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Strategic Knowledge Management, Innovation and Firm Performance: An Empirical Study in Vietnamese Firms

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Abstract

The main purpose of this paper is to test the relationship between strategic knowledge management, innovation and firm performance in the Vietnamese context. Our results show that strategic knowledge management significantly enhances innovation and organizational performance. It is also seen as playing an important mediating role in innovation between strategic knowledge management and firm performance. Although codification and personalization knowledge management strategies both have impact on innovation and performance, personalization knowledge management strategy has the dominant impact.

Keywords: Knowledge management strategy, innovation, performance, Vietnam.

1. Introduction

It is widely recognized that knowledge is an essential strategic resource for a firm to retain sustainable competitive advantage. As knowledge is created and disseminated throughout the firm, it has the potential to contribute to the firm's value by enhancing its capability to respond to new and unusual situations. In Managing in a Time of Great Change (2009), Drucker (2009, p.190) writes that "knowledge has become the key economic resource and the dominant – and perhaps even the only – source of comparative advantage".

The concept of organizational knowledge implies the capacity of an organization to organize information and apply technology in order to improve its products and processes. Thus, knowledge becomes the source of competitive advantage (Hall, 1992). Knowledge is considered one of the important firm resources. It is unique, inimitable, valuable and non-substitutable (Barney, 1986; Wernerfelt, 1984). Knowledge management (KM) is understood as a process for the collection, distribution, and efficient use of the knowledge resource (Davenport, 1994). Knowledge management can be referred to as organizing and improving operational techniques, procedures and tools in order to contribute to the knowledge management processes in all fields through all levels, resulting in improvement in products and processes. Knowledge management is composed of all activities of creation, dissemination and utilization of the knowledge resource directed toward innovation and improvement in the organization.

According to Ruggles (1998, p. 87), knowledge management activities add value to enterprises by enhancing innovation and innovativeness. He proposes that management's role should be "to carefully combine activities which enable and encourage ideas to be generated and grown, support their diffusion, and harvest the value for the organization". He argues that knowledge management is one way of achieving this with some success. Darroch (2005) emphasizes the importance of knowledge management to enhance innovation and performance within enterprises. Her study provides empirical evidence that an enterprise that is knowledge management proficient will be more innovative and will perform better. Chandy and Tellis (1998) state that knowledge resource and core competencies developed from the knowledge resource are fundamentals for product innovation.

In spite of all advances in knowledge management and innovation, the result has been an incomprehensible and confusing body of knowledge and many managers still do not know which variables can improve a knowledge management program's success (Moffett, McAdam and Parkinson, 2002). Organizational knowledge plays a very important role in the innovation process. Effects of knowledge management programs on innovation and corporate performance have been scarcely analyzed in the literature (Choi, Poon and Davis, 2008). Few studies empirically test the link between knowledge management and firm performance. Up to now, there is little empirical evidence showing the linkage between knowledge management, innovation and firm performance.

It is widely recognized that innovation is a key for the success of firms and it is also important to Vietnamese firms (Ministry of

Science and Technology, 2010). That there are many factors influencing the innovation processes in firm and knowledge management is acknowledged by many authors as an important determinant of innovation (Calantone R.J, Cavusgil S.T, Zhao. Y, 2002, 2003; Darroch, 2005). Nonaka (1994) emphasizes how knowledge is created within an organization and knowledge from customers and suppliers, research centers, and related institutions can be assimilated, processed and distributed to relevant receivers very efficiently and conveniently with the current development level of IT/IS technology and infrastructure development in Vietnam. A significant number of Vietnamese firms are small and medium companies and most of them are in a situation of an out-of-date technology level when compared with Western counterparts. Thus, there are some widespread viewpoints which downgrade the important role of knowledge management and innovation in the long term survival and development of Vietnamese firms. With all this knowledge in mind, we intend to understand how knowledge management contributes to innovation and firm performance in Vietnamese firms.

The aim of this study is to investigate the relationship between strategic knowledge management, innovation and firm performance in the Vietnamese context. That knowledge management can be translated into better organizational performance through increases in innovation capability is the central investigation in this paper. This paper is structured as follows. The next section is the research background and hypothesis development. The third section presents the methodology used. The fourth section presents empirical results and discussion. The last section is the conclusion.

2. Research background and hypotheses development

Knowledge management strategy

According to theory of organizational knowledge creation, knowledge is: (i) justified belief, which means that an individual should justify the truthfulness of his observations of reality (Nonaka and Takeuchi, 1995); (ii) the ability to define a situation and act accordingly. In this context, knowledge is directed toward defining a problem rather than solving a predefined problem. Finally, knowledge includes: (iii) explicit and implicit knowledge. Knowledge that can be expressed in words, technical drawings, or written documents is referred to as explicit knowledge. Knowledge associated with emotion, movement skills, practical experience, ideas, or implied problem solving procedures is referred to as implicit knowledge. Explicit knowledge can be saved and shared in forms of electronic data bases and management information system, whereas implicit knowledge is stored inside individuals and can be shared and transferred through direct interactive activities between individuals.

Knowledge management strategy is understood as an overall change process and a form of organizational renewal, focused on innovation through the creation of, transmission and application of new knowledge (Cohen and Levinthal, 1990). The implementation of a knowledge management strategy allows improvement of a firm's learning capability and its ability to combined knowledge-based capabilities and so to make better use of them (Kogut and Zander, 1992). New resources and generated capabilities are difficult to imitate;

these become the nucleus of a competitive advantage, so resulting in higher profitability.

Hansen et al. (1999) classify knowledge management into two types: codification strategy and personalization strategy. Knowledge that is carefully codified and stored in databases, where it can be assessed and used easily by anyone in the company is called codification knowledge management strategy. This approach allows many people to search for and retrieve codified knowledge without having to contact the person who developed it. That opens up the possibility of achieving scale in knowledge reuse and thus growing the business. Knowledge that is closely tied to the person who develops it and is shared mainly through person to person contact is called personalization knowledge management strategy. It provides creative, analytical rigorous advice and a high level problem solving by channeling individual expertise. Hansen et al. (1999) point out that a company's strategy for knowledge management should reflect its competitive strategy. A company which follows cost leadership through standardization of its processes tends to utilize a codification knowledge management strategy, whereas, a company competing based on differentiation tends to utilize a personalization knowledge management strategy. Hansen et al. (1999) also warn that companies should carefully choose the right knowledge management strategy due to the incompatibility between codification and personalization which means that companies who attempt to excel at both strategies risk failing both.

Choi and Lee (2002) identify three perspectives of knowledge management strategies. The focused view proposes that a company should focus on one strategy: either a system-oriented strategy or a human-oriented strategy. The system-oriented strategy corresponds to the degree of codifying and storing organizational knowledge to access and use it. The human-oriented strategy corresponds to the degree of acquiring and sharing tacit knowledge through interpersonal interaction. The studies from a focused view propose that companies should pursue one strategy predominantly. Hansen et al. (1999) suggest that companies pursue one strategy while using another to support it. Swan et al. (2000) argue that a human-oriented strategy is superior to a system-oriented strategy.

A balanced view suggests that companies should strike a good balance between the two strategies. Bierly and Chakrabarti (1996) found that firms which acquire and share knowledge by combining system and human-oriented strategies, tend to be more profitable. Jordan and Jones (1997) emphasize the balance between an explicit and tacit knowledge based strategy for encouraging the development of more innovative knowledge. Zack (1999) states that firms with an aggressive strategy which integrates a system-oriented strategy with a human oriented strategy, tend to outperform those with a less aggressive strategy.

The dynamic view suggests that firms align their strategies with the characteristics of knowledge. For example, Bohn (1994) states that managers should align knowledge management strategies along a spectrum from pure expertise to pure procedure. Singh and Zollo (1998) argue that firms should align knowledge strategies along with task characteristics.

Effect of strategic knowledge management on innovation

Innovation is widely considered a key pre-requisite for achieving organizational competitiveness and sustained long-term wealth in an increasingly volatile business environment. Katz (2007, p.15) defines innovation as: "The successful generation, development and implementation of new and novel ideas, which introduce new products, processes and/or strategies to a company or enhance current products, processes and/or strategies leading to commercial success and possible market leadership and creating value for stakeholders, driving economic growth and improving standards of living."

Innovative activities happening within a company is a sophisticated process including creation, absorption and implementation of new ideas or new ways of doing things. Innovative processes differ from case to case, however there are some points in common in that they are knowledge creation processes and the utilization of organizational core competences for innovation activities are supported by an appropriate organizational structure and strategy, a supportive working environment, corporate culture and leadership.

It is widely argued that innovation is highly dependent on knowledge management. It can be said that there is no innovation without new ideas and new knowledge creation is a pre-requisite condition for innovation. Arthur Andersen Business Consulting (1999) suggests that innovation is one goal of knowledge management. Grant (1996) points to the importance of integrating different types of knowledge in order to innovate; Kogut and Zander (1992) refer to this relationship in their concept of 'combinative capability'. According to some works (Romijn, Albaladejo, 2002; Nonaka, 1994; West, 1992), the organizations that are able to stimulate and to improve the knowledge of their human capital are much more prepared to face today's rapid changes and to innovate in the domain where they decide to invest and to compete. Due to the new insights of KM, a creative knowledge worker can contribute to face problems that need new kinds of resolution, situations that demand innovative approaches, and the relationships that can be discovered in the more and more complex markets where companies are operating. In addition, Johannessen et al. (1999) also propose the innovation theory model and contend that vision and knowledge creation of firms can play a supportive role in organizational innovation. Also, through the integration and application of knowledge, they can trigger innovation activities in an organization

Numerous authors have investigated the general relationship between knowledge management and innovation (Darroch, 2005; Wan et al., 2005; Schulze and Hoegl, 2008; and Carolina and Angel, 2011). Darroch (2005) investigates the relationship between knowledge management, innovation and performance at the firm level through applying structural equation model analysis. In her study, knowledge management orientation is measured by three variables: knowledge acquisition, knowledge dissemination, and responsiveness to knowledge. Innovation is measured by six elements originally proposed by Booz Allen Hamilton (1982): new products to the world, new products to the firm, addition to existing product lines, improvement or revision of existing product lines, cost reduction of existing products, and repositioning of existing products.

Her results show that all three components of knowledge management positively predict innovation and performance.

In the study of determinants of innovation of Singapore firms, Wan et al. (2005) use an aggregate index combining inputs and outputs of innovation activities to measure the innovation capability of Singapore firms. The study's results show that factor "willingness to exchange ideas" is positively and significantly related to firm innovation. Schulze and Hoegl (2008) relate Nonaka and colleagues' four knowledge creation modes of socialization, externalization, combination, and internalization to the novelty of product ideas generated. The findings document positive relationships of both socialization and internalization as well as negative relationships of externalization and combination with the novelty of product ideas. Carolina and Angel (2011) apply structural equation model analysis to study empirically the relationship between strategic knowledge management, innovation and performance of firms in Mursia, Spain. Carolina and Angel (2011) classify strategic knowledge management into codification KM strategy and personalization KM strategy. The study's results show that both codification KM strategy and personalization KM strategy have significant effects on innovation and performance.

The literature shows us that there is possible relationship between knowledge management and innovation in the sense that knowledge management leads to improvement and innovation in products, processes, and management systems. Codification KM strategy and personalization KM strategy both affect innovation. Therefore, we can define our research hypotheses as follows:

Hypothesis 1: Codification KM strategy has a direct positive impact on innovation.

Hypothesis 2: Personalization KM strategy has a direct positive impact on innovation.

Effect of strategic knowledge management on firm performance

Various scholars have acknowledged the importance of knowledge management on overall firm performance. Calantone et al. (2002) argue that learning orientation enhances organizational performance directly and indirectly through its influence on competitive advantage. Learning orientation facilitates the generation of resources and skills essential for firm performance. Darroch (2005) argues that by the time the organization is ready the gap between any internal company activities and performance will have closed, hence the relationship between responding to knowledge and performance. Hansen et al. (1999) illustrate how codification knowledge management strategy implemented by Ernst & Young lead to firm performance through standardization of services and cost-cutting and how personalization knowledge management strategy implemented by Bain, Boston Consulting Group, McKinsey lead to firm performance through customizing their services and charging high fees. Numbers of empirical studies have found the effect of knowledge management on firm performance such as Darroch (2005), Calantone et al. (2002), Carolina and Angel (2011), Pang-Lo Liu et al. (2004). Therefore, we define our research hypotheses as follows:

Hypothesis 3: Codification KM strategy has a direct positive impact on performance.

Hypothesis 4: Personalization KM strategy has a direct positive impact on performance

Effects of innovation on firm performance

Innovation is considered as a source of a firm competitiveness. Successful innovative activities lead to improvement in terms of new products/services introduction, better quality, reduced costs and as a result larger market share and higher profitability. Oslo Manual (2005) identifies that the impacts of innovations on firm performance range from effects on sales and market share to changes in productivity and efficiency. Important impacts at industry and national levels are changes in international competitiveness and in total factor productivity, knowledge spillovers from firm-level innovations, and an increase in the amount of knowledge flowing through networks. The outcomes of product innovations can be measured by the percentage of sales derived from new or improved products. Similar approaches can be used to measure the outcomes of other types of innovations. Additional indicators of the outcomes of innovation can be obtained through qualitative questions on the effects of innovations.

There are some empirical studies that investigate effects of innovation on performance such as Carolina and Angel (2011), Gunday, et al. (2011), Wang and Wang (2012), Calantone et al. (2002). Carolina and Angel (2011) apply structural equation model analysis to study empirically the relationship between strategic knowledge management, innovation and performance of firms in Mursia, Spain. The study's results show that innovation has a significant positive effect on firm performance.

Gunday et al. (2011) apply the SEM model to study the effects of different types of innovation (product innovation, process innovation, organizational innovation and marketing innovation) on firm performance (innovative performance, production performance, market performance, and financial performance). The findings support the claim that innovations performed in manufacturing firms have positive and significant impacts on innovative performance. The results of the analyses also reveal that financial performance is an output of innovative, production and market performances. Wang and Wang (2012) and Calantone et al. (2002) also find innovation has a significant impact on performance.

So we can further define our research hypothesis:

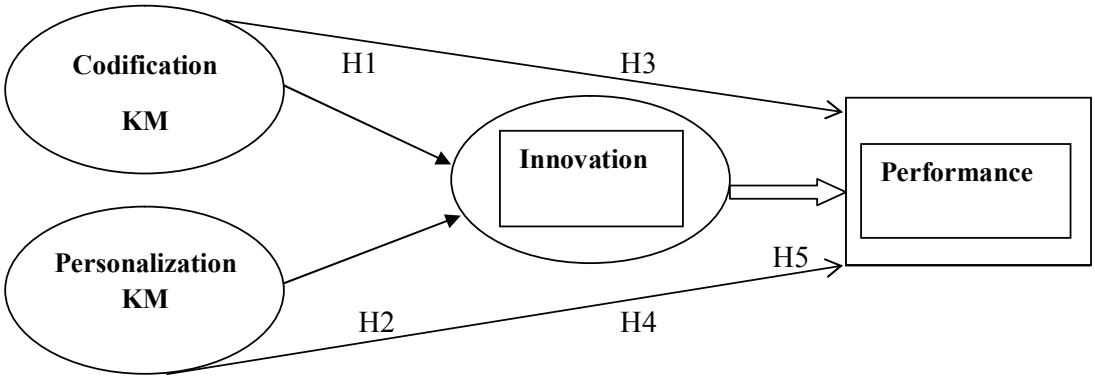
Hypothesis 5: Innovation has a significant positive impact on performance.

3. Methodology

The conceptual model of the study is depicted in Figure 1. The research hypotheses were tested through a survey of Vietnamese companies. The sampling procedure is convenient sampling. Using a list of NEU Business School MBA program graduates/students questionnaires were delivered to NEU Business School MBA graduates/students by email and questionnaires were distributed directly to participants of NEU Business School CEO in their classes. We ensured that one questionnaire was sent to one person in one firm.

Data were collected from November 2012 to May 2013. The study received 195 responses and 167 responses were valid and used for analysis. Table 1 shows characteristics of the sample.

Figure 1: Conceptual model



The variables of this research were measured using multi-item scales tested in previous studies. Classification of knowledge management was based on Hansen et al. (1999) into two types: codification strategy and personalization strategy. Items for KM strategies were based on Choi and Lee (2002, 2003), Carolina and Angel (2011). Codification KM strategy (KMC) consists of 4 items: knowledge (know-how, technical skill, and problem solving methods) is well codified in your company; knowledge can be acquired easily through formal documents and manuals in your company; results of projects and meetings should be documented in your company; knowledge is shared through codified forms like manuals or documents in your company. Personalization KM strategy (KMP) consists of 4 items: knowledge can be easily acquired from experts and co-workers in your company; it is easy to get face-to-face advice from experts; informal dialogues and meetings are used for knowledge sharing in your company; knowledge is acquired by one-to-one mentoring in your company.

In this study, we utilize the definition of innovation capability put forward by Hogan et al. (2011) as a firm's ability, relative to its competitors, to apply collective knowledge, skills, and resources to innovation activities relating to new products, processes, services, or management, marketing or work organization systems, in order to create added value for the firm or its stakeholders. This definition takes a holistic view of the innovation capability construct as it not only considers a broad range of innovation activities, but also considers their performance implications.

The innovation (INN) scale is based on Lee and Choi (2003), Carolina and Angel (2011) and consists of 3 items: the number of new or improved products and services launched on the market is superior to the average in your industry; the number of new or improved processes is superior to the average in your industry; the number of new policies and management systems (ISO, MIS, CRM, SRM, ERP) applied in your company is superior to the average in your industry.

The balanced scorecard includes four major dimensions: finance, customers, internal

Table 1: Sample description

Size	Sample 167 (%)
< 50 employees	38.6
50 – 299 employees	27.1
> 300 employees	34.3
Year of establishment	
After 2000	59.9
1976 - 2000	31.3
Before 1976	8.8
Field of operation	
Textile and leather	5.8
Manufacturing	4.6
Telecommunication, electronics, software	8.4
Foods and drinks	9.8
Hotels and tourism	6.5
Banking and finance	13
Trading	28.6
Construction	12.3
Others	11
Geographical distribution	
One location	31.1
More than one location	68.9

process, and learning and growth. The major advantage of BSC is that it retains financial performance and supplements it with measures of the drivers of future potential. As knowledge management is an activity that penetrates the whole organization, and we consider BSC to be more appropriate to measure firm performance. Firm performance (FP) is measured on three dimensions: (i) financial performance encompassing marketing performance (growth, profitability, and customer satisfaction); (ii) process performance which refers to quality and efficiency; (iii) internal performance relating to individual capabilities (employees' qualifications, satisfaction and creativity).

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .923; Bartlett's Test of Sphericity = 2022.566, p <0.000. This means that the correlation matrix is different from the unity matrix and factor analysis is appropriate. Results of EFA show us that there are two factors of strategic management: codification (KMC) and personalization (KMP) and one factor of performance (FP). We conduct CFA to test the measurement model. The measurement model shows appropriate indexes of goodness-fit: GFI = .871, CFI = .953, IFI = 954, RMSEA = 0.058.

CFA confirms that the first, two KM strategies exist: codification and personalization.

Second, the existence of one dimension in the performance variable is confirmed: items FP1, FP2, FP3, FP4, FP5, FP6, FP7, FP8, FP9, and FP10. The structural model in Figure 1 is tested using Amos 18. The results of the structural model are presented in Table 2.

4. Results and discussion

Results show that both KM strategies (codification and vpersonalization) impact on innovation, thus supporting H1 and H2. Codification KM does not have a direct impact on performance, so H3 is rejected. Personalization KM directly impacts on performance so H4 is supported. Innovation has a significant impact on firm performance, so H5 is supported thus reinforcing the total effects of KM strategies on performance. Some main points can be drawn from the results of the structural model as follows:

Firstly, although strategic knowledge management enhances innovation there is a difference regarding the impact of each knowledge management strategy. Personalization knowledge management strategy has a larger impact on innovation than codification knowledge management strategy, which supports the statement by Hansen et al. (1999), Swan et al. (2000), and Schulze and Hoegl (2008) that personalization strategy is motivated by new solutions and innovations, while codification strategy is based on the economics of existing knowledge reuse. Hansen et al. (1999), Schulze and Hoegl (2008) argue that tacit knowledge and explicit knowledge play a different role in the novelty of new product ideas generation. Schulze and Hoegl (2008) emphasize the important role of knowledge creation through socialization and internalization modes in novelty of new product ideas generation.

Secondly, codification and personalization knowledge management strategies have a significant total impact on performance. However, indirect impact on performance through innovation is much more important than direct impact. This is because both codification and personalization knowledge management strategies have a significant indirect impact mediating through innovation while codification knowledge management strategy does not have a direct impact on performance. This finding is consistent

Table 2: Indirect, direct and total effects of knowledge management strategies on performance

Indirect effects	**Estimate**	**P**
KMC ⟶ INN	.360	***
KMP ⟶ INN	.550	***
Direct effects		
KMC ⟶ FP	-.004	.953
KMP ⟶ FP	.299	***
INN ⟶ FP	.585	***
Total effects		
KMC ⟶ FP	.211	***
KMP ⟶ FP	.621	***

*** means $p < 0.001$

with the works of Heinz (2003), Calantone et al. (2002), Carolina and Angel (2011) who found firms with better innovative capability also have better performance. This finding is different from the finding of Darroch (2005) in which knowledge management has a direct impact on performance and no indirect impact on performance through innovation because innovation does not influence performance. The difference in constructing an innovation variable probably accounts for the different result of the innovation – performance relationship. In this study, the innovation variable is measured by the general improvement in the product, process and management system, whereas Darroch (2005) categorizes innovation into six particular types of product innovation: new products to the world, new products to the firm, addition to existing product lines, improvement or revision to existing product lines, cost reduction to existing products, repositioning of existing products. Darroch argues that the way she building innovation construct introduces uncertainty into innovation outcomes.

Finally, both knowledge management strategies contribute significantly to organizational performance, but personalization knowledge management strategy is much more important than codification knowledge management strategy. Chen and Liang (2011), Hansen et al. (1999), Swan et al. (2000), and Schulze and Hoegl (2008) also find a difference in the role of knowledge management strategies on performance.

5. Implications and limitations

This paper has some implications for practitioners. Firstly, it shows us the very important role of knowledge management strategies on organizational performance. Firms with better knowledge management performance have better business performance. Creating a decisive environment and culture for knowledge sharing and learning orientation within the organization is likely to ensure successful performance in the future.

Secondly, knowledge management contributes to firm performance mainly indirectly through improving innovation. All knowledge management activities of creation, dissemination and utilization of the knowledge resource should be directed toward innovation of the organization. Knowledge management activities can contribute to the organizational performance though enhancing innovation capability in all aspects of product innovation, process innovation, organizational innovation and marketing innovation.

Thirdly, we suggest that Vietnamese firms should adopt a focused perspective of knowledge management and that they should pursue one strategy predominantly. Hansen et al. (1999) suggest that companies pursue one strategy while using another to support it. The issue of which knowledge management strategies to pursue, codification or personalization, should reflect and be derived from the company's competitive strategy.

This study attempts to explore the linkage between strategic knowledge management, innovation and firm performance in the Vietnamese context. The sampling procedure applied in this study is convenient sampling and it may result in some limitations. Firstly, most respondents are current students or graduates of NEU Business School MBA program and some of them may not be key informants in

their organizations. Further, their answers may not reflect accurately what has been happening in the respondents' companies. Secondly, sampled companies may not be representative for the whole Vietnamese population of companies in terms of size or operating field. Therefore, the study's results should be used with some caution. Thirdly, in the questionnaire subjective measures of firm performance is included. In the future, we will try to consider also objective measures for performance, such as ROA or ROI, intermediate outcomes of strategic knowledge management learning outcomes or knowledge performance such as knowledge creation, accumulation, sharing, utilization and internalization (Tseng, 2008).

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