Knowledge management capability and goal achievement: An empirical investigation of ISO 9000 certified firms in Thailand

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Knowledge Management Capability, Team Efficiency, Operational excellence, Business Outstanding, Learning Vision, Absorptive Capacity

Abstract

Knowledge management (KM) is the process of leveraging organizational knowledge to deliver long-term advantage to a business and is based on a business strategy. Knowledge management capabilities are defined here as an organization's ability to accumulate critical knowledge resources and manage their assimilation and exploitation. Drawing on the resource-based view approach and contingency theory, the aim of this study is to examine the relationships between two dimensions of knowledge management capability: infrastructure capability, and process capability. Based on the finding, the pair dimensions of knowledge management capability correlated positive impact on operational excellence, team efficiency, business outstanding, and goal achievement. In addition, learning vision, absorptive capacity and environment uncertainty also play major roles in the knowledge management capability of a firm. On the other hand, technological munificence does not play a significant moderating role on the relationship between antecedence and the pair dimensions of knowledge management capability. The results were derived from a survey of 208 ISO 9000 certified firms in Thailand. The hypothesized relationships among variables are examined by using ordinary least square (OLS) regression analysis. Moreover, theoretical and managerial contributions, conclusion, and suggestions for future research are also mentioned.

1. Introduction

Nowadays, the business environment is one of aggressive competition. Thus, managers acknowledge knowledge value as an intangible property that is a major strategic resource to establish corporate benefit. However, a firm can develop efficiently and use knowledge that specifies the advantages and disadvantages of knowledge management capabilities (KMC) (Tanriverdi, 2005). Knowledge management (KM) refers to the process of mobilization of organizational knowledge to expose a long term advantage for a business and it is dependent on the strategy of a firm. Lubit (2001) demonstrates higher knowledge management capabilities which are important in creating sustainable competitive advantage in various firms. Knowledge management stores up all the data which gravitates around an organization by consistently managing and analyzing data and information, knowledge management is now becoming richer in content. The implementation of this arrangement in business is increasingly inclusive.

Knowledge management capabilities refer to an organization's capability to collect key sources of knowledge and arrange their utilization and absorption. According to scholars, Tanriverdi (2005) has explained the elements of knowledge management and indicated that it has an impact on a firm's performance. The literature on knowledge management capability has never seen empirical researches that combine the whole dimensions of knowledge management capability, antecedents, consequences and moderators within the knowledge management capability framework. Thus, this leads me to be interested in arranging to interpret this study. Therefore, the results of the study will be beneficial to executives utilizing knowledge management in order to develop and increase their firm's performance.

The overall aim of this study is to examine the relationships between two dimensions of knowledge management capability; infrastructure capability and process capability. This study examines the following research: (1) How does; knowledge management capability, (infrastructure

capability, and process capability) have an influence on team efficiency, operational excellence, business outstanding and goal achievement? (2) How does team efficiency, operational excellence, business outstanding have an influence on goal achievement? (3) How do learning vision, absorptive capacity, and environment uncertainty have an impact on two dimensions of knowledge management capability?, and (4) How do learning vision, absorptive capacity, and environment uncertainty have an impact on two dimensions of knowledge management capability via moderating effects of technological munificence? To answer these research questions, we propose to examine the relationships between knowledge management capability, including two dimensions (infrastructure capability and process capability) and goal achievement through its effect on team efficiency, operational excellence and business outstanding. Furthermore, the relationships between antecedents of knowledge management capability include three factors; learning vision, absorptive capacity, and environment uncertainty. These links can be moderated by technological munificence.

The rest of this study is arranged as follows: the first part presents the theoretical foundation explaining the research phenomenon. The relevant literature reviews the areas of; knowledge management capability (Infrastructure capability and process capability), team efficiency, operational excellence, business outstanding on goal achievement, learning vision, absorptive capacity, environment uncertainty and technological munificence, and their connection to hypotheses development are demonstrated in the second part. Next, research methodology consists of sample selection, data collection procedure, measurement of variables, instrumental verification and the statistics and equations to test the hypotheses. The findings and discussions are also illustrated. Furthermore, the final part provides theoretical contributions, managerial contributions, managerial implications, limitations, recommendations for future research, and conclusions.

2. Literature Review and Hypotheses Development

The resource-based approach has appeared as a major competitive tool in numerous organizational activities consisting of firm strategy, information technology capability, and KM. (Mata,Fuerst &Barney, 1995) Resource-base is defined as the resources and capabilities controlled by various competing firms, and these may be distinct and long lasting (Barney, 1991).The perspective of the resource-based, knowledge management researchers has indicated that many knowledge management related resources support a sustainable, competitive advantage. According to Gold, Malhotra, and Segars (2001) technological resource, structural resource, and cultural resource were specific and were accepted as possible sources of organizational capability. Contingency theory puts forward the notion that organizations have no superb structure method. The structure suitable for an organization includes a number of factors such as advanced technology, complicated industry environment, and the firm's strategic positioning. (Galbraith 1973). Contingency theories indicate that there was fundamental analysis about the organization structures deployed in a systematic method. According to the principal contingency, variables identified were; complicated industry environment, organization strategy, technology, and organization size (Hickson, Pugh, &Pheysey, 1969). Meanwhile, Birkinshaw, Nobel, and Ridderstrale (2002) examined accurate knowledge as a contingency variable, creating a notion of advancement within the knowledge assets dimension.

This conceptual model of study is illustrated in Figure 1. The study proposed the effects of two dimensions of knowledge management capability (Infrastructure capability and process capability) that have an influence on team efficiency, operational excellence, business outstanding goal achievement and the antecedents of relationships among the learning vision, absorptive capacity, and environment uncertainty. As this study explores the moderating effect of technological munificence, all hypotheses are expected to be positive.

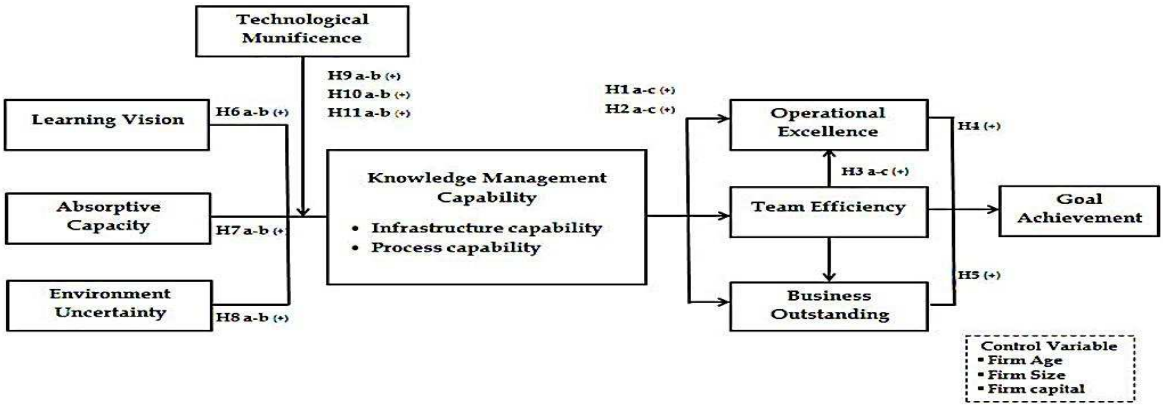

Figure 1: Model of Knowledge Management Capability and Goal Achievement

2.1 Knowledge management capability

Chuang (2004, p.406) has defined knowledge management capability as "its ability to mobilize and deploy knowledge management-based resources in combination with other resources and capabilities". Gold et al. (2001) indicated that knowledge management capability consists of infrastructure capability and process capability. Infrastructure capability includes culture, technology, and structure. Meanwhile, process capability also includes the organizational capabilities of knowledge protection, acquisition, application, and conversion. Concurrently, in order to utilize knowledge infrastructure effectively, it is of great significance to manage knowledge capability, which is established to store, transform, and transfer knowledge strength.

Infrastructure capability

Infrastructure capability refers to a firm's competency in integrating an organization's prior knowledge, utilizing and developing technological architecture and employee interaction by supporting both formal and informal methods. Infrastructure capability is the first dimension of knowledge management capability, and Infrastructure capability consists of culture, technology, and structure. It is a fact that infrastructure capability is a strategically significant resource in building knowledge corporate value (Gold et al, 2001; Chuang, 2004). Aujirapongpan, Vadhanasindhu, Chandrachai, and Cooparat, (2010) argue that infrastructure capability comprises technology, structure and culture that has a positive impact on operational effectiveness, which they also consider from a resource-based perspective and knowledge-based perspective. Kickul and Neuman, (2000) had evidence to support these results and revealed that infrastructure capability in knowledge management was associated with team efficiency. Khan and Quadri (2012) suggest the importance of the integration of the characteristics of integration management within knowledge capability which embraces tacit and explicit knowledge to increase the corporate performance and utilizes technology for effective collection in order to gain superior efficiency. This style of management can create business outstanding. Therefore, the research relationships are hypothesized as shown below:

Hypothesis 1: infrastructure capability is positively related to (a) team efficiency, (b) operational excellence, and (c) outstanding business.

Process capability

Process capability refers to a firm's competency in protecting its knowledge, acquisition of knowledge, actual use of knowledge, and making existing knowledge to be of use. Process capability is the second dimension of knowledge management capability which comprises attributes of acquisition, application, conversion and security (Gold et al, 2001; Chuang, 2004). Miranda, Lee, and Lee, (2011) explored data from 218 Korean firms that had differing types of process capability for knowledge management, having a positive impact on the firm's effectiveness, complementing synergies and a positive impact on value creation. Stevens and Campion, (1994) found that the

process capability of KMC correlates positively with team efficiency, including knowledge, skills, the abilities that it demonstrates in conflict resolution and collaborative problem solving. Richard and Nory, (2005) found that increasing the ability to manage corporate knowledge, both tacit and explicit can influence the nature of business outstanding very much. The study explains the nature of the integration between outstanding business intelligence and KMC. Based on the relevant literature, the following research hypothesis was postulated:

Hypothesis 2: process capability is positively related to (a) team efficiency, (b) operational excellence, and (c) business outstanding.

2.2 Consequences of knowledge management capability

Team efficiency

Team Efficiency refers to outstanding practices in managing the organization and achieving results to continue development of operations, process, and management. According to Johnson, (1997) it was suggested that the importance of knowledge management capability on operational excellence, produced optimum work practices among employees, leadership and collaboration convenience which depended on worldwide business and organization strengths. Illustrated results show that optimum practice collaborates on knowledge sharing for business operation, and investigates the valuable lessons and optimum utilizations that are obtained from knowledge sharing. Meanwhile, Zellmer, and Gibson, (2006) suggested the relationship between a learning team, operating performance and the quality of relationships between individuals. The data was obtained in a multi-method study of 115 teams in 20 subsidiaries of five MNCs. According to scholars, Mehta, Anju., Field, Hubert., Armenakis, Achilles and Mehta, Nikhil (2009) the relationships within goal orientation, team planning, and team efficiency, from which the data was obtained, 91 student teams collaborated on a complicated decision-making operation needing analysis skills. In the study, suggested team efficiency was considered by focusing on team planning and team efficiency to improve goal orientation. Based on the relevant literature, the following research hypothesis was developed:

Hypothesis 3: team efficiency is positively related to (a) operational excellence, (b) outstanding business, and (c) achieved goals.

Operational excellence

Operational excellence refers to outstanding practices in a company's business operation and receives continuing development of operations, process, and management. According to scholars, Ion, Naftanaila. Cătălina, Radu., and Georgiana, Cioana. (2013) operational excellence was introduced as a key business driver and also as a key industrial competitiveness driver. However, managers should also consider it as a key value-adding process and develop an approach to competitive advantage. Sudarmo (2013) demonstrates a study that influences on the operational excellence, in oil and gas, of Chevron Indonesian Kalimantan, Sumatra, West Java, and Jakarta. The data was obtained from 7000 employees of Chevron Indonesia. There were 225 respondents. Statistical analysis used Structural Equation Models (SEM). The results showed the relationship between operational excellence and corporate performance. Therefore, the research relationships are hypothesized as shown below:

Hypothesis 4: operational excellence is positively related to goal achievement.

Business Outstanding

Accordingly, business outstanding refers to a distinguished other firm that depends on the benefits expected from the organizations. D. Miller, (2007) paid attention to business outstanding of business intelligence as being different in different organizations, which benefit from low production cost, high corporate profitability and operational effectiveness. Further, Watson and Wixom (2007) have also regarded business outstanding as a procedure that includes two key activities: receiving

data in and receiving data out. Receiving data in refers to data in warehouse that depends on data transferred from data source systems that lead to integration of data into the data warehouse. Thus, receiving data out gets most organizational interest. Işık, Jones, and Sidorova, (2013) demonstrated that the business outstanding is also positively related to goal achievement, the recommend result of technological capabilities such as informational efficiency, convenient user access and the integration that is necessary for business success. According to scholars, Elbashir, Collier, and Davern, (2008) have reported on business outstanding such as Business Intelligence (BI) systems demonstrating the competency to extrapolate business information in order to facilitate and improve the quality of decision making within various business activities. The studies investigate both business procurement and organizational performance links which expose essential divergence in the industry sectors. Based on the relevant literature, the following research hypothesis was postulated:

Hypothesis 5: business outstanding is positively related to goals achieved.

2.3 Antecedents of knowledge management capability

Learning Vision

Learning Vision refers to both the organization learning capability and the strategy links with the market required to create an effective concept. According to scholars, Revilla and Rodríguez (2011) it was indicated that team vision and improved product performance were linked. The data was collected from the team vision of 78 new improved product performances from firms showing robust expansion. The study demonstrates team vision effectiveness that depends on the knowledge concentration strategy. Shankar, Singh, Gupta, & Narain, (2003) have reported on the strategic planning requirement of the KM process, and developed a framework that could be utilized, particularly by engineering firms, to suggest a KM procedural guideline. Further, knowledge management is the procedure of utilizing organizational knowledge to be of actual benefit in the long-term. Heide (1992) pointed out that the operation and utilized knowledge in both complex planning and proceeding policy is linked. Conclusions were obtained that which linked the knowledge management and policy proceedings. Based on the relevant literature, the following research hypothesis was developed:

Hypothesis 6: learning vision is positively related to (a) infrastructure capability, and (b) process capability.

Absorptive Capacity

Absorptive Capacity refers to the firm's competency of; absorption, combination, acquisition, new knowledge integration into the organizational operation, complex procedures, operating system, and operational preferences over competitors. Mu, Tang, and MacLachlan, (2010) have shown that firms are required to improve knowledge in order to obtain a sustained competitive advantage. The findings illustrated that a knowledge network depends on absorptive capabilities, dissemination capabilities, transmission speed, and a large interpersonal network. Furthermore, the findings illustrate that it is knowledge power which dominates such things as network speed. It facilitates knowledge integration. According to Gray (2006), who explored SME competency in operating and absorbing knowledge as the major source of successes in utilizing knowledge to improve innovations and a firm's growth. There were significant size, age and education links that dominated SME's in knowledge acquisition and integration. Yongping, Yanzheng, and Haomiao (2011) investigated the impact on absorptive capacity, network architecture and knowledge collection that linked innovation success and theoretical building in an empirical study comprised of 124 technology firms. The study showed that both knowledge collection and network architecture for absorptive capacity is positively associated, and impacts on innovation performance. Furthermore, network architecture and knowledge collection show positive effects on innovation performance enhancement. Based on the relevant literature, the following research hypothesis was postulated:

Hypothesis 7: absorptive capacity is positively related to (a) infrastructure capability, and (b) process capability.

Environment Uncertainty

Environment uncertainty refers to both complexities and dynamics which are strongly related concerning the environment such as economic turmoil, market turbulence, intensified competition, and technological turmoil. The scholar, Malhotra (2000), considered environment uncertainty, which has an increasing dynamic and intermittent change that indicates that it requires a knowledge management capability. Further, Birkinshaw, Nobel, and Ridderstråle (2002) demonstrated that suitability of organizational structure and knowledge management comprised a major undertaking in obtaining the greatest effectiveness and flexibility regarding environment uncertainty. Evidence from Ditillo (2004) illustrated knowledge management as a centralizing model to react to future organizational changes which require knowledge management capability in order to respond to environmental uncertainty. Grant, (1996) has also been considering the positive relationship between knowledge management capability and environmental uncertainty. Based on the relevant literature, the following research hypothesis was developed:

Hypothesis 8: environment uncertainty is positively related to (a) infrastructure capability, and (b) process capability.

2.4 Moderating Effect of Technological Munificence

Technological Munificence

Technological munificence refers to an ability of the technological environment to support the sustained growth of an organization. Li, Y., Wei, Z., Zhao, J., Zhang, C. and Liu, Y. (2013) investigated the relationship between exploitative learning and exploratory learning that impacts on product effectiveness and explored the moderating effect of environmental munificence by using data from 290 firms. The result of the illustration found that there was a positive relationship between exploratory learning and product effectiveness. Moreover, the results showed that environmental munificence strengthened the effect of exploratory learning on new product performance. Young Bong and Gurbaxani (2012) also suggested that technological munificence by firms secured strong growth potential. Furthermore, efficiency enhancement of outsourcing to a client firm depends on outsourcing attributes which comprise effectiveness, financial benefit, and an environmental munificence business. The results also indicate that the firms that outsource have been able to gain increasing productivity.

According to Parkland Mezias (2005), it was shown that the stock market underpinned alliance earning firms during 1995 to 2001 by the use of data from 75 e-commerce firms. Furthermore, alliance partners also obtained a rapid impact from the stock market which reflected that environmental munificence indicates a positive streak emerging. The results demonstrate that environmental munificence is changing the positive influence on the stock market by moving scrutiny from alliance announcements. Furthermore, Li (2011) investigated the relationship between innovation and learning that influenced on high-tech Chinese firms. The result of the proposition found that Chinese high-tech enterprises cooperation facilitated innovation by the Chinese state in that they should invest money to expand technology R&D to feed the growing demand for innovation. However, the result also showed that the relationship between absorptive capacity and innovation by technological knowledge absorptive capacity, within domestic technology, was more difficult than with foreign technology. Hatfield, Tegarden, and Echols (2001) demonstrated that technological munificence is linked to an increase in competitive advantage and technological munificence also supported market sentiment. Therefore, the research relationships are hypothesized as shown below:

Hypothesis 9: technological munificence positively moderates the relationships between learning vision and (a) infrastructure capability, and (b) process capability.

Hypothesis 10: technological munificence positively moderates the relationships between absorptive capacity and (a) infrastructure capability, and (b) process capability.
Hypothesis 11: technological munificence positively moderates the relationships between environment uncertainty and (a) infrastructure capability, and (b) process capability.

3. Research Methods

3.1 Data Collection

This study collected data from ISO 9000 certified firms in Thailand's manufacturing sector. A list of samples was obtained from the online database of the manufacturing directory of the Thai Industrial Standards Institute, Ministry of Industry of Royal Thai Government, in December, 2014 (www.tisi.go.th/syscer/9000.html). A mail survey was conducted via questionnaire for data collection. Therefore, questionnaires were mailed to executives or production managers of each firm, as key informants. The questionnaires were sent to 965 firms. In addition, with regard to the questionnaire mailing, 12 surveys were undeliverable because the firms had moved to new, unknown locations. The valid mailing was 965 surveys, of which 214 responses were received. Only 208 of the completed surveys were usable. The effective response rate was approximately 21.82%. According to Aaker, Kumar and Day (2001), the response rate for a mail survey, without an appropriate follow-up procedure, if greater than 20%, is considered acceptable.

To test the potential and non-response bias and to detect and consider possible problems with non-response errors, the assessment and investigation of non-response-bias were centered on two different procedures: (1) a comparison of sample statistics and known values of the population, such as the number of employees, number of years in business, and amount of capital invested, and (2) a comparison of first wave and second wave data recommended by Armstrong and Overton (1977). Neither procedure showed significant differences.

3.2 Questionnaire Development

In this study, the questionnaire was developed in seven parts. Part one includes personal information such as gender, age, status, education level, past experience, salary, and current position. Part two contains business information asking about business types, location of firm, period of time in operation, capital investment or operation capital, average sales revenues per year and the number of employees. Parts three to six involve the perceptual evaluation of respondents in terms of each construct in the conceptual model. Specifically, evaluating each dimension of organizational knowledge creativity, consequences, and external environment, are included in parts 3, 4, 5, and 6 respectively. The final part provides open-ended questions to respondents for opinions and suggestions.

3.3 Measurement

All constructs in the model included multiple-item scales. Each of these variables were measured by a five-point Likert scale ranging from1 (strongly disagree) to 5 (strongly agree). The variable measurements of dependent, independent, mediating, moderating, and the control variable are clarified as follows:

Dependent variables

Goal Achievement (GAC) is measured on a four-item scale and it is defined as firm' s achieving both financial and non-financial goals, a competitive advantage, and the supposed acceptance of other stakeholders (Deepen, Goldsby, and Knemeyer, 2008).

Independent variables

Knowledge Management Capability is a core construct of this research. It can be defined as a firm's ability to leverage existing knowledge to create and protect new knowledge in combination with other resources and capabilities (Chuang, 2004; Golet et al, 2001). It is measured on a seven-item scale which is classified into two dimensions: infrastructure capability, and process capability.

*Infrastructure capability (INC)*is measured by a four-item scale and it is defined as the ability of a firm to integrate previous knowledge of the organization, leveraging technological architecture and interaction of employees being encouraged both formally and informally (Chuang, 2004; Golet et al, 2001).

*Process capability (PRC)*is measured by a three-item scale and it is defined as the ability of a firm to acquire knowledge, make existing knowledge useful , the actual use of knowledge, and protection of knowledge (Chuang, 2004; Golet et al, 2001).

Team Efficiency (TEF) is measured on a four-item scale and it is defined as the capacity that a team has for conflict resolution, collaborative problem solving, communication, goal setting and performance management, planning and task coordination (Stevens and Campion, 1994, 1999)

Operational excellence (OEX) is measured on a four-item scale and it is defined as outstanding practices in managing the organization and achieving results within the continuous development of operations, processes, and management (Hardjono and Marrewijk (2001)

*Business Outstanding (BUO)*is measured on a four-item scale and is defined as a distinguished firm that depends on the benefits expected from the organization, while initiatives may represent the attainment of benefits such as improved profitability, reduced costs, and improved efficiency (D. Miller, 2012).

Learning Vision (LVI) is measured on a four-item scale and is defined as the meshing of an organization's learning competence and strategies with the needs of the market to create an effective concept (Brown, and Eisenhardt, 1995; Nevis, DiBella, Gould, 1995).

*Absorptive Capacity (ABC)*is measured on a four-item scale and it is defined as the ability of a firm to acquire, absorb, combine, and incorporate new knowledge into its organizational routine, system, process, and operations preferences over competitors (Camisón and Forés, 2010; Waranantakul and Ussahawanitchakit,2011).

Environment Uncertainty (ENU) is measured on a four-item scale and it is defined as complexity and dynamism that is strongly related to environmental issues such as market turbulence, competitive intensity, and technological turbulence (Jaworski and Kohli, 1993).

Moderating variables

Technological Munificence (TEC) is measured on a four-item scale and it is defined as an ability of the technology environment to support the sustained growth of an organization (Milton, Shadbolt, Cottam, and Hammersley, 1999; Li, Wei, Zhao, Zhang, and Liu, 2013).

Control variables

Firm age (FA) is defined as the number of years that the firm has been in operation and is measured by the number of years the firm has operated (Kotabe, Jiang, and Murray, 2011). *Firm size* (FS) may affect the capacity to adjust, and redefine a firm's strategy (Zahra, Neubaum and Larraneta, 2007). It was measured by the number of employees currently registered with a firm. *Firm capital* (FC) may affect the capacity of a firm to implement business strategies in order to achieve superior performance (Leiblein, Reueri and Dalsace, 2002).It was measured by the amount of capital invested.

3.4 Reliability and Validity

In this study, reliability was tested by using Cronbach's alpha coefficient that would be greater than 0.60 (Malhotra, 2004), which would demonstrate satisfactory reliability. Furthermore, this research used factor analysis to test the construct validity of all factors and examine the relationships of a large number of items, and to determine that these can be reduced to a small set of factors. This study was conducted separately on each set of items indicating a particular scale from limited observation. The factor loadings of each construct have shown they are statistically significant and all factor loadings are 0.838 - 0.910, greater than the 0.40 cut-off which is the acceptable criterion (Nunnally and Bernstein, 1994). The acceptable reliability and validity found in this study are appropriate for further analysis because of the results of factor loading and Cronbach Alpha Coefficient, testing for both reliability and validity. They are presented in Table 1.

Items	Factor Loadings	Cronbach Alpha
Infrastructure capability (INC)	0.807-0.875	0.799
Process capability (PRC)	0.866-0.910	0.788
Team Efficiency (TEF)	0.858-0.922	0.910
Operational excellence (OEX)	0.838-0.879	0.899
Business Outstanding (BUO)	0.871-0.890	0.876
Goal Achieve (GAC)	0.875-0.899	0.894
Learning Vision (LVI)	0.767-0.908	0.898
Absorptive Capacity (ABC)	0.823-0.888	0.867
Environment Uncertainty (ENU)	0.871-0.910	0.872
Technological Munificence (TEC)	0.843-0.908	0.891

Table 1: Results of Measure Validation

The ordinary least squares (OLS) regression analysis was used to test and examine the hypothesized effects of two dimensions of knowledge management capability on consequences (operational excellence, team efficiency, business outstanding and goal achieve). As all dependent variables, independent variables, and control variables in this study were neither nominal data nor categorical data, OLS was an appropriate approach to examine the hypothesized relationships. The equation relationship of the regression models are demonstrated as follows:

$$\textit{Equation 1:}\quad TEF = \beta_{01} + \beta_1 INC + \beta_2 PRC + \beta_3 FA + \beta_4 FS + \beta_5 FC + \varepsilon_1$$

$$\textit{Equation 2:}\quad OEX = \beta_{02} + \beta_6 INC + \beta_7 PRC + \beta_8 FA + \beta_9 FS + \beta_{10} FC + \varepsilon_2$$

$$\textit{Equation 3:}\quad BUO = \beta_{03} + \beta_{11} INC + \beta_{12} PRC + \beta_{13} FA + \beta_{14} FS + \beta_{15} FC + \varepsilon_3$$

$$\textit{Equation 4:}\quad OEX = \beta_{04} + \beta_{16} TEF + \beta_{17} FA + \beta_{18} FS + \beta_{19} FC + \varepsilon_4$$

$$\textit{Equation 5:}\quad BUO = \beta_{05} + \beta_{20} TEF + \beta_{21} FA + \beta_{22} FS + \beta_{23} FC + \varepsilon_5$$

$$\textit{Equation 6:}\quad GAC = \beta_{06} + \beta_{24} TEF + \beta_{25} OEX + \beta_{26} BUO + \beta_{27} FA + \beta_{28} FS + \beta_{29} FC + \varepsilon_6$$

$$\textit{Equation 7:}\quad INC = \beta_{07} + \beta_{30} LVI + \beta_{31} ABC + \beta_{32} ENU + \beta_{33} FA + \beta_{34} FS + \beta_{35} FC + \varepsilon_7$$

$$\textit{Equation 8:}\quad INC = \beta_{08} + \beta_{36} LVI + \beta_{37} ABC + \beta_{38} ENU + \beta_{39} TEC + \beta_{40}(LVI*TEC) + \beta_{41}(ABC*TEC) + \beta_{42}(ENU*TEC) + \beta_{43} FA + \beta_{44} FS + \beta_{45} FC + \varepsilon_8$$

$$\textit{Equation 9:}\quad PRC = B_9 + \beta_{46} LVI + \beta_{47} ABC + \beta_{48} ENU + \beta_{49} FA + \beta_{50} FS + \beta_{51} FC + \varepsilon_9$$

$$\textit{Equation 10:}\quad PRC = \beta_{10} + \beta_{52} LVI + \beta_{53} ABC + \beta_{54} ENU + \beta_{55} TEC + \beta_{56}(LVI*TEC) + \beta_{57}(ABC*TEC) + \beta_{58}(ENU*TEC) + \beta_{59} FA + \beta_{60} FS + \beta_{61} FC + \varepsilon_{10}$$

4. Results and Discussion

Table 2 illustrated the descriptive statistics and correlation matrix for all variables. Concerning the problems of multicollinearity between independent variables, variance inflation factors (VIF) were used to present the information due to non-orthogonality between independent variables inflating standard errors. The range of VIFs from 1.09–4.64, which is below the cut-off value of 10 suggested by Hair, Black, Babin, Anderson, and Tatham,(2006), indicated the independent variables which are not correlated with each other. Thus, it can be concluded that the multicollinearity variances are not a serious problem in this study.

	INC	PRC	TEF	OEX	BUO	GAC	LVI	ABC	ENU	TEC	FA	FS	FC
Mean	4.082	4.044	4.322	3.936	3.821	3.737	4.068	4.021	4.082	4.220	.840	.670	.560
S.D.	.603	.681	.653	.663	.744	.699	.619	.623	.630	.598	.371	.472	.498
INC													
PRC	.730**												
TEF	.580**	.494**											
OEX	.666**	.653**	.625**										
BUO	.573**	.569**	.508**	.846**									
GAC	.604**	.528**	.424**	.749**	.775**								
LVI	.664**	.672**	.587**	.643**	.573**	.595**							
ABC	.633**	.623**	.436**	.664**	.626**	.608**	.825**						
ENU	.578**	.570**	.556**	.603**	.509**	.559**	.696**	.669**					
TEC	.493**	.515**	.419**	.564**	.519**	.477**	.582**	.630**	.660**				
FA	.067	-.011	.025	-.001	.069	.058	.029	.030	-.026	.051	-		
FS	.142*	.135	.032	.100	.124	.128	.069	.105	.187*	.211**	.268*		
FC	-.004	-.020	-.013	-.021	-.023	-.004	-.031	-.011	.114	.056	.156*	.401	

*p<.1**p<.05,

Table 2: Descriptive Statistics And Correlation Matrix

Table 3 shows the results of OLS regression analysis of the relationships among two dimensions of knowledge management capability (including infrastructure capability, process capability), team efficiency, operational excellence, business outstanding, and goal achievement. These are illustrated in Models 1 to 10. It can be seen that the relationships among infrastructure capability, operational excellence, team efficiency, business outstanding, and goal achievement, are statistically significant (β_1=0.473, p<0.01; β_6=0.412, p<0.01; β_{11}= 0.330, p<0.01). ***Thus, Hypotheses 1a, 1b and 1c are supported.*** Meanwhile, the results shows that process capability has a statistically significant relationship with operational excellence, team efficiency and business outstanding (β_2=0.159, p<0.01; β_7=0.351, p<0.1; β_{12}=0.321, p<0.01). This finding is consistent with Khan and Quadri (2012) who found that knowledge management capability is related to team efficiency, operational excellence, and business outstanding. ***Thus, hypotheses 2a, 2b and 2c are supported.***

In addition, the relationships among team efficiency, operational excellence and business outstanding are statistically significant, *but are not significant regarding* goal achievement. (β_{16}=0.621, p<0.01; β_{20}=0.500, p<0.01; β_{24}= -0.049, p<0.01). *Thus, hypotheses* ***3a and 3b are supported, but hypotheses 3c is not supported.*** Moreover, operational excellence and business outstanding have a significant positive impact on goal achievement (β_{25}=0.369, p<0.01; β_{26}=0.487, p<0.01).This finding is consistent with Sudarmo (2013) who found that there was a relationship between operational excellence and corporate performance. ***Thus, hypotheses 4 and 5 are supported.*** The relationship between learning vision and dimensions of knowledge management capability; infrastructure capability (β_{30}=0.383, p<0.01), and process capability (β_{46}=0.432, p<0.01) are statistically significant. The relationships between absorptive capacity and dimensions of knowledge management capability; infrastructure capability (β_{31}=0.182, p<0.1) are statistically significant, while process capability (β_{47}=0.117, p<0.01) is not statistically significant. In addition, the relationships between environment uncertainty and dimensions of knowledge management capability; infrastructure capability (β_{32}=0.183, p<0.1) are statistically significant, but process capability (β_{48}=0.111, p<0.01) is not statistically significant. ***Thus, hypotheses 6a, 6b, 7a, and 8a are supported, but hypotheses 7b and 8b are not supported.***

Independent Variables	Dependent Variables									
	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8	Model 9	Model 10
	TEF	OEX	BUO	OEX	BUO	GAC	INC	INC	PRC	PRC
Infrastructure capability (INC)	.473***	.412***	.330***							
	(.084)	(.073)	(.082)							
Process capability (PRC)	.159*	.351***	.321***							
	(.084)	(.073)	(.082)							
Team Efficiency (TEF)				.621***	.500***	-.049				
				(.054)	(.060)	(.055)				
Operational excellence (OEX)						.369***				
						(.089)				
Business Outstanding (BUO)						.487***				
						(.081)				
Learning Vision (LVI)							.383***	.364***	.432***	.417***
							(.096)	(.096)	(.097)	(.096)
Absorptive Capacity (ABC)							.182*	.186*	.117	.123
							(.096)	(.098)	(.099)	(.098)
Environment Uncertainty (ENU)							.183*	.148*	.111	.095*
							(.077)	(.084)	(.083)	(.083)
Technological Munificence (TEC)								.057	.096	.124*
								(.075)	.073	(.074)
LVI*TEC								.038		.152
								(.100)		(.100)
ABC*TEC								-.008		.026
								(.090)		(.090)
ENU*TEC								.074		-.077
								(.083)		(.083)
Firm age (FA)	.028	-.063	.117	-.102	.090	.016	.114	.134	-.112	-.073
	(.160)	(.140)	(.159)	(.152)	(.171)	(.122)	(.143)	(.145)	(.143)	(.144)
Firm size (FS)	-.139	.012	.080	.234	.269	.062	.173	.126	.188	.157
	(.137)	(.120)	(.134)	(.129)	(.142)	(.103)	(.124)	(.127)	(.125)	(.126)
Firm capital (FC)	.032	-.019	-.068	-.103	-.147	.032	-.130	-.086	-.129	-.066
	(125)	(.109)	(.123)	.119	(.132)	(.095)	(.114)	(.117)	(114)	(.116)
Adjust R2	.334	.492	.366	.388	.260	.625	.471	.472	.467	.476

*p<0.1, **p<0.05, ***p<0.01,ª Beta coefficient with standard error in parenthesis.

Table 3 Results of OLS regression Analysis

Additionally, Table 3 also illustrated that the moderating effect of technological munificence on the relationship between learning vision and dimensions of knowledge management capability; infrastructure capability (β_{40}=0.038, p<0.01), and process capability (β_{56}=0.152, p<0.01) are not statistically significant. Furthermore, the results indicate that interaction between technological munificence and absorptive capacity have no significant influence on infrastructure capability (β_{41}=-0.008, p<0.01) and process capability (β_{57}=*0.026, p<0.01*). **Thus, hypotheses 9a, 9b, 10a, and 10b are not supported.** In addition, the results also show that interaction between technological munificence and environment uncertainty have no significant influence on infrastructure capability (β_{42}=-0.074, p<0.01) and process capability (β_{58}=*-0.077, p<0.01*). **Thus, hypotheses 11a and 11b are not supported.**

5. Contributions and Directions for Future Research

5.1 Theoretical Contributions and Directions for Future Research

This study can help to gain more understanding of the relationships between knowledge management capability (infrastructure capability and process capability) that influence team efficiency, operational excellence, business outstanding on goal achievement and the antecedence of the relationship between learning vision, absorptive capacity, and environment uncertainty and its moderators which are technological munificence in ISO9000 certified manufacturing firms in Thailand. Knowledge management capability: infrastructure capability and process capability, highlights the importance of the management and operational context, which demonstrates unique

theoretical contributions by expanding knowledge management capability literature, incorporating strategic management, and operational fields from two theories including the perspective of the resource-based view and contingency theory. Future longitudinal study needs to be examined. Moreover, future research is needed to collect data from other business and from different countries, which would provide diverging evidence from this study.

5.2 Managerial Contribution

This study is focusing particularly on the managerial contributions of chief executive officers, managers, or entrepreneurs. Firstly, knowledge management capability had a positive impact on goal achievement, and managers should maintain the development of knowledge management capability that involves factors such as operational excellence, team efficiency and business outstanding. The result suggests that each dimension of knowledge management capability influences organizational outcomes in different ways. Meanwhile, learning vision, absorptive capacity and environment uncertainty also correlate positively with the knowledge management capability of an organization. Thus, firms are expected to prioritize appropriate investments in knowledge management. Second, chief executive officers, managers, or entrepreneurs should be aware of the two dimensions of knowledge management capability for consideration and decision that were derived from greater relationships for long term goal achievements.

6. Conclusion

The aim of this study was to examine the relationships between two dimensions of knowledge management capability: infrastructure capability, and process capability. The result found that the pair dimensions of knowledge management capability correlate to a positive impact on operational excellence, team efficiency, business outstanding, and goal achievement. In addition, learning vision, absorptive capacity and environment uncertainty also play major roles in the knowledge management capability of a firm. On the other hand, technological munificence does not play a significant moderating role on the relationship between antecedence and the pair dimensions of knowledge management capability. Therefore, the primary task for a firm that was derived from developing knowledge management would be broadened to maximize the benefits. This study recommends that for future study and a greater generalization of the results, mixed methods should be used and different business settings utilized to derive data.

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