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Article

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MANAGEMENT | RESEARCH ARTICLE

Knowledge acquisition, knowledge management strategy and innovation: An empirical study of Vietnamese firms

Nguyen Ngoc Thang^{1,2*} and Pham Anh Tuan^{2,3}

Abstract: This paper examines two alternative views—universal and contingency—of the knowledge acquisition and innovation relationship in Vietnamese firms. Results from a survey of 130 companies show that knowledge acquisition has a positive effect on innovation. In addition, this study showed that in terms of direct effects on innovation results, the personalization strategy has a more important role than the codification strategy. However, among the two knowledge management (KM) strategies, only the codification strategy moderated the knowledge acquisition–innovation relationship. The findings also suggested that in order to achieve a high level of innovation results, the firm should not be overly dependent on the implementation of the codification strategy without paying due attention to personalization strategy. Furthermore, for firms at the nascent stage of development or those in developing countries like Vietnam, knowledge acquisition and personalization strategy can lead to innovation results.

Subjects: Business and Management; Knowledge management

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PUBLIC INTEREST STATEMENT

Knowledge is believed to be the main source of competitive advantage and a key driver for innovation of firms in today's business context. This research attempts to examine the influence of two KM strategies, namely codification and personalisation on the relationship between knowledge acquisition and innovation performance of Vietnamese firms. Codification involves the practices of codifying and sharing explicit knowledge in formal channels while personalisation relates the direct sharing of tacit knowledge among employees through informal channels. New technologies are being developed at an unprecedented pace, at the sake of codification practices, however it may not lessen the importance of different aspects of personalisation strategy, such as social interaction and person-to-person contacts in helping organisations to acquire knowledge and innovate. Results from this research show that knowledge acquisition has a strong direct effect on a firm's innovation performance and the codification strategy moderated the knowledge acquisition–innovation relationship.

Keywords: Knowledge acquisition; codification strategy; personalization strategy; innovation

1. Introduction

There is a growing body of research in the current literature that examines the influence of knowledge management on innovation results of firms (Donate & Guadamillas, 2011; Gloet & Samson, 2016; Turulja & Bajgorić, 2018). Knowledge management, according to Demarest (1997) and Rowley (2000), is defined as a set of activities or efforts of an organization to acquire, create, store, share, develop, diffuse and deploy knowledge by individuals or teams to enhance organizational performance. Thus, knowledge acquisition is a key activity in the learning cycle as it helps an organization to continuously develop and expand its knowledge repository. Some studies have pointed out the contribution of knowledge acquisition to the innovation of firms (Andreeva & Kianto, 2011; Chen & Huang, 2009; Darroch, 2005; Nishihara, 2018).

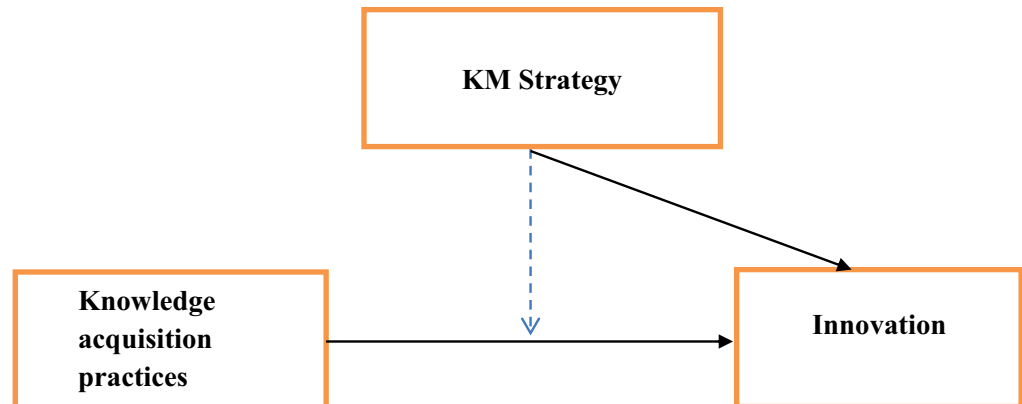
Though knowledge acquisition activities are frequently acknowledged to play an important role in the innovation performance of a firm, the specific form of this relationship is still open to debate. From a universal perspective, knowledge acquisition might have a direct effect on innovation. On the other hand, a contingency perspective implies that the impact of knowledge acquisition practices on innovation performance may be further enhanced when the practices are matched with KM strategy posture. By adopting the tacit-explicit typology of knowledge proposed by Polanyi (1967), scholars normally depict the KM strategy to be either human-oriented (personalization) or system-oriented (codification). According to Hansen et al. (1999), a firm will follow a codification strategy if most of its knowledge can be codified and stored in a repository so that it can be easily accessed and used by anyone in the firm. On the other hand, a firm will follow a personalization strategy when knowledge sharing practices inside the firm occur mainly through direct person-to-person contacts, internal social networks, or social media (Ammirato et al., 2019).

While there is an increasing number of studies in the KM literature addressing the direct effects of KM strategies on the different aspects of firm's innovation or organisational performance (e.g., Ajith & Ganesh, 2011; Bettiol et al., 2012; Liao et al., 2008; Rhodes et al., 2008), from what we know, very few studies conducted test for the moderating role of these strategies. In fact, it seems that the recent strong development of technologies, including cloud-based applications, social media and numerous corporate applications operating on different devices make it easier for organisations to implement their KM codification practices and promote knowledge sharing through digital channels. However, it may be dangerous if organisations rely too much on technology while giving less priority to building and maintaining organisational practices (e.g., social interactions, informal meetings) at the expense of tacit knowledge management. Thus, there are problems that need to be addressed to improve our understanding of how to choose a right KM strategy or to strike a balance of the two KM strategies.

In Vietnam, after decades of rapid economic growth, the utilisation of physical resources could no longer bring about competitive advantages for organizations. Research shows that Vietnamese firms spent less on research and development than those in other Southeast Asian countries. In addition, very few Vietnamese firms invested in licensed or patented knowledge to support their innovation efforts (World Bank, 2009). Therefore, they rarely introduce new products to the market and had a lower total factor productivity than those in other countries in the region (Saliola & Seker, 2011). Through knowledge management, Vietnamese firms may be able to create more innovation and improve their competitive advantages (Thang et al., 2013). However, the extent to which Vietnamese firms actually applied knowledge management and how they measure the impact of knowledge management on innovation are largely unknown.

In this paper, we build on the previous studies related to the knowledge acquisition-innovation relationship and extend the above literature by (i) determining the extent to which knowledge

Figure 1. Knowledge acquisition practices, knowledge management strategy, and innovation.



acquisition directly enhances innovation, (ii) examining the direct effects of KM strategy on innovation and (iii) investigating the moderating role of KM strategy in the relationship between knowledge acquisition and innovation of Vietnamese firms. Figure 1 summarizes our research model.

2. Theoretical background and hypotheses

2.1. The universal approach to knowledge acquisition

The knowledge-based view of firm recognizes knowledge as the most important strategic resource for ensuring an organization's long-term competitive advantage and knowledge management as a key instrument for the improvement of organizational effectiveness and performance (Grant, 1996; Kogut & Zander, 1992; Spender, 1996). Several research studies have described how KM is comprised of a series of activities through which knowledge is acquired, developed, gathered, shared, applied and protected by the organization to improve organizational performance (Alavi & Leidner, 2001; Grant, 2002; Zack et al., 2009). Although different terms can be used to describe the process of acquiring knowledge, such as acquire, seek, generate, capture, they all refer to the process of knowledge accumulation (Gold et al., 2001). This study focuses on one aspect of knowledge management—knowledge acquisition, as the very first and key process in the KM cycle to examine the contribution of KM to the innovation of a firm.

Organizational innovation is normally conceptualized in the current literature as either process-oriented or outcome-oriented (Quintane et al., 2011). From the process-oriented perspective, innovation is viewed as a process of producing a new viable idea and then implementing it in a way that produces value (Trott, 2005), or introducing and applying new ideas (West & Farr, 1990). From the outcome-oriented perspective, innovation simply implies something new in the environment into which it is introduced (Damanpour, 1996) or that new knowledge is applied for commercial ends (Song, 2015). Similarly, Du Plessis (2007) refers innovation to the creation of new knowledge and ideas to facilitate new business outcomes, aimed at improving internal business processes and structures and to create market-driven products and services.

The relationship between knowledge acquisition and innovation has been widely examined in the current literature. Darroch (2005) conducted a survey of 443 organizations in New Zealand and proved that knowledge acquisition has a positive effect on innovation, while Andreeva and Kianto (2011), based on a quantitative survey covering 221 firms in Finland, Russia and China, indicate that all the four KM processes—knowledge acquisition, knowledge storing, knowledge sharing and knowledge creation—have positive effects on the innovation results of firms. Yli-Renko et al. (2001) point out that knowledge acquisition mediates the relationship between social interaction and new

product development. In a similar vein, Chen and Huang (2009) show that knowledge acquisition contributes to both administrative and technical innovation of the firm.

According to Galunic and Rodan (1998), innovation comes from the process of knowledge exchange and recombination. Based on this reasoning, we can interpret the different ways through which knowledge acquisition contributes to innovation. First, as suggested by Yli-Renko et al. (2001), knowledge acquisition enhances the breadth and depth of external knowledge available to a firm, thereby increasing the likelihood of combining external knowledge with internal knowledge, leading to innovation results for the firm. Second, the acquisition of external knowledge could accelerate the new product development process. As Zahra et al. (2000) posit, knowledge diversity increases the speed of processing, thereby reducing product development cycles. In this study, knowledge acquisition involves not only the acquisition of knowledge outside of the firm but also the accumulation of the firm's internal knowledge. Based on the above review and arguments, we propose that:

H1: Knowledge acquisition is positively related to firm innovation

Organizational knowledge exists either in tacit or explicit form (Polanyi, 1967). According to Nonaka et al. (2000), explicit knowledge includes the type of knowledge which can become information or data that individuals can easily collect, codify and store as knowledge for future utilization. Conversely, tacit knowledge is subjective, both experience and skill-based. According to Bollinger and Smith (2001), tacit knowledge consists of lessons learned, know-how, assessment, estimation and intuition of individuals. A KM strategy is defined as a high-level plan consisting of processes, tools, and technological infrastructure as well as necessary organization to manage the deficiency or redundancy of knowledge in the organization (Nouri et al., 2013). Based on the dichotomy between tacit and explicit forms of organizational knowledge, the current KM literature also provides a popular classification of KM strategy, initiated by Hansen et al. (1999), according to which, every organisation might apply either codification strategy or personalisation strategy or strike a balance between codification and personalization within their knowledge strategy in order to create its competitive advantages.

Codification strategy relies on technology, system and procedures to describe, and codify the knowledge and experiences of organization, thereby transforming organizational knowledge from tacit into explicit form. The purpose of this strategy is to establish a knowledge repository or databases inside the organization that all members can have easy access to look for and acquire the knowledge needed for their work without having to contact the person who originally developed it. By contrast, a personalization strategy emphasizes the interaction and direct knowledge sharing among individuals in an organization. In this approach, knowledge is transferred through face-to-face conversations. This strategy is built on the establishment of social networks in teams and is enabled through mentoring or apprenticeship processes. It focusses on the acquisition of internal knowledge and fosters knowledge sharing mainly through informal channels (Jordan & Jones, 1997). Choi and Lee (2002) considered the codification strategy as a system-oriented strategy, while personalization strategy as a human-oriented strategy.

Based on the view of knowledge resource combination as the key mechanism for innovation (Galunic & Rodan, 1998), we can describe the different ways through which KM strategies contribute to innovation. For example, a codification strategy can help to reduce the "tacitness" of organizational knowledge, thus making it easier for different knowledge resources inside the organization to be exchanged or combined. Personalization strategy, on the other hand, encourages social interaction and knowledge sharing among individuals through informal channels, thus also fostering the exchange and recombination of knowledge resources throughout the firm.

There have been a limited number of empirical studies in the current literature examining the relationship between KM strategies and innovation of firms. Liao (2007) points out that although both

KM strategies (codification and personalization) have a positive effect on the innovation results of the firm and that codification strategy plays a more important role in contributing to the innovation results of firms. Majchrzak et al. (2004) conclude that explicit knowledge reuse, or codification strategy has a significant and positive relationship to radical innovation. Regarding personalization strategy, Rhodes et al. (2008) indicate that this strategy has a significant and positive association with product innovation and process innovation. Based on the above findings and arguments provided by the current literature related to KM strategy and innovation, we hypothesize:

H2: Knowledge management strategy is positively related to firm innovation

H2a: A codification strategy is positively related to firm innovation

H2b: A personalization strategy is positively related to firm innovation

2.2. A contingency approach to knowledge acquisition

Besides addressing the direct effects of knowledge acquisition and KM strategies on innovation, different scholars also adopted the contingency approach to determine different factors which may influence the relationship between knowledge acquisition practices and organizational performance (Bettiol et al., 2012; Hansen et al., 1999; Liu et al., 2013). According to this approach to knowledge acquisition, the impact of knowledge acquisition practices on innovation is conditioned by a KM's strategic posture. More specifically, an organization may exhibit higher innovation performance if they are applying knowledge acquisition practices consistent with the organizations' current KM strategies. Hansen et al. (1999) stated that there are two strategies for managing knowledge in an organization, including codification and personalization strategies. Codification strategy is a "people-to-document" approach where knowledge is extracted and stored in a database of the organization, while personalization strategy is a "people-to-people" approach where there are direct interactions between people within the organization. Thus, according to contingency theorists, a set of interaction effects between knowledge acquisition and KM strategy may have different effects to innovation performance of firms.

In this paper, we propose that both codification and personalization strategies possibly moderate the relationship between knowledge acquisition and innovation results of the firm. Our argument assumes that the two KM strategies utilize different tools or channels (human vs. system) for knowledge dissemination and knowledge combination, and these channels may either enhance or lessen innovation results of a firm when combined with knowledge gained through acquisition. As a rule, the KM strategy followed by a firm is oriented to the sharing of either explicit or tacit knowledge. Combining a KM strategy with knowledge acquisition can, therefore, have joint effects on the innovation result of a firm.

Although some firms may use different strategies for managing knowledge, Hansen et al. (1999) found that effective organizations choose their strategy based on characteristics of their products and services and focusing on one of the strategies and using the others in a supporting role. Besides, they suggested that organizations did not try to employ both strategies with an equal degree. Scheepers et al. (2004) show that organizations may need to adjust their codification and personalization strategies to align with the nature of the knowledge process because codification and personalization may have different effects on firm performance. A study by D. Lee and Van den Steen (2010) stated that when a firm pursued a codification strategy, knowledge is codified and stored in databases for reuse. Thus, employees have fewer incentives to explore new knowledge. In addition, a firm may not disseminate a moderately successful practice to all departments and levels of the firm.

When a firm adopts a high level of knowledge codification, explicit knowledge will be at the core of its KM practices because codification can only transfer explicit knowledge (Hahn & Wang, 2009).

In this situation, the organization tends to favor the use of formal channels, for example, official meetings, scheduled visit to customers, cross-functional project teams, firm's email system to facilitate the acquisition and sharing of explicit knowledge by all teams and individuals. However, if one organization focuses on the codification strategy, they need to spend more money on electronic repositories and codify their knowledge as the "tacitness" of knowledge increases.

When an organization pursues personalization strategy, informal channels instead of formal channels will be used by the firm for knowledge sharing because a personalization strategy which focuses on connecting people receives more attention. In this situation, organization needs to encourage its employees to help others or gratification of developing professional relationships (D. J. Lee & Ahn, 2007). Costs are incurred mostly at the time reuse of knowledge happens and this cost is related to the number of knowledge users (Chai & Nebus, 2012). In addition, personalization can exchange both explicit and tacit knowledge (Hahn & Wang, 2009). Thus, this approach could facilitate the acquisition of both explicit and tacit knowledge inside the organization by providing opportunities for individuals and teams to interact and exchange knowledge on a face to face basis. More specifically:

H3: A knowledge management strategy moderates the relationship between a firm's knowledge acquisition practices and innovation.

H3a: A codification strategy moderates the relationship between a firm's knowledge acquisition practices and innovation.

H3b: A personalization strategy moderates the relationship between a firm's knowledge acquisition practices and innovation.

3. Methodology

3.1. Sample and data collection

Companies participating in this study operate in a wide range of sectors, including manufacturing, high-tech, service, trading, etc. To be eligible, the company must satisfy three selection criteria, including (i) company must have at least 50 employees; (ii) it must have a minimum annual revenue of VND 50 billion; and (iii) it must have been operating for at least 5 years at the time of answering the questionnaire. We used these criteria to eliminate the possibility of including small companies that might not have KM activities. In addition, as it is widely believed that top management can provide reliable information about organizational characteristics of their organization (Mintzberg & Waters, 1985), the Chief Executive Officer (CEO) of each firm was contacted to respond to our survey.

Companies involved in this study were randomly selected, based on a list provided by the Statistics Offices in Hanoi and Ho Chi Minh City. A potential pool of 412 companies was drawn from several industries: high-tech, service, trading and manufacturing firms. The initial contacts for this study were the CEO of the companies. In June 2017, we e-mailed each CEO a cover letter and questionnaire measuring knowledge acquisition activities, KM strategy and innovation performance. Data collection was undertaken via different channels such as email, google docs and interview. After 1 month, a final total of 130 CEOs (equivalent to 31.6%) participated in the study with full information in the questionnaire. High-tech, service and manufacturing firms accounted for 21%, 27.5% and 24.6% of the research sample, respectively, while firms in trading and other sectors comprised 26.9% of the research sample.

Previous studies on KM and innovation tended to use high-tech or innovative industries for empirical testing (Donate & Guadamillas, 2011; Liao, 2007) since companies in this sector are more likely to apply KM and see innovation as a source of competitive advantage. However, there is an increasing

number of studies using a more diverse sample with companies coming from different industries for empirical testing (Andreeva & Kianto, 2011; Choi & Lee, 2002). In this study, due to the insignificant number of high-tech companies, the use of a multi-sector sample is more relevant and in the era of the knowledge-based economy, KM is increasingly practiced by firms in all sectors and industries.

3.2. Measures

Knowledge acquisition practices: The measure for knowledge acquisition was adapted and slightly modified from the study of (Gold et al., 2001), taking into consideration the level of KM implementation by Vietnamese firms in general. To gather data for empirical analysis, respondents were asked to rate how their firm performs vis-a-vis each item, using a 7-point scale. The reliability test shows a high value for this measure ($\alpha = 0.89$).

Knowledge management strategy: To examine the effects of KM strategies on innovation results of the firm, this study builds on the study of Choi and Lee (2002) to develop two separate measures for the codification strategy and for the personalization strategy. Both these two measures yield a high Cronbach's alpha value ($\alpha = 0.88$), showing strong internal reliability of these measures.

Innovation: The measure for innovation result used in this study was adapted and slightly modified innovation scale from the study of Donate and Guadamillas (2011) with eight items, reflecting the capacity of the firm in respect of making new products/services and business processes or modifying current products/services and business processes. Respondents were asked to rate not only absolute subjective items (level of innovation results of firms) but also relative items (level of innovation results compared to those of competitors), using a 7-point scale ranging from 1 (very low) to 7 (very high). This measure also obtains a very high value of internal consistency reliability ($\alpha = 0.94$).

Control variables: Firm size and firm age serve as control variables in this study. To compensate for skewness, firm size is measured by the number of staff and firm age is obtained by calculating the number of years from the founding date.

4. Results

A principal component analysis with varimax rotation was conducted to test the discriminant validity of the variables. Results from exploratory factor analysis show that four key variables (knowledge acquisition, codification strategy, personalization strategy, and innovation results) are successfully loaded on four different components with the eigenvalue of each component > 1 . In addition, Table 1 shows that the KMO and Bartlett's test generates a satisfactory result with KMO = 0.929 at the significance level $p < 0.05$.

Table 2 shows the means, standard deviations, and correlation matrix for all variables. Multicollinearity does not happen in this study because the correlation among variables is under 0.75 (Sekaran, 2003). The results of the correlation matrix in Table 5 indicate that knowledge acquisition has a positive and significant correlation with the innovation of firms.

Multiple regression analysis was used to test the hypotheses. In total, four models were built to test the hypotheses. In the first model, only two control variables—firm age and firm size—were entered. In the second model, the knowledge acquisition variable was added to estimate their individual effects on the innovation results of firms. In the third model, both the codification strategy and personalization strategy variables were added. Finally, in the fourth model, the interactions between each of these strategies with the knowledge acquisition variable were added at the same time to capture the possible moderating effects of the two KM strategies. The result in Table 3 shows that all the four models are significant with model 1 explaining the 5% the variance of the dependent variable and models 2, 3, 4 explaining, respectively, 56%, 63% and 66% variance of the dependent variable.

Table 1. Exploratory factor analysis

	Component			
	1	2	3	4
Innovation results 1	0.72			
Innovation results 2	0.72			
Innovation results 3	0.79			
Innovation results 4	0.74			
Innovation results 5	0.81			
Innovation results 6	0.75			
Innovation results 7	0.77			
Innovation results 8	0.76			
Codification strategy 1		0.77		
Codification strategy 2		0.81		
Codification strategy 3		0.60		
Codification strategy 4		0.82		
Personalization strategy 1			0.57	
Personalization strategy 2			0.63	
Personalization strategy 3			0.71	
Personalization strategy 4			0.64	
Knowledge acquisition 1				0.81
Knowledge acquisition 2				0.75
Knowledge acquisition 3				0.74
Knowledge acquisition 4				0.64
Knowledge acquisition 5				0.65

Notes: Only loadings > 0.50 are shown. KMO = 0.929, Bartlett's Test of Sphericity = 2363.426, Significance = 0.000.

Table 2. Means, standard deviations and correlations

	Mean	SD	1	2	3	4	5
Knowledge acquisition	4.90	1.26	1				
Codification strategy	5.06	1.31	0.60**	1			
Personalisation strategy	5.26	1.31	0.65**	0.69**	1		
Innovation Results	5.32	1.16	0.65**	0.50**	0.64**	1	
Firm age	3.85	1.24	-0.07	0.03	-0.06	-0.22*	1
Firm size	2.84	1.05	-0.03	0.09	0.01	0.01	0.46**

*p < 0.05; **p < 0.01.

Table 3. Results of regression analysis for knowledge acquisition practices, knowledge management strategy, and innovation

Variables	Model 1	Model 2	Model 3	Model 4
(Constant)				
Firm age	−0.28***	−0.17***	−0.17**	−0.16
Firm size	0.18*	0.15**	0.13*	0.11
Knowledge acquisition		0.52***	0.30***	0.43
Codification strategy			0.06	1.83
Personalization strategy			.35***	−.85
Codification X Knowledge acquisition				−1.46**
Personalization X Knowledge acquisition				1.06
F	3.88**	36.51***	33.07***	23.29***
R ²	0.07	0.57	0.65	0.69
Adjusted R ²	0.05	0.56	0.63	0.66

* $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$

More specifically, results from model 1 show that firm size or the number of staff are positively related to innovation results ($t = 0.18$, $p < 0.1$). This means that the greater the number of staff the higher the innovation results of firms. Conversely, firm age has a negative association with innovation result ($t = -0.28$, $p < 0.01$), suggesting that the older the firm, the lower its innovation result. One possible explanation is that gradually, inertia amongst individuals in the organization becomes greater, resulting in increased resistance to change and innovation inside the firm.

In model 2, with firm size and firm age being controlled, knowledge acquisition was significantly related to firm innovation. Specifically, knowledge acquisition has a strong and positive effect on innovation results of firms ($t = 0.52$, $p < 0.01$). This finding provides preliminary support for Hypothesis 1 and suggests that other things being equal, knowledge acquisition is a valuable approach for strengthening firm innovation.

In model 3, when the codification strategy and personalization strategy were added as independent variables. KM strategies as a set were significantly related to innovation of firm ($\Delta R^2 = 0.08$, $F = 33.07$, $p < 0.01$), thereby providing support for Hypothesis 2. More specifically, among the two KM strategies, only personalization strategy has a positive and significant effect on innovation of firm ($t = 0.35$, $p < 0.01$), while codification strategy has no marginally associated with innovation of the firm. Thus, these findings provide support for Hypothesis 2a but provide no support for Hypothesis 2b.

Beyond the direct effects, in model 4, we found support for the contingency approach to knowledge acquisition. The KM strategy—knowledge acquisition interaction terms accounted for significant incremental variance in innovation of firm ($\Delta R^2 = 0.04$, $F = 23.29$, $p < 0.01$). This result indicates that KM strategy does moderate the knowledge acquisition–firm innovation relationship, thereby providing support for Hypothesis 3. In testing the more specific moderation hypotheses, we found that a codification strategy interacts with knowledge acquisition to predict firm innovation, thereby providing some support for Hypothesis 3a. There is however no empirical evidence to support the moderating role of a personalization strategy in the relationship between knowledge acquisition and innovation

result, therefore Hypothesis 3b is not supported. Overall, maximizing firm innovation performance appears to depend on properly aligning knowledge acquisition with KM strategy.

5. Discussion

The universal approach: Findings from this study were used to interpret the relationships among knowledge acquisition, KM strategies and innovation results of firms. First, knowledge acquisition was found to exert a strong and positive effect on the innovation results of firm, thus supporting findings from previous research (Andreeva & Kianto, 2011; Rhodes et al., 2008; Yli-Renko et al., 2001). Consequently, firms need to develop processes to acquire knowledge from different stakeholders such as customers, partners, competitors, and past projects in order to enhance the firms' innovation results. Second, the study provides new evidence about the direct effect of KM strategy on innovation. Such findings coincide with the arguments of scholars (Bettiol et al., 2012; Liao, 2007; Rhodes et al., 2008) who promote the use of KM strategy as a means to foster firm innovation. However, in the Vietnam context, our findings show that a personalization strategy was related to higher innovation of firms, while a codification strategy was not associated with firm innovation. This may have two possible reasons. First, Asian cultural characteristics (e.g., personal relationships, make contact frequently, close relationships with co-workers, desire to help others) may be more effective for personalization. Second, firms in developing countries may not be heavily invested in the system, information technology, and knowledge repositories. Unfortunately, our survey does not allow us to explore these results in more detail.

Our findings are consistent with the study of Rhodes et al. (2008) which suggests that personalization knowledge transfer demonstrates a higher impact on the innovation capability of firms. However, results from this study are somehow opposite to that of Liao (2007) where codification strategy was found to contribute more to innovation than the personalization strategy. The contradictory findings of the above two studies could be linked to the different industries to which the surveyed firms belong. Choi and Jong (2010) argue that in some sectors, for example, banking and finance, where work processes and norms are highly established and standardized, codification strategy seems to reflect a higher level of fit than personalization strategy.

A contingency approach: Previous studies (e.g., Ajith & Ganesh, 2011; Bettiol et al., 2012; Liao, 2007) only examined the direct effect of KM strategies on innovation and seemed to ignore the moderating role of KM strategies on the relationship between knowledge acquisition and innovation. In this paper, both the direct and moderating effects of KM strategies on innovation have been examined. Our results add clarity to the specific aspects of firm innovation performance which are affected by knowledge acquisition and KM strategies. More specifically, despite a personalization strategy having a strong direct effect on innovation results, these regressions provided no evidence that a personalization strategy interacted with knowledge acquisition to predict innovation results.

By contrast, our results indicate that a codification strategy had a non-significant effect on firm innovation performance, while we found that a codification strategy interacts with knowledge acquisition to negatively influence the innovation results. The results suggest that when a firm prioritized the transformation of organizational knowledge from tacit into explicit form and promoted knowledge sharing in formal forms such as written reports, data, knowledge acquisition lost its importance in terms of influence on innovation result (Apostolou et al., 2007). Several explanations may account for these findings. On the one hand, the new knowledge a firm obtains from its customers, suppliers, and competitors through the knowledge acquisition process are primarily in the tacit form, and thus it is not easily compatible with the codification approach which favors the documentation and sharing of knowledge in explicit form. On the other hand, an organisation can concentrate on codification to exploit the advantages of high-level product standardisation. However, in the case of creative outputs, creative content is very high and is difficult to standardise. Thus, an organization needs to take into account the trade-off between codification and personalization (Bettiol et al., 2012; Caves, 2000).

Several studies in the extant literature have indicated that firms should use a biased approach towards implementing KM strategies where one specific strategy will have a dominant role while the other strategy will play a more supportive role (Ajith & Ganesh, 2011; Hansen et al., 1999). Results from our study suggested that in order to enhance the influence of knowledge acquisition on innovation performance, firms should not be overly dependent on codification strategy or invest heavily in KM tools and infrastructure without allocating appropriate resources to the development of a learning culture, to the promotion of knowledge sharing through informal channels, etc. Conversely, the findings also suggest that firms looking for higher innovation results are advised to choose the personalization strategy as their dominant KM strategy and give a lesser role to the codification strategy. In addition, although numerous studies (Apostolou et al., 2007; Bettiol et al., 2012; D. Lee & Van den Steen, 2010; Liu et al., 2013) have attempted to clarify the effects of different KM strategies on firm innovation, there still remains a high degree of uncertainty about how to design procedures and manage people in order to enhance innovation. Furthermore, as this study indicates, it appears that different types of KM strategies require different people and management procedures.

Although our study provides interesting insights into the relationship between knowledge acquisition, KM strategy and firm innovation performance, several limitations of this study should be emphasised. First, by using a relatively small and multi-sector sample ($N = 130$), it is not possible to analyse and draw sector-specific conclusions nor is it possible to generalize the findings from this study to the entire population of Vietnamese firms. In addition, different industries might need a different knowledge system. Future studies should strive for larger sample sizes and use other organizational characteristics as moderators in order to provide further insights into the knowledge acquisition—firm innovation performance relationship.

Second, this study captured self-report data for measuring the innovation results of a firm. Moreover, data were primarily collected through a survey of firm managers. However, perceptual measures were often completed by single respondents. Thus, single-respondent measures of innovation may account for some of the errors. Future research should use multiple respondents or collect data from multiple sources.

Third, as seen in many other empirical studies, this study used a cross-sectional research design, thus the obtained results may be influenced by causality concerning the hypothesized relationships. Future research may consider using a longitudinal design to discern the causal inferences among independent and dependent variables.

In today's organizations, a firm may not apply a moderately successful practice at different departments of the firm. Some departments may reuse the current best practices while other departments continue to experiment and create new knowledge. This study would provide a deeper understanding of how firms can manage knowledge to improve competitiveness and how they can develop a knowledge system.

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