The Determinants of Innovative Knowledge Transfer on Driving Force Innovation Performance and Global Innovation in MNC's Automobile in Thailand

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Abstract

The paper proposes a model explaining the innovations in organization on supporting local innovation, internal/external integration capacity and strategic alliances/partnership from international business literature thru innovative knowledge transfer by knowledge replication and knowledge adaption on innovation in organization as automobile MNCs in Thailand. Thus, a process reviewing the literature become an integral part of organizations' business strategies, along with aiding organizations to grow and innovate in the global market and gain competitive advantage. The role of innovative knowledge transfer in fostering knowledge quality and how integrated innovation capability of an organization. Specifically, to explain the potential of innovative knowledge transfer dimension as knowledge replication and knowledge adaptation becoming to the efficiency of innovation performance and global innovation by compose a set of constructs through structured questionnaire on 380 respondents from the automobile industrial domain in Thailand. The results verify that relationship strength by 12 hypotheses were derived based on the identified constructs and were subsequently validated has a significant positive impact on the validating the hypotheses, it was observed that while organizational contexts were positive associated with innovative knowledge transfer. Additionally, it was also observed that both innovative knowledge transfer and the quality of knowledge were positively to innovation performance and global innovation.

Keywords: organizational contexts; local innovation; internal innovation capacity; external innovation capacity; knowledge replication; knowledge adaption

Introduction

In response to the growth of automobile industry in Thailand, the automobile industry increasingly aims to improve its production network and management systems to contribute to the core of the global automobile industry on manufacturing assembling line, new technology and innovation, operating and management (Irawati and Charles 2010; Irawati 2011). The innovative knowledge is the most strategic resource and become to create new products and services on their learning process as the materialization of knowledge (Caloghirou et al., 2004).

From previous study, tacit knowledge resides in human mind, is hard to formalize, and is best transferred through direct social interactions (e.g., Nonaka, 1991; Subramaniam & Venkatraman, 2001), relationship qualities between expatriates and host country nationals who closely work with expatriates for knowledge transfer purpose are important (Bonache and Zárraga–Oberty, 2008). Indeed, the importance of social capital for learning and knowledge transfer has been explicitly recognized (Kostova and Roth, 2002). Nonaka (1991) classified knowledge as explicit and tacit. Explicit knowledge is based on documented and universally acceptability, tacit knowledge stems more from experience and is more undocumented in nature. In point of view, it is difficult to interpret and transfer, thus accounting for their stickiness (Tamer Cavusgill et al., 2003; Szulanski, 1996), tacit knowledge is regarded as the root of all organizational knowledge (Nonaka and Takeuchi, 1995). This is especially true in case of innovation, where a lot of the work–related knowledge is highly tacit in nature, and therefore sharing those makes it even more crucial for creating higher collective performance (Kaser and Miles, 2002). MNCs in Thailand especially most of Automobile industries are in the highly competitive markets that really need to concentrate in knowledge transfer with a new technology and information to the workers to local workers in their organization. We have observed that most studies look at internal and external integration capacity in lieu of knowledge transfer activities and contribute to host country knowledge base (Deng et al., 2018). However, we investigate on this underexplored topic, the current study also incorporated innovative capacity (Subramaniam and Youndt's, 2005, Hsu and Fang (2009) thru the product innovation (Rothaermel and Hess, 2010) and process innovation (Gnyawali and Madhavan, 2001) and competitive advantage (Wassmer, 2014) in the research framework as concerned with the optimization of subsidiary.

Therefore, the researcher is interested in the innovative MNCs' organizational which had a chance to deal with the interaction mechanisms and the influencing relationship among four factors

in organizational as local innovation, internal integration capacity, external integration capacity and strategic alliances/partnerships based on the theoretical analysis through questionnaire method in order to seek a way to actually improve the efficiency of innovation knowledge transfer among knowledge replication and knowledge adaption, thereby influence the necessary basis for the innovation performance and global innovation to MNCs subsidiary.

Research Objectives

1. To investigate the effectiveness of MNCs' organization as local innovation, internal knowledge integration capacity, external knowledge integration capacity, and strategics/ alliances partnership in subsidiary firms on the relationships with innovative knowledge transfer dimension which can develop to innovation performance and be able to become to global innovation.

2. To understand the causes of internal knowledge integration capacity and external knowledge integration capacity for increasing the quality of employees and staffs' capacity in MNCs automobile industry in order to improve the efficiency of innovation knowledge transfer.

3. To provide a new interpretation of innovative knowledge transfer as knowledge replication and knowledge adaption for integration with headquarters as they may be able to achieve innovation performance and become global innovative.

Scope of Research

Content Scope: the study focuses on the concept of innovative knowledge transfer dimension as knowledge replication and knowledge adaptation as a guide for improve firms' innovation performance and global innovation by using the significant factors in organizational context of automobile manufacturing as local innovation, internal integration capacity, external integration capacity and strategics alliances partnership to leading for MNC's innovation success.

Population Scope: this study seeks to find out the impact of innovative knowledge transfer on employee capacity. With reference to the MNCs' automobile manufacturing in Amata Nakorn industrial estate, Cholburi province, Thailand, these employees were selected for analysis, resulting in a total 380 respondents. These employees were taken across six functional areas in the company: production, marketing, administration, human resource, IT & information system, quality control

planners. The sample covered 380 respondents by questionnaires survey with snowballs and convenience techniques. Time scope: during on 1st September to 30th November 2021.

Literature Review

The role of organizational factors in innovation MNCs

Most of subsidiary MNCs in automobile industry are realize the importance of internal operations and the knowledge driven environment within a company (Malaviya and Wadhwa, 2005). For a decade, such innovation has become to be the manufacturing strategy for growth for most automobile competitive advantage in automobile industry such as local innovation (Birkinshaw, 1997; Schmid, Dzedek, and Lehrer, 2004), internal knowledge integration capacity (Clark and Lansit, 1995) and external knowledge integration capacity (Chia and Chang 2009). In additional, the perspective of strategic alliance/ partnership is created the relationship strength depicts of the new technology and innovation network (Levin and Cross, 2004). All organizational factors have been synthesized in the groups of leadership, environment, aspiration, and processes by the key components to creating an innovation supportive organizational environment.

The relationship of local innovation and innovative knowledge transfer

The value of knowledge adaption to stimulate MNC's innovation will depend on their own knowledge of home country environmental conditions and local practice. One of the organizational factors suggested by many researchers and practitioners as an important mechanism in knowledge management on local innovation (Birkinshaw, 1997; Schmid, Dzedek, and Lehrer, 2004) argued on role of entrepreneurial orientation in firms has self–initiative in their product or service that great potential and become to global innovation. The study determined on local orientation has strong need for integration with headquarters as they able to become to global innovation by Meyer et al., (2011) and Narula (2014). They concluded that local innovation, not only improves organizational performance but also accelerated innovative knowledge transfer through knowledge replication from parent company to foreign subsidiary. Specifically, it aims at investigating to what extent the effectiveness of such a transfer is influenced by local innovation in subsidiary firms which local strong capability networking at local MNCs can develop to knowledge replication for integration with headquarters as they may be able to become to global innovative (Bouquet and Birkinshaw, 2008).

Furthermore, the integration of local Innovation into business intelligence areas such as, Knowledge replication from Headquarters. Based on the above discussion we predict the following:

H1: Local Innovation positively improves knowledge replication significantly and positive influence on knowledge replication transfer.

In regarding to Organizational learning – the ability to learn from others, and the culture of openness within the organization could have a significant impact on how knowledge is transferred (Senge, 1990). As known by Bukowitz, Williams and Edward (1999) Knowledge Management Process Framework indicate that the tactical component forms part of the learning strategy in the following sequence: get, use, learn and contributed. The MNCs subsidiaries act as nodes embedded in variety of local contexts and allowing them to access local innovation systems and diverse knowledge bases and integrate the later to create new skills as knowledge adaption (Mudambi et al., 2007). We realized that learn and contribute process elements are considered the most challenging and vital steps for innovation and overall organizational performance. With reference to organizational learning and learning strategy within the organization, we predict:

H2: Local Innovation positively improves knowledge adaption significantly and positive influence on knowledge adaption transfer.

Internal knowledge integration capacity and external knowledge integration capacity and efficiency of knowledge transfer

Significantly, Clark and Lansit (1995) stated that internal knowledge integration capacity improved firms 'competitive in advance products and service and make up its stronger in technology support while the external knowledge integration improved the performance of competitive edge by more support on customer's effectiveness; and Chia and Chang (2009) supported that the innovations of some industries as telecommunication terminal equipment developed from the suppliers and customers' suggestions and created new ideas, there by how the innovation systems of developing enterprises could be made in the establishment of innovative knowledge transfer mechanism among internal integration capacity and external integration capacity. Thus, it is a constant improvement in industrial competitiveness and core competence. We suggested the following presumptions can be made:

H3: Internal knowledge integration capacity has a positive correlation with knowledge replication transfer.

H4: Internal knowledge integration capacity has a positive correlation with knowledge adaption transfer.

H5: External knowledge integration capacity has a positive correlation with knowledge replication transfer.

H6: External knowledge integration capacity has a positive correlation with knowledge adaption transfer.

Strategic alliances/ partnerships

From the perspective of strategic alliance/ partnership on innovative knowledge transfer in enterprises, the relationship strength depicts the link model of the technology alliance such as innovation network for MNCs. As the way for partners in automotive industry MNCs has to acquire the knowledge and join the business activities from the perspective of knowledge source that effect the weak relationship linking was and effective way for contacting acquiring new information or new knowledge (Levin and Cross, 2004). As a result, it is necessary to indicates the significant influence of the strong relationship on the performance of the knowledge transfer for promoting alliance strategy, improving the absorptive capacity of knowledge, etc. (Yukika, 2006; Yang et al., 1999; Okamuro, 2007). Based on the above literature, this research suggests that:

H7: Strategic alliance/ partnership has a positive correlation with knowledge replication transfer.

H8: Strategic alliance/ partnership has a positive correlation with knowledge adaption transfer.

The role of innovative knowledge transfer dimension between organization factors and innovation performance

The previous idea has study for the external context, the importance of transferring in organizational learning, knowledge transfer refers to the transmission of knowledge across organizational boundaries, which one organization learns from another one (Argote et al., 2003; Easerby–Smith et al., 2008; Lin et al., 2012). Nevertheless, in the previous study knowledge transfer has complied for a firm's innovation and new strategy performance and most of them examine knowledge transfer under the mechanism's knowledge transfer label (Wang and Rajagopalan, 2015; Williams, 2007). This research building on the previous literature on innovation management in the large organizational as MNCs in automobile industry which has significant consequence for innovation management (Barley et al., 2008; Williams, 2007), we defined knowledge transfer as transmission

of knowledge across organizational into two constructs, knowledge replication and knowledge adaptation and extent to possess a high technology innovation performance and cognitive to global performance. Knowledge replication defined permitted use of partner's knowledge in the same practice by implement from our partner exactly like copy them or acquired knowledge from an alliance partnership (Williams, 2007), Knowledge adaptation defined to modified practices from our partner when we implement them in our business base on innovation (Williams, 2007). Various forms of knowledge differ in the ease with, which most prominent distinction on the character of knowledge as tacit or explicit knowledge shifts: tacit knowledge becomes more important to decision–making and strategic positioning is high turbulent environments (Jones and Mahon, 2012). Therefore, the following hypothesis is proposed:

H9: In an innovative MNCs, knowledge replication transfer will be positively associated with innovation performance.

H10: In an innovative MNCs, knowledge replication transfer will be positively associated with global innovation.

The role of Innovative Knowledge transfer dimension between organization factors and global innovation.

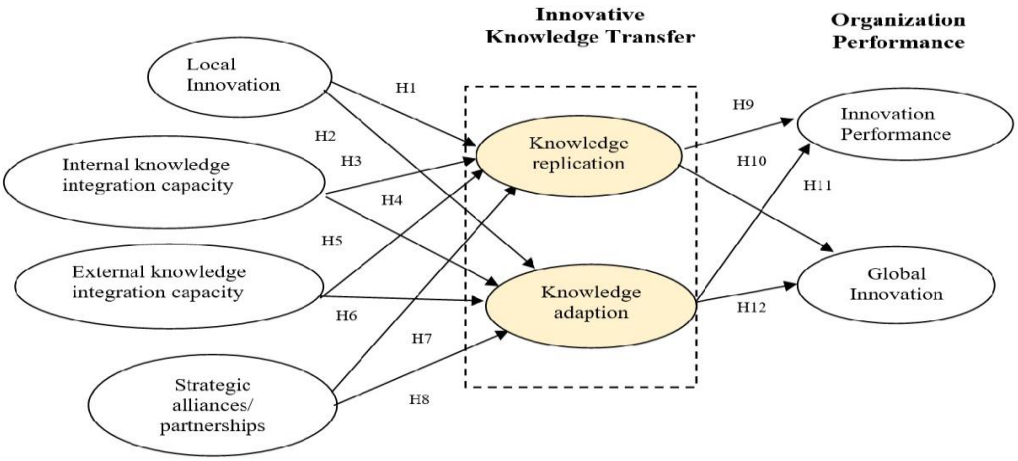
Thus, the two–innovation for generation of innovation from the innovation development processes are innovation performance and global innovation (Birkinshaw, 1997; Birkinshaw et al., 1998) as the results of entrepreneurial orientation in their development processes as to leads to local innovation of the subsidiary can become to global innovation. Therefore, the following hypothesis is proposed:

H11: In an innovative MNCs, knowledge adaption transfer will be positively associated with innovative performance.

H12: In an innovative MNCs, knowledge adaption transfer will be positively associated with global innovation.

Research Methodology

The study is certified by the research ethics review committee for research involving international business research subjects, Silpakorn University International College, with REC 64.0614–083–1926. This research is a quantitative research based on the foregoing theories and presumptions, the basic framework of this research.



The determinants of Innovative Knowledge Transfer on driving force Innovation performance and Global innovation in MNC's Automobile in Thailand.

Figure 1. Conceptual Framework

This research is quantitative research which the data of this research was acquired through questionnaires. We consider the cost and convenience of survey during COVID–19 pandemics, the sources of survey samples were mainly in automotive industry including automotive parts, automobile manufacturers and assemblers in MNCs Thailand's Industrial Estate Amata corporation public co. ltd. (2019). The study used the Statistical Packages for Social Sciences (SPSS) version–23 and Analysis Moments of Structure (AMOS version–23) software's to further check the relationship among various variables set forth in the theoretical framework, this research, based on the collect data, made use of the data and results from the analysis of 380 respondents to test the twelve research hypotheses the we made use of two–stage method: ***the first stage*** was to carry out cronbach's coefficient analysis (Brown, 2002) and confirmatory factor analysis (DiStefano and Hess, 2005) on individual variable and its item so as to know reliability and validity of variable and its variable items; ***second stage*** was to use SEM structure model to conduct analysis as to verify all the assumptions in the research. Reliability analysis, In the reliability analysis, local innovation (LI), internal integration capacity (IN), external integration capacity (EX), strategic alliances/partnerships (NT), knowledge replication (KR), knowledge adaption (KA), innovation performance (INP), and global innovation (GI) and Model validity measures are shown in Table 1.

Results

1. Exploratory Factor Analysis (EFA)

The presentation of data analysis in this chapter comprises four main stages which includes: 1) presentation of descriptive statistics on automobile–workers' demographic profile, 2) exploratory factor analysis (EFA) of the relevant measurement item used to represent the latent constructs, 3) confirmatory factor analysis of the latent constructs and their items and 4) tests of the hypotheses via the statistical techniques of structural equation modeling (SEM) and analysis of variance (ANOVA). Therefore, the following section presents descriptive statistics on the demographic profile of automobile–workers respondents in Thailand's automobile industries. As control variable by table1 presents the results of convergent validity test and internal consistency test. The convergent validity consists of indicator loading. According to Hair et al. (2010), value of indicator loading should be greater than 0.708. In this study, indicator loadings are varied between 0.621 to 0.909; thus, the results surpass the recommended values. Internal consistency test includes Cronbach's Alpha values ranged from 0.809 to 0.900 which are greater than a threshold value of 0.7 which composite, reliability of the construct in the measurement model is confirmed. (Choo et al., 2014; Keh et al., 2014; Nunnally & Bernstein, 1994).

Table 1 Construct validity and reliability

Construct/Items	Mean	SD	Loading	Cronbach's Alpha (α)
Local innovation (LI)				0.826
LI1*: Change in the design of product/service offered*	3.52	1.205	0.621	
LI3*: Entering new markets inside the country.*	3.62	1.242	0.842	
LI4*: Changing production processes.*	3.75	1.228	0.868	
LI5: Company developing new suppliers and partners	3.75	1.230	0.768	
Strategic alliances/ partnerships (NT)				0.886
NT1*: Company has extensive experience with strategic partnerships and alliances with our suppliers*	4.07	0.630	0.755	
NT2*: Company has a long history in the preparation and development of partnerships in the past.*	4.04	0.654	0.871	
NT3: *Company has as common practice the development of partnerships.*	4.00	0.637	0.844	
NT4: *Company considers strategic, and alliances matters of vital important to our business.*	4.03	0.661	0.735	

Construct/Items	Mean	SD	Loading	Cronbach's Alpha (α)
Internal integration capacity (IN)				0.809
IN1: Improve information sharing for the coordination of the flow of goods between your plant and other plants of the network (e.g., through exchange information on inventories, deliveries, production plants, etc.,	4.14	0.627	0.812	
IN2: *Improve joint decision making to define production plans and allocate production in collaboration with other plants in the network (e.g., through shared procedure, shared forecasts).*	4.19	0.596	0.864	
IN3: *Improve innovation sharing/joint innovation with other plants in the network.*	4.20	0.627	0.839	
IN5: *Developing a comprehensive network performance management system.*	4.21	0.670	0.747	
External integration capability (EX)				0.885
EX1: *Sharing information with key suppliers.*	4.15	0.653	0.777	
EX3: *Join decision making with key suppliers.*	4.11	0.651	0.852	
EX4: Sharing information with key suppliers.	4.16	0.647	0.844	
EX6**:** *Joint decision making with key customers.*	4.19	0.666	0.752	
Knowledge replication (KR)				0.887
KR1: *We tried to manage our business exactly like our partners.*	4.19	0.605	0.749	
KR3: *We tried to copy practices from our partner down to smallest detail.*	4.12	0.629	0.863	
KR4: *We spent substantial time making sure practices we adopted from our partner worked just as they did there.*	4.19	0.654	0.876	
KR5: We tried to manage our business exactly like our partner.	4.22	0.652	0.833	
Knowledge adaption (KA)				0.900
KA1: *We usually modified practices from our partner when we implemented them in our business.*	4.30	0.573	0.662	
KA3: *We spent substantial time modifying practices from our partner.*	4.27	0.585	0.879	
KA4: *We carefully selected practices for our partner to adopt in our business.*	4.27	0.585	0.880	
KA5: *We tried to adapt and mitigation knowledge into our business practice.*	4.27	0.613	0.814	
Global innovation (GI)				0.883
GI1: *The subsidiary has permission headquarter to perform innovation projects.*	4.20	0.561	0.831	
GI2: *Develops products that today are sold by other subsidiaries.*	4.17	0.570	0.869	

Construct/Items	Mean	SD	Loading	Cronbach's Alpha (α)
GI3: *Develops organizational processes that are now adopted in other subsidiaries.*	4.20	0.635	0.821	
GI4: *Develops organizational products/processes into partnership with suppliers.*	4.22		0.734	
Innovation performance (INP)				0.882
INP1: *The overall performance of our new product development at home program.*	4.13	0.524	0.639	
INP3: *The compared with our major competitors, our new product development at home has been successful.*	4.10	0.613	0.877	
INP4: *When the firm introduces products or service, our overall new product development at home become successful.*	4.14	0.588	0.909	
INP5: *When the firm implement new or significantly improved production processes, distribution methods or support activities for its goods and services.*	4.18	0.611	0.862	

2. Discriminant and convergent validity

Convergent validity of the measures was established through factor loading shown in Table 1, and construct reliability and average variance extracted (AVE) for all variables were greater than 0.50. Finally, the composite reliability of all variables was greater than AVE thereby meeting the criteria of adequate convergent validity (Hair et al., 2010). Moreover, discriminant validity was assessed to see if average variance shared between the constructs and their corresponding items was greater than shared variance among different constructs.

3. Correlations and descriptive statistic

Correlation analysis (Table 2) showed a significant of convergent validity test and internal consistency test. The convergent validity consists of indicator loading and average variance extracted (AVE). According to Hair et al. (2010), AVE should be greater than 0.5. In this study, AVE values are ranged between 0.573 and 0.726 and positive association between local innovation and strategic alliance/partnerships ($r = 0.335$, $p < 0.001$), strategic alliance/partnerships and internal integration capacity ($r = 0.474$, $p < 0.001$), internal integration capacity and external integration capacity ($r = 0.424$, $p < 0.001$), external integration capacity and knowledge replication ($r = 0.326$, $p < 0.001$), knowledge replication and knowledge adoption ($r = 0.452$, $p < 0.001$), knowledge adaption and innovation performance ($r = 0.351$, $p < 0.001$).

Table 2 Model validity measures: Means, standard deviations and correlations

	CR	AVE	MSV	MaxR(H)	LI	NT	IN	EX	KR	KA	INP	GI
LI	0.832	0.573	0.112	0.955	**0.757**							
NT	0.873	0.638	0.225	0.930	0.335*	**0.799**						
IN	0.888	0.668	0.225	0.937	0.286*	0.474*	**0.817**					
EX	0.889	0.668	0.179	0.909	0.310*	0.366*	0.424*	**0.817**				
KR	0.882	0.656	0.204	0.915	0.169*	0.196*	0.107*	0.326*	**0.810**			
KA	0.913	0.726	0.204	0.942	0.187*	0.287*	0.265*	0.357*	0.452*	**0.852**		
INP	0.863	0.621	0.123	0.979	0.173*	0.274*	0.173*	0.247*	0.213*	0.351*	**0.788**	
GI	0.882	0.662	0.082	0.957	0.137*	0.275*	0.174*	0.243*	0.147*	0.280*	0.287*	**0.814**

Notes: **Correlation is significant at the 0.01 (*and 0.05 levels, n= 380 respectively)*

4. Hypothesis testing

Before hypothesis testing, the structural model fit was assessed, and it was found to be acceptable square multiple correlations (R^2) = 0.378 ($p < 0.05$), CFI = 0.951, RMSEA = 0.051.

Table 3 Model Fit Measures

Measure	Estimate	Threshold	Interpretation
CMIN	855.569	--	--
DF	429.000	--	--
CMIN/DF	1.994	Between 1 and 3	Excellent
CFI	0.951	>0.95	Excellent
SRMR	0.064	<0.08	Excellent
RMSEA	0.051	<0.06	Excellent
PClose	0.378	>0.05	Excellent

Tables 2&3: In this section presents the result of factor analysis under the extraction of Principal Components Analysis (PCA) of all latent constructs of independent variables which range from organization context and knowledge transfers as per the research framework employed in this study. The data analysis consists of four main sections ranging from descriptive analysis, exploratory factor analysis, confirmatory factor analysis and hypotheses testing. For the hypotheses testing in this chapter, the presentation covers all eight independent variables, which are learning characteristics of the organization context and Innovative knowledge transfer dimension among the Thai workers in organization such as local innovation (LI), internal integration capacity (IN), external integration capacity (EXT), strategic alliances/partnerships (NT), knowledge replication (KR),

knowledge adaption (KA), innovation performance (INP), and global innovation (GI) in the MNC's automobile factory in Industrial Estate in Thailand.

Discussion and Implication on the Theory

This research used a sample of automobile companies in Thailand and applied SEM analysis to test the relationships between organizational factors (i.e., local innovation, internal integration capacity, external integration capacity, strategic alliances/ partnerships); innovative knowledge transfer (i.e., knowledge replication, knowledge adaption); innovation performance and global innovation. The goodness–of–fit testing in concluded that:

– Organizational factors had a significant positive correlation with innovative knowledge transfer. External integration capacity and Strategic alliance/ partnership had the greatest impact on innovative knowledge transfer.

– Knowledge adaption had a significant and positive correlation innovation performance and global innovation.

This study contributed to our understanding of how organizations transfer and deploy innovative knowledge transfer across head quarter to subsidiary for innovation performance and global innovation for competitive advantage especially in automobile industry to makes an important contribution to the literature on global strategy in the international business. the MNCs automotive industry in Thailand acquire for the significance in knowledge replication and knowledge adaption to improve the efficiency of every kind of knowledge transfer.

Theoretical Contributions

This study makes at least three contributions to research on knowledge transfer and innovation. ***First,*** by considering organization context as local innovation, internal knowledge integration capacity, external knowledge integration capacity, and strategic alliance/ partnerships. This study added new evidence to a promising research stream on local organization of innovative knowledge transfer (Birkinshaw, 1997; Schmid, Dzedek, and Lehrer, 2004). Thus, the innovativeness of "local innovator" (Gupta and Govindarajan, 1991) that local innovators solve unique problems with their own knowledge because knowledge from others is not useful for local situations. ***Second,*** this study empirically examines the innovative knowledge transfer as knowledge replication and knowledge adaption (Wang and Rajagopalan, 2015; Williams, 2007). ***Third,*** the study enriches

research on internal knowledge integration capacity (Clark and Lansit, 1995) and external integration capacity (Chia and Chang, 2009) which has often focused on new product development in advance products and technology supporting that our study provides empirical evidence of the impact of knowledge transfer on employees' innovative behavior in automobile industry in Thailand.

Managerial Contributions

This study provides some new insights for managing innovative knowledge transfer that would benefit innovation. The results of this study point to a refocus of firms' innovative knowledge transfer within organizational factors would eagerly and freely exchange knowledge with the goal of innovation performance and global innovation. Our results suggest that managers should actively disseminate knowledge and create a reciprocal knowledge sharing process with other units that would benefit innovation. Thus, managers should re–create the link between all department and the rest of the firm as well as socialization mechanisms should be set up (Lawson et al., 2009) as strategic alliance/ partnership, knowledge networking of the firm.

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