

Innovative Knowledge Productivity in Community of Practice in Public Hospitals of Thailand: A Model Comparison Approach

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Abstract

The Innovative Knowledge Productivity (INN) is the ability of health care professionals to survive will come to depend on their "comparative advantage" in making the knowledge worker more productive. The current research represents a conceptual replication of several previous model comparison studies. The particular models under investigation are Knowledge sharing (KS) model (KSM model) of Van den Hooff and De Ridder (2004) and Absorptive capacity (ACAP) Model (ACM model) of Todorova and Durisin (2007), potentially adequate in the targeted healthcare professional setting. These models are empirically examined and compared, using samples consisted of 428 Registered Nurses of the Knowledge Management Network for Caring Patients with Diabetes at Public Hospitals in the Northern Region of Thailand. We employed a model comparison approach to identify the best fitting model to predict Innovative Knowledge Productivity. Results of the study highlight Absorptive capacity Model (ACM) can predict The Innovative Knowledge Productivity of healthcare professional more than Knowledge sharing model (KSM) based on using the three criteria — (1) minimum discrepancy per degree of freedom (CMIN/DF); (2) The coefficient of determination (R^2) of The Innovative Knowledge Productivity; and (3) Root Mean Square Residual (RMR). ACM Model has a total effect on the dependent variable 0.524, which more than KSM Model (Total effect= 0.221). Moreover, the ACM model was identified as the best fitting model to predict Innovative Knowledge Productivity.

Keywords: Absorptive Capacity; Model Fit; Peer-Assist; Knowledge Productivity; Communities of Practice; Diabetes

Introduction

Diabetes is a leading chronic, non-infectious disease that is a health problem in all regions of Thailand, affecting many hospital health system managements (Attakrai, 2015). The trend is that the magnitude of the problem will increase. From a survey in 2009, diabetic patients were estimated to be more than 4 million in Thailand (roughly 9 % of the country's population) and possibly will be increased (Attakrai, 2013). Therefore, diabetes prevention requires cooperation from both the public and private sectors working together as a network to share knowledge sharing and apply the acquired knowledge to develop innovation and continue to care for diabetic patients. The concept of knowledge

management format that focuses on the benefits from Networking is from the need to create wide knowledge communities by creating reliability, trust, and true friendship to exchange knowledge aiming at cultural knowledge to build a strong community of practice (Anuwat et al., 2010).

There are many formats of Knowledge sharing behaviour among the members of the community, for example, Symposium, Knowledge Management Market Convention, Workshop, Peer-Assisted Learning, Computer-Based Learning, Seminar. Attakrai (2013) studied the formats of Thai diabetes patient care knowledge management to be in two main formats; (1) Knowledge Management Market Convention. The author describes these activities based on the knowledge sharing behaviour concept proposed by Van den Hooff (2003); and (2) Peer-Assisted Learning by applying absorptive capacity concept by Todorova and Durisin (2007) (Figure 1).

The Knowledge Management Market Convention requires a location for the knowledge to be presented to those interested and besides the location, expert lectures and learners are also required. However, even if the format has the prominent point being that it can transfer knowledge to a large amount of audience at once, it faces problems with time control, the knowledge being presented is not interesting for the audience and many more, whereas, in Peer-Assisted Learning, a learner is a person participating in the sharing of knowledge, skills, expertise, experience, and opinions and willingly suggests good practices on issues need or requested by learners in the group. He or she also gives guidance, compliments, and motivation to co-learners regularly. Even if the knowledge being shared by peer-assisted learning is the knowledge interested by the learner. However, it would be effective only if it is conducted between two small groups; the teachers and the students. Therefore, it presents a problem when conducted in a wide knowledge management community. From the above-mentioned reasons, the researcher focused on studying that under the social resource of professional nurses for diabetic patient care community knowledge management, in which, learning concept between Knowledge sharing behavior and Absorptive capacity is more reliable to forecast The Innovative Knowledge Productivity (Figure 2).

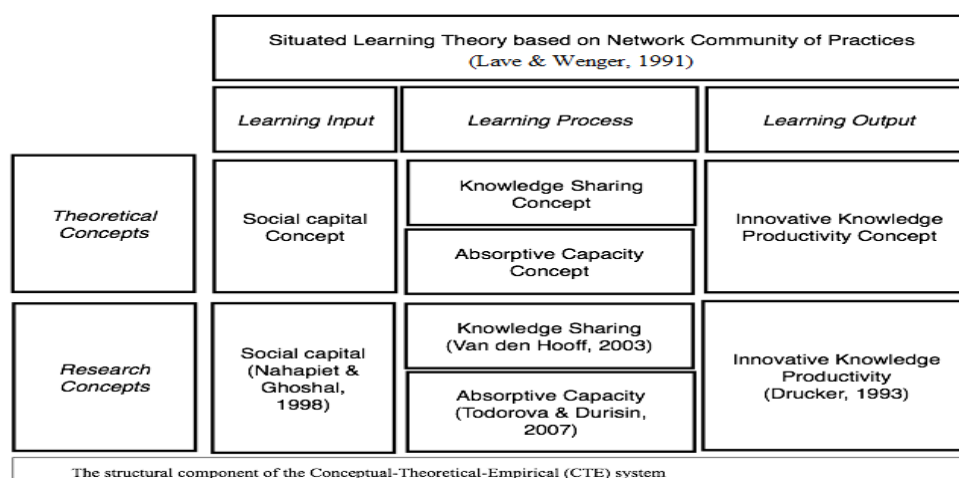


Figure 1 Theoretical Framework

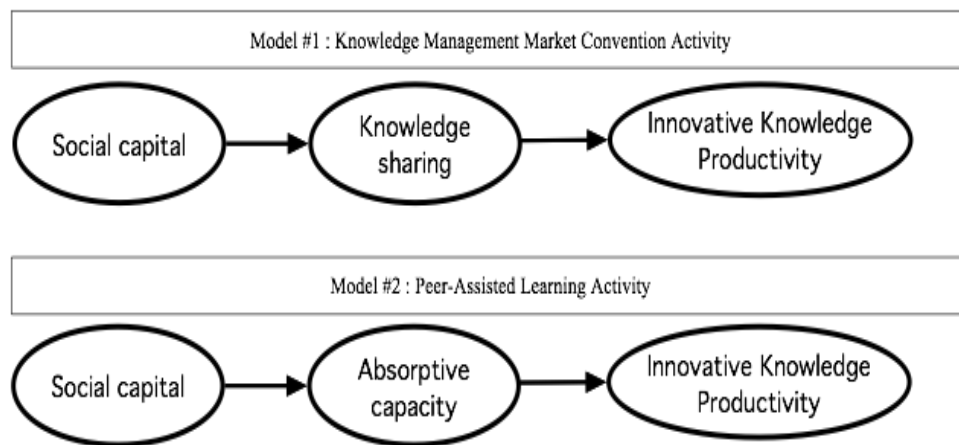


Figure 2 Conceptual Framework

The objectives of this study were (1) Goodness of Fit test; and (2) The comparison of the two models was made by using the three criteria— (1) minimum discrepancy per degree of freedom (CMIN/DF); (2) the coefficient of determination (R²) of The Innovative Knowledge Productivity; and (3) Root Mean Square Residual (RMR).

Literature review

Theoretical background

Situated Learning Theory based on Network Community of practice

Theoretical framework of this research based on Situated Learning Theory based on Network Community of practice (Social theory of learning) of Lave and Wenger (1998). This theory has its roots in attempts to develop accounts of the social learning inspired by anthropology and social theory (Lave & Wenger, 1998). Creating a working network based on improving and integrating both internal and external knowledge to come up with innovative knowledge. The knowledge that is appropriate and can be used for creating inter-organisational networks with members relying on more than competing with each other. The theory and concepts that can be used to explain the creation of such network (Attakrai, 2013; 2015) under the framework of Situated Learning Theory based on Network Community of practice (Social theory of learning) of Lave and Wenger (1998). The theory was used to expand a community of practice concept of not being a part of any official organisation but it is a network of individuals that intend to participate in Knowledge and experience sharing activities to be used to solve similar problems. The knowledge management network reflects the same beliefs and attitudes. The social relationship among the members is based on the exchange of knowledge, experiences, and solution (Lave & Wenger, 1998; Li et al., 2009).

Innovative Knowledge Productivity (INN)

Peter Drucker asserted that making knowledge workers productive was “the biggest of the 21st century management challenges” (Drucker, 1999). The task of improving Innovative knowledge productivity for professionals is enormous, and so are the consequences of failing to do so. In fact, Drucker warned that improving knowledge worker productivity is the “first survival requirement” of developed organisation. (Drucker, 1999). Innovative Knowledge Productivity for professionals must be considered a capital asset. If an organisation is seeking to grow its assets and to maximize their return, and if knowledge workers’ productivity is deeply influenced by the workers’ inner states, then helping knowledge workers to cultivate optimal internal states becomes the responsibility of management and, in effect, becomes an exercise in asset management (Drucker, 1999).

Much of the work on Innovation Knowledge Productivity is found in the literature on innovation diffusion (Rogers, 1995). According to these scholars, an organisation or Professional social network must be innovative to survive in a volatile environment (Johnson et al., 1997). Innovative Knowledge Productivity is conceived by some (Rogers & Shoemaker, 1971; Hurt et al., 1977) as the degree to which an individual, compared to others in the social network system or Community of Practice (CoP), is relatively early in adopting something new. That definition, however, focuses on the individual, not the organisation. Innovative Knowledge Productivity is conceptualized from two perspectives. The first views it as a behavioral variable, that is, the rate of adoption of innovations by the organisation. The second view it as an organisation’s willingness to change by knowledge utilisation.

Social Capital (SC)

Nahapiet and Ghoshal (1998) defined social capital as “the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit”. Adler and Kwon (2002) stated that social capital is a durable asset in which resources are invested so that they may return the benefits in the future. Social capital is not necessarily contexted specific, i.e., Professional Social network or Community of Practice (CoP) formed in one context may be assimilated and transformed to another (Nahapiet & Ghoshal, 1998; Adler & Kwon, 2002). For example, the network formed in the academic environment of a university can be used by the students later in their professional lives.

Absorptive capacity (ACAP)

Absorptive capacity was defined originally as a firm’s ability to recognize the value of new information, assimilate it, and apply it for commercial purposes (Cohen & Levinthal, 1990). Zahra and George (2002) divide absorptive capacity into potential absorptive capacity and realized absorptive capacity. Moreover, they conceptualize the sequence as a linear relationship between acquisition, assimilation, transformation, and exploitation,

whereas Todorova and Durisin (2007) interpret assimilation and transformation as two parallel elements. Knowledge is assimilated if the existing cognitive structure of organisational members does not change. Transformation means that new knowledge is interrelated with changing existing cognitive structures. Absorptive capacity is not static but rather evolves through learning processes (Todorova & Durisin, 2007).

Knowledge sharing (KS)

Van den Hooff and De Ridder (2004) was defined as the process where individuals mutually exchange their (implicit and explicit) knowledge and jointly create new knowledge. This process is essential for translating individual knowledge to an organisation or social network knowledge. Moreover, they implied that every knowledge sharing process consists of both bringing (or “donating” – communicating to others what one’s personal intellectual capital is) knowledge and getting (or “collecting” – consulting colleagues to get them to share their intellectual capital) knowledge.

Innovative Knowledge Productivity and Social capital

In the new era, social capital became viewed as a tool, which facilitates resource exchange, creates intellectual capital, increases dynamic learning, and present innovativeness of knowledge. At the same time, it’s also one of the core concepts in maintaining competitive advantages (Alder & Kwon, 2002). In researching the role of social capital in the open level of the organisation, Walker et al. (1997) indicated social capital as a way of reinforcing behavior standards in the company. Therefore, the moderate quality and quantity of social capital is a good catalyst in organisational innovation, but a direct effect on innovativeness. Chaminade and Roberts (2002) implied social capital as a mechanism connecting knowledge with and across firms that accord studying of Chang et al. (2006). So that social capital is not a direct effect on Innovative Knowledge Productivity.

From the review on literature by Wang and Noe (2010), and Volberda et al. (2010), it was found that social capital affects Innovative Knowledge Productivity through knowledge sharing behavior and absorptive capacity, respectively. Additionally, from the study of research conducted on the relationship of in a group of deep-seeded knowledge sharing behavior conducted by Yang and Farn (2007), it was found that the knowledge sharing behavior on deep-seeded knowledge and experience that led to innovative knowledge productivity required connections between individual and social network. Additionally, it is consistent with the research on the causal model based on the concept by Lin (2007) that found that staff in a large organisation that share knowledge within the team resulted in them being able to continuously produce innovative knowledge.

While from the result of the study done by Carrion et al. (2012), it was found that if a large company develops an absorptive capacity for each component, the Innovative Knowledge Productivity will increase (Carrion et al., 2012).

In order to research the relationship between social capital and Innovative Knowledge Productivity through Knowledge sharing behavior and Absorptive capacity, the following hypothesis was made:

The conceptual framework in this study (Figure 2) has two models—which have the same Independent Variables (Social capital) but different Mediator variables such as Knowledge sharing behavior (KSM model: members share knowledge with each other by Knowledge Management Market Convention).

H1: Knowledge sharing will significantly influence Innovative Knowledge Productivity.

H2: Absorptive capacity will significantly influence Innovative Knowledge Productivity.

and Absorptive Capacity (ACM model: members share knowledge with each other by Diabetes Peer-Assisted Learning).

H3: Social capital will significantly influence Knowledge sharing.

H4: Social capital will significantly influence Absorptive capacity.

Conceptual Framework

The conceptual framework was based on Situated Learning Theory based on the Network Community of practice (Social theory of learning) Lave and Wenger (1998) (Figure 1 and Figure 2). The particular models under investigation are the Knowledge sharing model (KSM model) of Van den Hooff and De Ridder (2004) and Absorptive capacity Model (ACM model) of Todorova and Durisin (2007).

Methodology

Sampling and data collection

This study consists of two groups: (1) Registered Nurses who have experience in Diabetes Knowledge Management Market Convention activity 219 persons; and (2) Registered Nurses of the Knowledge Management Network for Caring Patients with Diabetes at Public Hospitals in the Northern Region of Thailand (Diabetes CoPs) who have experience in Diabetes Peer-Assisted Learning activity 209 persons by Simple Random Sampling from Registered Nurses of the Knowledge Management Network for Caring Patients with Diabetes at Public Hospitals in the Northern Region of Thailand (Diabetes CoPs) list of each group.

Research Instruments

The questionnaire used contained answers with 5 levels of Likert scale starting with strongly agreement at level 5 and strongly disagreement at level 1. There were a total of 28 questions divided into 5 parts as followed: Social capital of Nahapiet and Ghoshal

(1998) 7 items, knowledge sharing behaviour of Van den Hooff et al. (2003) 3 items, Absorptive capacity of Todorova and Durisin (2007) 14 items, and Innovative Knowledge Productivity of Druckers (1993) 4 items.

To determine the content validity of the questionnaire was done by using the acquired answers to figure out the consistency between the questions and variables to calculate for the Index of item objective congruence (IOC), which is higher than the benchmark set by the researcher at 0.6 or more (Rovinelli & Hambleton, 1977). Therefore, the quality of the research instruments is at a good level.

To test the validity and accuracy of the instruments after the questionnaire revision, it was tried on 35 diabetic patient care network members at state hospitals that were not in the sample group with each instrument reliability calculated Cronbach's alpha coefficient test with the Reliability at 0.788, 0.798, 0.887, and 0.902, respectively.

Research variables

The dependent variable is Innovative Knowledge Productivity; Independent Variable is Social capital, and Mediator variable are Knowledge sharing behaviour (KSM model) and Absorptive Capacity (ACM model) — examination model and The Innovative Knowledge Productivity model — and to compare them in sense of the ability of prediction and the error of prediction.

Data Analysis Procedures

The data analysis was done according to the table data analysis as followed;

Table 1

Research Objectives	How to Analyse	Statistics for Analysis	Recommendations on Fit Indices
(1) Goodness of Fit test	Structural Equation Modeling	CMIN/DF less than 3.0 (Hair et al., 2010)	
		P-value exceeds 0.05 (Byrne, 2001)	
		GFI exceeds .90 (Byrne, 2001)	
		AGFI exceeds .90 (Byrne, 2001)	
		RMS should not exceed .08 (Hair et al., 2010)	
		TLI exceeds .95 (Hu and Bentler, 1995).	
		CFI exceeds .95 (Hair et al., 2010)	
		RMSEA<0.05: close fit (Steiger, 1990)	
GFI: Goodness-of-Fit Index, AGFI: Adjust Goodness-of-Fit Index, RMS: Root Mean Square Residual, TLI: Tucker-Lewis Index, CFI= Comparative Fit Index, RMSEA: Root Mean Square Error of Approximation			
	How to Analyse and Statistics for Analysis		Recommendations for comparison
(2) The comparison of the two models	(1) To compare Chi square/Degree of freedom		The smaller is the better
	(2) To compare the coefficient of determination (R ²) of The Innovative Knowledge Productivity		The bigger is the better

(3) To compare Root Mean Square Residual: RMR

The smaller is the better

Results and Discussions

Before the analysis according to the research objective and research hypothesis, the researcher found that the data used has passed all assumptions; (1) normal distribution (P-value from Shapiro-Wilks results = 0.7226 which more than 0.05); and (2) homogeneity of variance (levene statistic significance = 0.02 which less than 0.05). Thus, the variance of both groups is not differently distributed and can be analyzed according to the research objective.

Table 2

Model	Hypothesis	Coefficient		t-value	t-prob	Hypothesis Testing
		B	Beta			
KSM Model	H1 KS→INN	0.379	0.389	6.153	0.000	Accepted H ₀
	H3 SC→KS	0.586	0.526	9.001	0.000	Accepted H ₀

We accept the null hypothesis and reject the alternative hypothesis.

R=0.452; R²= 0.144; Adj.R²= 0.197; Std. Error of Est.= 0.44087

F= 27.083; Sig.= 0.000

ACM Model	H2 ACAP→INN	0.554	0.454	7.410	0.000	Accepted H ₀
	H4 SC→ACAP	0.614	0.689	13.851	0.000	Accepted H ₀

We accept the null hypothesis and reject the alternative hypothesis.

R=0.469; R²= 0.220; Adj.R²= 0.213; Std. Error of Est.= 0.43641

F= 54.911; Sig.= 0.000

Table 3

Research Objectives	How to Analysis	Fit indices for modeling	KSM Model	ACM Model
(1) Goodness of Fit test	SEM	CMIN/DF	1.254	1.141
		P	0.077	0.075
		GFI	0.947	0.919
		AGFI	0.918	0.901
		RMS	0.035	0.020
		TLI	0.981	0.984
		CFI	0.986	0.987
		RMSEA	0.035	0.026

Both KSM model and ACM model are goodness of fit model



(2) The comparison of the two models	(1) To compare CMIN/DF	CMIN/DF= 1.254	CMIN/DF= 1.141
	(2) To compare the coefficient of determination (R^2) of The Innovative Knowledge Productivity	$R^2= 0.204$	$R^2= 0.220$
	(3) To compare Root Mean Square Residual: RMR	RMS= 0.035	RMS= 0.020
<i>ACM Model has CMIN/DF, R^2, and RMS better than KSM Model</i>			

Based on the statistical results, researchers had synthesis the data and present both two models are the goodness of fit model. However, the ACM model is better than the KSM model because of the three criteria— (1) CMIN/DF, (2) The coefficient of determination (R^2) of The Innovative Knowledge Productivity, and (3) Root Mean Square Residual (RMR) have good results.

Conclusion and Recommendation

To be a success in Knowledge Productivity in The Knowledge Management Network for Caring Patients with Diabetes at Public Hospitals in the Northern Region of Thailand (Diabetes CoPs). The target of knowledge management activities Diabetes CoPs should have good Strategies following the guidelines: Diabetes CoPs should select sharing knowledge to each other by Diabetes Peer-Assisted Learning activity more than sharing knowledge with each other by Knowledge Management Market Convention activity. Thus, the finding suggests that the ACM model is the best fitting model to predict Innovative Knowledge Productivity. The finding also suggest that the challenge in enabling Health care Professional CoPs is not so much that of creating them but that of removing barriers for individuals' participation, making to be both knowledge donator and receiver at the same time, supporting and enriching the development of each individual's uniqueness within the context of the community, and linking that distinctiveness with the community goals. The study points towards one additional area where professionals could make a strong contribution to the community of practice development. The research result indicates that participants view their communities as providing an area for joint generation of new knowledge, the best practice, not just for explaining the existing knowledge. All members of CoPs should identify their existing knowledge and discover another knowledge outside organisation and transforming and utilizing new knowledge to agree with their organisation and routines.

Although the findings are encouraging and useful, the present study has certain limitations. First, whether our findings could be generalized to all types of professional communities is unclear. Secondly, knowledge sharing in communities of practice might be different from that of intra-organisational and inter-organisational virtual communities of practice. Further research is necessary to verify the generalizability of our findings. There are some questions remain for future research, for instance, social



capital represents to be a mechanism to motivate the knowledge flows among individuals within a community of practice (Chaminade & Roberts, 2002). The study seems to suggest that the community strengthens the social capital by strengthening the ties between people who have met in an earlier face-to-face meeting but would not have kept in touch if not for the network. The development of social capital leading to knowledge sharing and Absorptive capacity is an ongoing phenomenon. These social capital factors were measured at a static point rather than as they were developing, thus losing time richness of explanation. An ideal empirical design for testing the proposed model would be a longitudinal comparison of users' initial use and long-term use of professional communities for sharing knowledge, in order to faithfully capture the complex, dynamic interrelationships between initial and long-term knowledge sharing decisions. Future research should examine the interrelationships among facets of social capital.

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