
5) Business Consulting
6) Manufacturing
7) Automotive and Logistics
8) Media and Marketing
9) Real Estate
10) Equipment and Building Materials
11) Architecture, Interior, and Decor
12) Hotel and Travel
13) Education and Training
14) Other: _____ (please specify)

In the following questions, please indicate…

9. Firm Age: _____ years

10. Number of Employees (Firm Size): _____ people

Part 2: Knowledge-oriented Leadership Please indicate the extent to which you perceive that your firm has implemented the following measures on seven-point scale.							
11. Knowledge-oriented Leadership (KOL)	1 = strongly disagree						7 = strongly agree
Our management…							
11.1… leadership has been creating an environment for responsible employee behavior and teamwork.	1	2	3	4	5	6	7
11.2…is used to assuming the role of knowledge leaders, which is mainly characterized by openness and tolerance of mistakes	1	2	3	4	5	6	7
11.3…is used to assuming the role of knowledge leaders, which is mainly characterized by mediation for the achievement of the firm's objectives.	1	2	3	4	5	6	7
11.4… promotes learning from experience, tolerating mistakes up to a certain point.	1	2	3	4	5	6	7
11.5... behaves as advisers, and controls are just an assessment of the accomplishment of objectives.	1	2	3	4	5	6	7
11.6… promotes the acquisition of external knowledge.	1	2	3	4	5	6	7
11.7... rewards employees who share and apply their knowledge.	1	2	3	4	5	6	7

Part 3: Customer Knowledge Management (CKM) Please indicate the extent to which you perceive that your firm has implemented the following measures on a seven-point scale.							
12. Knowledge about Customers (CKM_KAB)	1 = strongly disagree						7 = strongly agree
12. 1. Our firm has been informed about the customer's background.	1	2	3	4	5	6	7
12. 2. Our firm has been informed about the number of customer referrals.	1	2	3	4	5	6	7
12. 3. Our firm has been informed about the customer's requirements and prerequisites.	1	2	3	4	5	6	7
12. 4. Our firm has been informed about the customer's demands and requests.	1	2	3	4	5	6	7
12. 5. Our firm has been informed about the customer's problems.	1	2	3	4	5	6	7
13. Knowledge for Customers (CKM_KFO)	1 = strongly disagree						7 = strongly agree
13.1. Our firm provides information about current products and services for customers.	1	2	3	4	5	6	7
13.2. Our firm provides information about new products and services for customers.	1	2	3	4	5	6	7
13.3. Our firm provides information about the benefits of new products and services for customers.	1	2	3	4	5	6	7
13.4. Our firm helps customers make better decisions by providing information.	1	2	3	4	5	6	7

Part 3: Customer Knowledge Management (CKM) Please indicate the extent to which you perceive that your firm has implemented the following measures on a seven-point scale.							
14. Knowledge from Customers (CKM_KFR)	1 = strongly disagree						7 = strongly agree
14.1. Our firm asks customers about current service quality.	1	2	3	4	5	6	7
14.2. Our firm asks customers about the competitor's service quality.	1	2	3	4	5	6	7
14.3. Our firm asks customers about their required services.	1	2	3	4	5	6	7
14.4. Gaining customer's ideas affects the development of the new products and services of our firm.	1	2	3	4	5	6	7
Part 4: Innovation Quality (INNOV) Please indicate the extent to which you perceive that your firm has implemented the following measures on seven-point scale.							
15. Innovation Quality	1 = strongly disagree						7 = strongly agree
Our firm has…	1	2	3	4	5	6	7
15.1. ...good performance in generating novel ideas.	1	2	3	4	5	6	7
15.2. ... good performance in developing new product or service.	1	2	3	4	5	6	7
15.3. ... good performance in launching new product or service.	1	2	3	4	5	6	7
15.4. ...good performance in using new technology and equipment.	1	2	3	4	5	6	7
15.5. ...good performance in solving customers' problems.	1	2	3	4	5	6	7

Part 5: Firm Performance Please indicate the extent to which you perceive that your firm has implemented the following measures on a seven-point scale.							
16. Marketing performance (MK)	1 = strongly disagree						7 = strongly agree
Compared to our main competitors,							
16.1. …the growth of our market share is higher.	1	2	3	4	5	6	7
16.2. …the acquisition of new customers is higher.	1	2	3	4	5	6	7
16.3. …the retention of existing customers is higher.	1	2	3	4	5	6	7
16.4. … increase in sales to existing customers is superior.	1	2	3	4	5	6	7
16.5. …customer satisfaction of our firm is higher.	1	2	3	4	5	6	7
Please rate the overall performance of your business unit in the **past two years.** *Definition:* *"ROI" is a ratio between net profit (over a period) and cost of investment*							
17. Financial performance (FIN)	1 = very poor						7 = excellent
17.1. Sales	1	2	3	4	5	6	7
17.2. Return on Investment (ROI)	1	2	3	4	5	6	7
17.3. Profit	1	2	3	4	5	6	7
17.4. Profit Growth	1	2	3	4	5	6	7
17.5. Business Growth	1	2	3	4	5	6	7
17.6. Cash Flow	1	2	3	4	5	6	7

Please rate the overall performance of your business unit compared with your **average competitor** in the **past two years.**							
17. Financial performance (CFIN)	1 = very poor						7 = excellent
17.7. Sales	1	2	3	4	5	6	7
17.8. Return on Investment (ROI)	1	2	3	4	5	6	7
17.9. Profit	1	2	3	4	5	6	7
17.10. Profit Growth	1	2	3	4	5	6	7
17.11. Business Growth	1	2	3	4	5	6	7
17.12. Cash Flow	1	2	3	4	5	6	7

Please indicate the extent to which you perceive that your firm has implemented the following measures on seven-point scale.							
18. Operational performance (OPER)	1 = strongly disagree						7 = strongly agree
Compared to our main competitors,							
18.1. …the customer satisfaction of our firm is higher.	1	2	3	4	5	6	7
18.2. …our firm's products and services are developed.	1	2	3	4	5	6	7
18.3. … the cost management of our firm is superior.	1	2	3	4	5	6	7
18.4. … the responsiveness of our firm is superior.	1	2	3	4	5	6	7
18.5. … the past performance of our firm is superior.	1	2	3	4	5	6	7
18.6. …our management is superior.	1	2	3	4	5	6	7

Part 6: Competitive Intensity (COMP_INT) Please indicate the extent to which you perceive that your firm has implemented the following measures on seven-point scale.							
19. Competitive Intensity	1 = strongly disagree				7 = strongly agree		
In our industry…	1	2	3	4	5	6	7
19.1 … competition is cutthroat.	1	2	3	4	5	6	7
19.2 … there are many "promotion wars."	1	2	3	4	5	6	7
19.3 … strong price competition is well known.	1	2	3	4	5	6	7
19.4 … we hear of a new competitive move almost every day.	1	2	3	4	5	6	7

APPENDIX B: Questionnaire – Thai Version

มหาวิทยาลัยมหิดล
Mahidol University

กรุณาเลือก 1 ธุรกิจหลักของท่านที่เปิดมามากกว่า 2 ปีเพื่อทำแบบสำรวจนี้

การสำรวจนี้เป็นส่วนหนึ่งของวิทยานิพนธ์ที่ศึกษาความสัมพันธ์ระหว่างความเป็นผู้นำเชิงความรู้ (KOL) การจัดการความรู้ลูกค้า (CKM) และผลการดำเนินงานขององค์การวิสาหกิจขนาดกลางและขนาดย่อมในไทย (SMEs)	
คำจำกัดความ: “SME” หมายถึงธุรกิจที่มีรายได้ไม่เกิน 500 ล้านบ้าทต่อปี และพนักงานไม่เกิน 200 คน ในกิจการการผลิต หรือ ธุรกิจที่มีรายได้ไม่เกิน 300 ล้านบ้าทต่อปี และพนักงานไม่เกิน 100 คน ในกิจการการค้าและการบริการ “บริษัท” หมายถึงบริษัทที่คุณทำงานอยู่หรือเป็นเจ้าของ “ความรู้ลูกค้า” หมายถึงความรู้ที่เกิดขึ้นระหว่างการปฏิสัมพันธ์ระหว่างบริษัทและลูกค้า	
ส่วนที่ 1 ข้อมูลพื้นฐาน โปรดวงกลมหมายเลขที่เหมาะสมข้างคำถามในแต่ละข้อเพื่อทำแบบสำรวจนี้ให้สมบูรณ์	
1. เพศ 1) ชาย	2) หญิง
2. ตำแหน่งของคุณ (ตำแหน่งงาน) 1) เจ้าของธุรกิจ 2) ผู้จัดการทั่วไป 3) ผู้จัดการฝ่ายขาย	4) ผู้จัดการฝ่ายการตลาด 5) ผู้จัดการฝ่ายการเงิน / บัญชี 6) อื่นๆ (โปรดระบุ): _____
3. ประสบการณ์การทำงาน 1) น้อยกว่า 1 ปี 2) 1-5 ปี 3) 6-10 ปี	4) 11-15 ปี 5) 16-20 ปี 6) มากกว่า 20 ปี
4. คุณทำงานให้กับบริษัทของคุณมานานแค่ไหนแล้ว? (วาระการดำรงตำแหน่ง) 1) น้อยกว่า 1 ปี 2) 1-5 ปี 3) 6-10 ปี	4) 11-15 ปี 5) 16-20 ปี 6) มากกว่า 20 ปี

ส่วนที่ 1 ข้อมูลพื้นฐาน

โปรดวงกลมหมายเลขที่เหมาะสมข้างคำถามในแต่ละข้อเพื่อทำแบบสำรวจนี้ให้สมบูรณ์

5. สถานะของบริษัท

1) กิจการ / กิจการเจ้าของคนเดียว
2) บริษัทเอกชนจำกัด
3) ห้างหุ้นส่วน / กิจการร่วมค้า

6. รายได้จากการขายต่อปี

1) น้อยกว่า 1,800,000
2) 1,800,001 - 3,000,000 บาท
3) 3,000,001 - 5,000,000 บาท
4) 5,000,001 - 10,000,000 บาท
5) 10,000,001 - 20,000,000 บาท
6) 20,000,001 - 50,000,000 บาท
7) 50,000,001 - 100,000,000 บาท
8) 100,000,001 - 300,000,000 บาท
9) 300,000,001 - 500,000,000 บาท

7. ภาคอุตสาหกรรม (สามารถตอบได้มากกว่า 1 ข้อ)

1) การผลิต
2) การบริการ
3) ค้าส่ง
4) ค้าปลีก

8. อุตสาหกรรม

1) เครื่องแต่งกายและสินค้าแฟชั่น
2) สุขภาพและความงาม
3) อาหารและเครื่องดื่ม
4) ไอทีโซลูชั่น
5) การให้คำปรึกษาทางธุรกิจ
6) การผลิต
7) ยานยนต์และการจัดการขนส่ง
8) สื่อและการตลาด
9) อสังหาริมทรัพย์
10) อุปกรณ์และวัสดุก่อสร้าง
11) สถาปัตยกรรม การตกแต่งภายใน และการตกแต่ง
12) อื่นๆ (โปรดระบุ): _____

ในคำถามต่อไปนี้โปรดระบุ

9. อายุบริษัท : _____ ปี (นับตั้งแต่ก่อตั้ง)

10. จำนวนพนักงาน (ขนาดบริษัท): _____ คน

ส่วนที่ 2: ความเป็นผู้นำเชิงความรู้ Knowledge-oriented Leadership (KOL) ท่านเห็นด้วยกับข้อความต่อไปนี้ในระดับใด							
11. ความเป็นผู้นำเชิงความรู้	1 = ไม่เห็นด้วยอย่างยิ่ง						7 = เห็นด้วยอย่างยิ่ง
ผู้บริหารของเรา ...							
11.1 มีความเป็นผู้นำที่ได้สร้างสภาพแวดล้อมให้พนักงานมีพฤติกรรมที่รับผิดชอบและมีการทำงานเป็นทีม	1	2	3	4	5	6	7
11.2 คุ้นเคยกับบทบาทของผู้นำที่มีความรู้ ซึ่งมีลักษณะเปิดกว้าง ยอมรับความผิดพลาด	1	2	3	4	5	6	7
11.3 คุ้นเคยกับบทบาทของผู้นำที่มีความรู้ ซึ่งมีลักษณะเป็นสื่อกลางเพื่อทำให้บรรลุวัตถุประสงค์ของบริษัท	1	2	3	4	5	6	7
11.4 ส่งเสริมการเรียนรู้จากประสบการณ์และยอมรับข้อผิดพลาดในระดับหนึ่ง	1	2	3	4	5	6	7
11.5 ประพฤติตนเป็นที่ปรึกษาและมองว่าการควบคุมเป็นเพียงการประเมินความสำเร็จตามวัตถุประสงค์	1	2	3	4	5	6	7
11.6 ส่งเสริมการได้มาซึ่งความรู้จากภายนอก	1	2	3	4	5	6	7
11.7 ให้รางวัลพนักงานที่แบ่งปันและประยุกต์ใช้ความรู้ภายในองค์กร	1	2	3	4	5	6	7

ส่วนที่ 3: การจัดการความรู้ลูกค้า Customer Knowledge Management (CKM) ท่านเห็นด้วยกับข้อความต่อไปนี้ในระดับใด							
12. ความรู้เกี่ยวกับลูกค้า (CKM_KAB) คำจำกัดความ: “การบอกต่อ” หมายถึงการที่มีลูกค้าเดิมแนะนำให้กับผู้อื่นทราบ	1 = ไม่เห็นด้วยอย่างยิ่ง						7 = เห็นด้วยอย่างยิ่ง
12. 1. บริษัทของเราทราบเกี่ยวกับข้อมูลเบื้องต้นของลูกค้า	1	2	3	4	5	6	7
12.2. บริษัทของเราทราบจำนวนการบอกต่อของลูกค้า	1	2	3	4	5	6	7
12. 3. บริษัทของเราทราบเกี่ยวกับเงื่อนไขและข้อกำหนดเบื้องต้นของลูกค้า	1	2	3	4	5	6	7
12. 4. บริษัทของเราทราบเกี่ยวกับความต้องการและความต้องการพิเศษอื่นๆของลูกค้า	1	2	3	4	5	6	7
12. 5. บริษัทของเราทราบเกี่ยวกับปัญหาของลูกค้า	1	2	3	4	5	6	7
13. ความรู้สำหรับลูกค้า (CKM_KFO)	1 = ไม่เห็นด้วยอย่างยิ่ง						7 = เห็นด้วยอย่างยิ่ง
13.1. บริษัทของเราให้ข้อมูลเกี่ยวกับผลิตภัณฑ์และบริการปัจจุบันสำหรับลูกค้า	1	2	3	4	5	6	7
13.2. บริษัทของเราให้ข้อมูลเกี่ยวกับผลิตภัณฑ์และบริการใหม่สำหรับลูกค้า ..	1	2	3	4	5	6	7
13.3. บริษัทของเราให้ข้อมูลเกี่ยวกับ**ประโยชน์**ของผลิตภัณฑ์และบริการใหม่สำหรับลูกค้า	1	2	3	4	5	6	7
13.4. บริษัทของเราช่วยให้ลูกค้าตัดสินใจได้ดีขึ้นโดยการให้ข้อมูลที่เพียงพอ	1	2	3	4	5	6	7
14. ความรู้จากลูกค้า (CKM_KFR)	1 = ไม่เห็นด้วยอย่างยิ่ง						7 = เห็นด้วยอย่างยิ่ง
14.1. บริษัทของเราถามลูกค้าเกี่ยวกับคุณภาพการให้บริการในปัจจุบัน	1	2	3	4	5	6	7
14.2. บริษัทของเราถามลูกค้าเกี่ยวกับคุณภาพการให้บริการของคู่แข่งของเรา	1	2	3	4	5	6	7
14.3. บริษัทของเราถามลูกค้าเกี่ยวกับบริการที่จำเป็นสำหรับลูกค้า	1	2	3	4	5	6	7
14.4. การได้ความคิดเห็นของลูกค้าส่งผลกระทบต่อการพัฒนาผลิตภัณฑ์และบริการใหม่ของบริษัทของเรา	1	2	3	4	5	6	7

ส่วนที่ 4: การประเมินด้านคุณภาพนวัตกรรม Innovation Quality (INNOV) ท่านเห็นด้วยกับข้อความต่อไปนี้ในระดับใด							
15. การประเมินด้านคุณภาพนวัตกรรม	1 = ไม่เห็นด้วยอย่างยิ่ง						7 = ห็นด้วยอย่างยิ่ง
บริษัทเรามี ...	1	2	3	4	5	6	7
15.1. ผลการดำเนินงานที่ดีจากการสร้างสรรค์ความคิดใหม่ ๆ	1	2	3	4	5	6	7
15.2. ผลการดำเนินงานที่ดีในการพัฒนาผลิตภัณฑ์หรือบริการใหม่	1	2	3	4	5	6	7
15.3. ผลการดำเนินงานที่ดีในการเปิดตัวผลิตภัณฑ์หรือบริการใหม่	1	2	3	4	5	6	7
15.4. ผลการดำเนินงานที่ดีในการนำเทคโนโลยีและอุปกรณ์ใหม่มาใช้	1	2	3	4	5	6	7
15.5. ผลการดำเนินงานที่ดีในการแก้ปัญหาของลูกค้า	1	2	3	4	5	6	7
ส่วนที่ 5: ผลการดำเนินงานขององค์การ Firm Performance ท่านเห็นด้วยกับข้อความต่อไปนี้ในระดับใด							
16. ผลการดำเนินงานทางการตลาด **Marketing performance (MK)**	1 = ไม่เห็นด้วยอย่างยิ่ง						7 = เห็นด้วยอย่างยิ่ง
Compared to our main competitors, เมื่อเทียบกับคู่แข่งหลักของบริษัทเรา…							
16.1. ส่วนแบ่งการตลาดของเราเติบโตสูงกว่า	1	2	3	4	5	6	7
16.2. เราได้ลูกค้าใหม่เพิ่มขึ้นมากกว่า	1	2	3	4	5	6	7
16.3. เราสามารถรักษาจำนวนลูกค้าเดิมที่มีอยู่ได้มากกว่า	1	2	3	4	5	6	7
16.4. เรามียอดขายเพิ่มขึ้นจากลูกค้าปัจจุบันสูงกว่า	1	2	3	4	5	6	7
16.5. ความพึงพอใจของลูกค้าต่อบริษัทเราสูงกว่า	1	2	3	4	5	6	7

โปรดประเมินผลการดำเนินงานโดยรวมของธุรกิจของคุณในช่วง **<u>สองปีที่ผ่านมา</u>** คำจำกัดความ “ROI” หมายถึงอัตราผลตอบแทนจากการลงทุนคืออัตราส่วนระหว่างกำไรสุทธิและต้นทุนการลงทุน							
17. ผลประกอบการด้านการเงิน **Financial performance (FIN)**	1 = แย่มาก						7 = ดีเลิศ
17.1. ยอดขาย	1	2	3	4	5	6	7
17.2. ผลตอบแทนการลงทุน (ROI)	1	2	3	4	5	6	7
17.3. กำไร	1	2	3	4	5	6	7
17.4. การเติบโตของกำไร	1	2	3	4	5	6	7
17.5. การเติบโตของธุรกิจ	1	2	3	4	5	6	7
17.6. งบกระแสเงินสด	1	2	3	4	5	6	7
โปรดประเมินผลการดำเนินงานโดยรวมของธุรกิจของคุณเมื่อเปรียบเทียบกับ **<u>คู่แข่งหลัก</u>** ของคุณในช่วงสองปีที่ผ่านมา							
17. ผลประกอบการด้านการเงิน **Financial performance (CFIN)**	1 = แย่มาก						7 = ดีเลิศ
17.7. ยอดขายเทียบกับคู่แข่ง	1	2	3	4	5	6	7
17.8. ผลตอบแทนการลงทุนเทียบกับคู่แข่ง	1	2	3	4	5	6	7
17.9. กำไรเทียบกับคู่แข่ง	1	2	3	4	5	6	7
17.10. การเติบโตของกำไรเทียบกับคู่แข่ง	1	2	3	4	5	6	7
17.11. การเติบโตของธุรกิจเทียบกับคู่แข่ง	1	2	3	4	5	6	7
17.12. งบกระแสเงินสดเทียบกับคู่แข่ง	1	2	3	4	5	6	7

ท่านเห็นด้วยกับข้อความต่อไปนี้ในระดับใด							
18. การประเมินด้านการดำเนินงาน **Operational performance (OPER)**	1 = ไม่เห็นด้วยอย่างยิ่ง						7 = เห็นด้วยอย่างยิ่ง
เมื่อเทียบกับคู่แข่งหลัก…							
18.1. การจัดการต้นทุนของบริษัทเราดีกว่า	1	2	3	4	5	6	7
18.2. การตอบสนองของบริษัทเราดีกว่า	1	2	3	4	5	6	7
18.3. ผลการดำเนินงานที่ผ่านมาของบริษัทเราเหนือกว่า	1	2	3	4	5	6	7
18.4. การบริหารจัดการของบริษัทเราเหนือกว่า	1	2	3	4	5	6	7
18.5 กระบวนการทำงานของเรานั้นมีประสิทธิภาพและประสิทธิผลมากกว่า	1	2	3	4	5	6	7
18.6 การจัดส่งสินค้าและบริการของเรานั้นเชื่อถือได้มากขึ้น	1	2	3	4	5	6	7
ส่วนที่ 6 ความรุนแรงของการแข่งขัน **Competitive Intensity (COMP INT)** **ท่านเห็นด้วยกับข้อความต่อไปนี้ในระดับใด**							
19. ความรุนแรงของการแข่งขัน	1 = ไม่เห็นด้วยอย่างยิ่ง						7 = เห็นด้วยอย่างยิ่ง
ในอุตสาหกรรมของเรา ...	1	2	3	4	5	6	7
19.1 …การแข่งขันมีความรุนแรงมาก	1	2	3	4	5	6	7
19.2 …มี "สงครามส่งเสริมการขาย" มากมาย	1	2	3	4	5	6	7
19.3 ...การแข่งขันด้านราคาอย่างรุนแรงเป็นเรื่องปกติ	1	2	3	4	5	6	7
19.4 …เราทราบว่ามีกิจกรรมทางการแข่งขันเกิดขึ้นใหม่เกือบทุกวัน	1	2	3	4	5	6	7

APPENDIX C: Publications of CKM

Publications of CKM Studies

To build a comprehensive literature review of CKM, the author has gone through several steps in managing the scope of the review and to assure a consistent range of related studies in the sample. First, 216 papers were found when the term "customer knowledge management" was typed into the electronic database, SCOPUS, where the initial studies were after 2001. Next the author limited the search to journal sources; therefore, conference proceedings, books, and book series were excluded resulting in 107 papers. In the third step, document types were also excluded: reviews, articles in press, and conference papers; only the article were kept, and this resulted in 97 articles in this step. Two papers that were not related to CKM—in the subject areas of chemical engineering and medicine—were also excluded; finally, there was a total of 95 articles. Although the number of papers was relatively high, this paper focuses on recent and most-cited papers.

When the term "knowledge-oriented leadership" was investigated in SCOPUS and similar steps were followed as with CKM, 9 papers were found regarding this term. However, when both terms were searched together with a Boolean "AND,", only 5 papers were found.

Keywords: Co-occurrence of CKM Studies

Using the VOS-Viewer, the table below reflects the keywords that co-occurred in 95 CKM studies from 2001-2019, while Figure A shows the relationships among the keywords. There were 6 categories of keywords where CKM had co-occurred in 95 CKM studies from 2001-2019.

Table A Keywords: Co-occurrence of CKM studies: Literature review of 95 CKM Studies from 2001-2019

Keywords: Co-occurrence			
No.	**Red**	**No.**	**Green**
1	Information Systems	1	Marketing
2	Public Relations	2	Data Mining
3	Sales	3	Management Science
4	Customer Relationships	4	Information Management
5	Social Media	5	Customer Information
6	Effective Management	6	Industrial Management
7	Competition	7	Decision-making
8	Knowledge Acquisition	8	Customer Satisfaction
No.	**Blue**	**No.**	**Yellow**
1	Value Creation	1	Process Management
2	Knowledge-based Systems	2	Knowledge Management
3	Information Technology	3	E-commerce
4	Customer Orientation	4	Customer Knowledge
5	Customer Knowledge Management		
6	Customer Relationship Management		
No.	**Purple**	**No.**	**Light Blue**
1	Organizational Performance	1	Customer Engagement
2	Knowledge	2	Software Quality
3	Project Management	3	Innovation

Among the 95 articles on CKM, there were 6 main categories of keywords that the VOS-Viewer suggested. CKM is closely related to knowledge management and customer relationship management, and CKM has a strong relationship with both keywords and a relatively strong relationship with knowledge acquisition and customer knowledge. On the other hand, other keywords tended to have relatively small relationship with CKM.

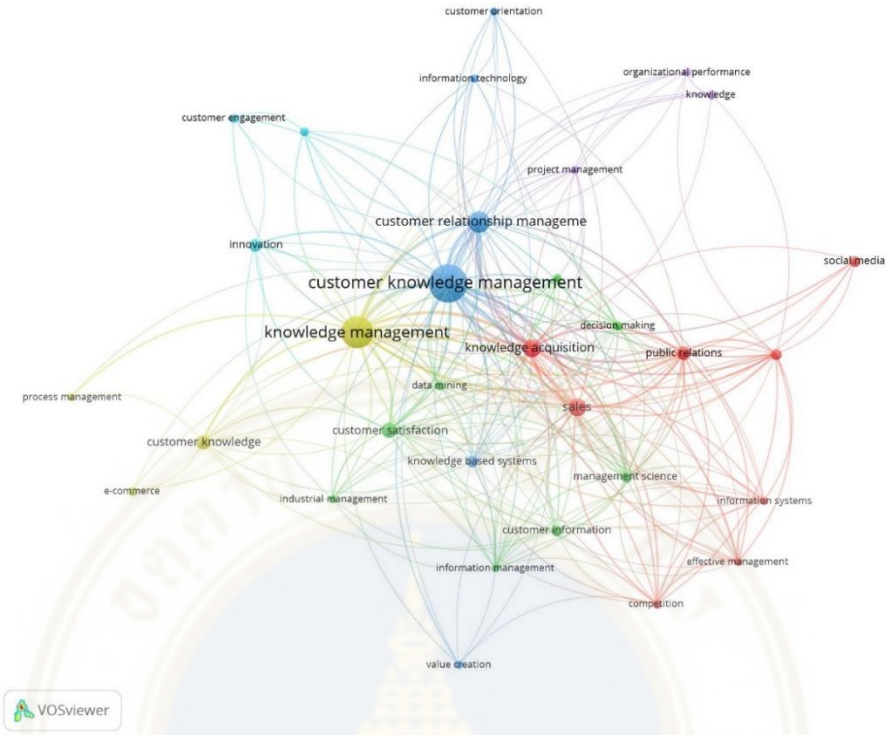


Figure A. Keywords: Co-occurrence of CKM Studies

Authors: Co-citation of CKM Studies

Using the VOS-Viewer, the table below shows the authors of the CKM articles that co-cited 95 CKM studies from 2001-2019, while Figure B shows the relationships of co-cited CKM studies among the authors.

Table B Authors: Co-citation of CKM Studies: Literature Review of 95 CKM Studies from 2001-2019

No.	Red	No.	Blue:	No.	Green:
1	Davenport, T. H.	1	Brenner, W.	1	Kolbe, L.
2	Leibold, M.	2	Garcia-murillo, M.	2	Gebert, H.
3	Gibbert, M.	3	Annabi, H.	3	Geib, M.
4	Probst, G.	4	Rowley, J.	4	Salomann, H.
5	Nonaka, I.	5	Davenport, T.	5	Lopez-nicolas, C.
6	Von Hippei, E.	6	Prusak, L.	6	Riempp, G.
7	Darroch, J.	7	Drucker, P. F.	7	Rollins, M.
8	Klahr, P.	8	Alavi, M.	8	Dous, M.
9	Harris, J. G.	9	Bueren, A.	9	Mckeen, J. D.
10	Teece, D. J.	10	Rigas, D.	10	Eisenhardt, K. M.
11	Sharma, S.	11	Schierholz, R	11	Grant, R.M.
12	Kohli, A. K.			12	Triki, A.
13	Hult, G. T. M.			13	Salojarvi, H.
14	Awazu, Y.			14	Hair, J. F.
15	Ramaswamy, V.			15	Garrido-moreno, A.
16	Desouza, K. C.			16	Khosravi, A.
17	Takeuchi, H.			17	Molina-castillo, F.J.
18	Day, G. S.				
19	Griffin, A.				
20	Jaworski, B. J.				

Among the 95 articles on CKM, there were 3 main school of thought from 48 authors that the VOS-Viewer suggested: (1) Davenport, (2) Leibold, (3) Gibbert, (4) Probst, and (5) Nonaka have been frequently co-cited in similar schools of thought; (1) Brenner, (2) Garcia-murillo, (3) Annabi, and (4) Rowley share similar schools of thought and have been recurrently co-cited. Lastly, (1) Kolbe, (2) Gebert, (3) Geib, (4) and Salomann are co-cited authors that have been studied regarding CKM in the past two decades with similar schools of thought.

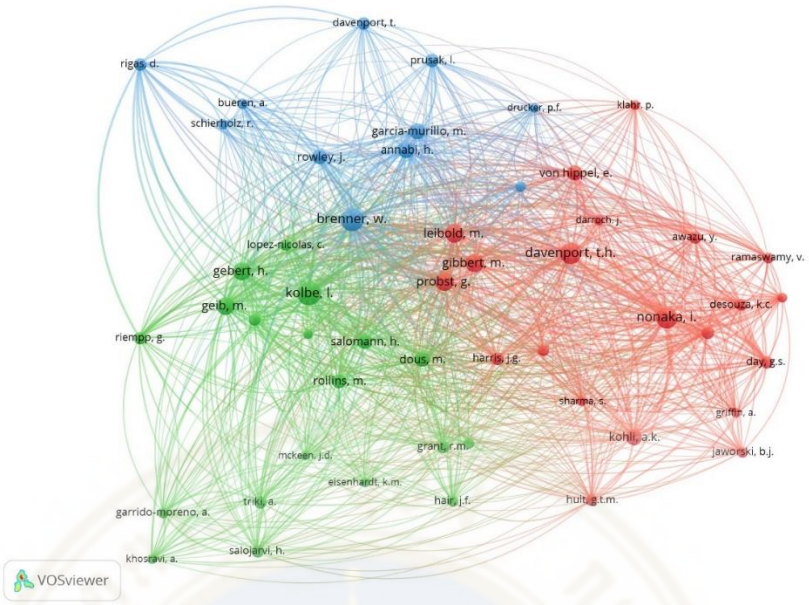


Figure B. Authors: Co-citation of CKM Studies: Literature Review of 95 CKM Studies from 2001-2019

CKM Studies in Different Contributing Countries

For almost two decades, CKM studies were conducted in 33 different countries. Surprisingly, most of them were conducted in Iran, Taiwan, and Malaysia, followed by the United States, China, and the United Kingdom. However, there was only one paper that was conducted in Thailand. From this result, there is a gap in the study of this area in Thailand.

Table C CKM Studies in Different Contributing Countries: Literature Review of 95 CKM Studies from 2001-2019

No.	Contributing Country	No. of CKM Articles	Proportion in %
1	Iran	18	16%
2	Taiwan	13	11%
3	Malaysia	11	10%
4	United States	10	9%
5	China	9	8%

Table C CKM Studies in Different Contributing Countries: Literature Review of 95 CKM Studies from 2001-2019 (cont.)

No.	Contributing Country	No. of CKM Articles	Proportion in %
6	United Kingdom	7	6%
7	Italy	4	3%
8	Spain	4	3%
9	Switzerland	3	3%
10	Tunisia	3	3%
11	Australia	2	2%
12	Finland	2	2%
13	Hong Kong	2	2%
14	India	2	2%
15	Jamaica	2	2%
16	Liechtenstein	2	2%
17	Norway	2	2%
18	Saudi Arabia	2	2%
19	Singapore	2	2%
20	Austria	1	1%
21	Bangladesh	1	1%
22	Brazil	1	1%
23	Bulgaria	1	1%
24	Canada	1	1%
25	Ghana	1	1%
26	Indonesia	1	1%
27	Japan	1	1%
28	Jordan	1	1%
29	Mexico	1	1%
30	Netherlands	1	1%

Table C CKM Studies in Different Contributing Countries: Literature Review of 95 CKM Studies from 2001-2019 (cont.)

No.	Contributing Country	No. of CKM Articles	Proportion in %
31	Oman	1	1%
32	Pakistan	1	1%
33	Thailand	1	1%
34	Undefined	1	1%

CKM Studies in Different Subject Areas

Most CKM papers were found in journals under the subject area of business, management, and accounting, particularly in the category of (1) strategy and management and (2) business and international management. However, many papers were also found in the subject area of computer science.

Table D CKM Studies in Different Subject Areas: Literature Review of 95 CKM Studies from 2001-2019

Subject Area	No. of Journals	No. of CKM Articles
Business, Management, and Accounting	45	66
Computer Science	14	16
Multidisciplinary	2	3
Social Sciences	2	2
Arts and Humanities	1	2
Economics, Econometrics, and Finance	1	1
Mathematics	1	1
Decision Sciences	1	1
Medicine	1	1
Health Professions	1	1
N/A	1	1
Total	70	95

CKM Studies in Different Journals

The majority of CKM papers were found in journals concentrating on knowledge management, such as the Journal of Knowledge Management. Moreover, CKM articles were also found in other journals that focused on management and information systems.

Table E CKM Studies in Different Journals: Literature Review of 95 CKM Studies from 2001-2019

Name of Journal	No. of CKM Articles	Proportion in %
Journal of Knowledge Management	8	8%
European Management Journal	3	3%
International Journal of Electronic Customer Relationship Management	3	3%
Journal of Business and Industrial Marketing	3	3%
Journal of Business Research	3	3%
Journal of Theoretical and Applied Information Technology	3	3%
Knowledge and Process Management	3	3%
Asian Social Science	2	2%
Business Information Review	2	2%
Business Process Management Journal	2	2%
International Journal of Knowledge Management Studies	2	2%
Knowledge Management Research and Practice	2	2%
Middle East Journal of Scientific Research	2	2%
Actual Problems of Economics	1	1%
Advanced Science Letters	1	1%
Australian Journal of Basic and Applied Sciences	1	1%
Baltic Journal of Management	1	1%
Change Management	1	1%

Table E CKM Studies in Different Journals: Literature Review of 95 CKM Studies from 2001-2019 (cont.)

Name of Journal	No. of CKM Articles	Proportion in %
Contaduria y Administracion	1	1%
Dongbei Daxue Xuebao Journal of Northeastern University	1	1%
Electronic Commerce Research	1	1%
Espacios	1	1%
European Journal of Innovation Management	1	1%
European Journal of Social Sciences	1	1%
Global Business and Economics Review	1	1%
Industrial Management and Data Systems	1	1%
Industrial Management Data Systems	1	1%
Industrial Marketing Management	1	1%
Information Development	1	1%
Information Technology Journal	1	1%
Intelligent Decision Technologies	1	1%
International Business Management	1	1%
International Journal of Applied Mathematics and Statistics	1	1%
International Journal of Computers and Applications	1	1%
International Journal of Healthcare Information Systems and Informatics	1	1%
International Journal of Information Management	1	1%
International Journal of Information Systems in The Service Sector	1	1%
International Journal of Innovation Management	1	1%
International Journal of Management and Business Research	1	1%

Table E CKM Studies in Different Journals: Literature Review of 95 CKM Studies from 2001-2019 (cont.)

Name of Journal	No. of CKM Articles	Proportion in %
International Journal of Management and Decision Making	1	1%
International Journal of Physical Distribution and Logistics Management	1	1%
International Journal of Production Economics	1	1%
International Journal of Project Management	1	1%
International Journal of Public Sector Performance Management	1	1%
International Review on Computers and Software	1	1%
Journal of Business Economics and Management	1	1%
Journal of Computers	1	1%
Journal of Database Marketing and Customer Strategy Management	1	1%
Journal of High Technology Management Research	1	1%
Journal of Human Values	1	1%
Journal of Information and Knowledge Management	1	1%
Journal of Military Medicine	1	1%
Journal of The Operational Research Society	1	1%
Journal of Theoretical and Applied Electronic Commerce Research	1	1%
Journal of Travel and Tourism Marketing	1	1%
Journal of Vacation Marketing	1	1%
Knowledge Based Systems	1	1%
Knowledge Management and E Learning	1	1%
Kybernetes	1	1%
Management Science Letters	1	1%

Table E CKM Studies in Different Journals: Literature Review of 95 CKM Studies from 2001-2019 (cont.)

Name of Journal	No. of CKM Articles	Proportion in %
Measuring Business Excellence	1	1%
Ruan Jian Xue Bao Journal of Software	1	1%
Service Industries Journal	1	1%
Sport Science	1	1%
Strategic Direction	1	1%
Technovation	1	1%
Telematics and Informatics	1	1%
Total Quality Management and Business Excellence	1	1%
Vikalpa	1	1%
Vine Journal of Information and Knowledge Management Systems	1	1%