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THE ROLES OF KNOWLEDGE MANAGEMENT AND COOPERATION IN DETERMINING COMPANY INNOVATION CAPABILITY: A LITERATURE REVIEW

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ABSTRACT

Aim/Purpose	The aim of this study is to develop a research model derived from relevant literature to guide empirical efforts.
Background	Companies struggle to innovate, which is essential for improving their performance, surviving in competition, and growing. A number of studies have discussed company innovation capability, stating that innovation capability is influenced by several variables such as cooperation and knowledge management. Therefore, further research is necessary to identify factors playing a role in enhancing innovation capability.
Methodology	This study is based on systematic literature review. The stages are: (1) research scope review, (2) comprehensive online research, (3) journal quality assessment, (4) data extraction from journals, (5) journal synthesis, and (6) comprehensive report. The online research used Google Scholar database, by browsing titles, abstracts, and keywords to locate empirical research studies in peer-reviewed journals published in 2010-2020. Furthermore, 62 related articles were found,

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	of which 38 articles were excluded from further analysis and 24 articles were selected because they were more related to the topic.
Contribution	The results of this study enrich the research in the field of knowledge management, cooperation, and innovation capability by developing a conceptual framework of innovation capability. The proposed theoretical model may be fundamental in addressing the need of a research model to guide further empirical efforts.
Findings	This study provides a research model derived from systematically reviewing relevant literature. The proposed theoretical model was done by incorporating the aspects of knowledge management, cooperation, and innovation capability. The model shows that knowledge management and cooperation are essential aspects of innovation capability. Furthermore, this study also provides the dimensions and sub dimensions of each variable that was established after synthesizing the literature review.
Recommendations for Practitioners	Business practitioners can use the identified predictors of innovation capability and the dimensions of each variable to explore their company's innovation capability. They can also take the relevant variables into consideration when making policies regarding innovation.
Recommendations for Researchers	The theoretical model proposed in this study needs validation with further empirical investigation.
Impact on Society	Readers of this paper can obtain an understanding that knowledge management and cooperation are essential aspects to consider in enhancing innovation capability.
Future Research	Future studies should explore other dimensions of knowledge management and cooperation through alternative approaches and perspectives.
Keywords	knowledge management, cooperation, innovation capability

INTRODUCTION

Innovation is fundamental for a company to enhance its performance. In general, companies struggle to innovate. According to Schumpeter (as cited in Crossan & Apaydin, 2010), innovation is doing new things and existing things differently that includes results and quality of production, production methods, markets, sources of supply, or organizational structures. To achieve competitive advantages, according to Barney (1991), companies could employ various methods because the most important aspect of a dynamic organization is successfully developing innovations. In terms of competitiveness, innovation is the key factor for a company to survive and continuously grow. Therefore, a company needs to establish a competitive advantage by finding new and better methods to compete in an industry and implement them in the market. In this matter, Guan and Ma (2003) discovered that interaction and harmonization of various innovation assets are the main factor in improving company's competitiveness in China.

In improving and developing companies' innovation capability, several studies found that cooperation and knowledge management are the two most important factors. There are some studies that support this finding. Barney (1991) introduces the concept of *the resource-based view (RBV)*. A firm's resources are used to enable it to establish strategies to improve the overall efficiency and performance of the organization and these can be quite wide ranging. Barney (1991) classifies these resources into three categories, namely: physical capital, human capital and organization capital. This theory explains that companies can obtain resources in three ways, namely: (a) developing internally

within the organization, which is usually for resources that are tacit, unique and complex and are not traded in the market, (b) through market mechanisms for tradable resources and (c) relational exchanges for specific resources or capabilities that can only be used jointly with other company resources through cooperation.

In the context of knowledge management, the knowledge-based theory approach regards knowledge as an essential resource, where the company is a place for storing and creating knowledge and capabilities. Resources in the form of external knowledge can be obtained if the company has access to the knowledge and institutions of other companies (Grant, 1996).

Romijn and Albaladejo (2002) highlighted the importance of external and internal sources as innovation capability predictors. In this literature review, they considered that knowledge management is a part of internal sources. In addition, Yang et al. (2006) investigated the influence of knowledge acquisition and innovation on a company's innovation capability in China and its impact on the company's long-term growth. Others study found the importance of transdisciplinary knowledge within an organization that could produce knowledge for the organization (Lotrecchiano & Misra, 2018; Paletz & Schunn, 2012; Pregernig, 2006). In this regard, transdisciplinary knowledge management could be the new research direction as the antecedent of a company's innovation capability.

In terms of cooperation, Shan et al. (1994) argued that cooperation could improve innovation capability of a start-up company. Koschatzky (1999) explained that a company capable to innovate is conducting an intensive interaction with their partners. Romijn and Albaladejo (2002) referred cooperation as a factor originating from external sources with other parties outside the company. Other studies found that cooperation is a predictor of innovation capability (Lundvall et al., 2002; Quintana-Garcia & Benadives-Velasco, 2004). In a similar topic, Silva and Leitão (2009) showed that innovation capability could be stimulated by external party cooperation.

To increase competitiveness, a company has to improve their capability to innovate. However, most of the time, a company has to deal with a basic problem, that is, resources and external relations (Bougrain & Haudeville, 2002; Mezgár et al., 2000). Therefore, further research is necessary to be conducted to identify the factor playing a role to enhance innovation capability. This study was conducted to investigate the stated problem that could enrich the topic of innovation capability by developing a conceptual framework from relevant literature to identify predictors of innovation capability. This study seeks to identify and describe the literature gap from the abovementioned previous research.

In order to propose the framework, we conducted a systematic review of knowledge management, cooperation, and innovation capability literature. The methods employed in studying innovation capability were also analyzed. In this study, we examined different conceptual perspectives used in the literature, identified main methodological approaches and main innovation capability dimensions, and used those dimensions as important measures in our conceptual framework. Finally, this study also presents the conclusion with implication and the direction for future study.

CONCEPTUAL FRAMEWORK

INNOVATION CAPABILITY

Adler and Shenhar (1990) defined innovation as (1) the ability to develop products to meet the needs of the market; (2) the ability to use existing technology to develop products; (3) the ability to develop new products or update existing products to meet the needs of markets; and (4) the ability to acquire new technology to create new opportunities. Focusing on the same topic, Combe and Greenley (2004) argued that a company requires superior organizational capabilities in order to excel in a competition. In this case, a capability is the ability or power to combine intangible assets or resources in the form of expertise, learning, and knowledge to utilize other tangible or intangible assets (Combe & Greenley, 2004).

According to Romijn and Albaladejo (2002), innovation capability is influenced by internal and external factors. Internal factors include educational background and the skills of the owner and employee. External factors include interactions with suppliers, customers, public institutions, and industry associations that may allow the company to receive input for learning processes, which is not available from within the company. This finding is valuable for studying the topic of innovation capability because it applies and strengthens the RBV theory (Resource Based View Theory). Their study also provides a primitive framework for innovation capability by classifying internal and external sources.

Qiang and Yong (2011) further reinforced the findings of Romijn and Albaladejo (2002) by explaining some internal sources that serve as predictors of innovation capability. Namely, innovation capability has six dimensions: strategic capability, organizational climate capability, marketing, technological competence, manufacturing capability, and organizational capability.

Regarding innovation capability, Iddris (2016) developed a systemic review that generally explains the following terms: knowledge transformation, learning, idea generation, and processes. Iddris (2016) explained that innovation capability is the ability to generate innovation through continuous learning, knowledge transformation, creativity, and exploitation of internal and external resources available to the firm. Moreover, Iddris (2016) also identified that the most recurring themes or concepts and summarized them as innovation capability dimensions into a conceptual framework in order to facilitate future empirical research. These dimensions include knowledge management, organizational learning, organizational culture, leadership collaboration, creativity, idea management, and innovation strategy.

In addition, Saunila (2020) conducted a systematic literature review on innovation capability and found two conceptualizations of innovation capability, which are (1) innovation as a process and (2) innovation as an outcome. Innovation as a process is defined as the ability to continuously transform knowledge and ideas into new products, processes, and systems for the benefit of the firm and its stakeholders. On the other hand, the notion of innovation as an outcome defines as the capacity to produce distinct types of innovation, such as product innovation, process innovation, or organizational innovation.

Some scholars developed the concept of innovation capability based on the approach of the change process, namely (1) incremental innovation and (2) radical innovation. Incremental innovation capability is the capability to generate innovations that refine and reinforce existing products and services. Meanwhile, radical innovative capability is the capability to generate innovations that significantly transform existing products and services (Ettlie et al., 1984; Liu et al., 2018; Subramaniam & Youndt, 2005; Suroso & Azis, 2015). In addition, Suroso and Azis (2015) stated that the concept of innovating measurement is divided into two approaches, namely (1) input and output measurement and (2) metric and methodologies measurement. Input and output approach assesses the innovation as a combination of input and output indicators. Meanwhile, metric and methodologies approach assesses the innovation using metric tools or methods that have been developed, such as surveys, questionnaires, balance scorecard and various mathematical models.

Based on the above mentioned explanation, by considering the findings by Romijn and Albaladejo (2002), Iddris (2016), and Saunila (2020), innovation capability can be defined as a company's ability to exploit and convert potential external and internal resources through cooperation and knowledge into new products, processes and systems for the benefit of the company and its shareholders.

COOPERATION

Based on the approach of RBV theory, there are three main objectives for companies to carry on cooperation. The first objective is to scale profits by combining similar resources. Second, to provide

resource advantage by combining complementary resources, skills, and strengths. Third, the benefits of learning through new skills or knowledge (Barney, 1991).

Cravens et al. (1993) introduced the term lateral relationship and internal relationship. Lateral relationship takes place between companies with one or more other companies with similar goals, an internal relationship takes place between business units, departments, and individual officers. Its purpose is to enable cross-functional cooperation between specialties. Moreover, Hillebrand and Bie-mans (2003) stated that cooperation consists of internal and external cooperation. Internal cooperation focuses on cooperation within organizations, while external cooperation deals with cooperation between organizations (external cooperation). According to Baratt (2004), cooperation is an effort between company and its stakeholders that consist of vertical and horizontal relationships. A vertical relationship is cooperation with its suppliers and customers. Meanwhile, a horizontal relationship is cooperation with competitors and non-competitors, such as university, government or public institution, etc. Both horizontal and vertical relationships include internal cooperation (across functional inside a company).

Sanches and Zilber (2019) found that company employs a cooperative strategy to establish a competitive advantage. In this case, a cooperative strategy is conducted by long-term cooperation between two or more independent companies or business units for mutually beneficial economic purposes. Company may establish strategic cooperation to obtain several benefits that include the acquisition of new skills obtained and learned from a new cooperation or in other words, a process of knowledge transfer between a company and its partner. In addition, it would be easier for a company to acquire access to a new market if they establish cooperation with a local party who is well aware of the market condition and also a company could reduce business and other risks by establishing a strategic cooperation, especially when they go into a new international market.

According to Sanches and Zilber (2019), cooperation has a strategic role for the development of company capabilities through improvement in skills and knowledge. In this literature review, knowledge and cooperation are predictors of innovation capability that is a part of the company capabilities.

KNOWLEDGE MANAGEMENT

Nonaka and Takeuchi (1995) divided knowledge into explicit and tacit categories. Explicit knowledge is based on documentation and mutual agreement, while tacit knowledge comes more from experience and undocumented. Based on an explicit approach, knowledge can be created through a structured, managed, scientific learning process, while on a tacit approach, knowledge is considered more difficult to interpret and transfer due to its stickiness. This is in line with Xue (2017) who distinguished explicit knowledge and tacit knowledge. Explicit knowledge has several features as follow (1) can be documented, codified, shared; (2) can be stored in technological ways and digital systems; and (3) transferable. Meanwhile, the features of tacit knowledge are (1) what people think in their mind; (2) difficult to be accessed and evaluated; and (3) not transferable.

Further studies on knowledge lead to knowledge management. Knowledge management has been variously defined in the literature. Darroch (2003) explained that knowledge management is the process to acquire, disseminate and implement knowledge within or between organizations. He further elaborated that the knowledge management model consists of knowledge acquisition, knowledge dissemination, and knowledge responsiveness. Wong et al. (2015) defined knowledge management as knowledge resources and processes management to create values through its implementation that will provide competitive advantages. Furthermore, Wong et al. (2015) proposed a knowledge management model that consists of knowledge resources, knowledge management processes, and knowledge management factors. Knowledge management involves management, exploitation, and development of knowledge to enhance organizational performance (Lee & Wong, 2015).

METHODOLOGY

In this study, a systematic literature review recommended by Jesson, Matheson, and Lacey (2011) was adopted with the following stages: (1) Reviewing the scope of research, (2) Doing comprehensive research using an online database and search engine, (3) Assessing the quality of the journal that is going to be used, (4) Extracting data from the selected journals, (5) Synthesizing the reviewed journals, and (6) Writing a balanced, impartial, and comprehensive report using a systematic review format. It was selected as a basis of the review as the procedure is repeatable and offers a transparent process the selection of the relevant studies.

The web search was conducted using the following keywords: “innovation capability”, “knowledge management”, “innovation capability and cooperation”; hence, it was decided to use KM and SMEs. These keywords represent the variables that are the focus of this research and help answer the research objectives. The research also included browsing titles and abstracts, besides the keywords. It was performed by searching the latest ten years (2010-2020) of empirical research studies in peer-reviewed journals contained in Google Scholar database. The researcher found 62 related articles, of which 38 articles were excluded from further analysis and 24 articles were selected. The selection measures include suitability of the article topic, similarity of research scope, and depth of explanation regarding the relationships between knowledge management, cooperation, and innovation capability.

FINDINGS AND DISCUSSION

RELATIONSHIP BETWEEN KNOWLEDGE MANAGEMENT AND INNOVATION CAPABILITY

According to several studies, it was found that knowledge could improve innovation capability. Many studies have investigated the influence of knowledge management on innovation capability. This paper presents several important studies investigating the relationship between knowledge management and innovation capability. Table 1 illustrates the relevant studies on the topic.

Table 1: List of Selected Articles by Title

NO	TITLE & AUTHOR	FINDINGS
1	Social capital, knowledge sharing, and innovation capability: an empirical study of R&D teams in Iran (Akhdavan & Hosseini, 2016)	Social interaction ties (as a structural capital factor), trust, reciprocity, and team identification (as relational capital factors) significantly associated with Knowledge Sharing (KS) intention. In turn, it was significantly related to KS behaviors (knowledge collecting and knowledge donating). In addition, the findings revealed that members' willingness to collect and donate knowledge can affect team innovation capability.
2	Knowledge sharing enablers, processes, and firm innovation capability (Hussein et al., 2016)	Knowledge self-efficacy and top management support have a positive impact on knowledge donating and collecting. Only knowledge collecting, however, had a positive effect on firm innovation capability.

NO	TITLE & AUTHOR	FINDINGS
3	Relationships among organizational culture, knowledge sharing, and innovation capability: a case of the automobile industry in Taiwan (Chang et al., 2017)	The result shows that knowledge sharing is the mediating variable of organization culture and innovation capability, and organizational culture has a significant positive effect on knowledge sharing.
4	Knowledge from customer, for customer, or about customer: which triggers innovation capability the most? (Taghizadeh et al., 2018)	The findings show that knowledge from customers and knowledge for customers are the most influential predictors of new service market performance. Of the three dimensions of customer knowledge management, knowledge from customer turns out to be the strongest predictor of innovation quality, and speed. Innovation quality has a greater impact on new service market performance than innovation speed. Innovation capability (quality and speed) plays a mediating role in this study.
5	An empirical examination of knowledge management processes and market orientation, innovation capability, and organizational performance: insights from Jordan (Migdadi et al., 2017)	The study reveals that engagement in Knowledge Management Process (KMP) and Market Orientation (MO) can lead to better innovation capability in the organizations, which in turn can lead to better organizational performance.
6	Knowledge sharing and firm innovation capability in Croatian ICT companies (Podrug et al., 2017)	The results suggest that employee willingness to donate and collect knowledge enables the firm to improve innovation capability.
7	Evaluating the role of social capital, tacit knowledge sharing, knowledge quality and reciprocity in determining innovation capability of an organization (Ganguly et al., 2019)	Both tacit knowledge sharing and the quality of knowledge were positively associated with innovation capability.
8	Comparison of competing models and multi-group analysis of organizational culture, knowledge transfer, and innovation capability: an empirical study of the Taiwan semiconductor industry (Liao et al., 2015)	Through the competing models, it was found that supportive culture is better than bureaucratic and innovative culture. Findings also reveal that managers should shape a supportive culture and encourage Knowledge Transfer (KT) to promote Innovation capability (IC) in the semiconductor industry supply chain. KT is a partial mediator between Organizational Culture (OC) and ICI. In addition, after multi-group analysis, the results show that culture has significantly different relationships with KT and IC.

NO	TITLE & AUTHOR	FINDINGS
9	Impacts of external knowledge and interaction on innovation capability among Indonesian SMEs (Indarti, 2017)	Findings from a survey among 198 Indonesian SMEs show that the depth of knowledge absorbed by a focal firm has a significant impact on the innovation capability. Similarly, the interaction affects the innovation capability significantly.
10	Impact of motivation and supervisory support to enhancing the innovation capability of dairy farms in Pakistan (Ullah et al., 2017)	The results confirmed that all hypothesized relationships except the impact of trust on knowledge sharing, which may be due to the unique contextual setting of Pakistan. This paper concludes that employees feel delighted in sharing knowledge for enhancing the innovation capability when they feel motivated and are provided with proper training.
11	Conceptualizing knowledge management, individual absorptive capacity, and innovation capability: a proposed framework (Saleh et al., 2018)	This paper concludes that knowledge management and absorptive capacity is imperative in individual innovation capability, which in turn will affect their organization's success.
12	The transformational leadership, knowledge management, and perceived organization support in predicting innovation capability (Sahban, 2019)	The results show a strong causal relation among Transformational Leadership (TL), Knowledge Management Infrastructure (KMI), and product and process innovation. In summary, transformational leadership was found as a prognosticator of KMI, product innovation, and process innovation. Furthermore, the relationship between TL and innovation (product and process) mediates by KMI. The findings could assist leaders or managers to manage the infrastructure of knowledge in their organizations and drive the organizations towards success by bringing innovations in products and processes.
13	HRM practices, knowledge sharing, innovation capability and firm performance in hospitals (Aktharsha & Sengottuvel, 2016)	Recruitment and selection, compensation and reward, teamwork, and training and development were found to be significant predictors of knowledge sharing behavior and knowledge sharing behavior of nurses that play a vital role in predicting the innovation capability of hospitals.
14	Firm innovation capability through knowledge sharing at Indonesian small and medium industries: impact of tacit and explicit knowledge perspective (Rumanti et al., 2019)	The result suggests that a company's capacity to share knowledge, both tacitly and explicitly, is indeed significant and influential towards the innovation capability of such a company, in this case, SMI.

NO	TITLE & AUTHOR	FINDINGS
15	The role of social commerce features and customer knowledge management in improving SME's innovation capability (Dzulfikar et al., 2018)	The findings conclude that through Customer Knowledge Management (CKM) implementation, Instagram-for-Business significantly affects the innovation capability of SMEs.
16	The effect of knowledge and innovation management processes on innovation capability and new product development success (Tekin & Akyol, 2019)	The findings conclude that through Customer Knowledge Management (CKM) implementation, Instagram-for-Business significantly affects the innovation capability of SMEs.
17	Customer knowledge management, innovation capability, and business performance: a case study of the banking industry (Taherparvar et al., 2014)	The study aims to examine the effect of customer knowledge management (CKM) on continuous innovation and firm performance in 35 private banks in Guilan (Iran). CKM emerges as an important and effective system for innovation capability and firm performance. However, the role of CKM in innovation and performance is not well understood.
18	Exploiting supplier innovativeness through knowledge integration (Bengtsson et al., 2013)	The study shows that innovative suppliers do contribute to a firm's innovation performance in terms of time-to-market and innovation level in products/services. The main result shows that an internal knowledge integration capability in terms of proficiency in supplier management and cross-functional decision making boosts innovation performance; in particular when the technological uncertainty is high.

Table 2 presents research focusing on knowledge management, derived from Table 1. Table 2 is pivotal in establishing a framework for model development in our study. In addition, Table 2 reveals the direction of the existing studies regarding knowledge management as an innovation capability predictor.

Based on Table 2, it can be synthesized that knowledge management consists of several dimensions, which are knowledge sharing, knowledge donating, knowledge documentation, and knowledge collecting, etc. However, the most interesting aspect of the studies during 2010-2020 is the focus on knowledge sharing in representing knowledge management (Akhavan & Hosseini 2016; Aktharsa & Sengottuvel 2016; Chang et al., 2017; Hussein et al., 2016; Podrug et al., 2017; Rumanti et al., 2019; Ullah et al., 2017).

Table 2: Research Focus on Knowledge Management

NO.	AUTHOR	KNOWLEDGE MANAGEMENT DIMENSION
1	Akhavan and Hosseini (2016) Hussein et al. (2016) Chang et al. (2017) Podrug et al. (2017) Ullah et al. (2017) Aktharsha and Sengottuvel (2016) Rumanti et al. (2019)	Knowledge sharing Knowledge donating Knowledge collecting
3	Migdadi et al. (2017) Tekin and Akyol (2019)	Knowledge creation, intra-organizational knowledge sharing, and application External knowledge acquisition Knowledge storage and documentation
4	Ganguly et al. (2019)	Tacit knowledge sharing Knowledge reciprocation Quality of knowledge
5	Indarti (2017)	Knowledge intensity of interaction Knowledge distribution
	Saleh et al. (2018)	Knowledge identification Knowledge access
6	Sahban (2019)	Knowledge management infrastructure
7	Rumanti et al. (2019)	Tacit knowledge Explicit knowledge
8	Liao et al. (2015)	Knowledge Transfer

Several studies offer different perspectives (Ganguly, 2019; Lotrecchiano & Misra, 2018; Nonaka & Takeuchi 1995; Paletz & Schunn, 2012; Pregernig, 2006; Rumanti et al., 2019). According to Nonaka and Takeuchi (1995) who categorized knowledge into two types: tacit knowledge and explicit knowledge, the previous studies presented in Table 2 have not been able to dig further and deeper into the role of tacit and explicit knowledge of a company in innovation capability, especially in every dimension of knowledge management. Therefore, Rumanti et al. (2019) and Ganguly et al. (2019) sought to examine the influence of tacit and explicit knowledge on knowledge sharing as dimensions of knowledge management. Meanwhile, others researcher viewed the knowledge from other perspective through the source of knowledge (Bengtsson et al., 2013; Dzulfikar et al., 2018; Taghizadeh et al., 2018; Taherparvar et al., 2014).

Based on the description, our literature review seems to reveal three major perspectives in the studies concerning knowledge management and its relationship with innovation capacity. The first group observed knowledge management using activity or process approach, which are knowledge sharing, knowledge donating, knowledge acquisition, and so on. The second group studied knowledge management from trait of knowledge with emphasis on tacit and explicit knowledge. The third group viewed knowledge management from the sources of knowledge that include customers, suppliers, and so on. Thus far, most of the existing studies had regarded knowledge management as a predictor of innovation capability, no matter whether by its process or by its nature.

RELATIONSHIP BETWEEN COOPERATION AND INNOVATION CAPABILITY

Several studies acknowledge that cooperation is one of the important factors in enhancing innovation capability in a company. Table 3 below presents the relevant studies that investigated the relationship between cooperation and innovation capability.

Table 3: List of Selected Articles

NO	TITLE & AUTHOR	FINDING
1	Cooperation in innovation activities: the importance of partners. De Faria et al. (2010)	The results show that firms from high-technological industries, with higher levels of absorptive capacity and of innovation investment, who give importance to incoming spillovers management, and who cooperate with firms from the same group or with suppliers, place greater value on cooperation partners in the innovation process.
2	Innovation, cooperation and business performance Some evidence from Indonesian small food processing cluster. Najib and Kiminami (2011)	The result shows evidence that cooperation is significantly related to innovation of SMEs in food processing industry clusters. Moreover, business performance is a function of innovation, in which research results show that innovation significantly affects the business performance of SMEs.
3	External sources for innovation in food SMEs. Lefebvre et al. (2015)	The results indicate that collaboration with customers is important for product innovations in food SMEs while collaboration with competitors is more important for organizational innovations in this type of firm. In addition, collaboration with science base actors does not appear relevant to innovation in food SMEs.
4	How does cooperation affect innovation in micro-enterprises? Tu et al. (2014)	Cooperation with suppliers has a positive significant influence on product innovation and service innovation whereas cooperation with consumers does not.
5	When and with whom to cooperate? Investigating the effects of cooperation stage and type on innovation capabilities and success. Weber and Heidenreich (2018).	Cooperation in concept and product development primarily improves a company's innovation capabilities while cooperation in the implementation stage primarily enhances innovation success of a company. Concerning its types, vertical, horizontal as well as institutional, cooperation significantly enhances innovation capabilities and success of a company. However, cooperation with institutional partners was found to be the most important contributor throughout all stages.

NO	TITLE & AUTHOR	FINDING
6	Sustainable development of micro firms: examining the effects of cooperation on handicraft firm's performance through innovation capability. Shafi (2020).	It was found that the impact of cooperation with customers and suppliers on firm performance via innovation capability was positive and significant. In contrast, competitor cooperation did not significantly affect innovation capability. Furthermore, there was a positive and significant interaction effect of customer and competitor cooperation on innovation capability.

The following studies investigated dimensions of cooperation, presented in Table 4. To investigate the relationship between cooperation and innovation capability, cooperation is classified into several types, which are intra-firm cooperation, inter-firm cooperation, and cooperation with institutions. Intra-firm cooperation consists of cooperation with customers, suppliers, and competitors. Inter-firm cooperation consists of cooperation between firms. While cooperation with institutions consists of cooperation with universities, government, consulting firms, etc. (De Faria et al., 2010; Freel & Harrison, 2006; Lefebvre et al., 2015; Najib & Kiminami, 2011; Silva & Leitão, 2009; Tu et al., 2014). Weber and Heidenreich (2018) split cooperation into horizontal and vertical cooperation.

Table 4 presents the importance to establish a foundation in developing our model, as it provides the direction of the existing studies concerning cooperation as an innovation capability predictor.

Table 4: Research Focus on Cooperation

NO	AUTHOR	DIMENSION
1	De Faria et al. (2010)	(1) Cooperation with suppliers, (2) cooperation with clients or customers, (3) cooperation with competitors, (4) cooperation with consultants, (5) cooperation with commercial laboratory or R&D firms, (6) cooperation with universities, (7) cooperation with government research institutions.
2	Najib and Kiminami (2011)	(1) Inter-firm cooperation; (2) cooperation with the government; and (3) cooperation with research institutions.
3	Freel and Harrison (2006)	(1) Cooperation with supplier, (2) cooperation with customer, (3) cooperation with a competitor, (4) cooperation with a university.
4	Lefebvre et al. (2015)	Market base actors; (1) suppliers, (2) customers, (3) competitors, (4) firms from other sectors. Science base actors: (1) universities and public research institutes, (2) private research institutes.
5	Tu et al. (2014)	(1) cooperation with suppliers, (2) cooperation with consumers
6	Weber and Heidenreich, (2018)	(1) horizontal cooperation, (2) vertical cooperation, (3) institutional cooperation.

To sum up, studies regarding cooperation as an innovation predictor can be classified into several categories. Some studies investigated the relationship between cooperation and innovation capability using a vertical approach, by analyzing the customers, suppliers, competitors, and other related factors. Others investigated cooperation by implementing a horizontal approach by analyzing the lateral and

internal cooperation processes. In this case, a lateral relationship is developed if a company cooperates with one or more companies or with external parties to expand its operation. On the other hand, an internal relationship is established between business units, departments, and individuals within a company.

It can be seen that the studies presented in Table 4 mostly focus on investigating the cooperation dimension using a vertical approach, such as its relationship with suppliers, clients, competitors, institutions, and others. Studies that investigate the cooperation model using a lateral approach are still limited. Therefore, it can be considered as a literature gap. It is believed that good internal cooperation could stimulate innovation in company. In practice, a company establishes cooperation with other parties to achieve certain goals, such as market expansion, product development, technology application, and others. Based on the observations discussed in the literature review, studies that investigate the relationship between cooperation and the abovementioned dimensions are rarely seen. Therefore, it can also be considered as a literature gap.

PROPOSED THEORETICAL MODEL

This literature investigation provides a research scope perspective by proposing a theoretical model of knowledge management capabilities, cooperation, and innovation. In which, the model was developed by synchronizing findings from the literature review and describing the direction and focus of the studies from 2010 to 2020 regarding knowledge management and cooperation, which are used as operational variables to predict innovation ability. Furthermore, this study advances our argument that knowledge management and cooperation practices can be considered as important internal and external drivers to enhance innovation capabilities. Companies that carry out knowledge management and cooperation internally and externally can have adequate innovative capability. All the proposed relationships between knowledge management, cooperation, and innovation capabilities are depicted in Figure 1. This model does not only show the relationships between variables but also the dimensions, sub-dimensions and indicators of each of these variables.

Specifically, four propositions were formulated:

First Proposition: A company's knowledge management can be developed through three perspective dimensions namely: process of knowledge, sources of knowledge, and trait of knowledge.

A theoretical model that was established based on synthesizing literature review has produced a knowledge management dimension that was developed from three perspectives: process of knowledge management, trait of knowledge management and sources of knowledge management. The first dimension is based on a process approach where knowledge management is considered as activities to generate knowledge into a firm, including knowledge sharing, knowledge donating, knowledge collecting, and others (Akhavan & Hosseini, 2016; Aktharsha & Sengottuvel, 2016; Chang et al., 2017; Hussein et al., 2016; Podrug et al., 2017; Rumanti et al., 2019; Ullah et al., 2017). The second dimension is based on its nature, which is tacit and explicit (Nonaka & Takeuchi, 1995; Ganguly et al., 2019; Rumanti et al., 2019). Furthermore, the third dimension based on its sources such as knowledge that is obtained from customers and suppliers, which is customer knowledge and supplier knowledge (Dzulfikar et al., 2018; Taghizadeh et al., 2018; Taherparvar et al., 2014). These consist of knowledge from, about and for customer or supplier which are valuable resources for a firm. Customer knowledge can be used to facilitate innovation capabilities such as facilitate the identification of emerging market opportunities and improve customer value co-creation (Taghizadeh et al., 2018). Furthermore, in term of supplier knowledge, shows that internal knowledge integration capabilities for integrating innovative suppliers boost the impact of innovative suppliers on firms' innovation capability (Bengtsson et al., 2013).

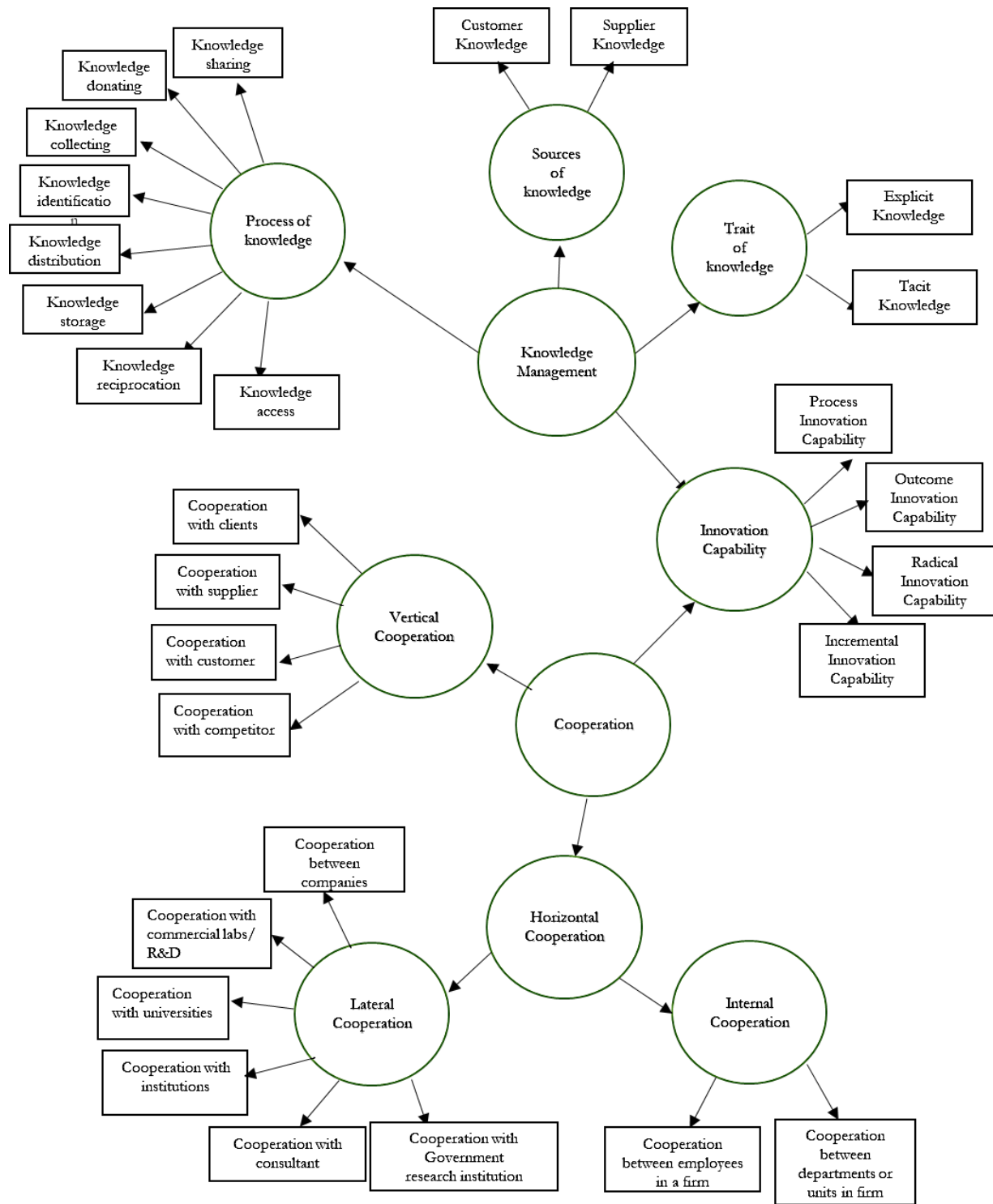


Figure 1: The Theoretical Model of Innovation Capability

Second Proposition: A company’s innovation capability is determined by knowledge management.

This proposition is supported by several existing studies presented in Table 1 that explain the relationship between knowledge management and innovation capability. Those studies agree that knowledge management can be implemented as an innovation capability predictor. In this case,

resource-based view theory explains that human capital as a company's resource has a part in improving a company's competitiveness (Barney, 1991). The argument is also supported by knowledge-based theory stated that knowledge is a company's intellectual capital and it is crucial in ensuring a company's sustainability in a long term. The new knowledge could provide a foundation for reinvention, innovation, and competitiveness of an organization (Grant, 1996).

Third Proposition: A company's cooperation can be developed through two-perspective dimensions, namely: vertical cooperation and horizontal cooperation, which consist of sub-dimensions, namely: internal cooperation, and lateral cooperation.

A theoretical model that was established based on synthesizing literature review has produced a cooperation dimension that was developed from two perspectives: vertical cooperation dimension and horizontal cooperation dimension. The vertical cooperation dimension model shows that the company can cooperate with customers, clients, suppliers and competitors. It is supported by studies showing that cooperation with potential partners can boost a company's innovation capabilities (De Faria et al., 2010; Freel & Harrison, 2006; Moreira & Silva, 2014; Tu et al., 2014). Companies can get feedback and ideas from customers, clients, suppliers and competitors to innovate. Furthermore, the dimension model of horizontal cooperation consists of lateral cooperation and internal cooperation sub dimensions. This dimension models shows that the company can cooperate with other parties outside the company or empower internal cooperation within the company (Lefebvre et al., 2015; Najib & Kiminami, 2011). Moreover, cooperation with other parties outside the company is primarily aimed at obtaining or exchanging resources, knowledge and experience with outsiders. This can be done by cooperating between similar companies, with research institutes or universities or with government institutions. Meanwhile, internal cooperation is to increase cooperation between work units and departments within the company itself (Cravens, 1993; Hillebrand & Biemans, 2003).

Fourth Proposition: A company's innovation capability is determined by cooperation.

This proposition is supported by several studies presented in Table 3 explaining the relationship between cooperation and innovation capability. Those studies agree that cooperation can be implemented as an innovation capability predictor. The resource-based view theory explains that one of the methods taken by company to acquire a resource that they do not possess is by conducting relational exchanges for specific resources or capabilities that can only be used jointly with other company resources through cooperation (Barney, 1991).

Fifth Proposition: A company's innovation capability can be developed through four perspective dimensions namely process innovation capability, outcome innovation capability, radical innovation capability and incremental innovation capability.

This proposition is supported by several existing studies investigating how to measure innovation capability. Saunila (2020) shows that innovation capability can be measured through two approaches: innovation as a process and innovation as an outcome. As a process, this dimension measures innovation capability by paying attention to the processes and efforts made by a company in changing ideas and knowledge to produce something new. Meanwhile, the innovation dimension as an outcome sees the results achieved from the innovation process, such as product innovation, marketing innovation, and process innovation. Through this approach of innovation capability dimension model, we can find out to what extent the predictor knowledge management and cooperation variables play a role in driving the innovation capability and outcome processes achieved, and can further answer the question of what types of innovation are dominant among process, production and marketing innovation.

Another view shows that innovation capability can be measured by seeing how the innovation change process occurs, whether radical or incremental. Radical innovation changes show the ability of a company to produce significant innovations by changing existing products and services, while incremental changes show the ability of a company to produce innovation by perfecting and

strengthening existing products and services (Ettlie et al., 1984; Liu et al., 2018; Subramanian & Youndt, 2005; Suroso & Azis, 2015). Through this approach of innovation capability dimension model, we can find out to what extent the predictor variables of knowledge management and cooperation can encourage companies to produce incremental and radical innovations. This dimensional model is also expected to be able to explain the question of whether the type of innovation is practically dominant resulting from either radical or incremental.

CONCLUSION AND FUTURE DIRECTION

This study proposes a research model by analyzing current relevant literature. The proposed theoretical model in this research was constructed by incorporating the aspects of knowledge management, cooperation, and innovation capability. These aspects are considered important as the internal and external drivers enhancing innovation capability. Furthermore, this study also exposes the dimensions and sub-dimensions of each variable that was established after synthesizing the literature review.

The study contributes in two ways. First, in terms of theory implication, the results of this study enrich the studies in the field of knowledge management, cooperation and innovation capability. The proposed theoretical model in this research is believed to be fundamental to address the need to have a research model that can be used as guidance for further empirical efforts. Second, in terms of business implication, this study contributes to provide recommendation for business practitioners interested in enhancing their innovation capability by utilizing cooperation and knowledge management in making their company's policies. Generally, this study presents understanding that knowledge management and cooperation are essential aspects in innovation capability.

Like any other research projects, this study also has some limitations. Methodology is one of the limitations of this study, in terms of search engine ability since this study was only employing Google Scholar during the investigation process. Therefore, different outcomes might be obtained if different search engine used. Moreover, although the selected keywords might prevent different outcomes, there is still a chance that other related articles were overlooked during the process. Although the inclusive and exclusive criteria had been developed as detailed as possible, there is also a chance that some related articles were missing due to subjectivity. It should be noted that the theoretical model proposed in this study needs to be validated in empirical investigations. In addition, further studies may find problems and questions related to the relationship between knowledge management and cooperation on innovation capability.

In the topic of knowledge management, most of the existing studies had regarded knowledge management as a predictor of innovation capability, focusing on its process, sources or by its nature. The future studies should be conducted to investigate knowledge management using a transdisciplinary approach to deepen our understanding of knowledge management and its relationship to innovation capability. A company needs the ability to manage its complexity of tacit and explicit knowledge management. The future studies are recommended to be focusing on the question research on how the company should combine the development of tacit and explicit knowledge to enhance its innovation capability. Furthermore, since previous research investigates the source of knowledge management from customer and supplier perspective, hence, further study should consider the sources of knowledge from other perspective such as market knowledge, competitor knowledge and others.

In the topic of the relationship between cooperation and innovation capability, many of the existing researches investigate the topic based on the type of partner approach. Hence, further study should consider exploring cooperation with other approaches, for example, how cooperation drives innovation capability in market expansion, application of new technology, or development of new production processes and other aspects. Therefore, future studies are expected to forecast the influence of knowledge management and cooperation on innovation capability through radical and incremental approaches.

Lastly, future studies may also investigate the roles of knowledge management and cooperation in companies with different business scales. It should be speculated that the characteristics of knowledge management and co-operation will differ in small, medium, and large businesses. This can be done by investigating the factors moderating the relationships between knowledge management, cooperation, and innovation capability.

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