THE INFLUENCE OF ORGANIZATIONAL FACTORS ON INNOVATIVE KNOWLEDGE IMPLICATION FOR MNCS AUTOMOBILE IN THAILAND

By
MR. Phairat BOONSUWAN

A Thesis Submitted in Partial Fulfillment of the Requirements
for Doctor of Philosophy INTERNATIONAL BUSINESS (INTERNATIONAL PROGRAM)
Department of INTERNATIONAL BUSINESS
Graduate School, Silpakorn University
Academic Year 2022

อิทธิพลต่อความสำเร็จของการถ่ายทอดองค์ความรู้ด้านนวัตกรรม ในองค์กรธุรกิจข้ามชาติในภาคอุตสาหกรรมการผลิตรถยนต์ในประเทศไทย

โดย
นายไพรัช บุญสุวรรณ

วิทยานิพนธ์นี้เป็นส่วนหนึ่งของการศึกษาตามหลักสูตรปรัชญาดุษฎีบัณฑิต
สาขาวิชาธุรกิจระหว่างประเทศ แบบ 1.1 ปรัชญาดุษฎีบัณฑิต
ภาควิชาธุรกิจระหว่างประเทศ
บัณฑิตวิทยาลัย มหาวิทยาลัยศิลปากร
ปีการศึกษา 2565

THE INFLUENCE OF ORGANIZATIONAL FACTORS ON INNOVATIVE KNOWLEDGE IMPLICATION FOR MNCS AUTOMOBILE IN THAILAND

By

MR. Phairat BOONSUWAN

A Thesis Submitted in Partial Fulfillment of the Requirements
for Doctor of Philosophy INTERNATIONAL BUSINESS (INTERNATIONAL PROGRAM)
Department of INTERNATIONAL BUSINESS
Graduate School, Silpakorn University
Academic Year 2022

Title	The Influence of Organizational factors on Innovative Knowledge Implication for MNCs Automobile in Thailand
By	MR. Phairat BOONSUWAN
Field of Study	INTERNATIONAL BUSINESS (INTERNATIONAL PROGRAM)
Advisor	Assistant Professor Chalermporn Siriwichai, Ph.D.

Graduate School Silpakorn University in Partial Fulfillment of the Requirements for the Doctor of Philosophy

.....Dean of the Graduate School
(Assistant Professor Sathit Niratisai, Ph.D) (Acting)

Approved by

.....Chair person
(Assistant Professor Krongthong Khairiree, Ph.D.)

.....Advisor
(Assistant Professor Chalermporn Siriwichai, Ph.D.)

.....Committee
(Papangkorn Kongmanwatana, Ph.D.)

.....Committee
(Assistant Professor Sudawadee Chanpiwat, Ph.D.)

.....External Examiner
(Assistant Professor Nantarat Tangvitoontham, Ph.D.)

59502905 : Major INTERNATIONAL BUSINESS (INTERNATIONAL PROGRAM)

MR. PHAIRAT BOONSUWAN : THE INFLUENCE OF ORGANIZATIONAL FACTORS ON INNOVATIVE KNOWLEDGE IMPLICATION FOR MNCS AUTOMOBILE IN THAILAND THESIS ADVISOR : ASSISTANT PROFESSOR CHALERMPORN SIRIWICHAI, Ph.D.

The paper proposes a model explaining the link between organization context in subsidiaries of automobile MNCs and innovative knowledge transfer in roles of multinational corporations in Thailand that can make a strategic contribution in MNCs' network for innovation performance and global innovation. In organizational MNC factors, this study explores the concept of local innovation, internal/external integration capacity and strategic alliances/partnership from international business literature to a manufacturing context, become an integral part of organizations' business strategies.

Three research objectives were derived to guide the entire research and examine how the important concepts in the role of innovative knowledge transfer in fostering knowledge quality and how integrated innovation capacity of an organization. Specifically, *the first objective* was to investigate the conceptualizations of local innovation, internal/external integration capacity, strategic alliance/partnership and 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 for MNCs automobile in Thailand. *The second objective* is to state with a review of several literature in field of organizational context and innovative knowledge transfer to compose a set of contracts were subsequently validated through a primary survey based on a structured questionnaire on a sample size of 380 respondents from the automobile industrial domain in Thailand. *And the third objective* is to contribute to the essential of organization factors and innovative knowledge transfer through a theoretical contribution of this research and provide the practical implications to innovation performance and global innovation.

Measurement development is one of the major objective and research contribution of the study. A quantitative approach was used to achieve this objective. This research development instrument based on literature reviews and conduct with quantitative methods were questionnaire survey and construct analysis. The collected data was analyzed by using exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). A measurement scales were finalized by employing 20 items to measure 4 dimension of organization factors, 10 items to measure 2 dimension of innovative knowledge transfer, 9 items to measure 2 dimension of company performance. Additionally, the development measurement could contribute to theoretical implications.

The data was collected from five MNCs automobile industry in Industrial Estate in Thailand and analyzed by Structural Equation Modeling analysis (SEM). The structural model was used to assess the hypothesized relationship between latent variables for achieving the first objective of this study. Two

endogenous variables consist of local innovation, internal integration capacity and two exogenous variables consist of external integration capacity and strategic alliance/partnership. 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 was positive associated with innovative knowledge transfer. Moreover, it was also observed that both innovative knowledge transfer and the quality of knowledge were positively to innovation performance and global innovation.

This study contributes to the theoretical advancement by a theoretical model of innovative knowledge transfer is mainly interested in positive evidence in favor of a moderator effect of innovative knowledge transfer as knowledge replication and knowledge adaptation on the relationship between local innovation, internal/external integrated capacity, and strategic alliance/partnership in MNCs organization and innovation performance and global innovation. The results reveal that both of replication knowledge and adaptation knowledge were tested as the mediators the relationships between the independent variables and dependent variable.

Interestingly, the findings provide important implications for MNCs automobile in Thailand to understand the relationship between organizational factors and the significant dimension of innovation knowledge that supported by local innovation, internal/external integrated capacity, and strategic alliance/ partnership, which can serve as a guideline for the company to appropriately develop its innovation strategies. Nonetheless, the limitations of the results were discussed, and the important recommendations were provided for the future study.

ACKNOWLEDGEMENTS

I would like to thank first our academic faculty and friends who relentlessly encouraged our endeavor and have shared their efforts in supporting this research project.

I am also grateful to our affiliations, all faculty in international college, Silpakorn University, for great supporting and contribute valuable knowledge and experience which providing a strong opinion to make our research efforts concerning to my research. I owe special thanks to many colleagues for providing us with intellectual guidance and inspiration, especially Bangkok Bank, Amata Nakorn Industrial Estate Branch, and all Human Resource Manager of MNCs' automobile industry at Amata Nakorn Industrial Estate, Cholburi province, and Eastern Sea Broad Industrial Estate, Rayong province who has helped in the questionnaire survey and data collection process during September to November 2021.

Thank you to Advisor Ph.D. IB faculty and others academic at Silpakorn university, international college. Bangkok, Thailand.

Finally, our sincere thanks to the Maruey Library, The Stock Exchange of Thailand (SET) employees and staffs who have over the months, provided valuable support in terms of textbooks, relevant information and bulletin board of Thailand's automobile industry and excellence facility space for Ph.D. students who intend to work the research.

MR. Phairat BOONSUWAN

TABLE OF CONTENTS

Page

LIST OF TABLES

Page

LIST OF FIGURES

Page

CHAPTER I
INTRODUCTION

1.1 Research Background

Whether Thailand industries will see a healthy revival or be stuck in an economic quagmire caused by the global economic conditions and their adaptability amid uncertainty, the Thailand investment strategic in countries' landscape is likely to increase in the year 2022 after Covid-19 pandemic as many uncertainties start to subside by FDI competition which aims to transform ASEAN into single market in this region within the 10 nations economic in Southeast Asia regional by foreign investment which increase with the highly percentage compared to the last decade. With the country's full reopening in every sector for investment, although source of FDI in Thailand is increasingly in volatile global situation could diversified industrial sector (Brimble, 2001) as Japan is the largest source foreign industrial sector in Thailand. In spite of the Board of investment (BOI), Japanese investment manufacturing are significant in highly number of projects recorded in the second half year of 2021. Whether Thai industries will see a healthy revival or be stuck in an economic quagmire caused by the pandemic that will adapt and amid uncertainty in the global economics condition. "*Japanese investors are still interested in poring investment into Thailand*" (Thailand BOI, 2020).

The more MNCs (Multinational corporation) show the large number of foreign investors interesting invested in Thailand as the volume of FDI from over the world in this decade (Laura D., 2014) as FDI in Asia in particular. Many manufacturers as MNCs in Thailand especially those in the automotive, food and construction material segments are handling with higher production costs and will eventually high energy cost and burden in supply chain cost onto customers from the uncertainty in global economics condition. As the results, the global supply chains could be affected to the cost of production that investors are projected to substantially accelerated FDI into the Asian nations which recipients of the improving international investment as FDI. "South, East and Southeast Asia remain priority investment destinations" (ASEAN Investment, 2020) in several industries which are supporting by the local government

to promote FDI inflows for country economics progress in this region (ASEAN Investment, 2020).

The World Investment Report (2020) disclosed that more than 70,000 of Multinational corporation has 20 percent contributed world economic in the international business that influence to the world financial and trading business more than Us. dollar in a trillion recognized for investment capital fund and assets value exceeding in capital of investment for business investment foreign trading in Trillion USD. invested on the world economic value (Unctad, 2020). Apart from the world economy, the international business is business whose activities are carried out across national borders as the essence of good corporate governance on performing globalization to the firm through the pronoun of the world's resources and also world economy. Recently, the role of innovation transfer to be sustainable organizations need to be accountable toward and consistent in relations with stakeholder and sustainable performance (Staub *et al*., 2016; Senge, 1990). Importantly, Information and Technology transfer from expertise and innovative resource as organizational knowledge among the business alliance and the relevant industry of hi-technology remains preserves innovative knowledge creating and sustaining MNCs across the region especially in Southeast Asia to defending against competitive threats in automotive industry in the region that emerging economies of the region by innovative knowledge and hi-technology in economic growth such as Thailand and other countries in ASEAN (Kogut and Zander, 2003; Wahab *et al*., 2012). The adaptation and integrate capacity in high technology are necessary to encourage local employees to embedded in their ability to contributes host country economies (Jordaan, 2013). Interestingly, many research exposes that incorporation of market values of MNCs to attributed mainly to tangible assets for investment and intangible assets as knowledge assets in the region (Kogut and Zander, 2003). MNCs has to create technology knowledge inside the investment country and earning capacity of business corporations at host country to knowledge transformation among business partnership (Driffield *et al*., 2010), which established and transition knowledge towards a knowledge economy in faster as technology information to help company operational practice which using technology adoption in organization (Gilbert and Cordey-Hayes, 1996; Gold *et al*., 2001) and benefit the innovative performance and

global innovation of such countries receiving the technology. In consequence, cause of low wages in cost of production, strong in law and regulation on business environments and infrastructure as well as employee's skill and knowledgeable, the survey by Japanese investors for Thailand investment as the future growth and sustainability achievement with high potential of the local market in Thailand (ASEAN Investment 2020). For example, automobile, electronic and consumer product, agriculture and hospitality are among the sectors most attractive by customers in development regional.

As Industrial estate in Thailand industrial organization has focusing on economic sustainable economic and create job opportunity to Thai's local communities as to generated national income by international trading across the region. Currently, Amata Nakorn industrial estate in Cholburi province contained with more than 1,000 MNCs companies have been operating for manufacturing in several industries sourced from emerging country of investment and mains to acerated knowledge economic in local and macro-economic for national income.

As Thailand 4.0 nation economics' policy defined to encourage countries with new high technology and digital infrastructure with information and technology base in term of productivity and strengthen in economics sustainability development in line with R&D in new innovation technology. Among the emerging economies of Southeast Asia (SEA) and ASEAN with 10 nations in economic collaboration as Brunie, Cambodia, Indonesia, Laos, Malaysia, Myanmar, the Philippines, Singapore, Thailand and Vietnam profound significance for economic success and collaborate closely as the Eastern Economic Corridor (EEC) Development Plan to provide a significant share of foreign direct investment (FDI) with strong access to presence of FDI via multinationals (MNCs) through transparency technical knowledge available worldwide via either knowledge transfer especially stifling the development of technological capabilities (Revilla Diez and Kiese, 2005). Therefore, It is clear that importing innovative knowledge is more important for MNCs to achievements in the global market while foreign skills to becoming the organizational of knowledge base for long-term solution, especially R&D (Research and Development) activities, subsidiary capability, knowledge sharing with hi-technology involving in production and processes.

Recently, Thailand become to be ranked 14th for Foreign Direct Investment (FDI) with country investment for the emerging country in the world's fastest growing regions as ASEAN (Swierczek & Onishi, 2003, p.188). Most of foreign investment assigned to foreign work with technology transforming and innovative knowledge transferring to local country as Thailand a regional hub of investment on emerging economy (Swierczek & Onishi, 2003). The roles of multinational corporations encourage productivity and innovative technology workforces to gaining a competitive advantage together especially a large manufacturing in automotive industry (Clegg & Gray, 2002). As such, issues of multinational corporations in local adaptation practitioners and researchers.

1.1.1 Multinational corporation's organizational Context

This study focuses on an organization as a regional headquarters or subsidiary of foreign investment especially MNCs in automobile industry in Thailand and organization development contained with implementation of people, practices, systems and techniques that assign collective commitment by company mission and policy as well as company strategy and objective by top management. Thus, an organization culture in term of knowledge transfer have to informs people about the appropriate way how the processing is done in an organization. As Japanese's MNCs or foreign subsidiary in Thailand are driving behind economic development which linking with the economic on the productivities of company. Thus, the key characteristics of organizational context include concern to use processes derived from company activities, employees behavioral to help an organization to be highly effective or optimal performance especially the organization are continued improve as the design of the processes along with the theoretical orientation which shapes the conceptual and practice framework of particular department or division in organization. This study focuses on subsidiary or MNCs practices that MNC's organization uses to manage its innovative knowledge transfer and diverse workforce can be used in organization especially relevant with increasing globalization.

Apart from, Multinational corporation organized with strategy key of organizational factors as company's strategy, organizational structure, culture, and innovative information and know-how drive a critical business role in overall manufacturing routine (Galbraith, 2002). It is important to know how we process and transform external and internal knowledge efficiency overall in organization to enhance a local process as organizational crucial controls (Turner and Mahija, 2006); culture (Bhagat *et al*., 2002); training and education processes and activities, leadership, HRM policies (Wong, 2005); and networks (Hansen *et al*, 2005). An MNCs' organizational focus on a structured IT network by expertise in IT and sharing knowledge by individuals for knowledge and information. Thus, a trust culture between knowledge transfer relationships between employees and expertise are supported through all department in organizational as training, teaching, discussion, and learning strategy to promoted in double loop learning (Senge, 1990). As knowledge creation is well-understood in organization framework (Bukowitz and Williams, 1999) has supported learning strategy on innovation knowledge transfer in overall departments. According to prior study in knowledge transfers, there are some gaps on existing literature in between innovative knowledge transfer and organizational context. Thus, this study focuses on MNCs business manufacturing in automobile industry in Thailand base on the previous literature analysis and business environment such as local innovation, internal integration capacity, external integration capacity, and strategic alliance partnership. Thus, the objective of this study is to understand the effects of organizational factors causes effects of innovative knowledge transfer in organization.

A major consideration in the choice of the variables was general that we could applied to any kind of organization. S.F. Nadel, the theory of social structure has noted as formal characteristics are on a high level of abstraction for example, Simmel's has discussion of the number of individuals in a group indicates how size is a formal characteristic of groups independent of the specific individuals and innovation strategic planning on MNCs organizational level. However, particularly in MNCs in large corporations that it is challenging to influence the innovativeness of the company in all department. In this study about the innovative knowledge transfer

only in manufacturing organization. we used employees in the production department as the unit of analysis. We realized that all innovation are significant factors in competitive advantage to the MNCs manufacturing that begin with innovative ideas. Productive implementation of new procedures, new products & service introductions and new operating process varies on a individual or a group developing in great ideas ahead of their original status (Amabile, Conti, Coon, Lazenby, & Herron, 1996). Therefore, we concentrate on innovative knowledge transfer, Innovative Capacity on co-workers' creativity. In with the relationship between local innovation, knowledge transfer, internal capacity integration and other researchers (Amabile *et al.,* 1996; Stein, 1974; Woodman, Sawyer & Graiffin, 1983), we defined effort-location creativity as the tendency of working staffs within an individual working environment to produce creativity new ideas that are supporting on their operational. In term of contingency on innovative working that we focused on the creativity idea on a new production by objective measures on innovative new idea in their operational. "Innovation differs from improvement in that innovation refers to the implementation of ideas" (Shalley & Gilson, 2004, p.34). While other researchers stated that innovative knowledge as a Matrix structure (Daft, 1998) in which working within manufacturing on teams work in several departments as Automobile manufacturing in Thailand. Consequently, the working in the new challenge on manufacturing environment may be different procedures and specific in manufacturing of the functional operation on their department. For this reason, we conceived of employee innovative capacity and knowledge transfer in work environment creativity as an individual-level perceive the knowledge and all of this depend on the organization contexts such as Local innovation (LI), Internal integration capacity (IN), External integration capacity (EX), Strategic alliance/ partnership (NT) as an individual-level construct.

Many researchers were supported on the theory pouring explained that organization confidence excites innovation and technology has encouraged internal knowledge, which in chance moves innovation capacity. Previous research by Feist (1998) stated that personality traits and public processes has benefit to the firm also clearly to accumulated knowledge, conduct in working practice (Shalley & Gilson,

2004). Amabile *et al*. (1996) conducted research in the particularly of public community make-up as effecting to a subsidiary structure and added search need to understanding in organizational on peoples' behaviors and deep understanding on the changing of innovation which become to be more important on knowledge transfer in organization (Weggeman, 1997).

In general, there are knowledge sharing, knowledge transfer and knowledge creation which collaborated in business strategies and practiced in organization according to the recent principals of knowledge organizations. We referred to Amabile (1977) explained that internal knowledge effected from knowledge creation, tacit knowledge sharing and knowledge quality for individual capability in capacity development that three broad organizational factors had consist of several particular factors.

1) Organizational motivation supported by the principal practice in basic orientation in operational of the firm by supporting as the provision in creativity a long with innovative operational.
2) Management procedures: define as a freedom or accessing in working process on the challenging new processing and new methods.
3) Resources: define as operational in working process on the innovation planning such as sufficient time, reduce cost, increase new high technology, and advance in information of database as well as knowledge transfer with educate and training more efficiency in working routine (Amabile, 1988).

As previous research, an organizational of automobile manufacturing and subsidiary practices are derived from the collective attitude of internal knowledge are the supporting to type organizational practice obvious which was considered by Cameron and Quinn's (1999) expressed through values model in the specific of innovative knowledge transfer. In operational as employee practice was concerned with how innovative in working place studied which focused on innovation practices (West & Anderson, 1996). We are concentrating on the manufacturing environment with high technology and the innovation followed by the research and development at

work according to effected learning theory to Amabile's model as the important of organizational motivation to innovate. On our study be focusing on the innovation and the new creative talent that employees in several department concerns with new creative talent and new idea on technology development or adapted to the new tend of innovative practice (Lave & Wenger, 1991). Thus, this study obviously considers in the concept of knowledge replication and knowledge adaptation for developing a new production with creativity success and searched for working processes. In the otherwards, headquarter is more important to support subsidiary in innovation's policy with training and innovative knowledge such as worker has to replicate knowledge to exchange processes on stimulated with exchange processes and open mind on the idea exchange in MNC's organization of Automobile's model which focusing on the innovative knowledge from R&D and new technology development in automobile industry in Thailand.

1.1.2 MNCs Automobile Industry in Thailand

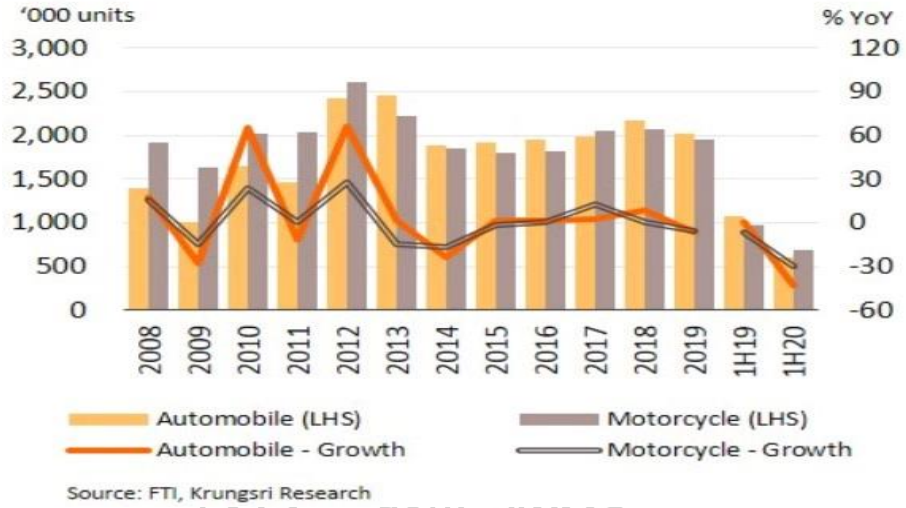
Whether Thai industries faced with a healthy revival or stuck in an economic quagmire caused by the pandemic Covid-10 in 2020 in several industries in the country. The global market has increasingly volatile global situation could derail the revival of the country's industrial sector (Economic review, Bangkok Post, Mid-year 2022). An organization culture informs people to adaptation in the appropriate way to help factory operating which to increasing productivity a long with innovative knowledge in an organization. Previously Japanese's MNCs in Thailand have created hi-technology and new innovative knowledge in the manufacturing process in MNCs organizational such as new technology learning, training, discussion, research, and development in automobile production. Thus, Thai automobile industry can answer swiftly to shifting situations serious to manage the diversity of its multinational workforce. This study encourages local innovative on production at a new way on knowledge adaption or knowledge replication in several of the practices that MNC's organization determine to changing operation routine to the alternative strategy framework in organization especially relevant with increasing globalization.

1.1.3 Abundant Skilled Labor in Thailand

As Thailand is the top in automobile industry in ASEAN, Thailand create the large volume of vehicle export to abroad during 2019 to 2020 (Sourced: Thailand Automotive Institute as of February 2017). This automobile industry has been continuously developed and become to most important of well-established from Multinational Corporation from several countries to investment in this region over decades. With many reasons to encourage country to promote MNCs automobile business such as BOI Incentives “to recognize the important and value of the automotive industry and offers a wide range of tax and non-tax incentives for projects that meet national development objectives” (Sourced: BOI-brochure 2017).

Automobile industry in Thailand is considered one of the growth industries and generate the exporting revenue of motor vehicle since 2016 to 2017 caused from MNCs automobile manufacturing extend to global business (Sourced: Thailand Automotive Institute as of February 2017). The production numbers increasing remarkably since 2009 which 9.93% increase annually which Thailand had doubled its car production compared to 2009” Sourced: Thailand Automotive Institute as of February 2017). We considered the high growth in Thailand car production during 2009 to 2016 was more than 2,500,000 units in 2012 and approximated 2,000,000 units in 2019 before the world COVID1 situation. Recently, totally 1.33 million car was export to several counties in the world with high demand in foreign market in 2020 and 37% of domestic demand including in ASEAN countries. (Apisithniran, Lamonphet, 24 April 2020, Bangkok Post, 15 May 2020) showed the figure of number of units in Thailand automobile capacity since 2008 to 2020 which indicated all automobile production, automobile growth rate from year end, motorcycle production and motorcycle growth rate from year end in Figure 1.1. sourced from Thailand Automotive Institute (TAI).

Figure 1: Thailand Car Production 2009-2016



Sourced: *Thailand Automotive Institute (TAI), February 2017*

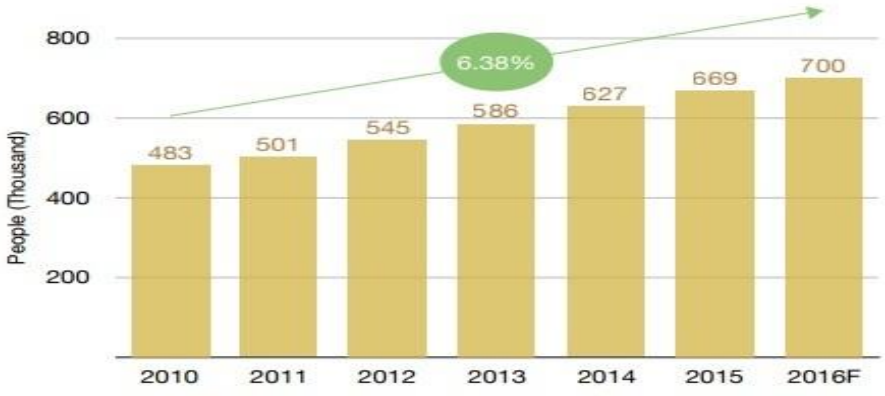
Figure 2 Thailand Car Export Unit and Value 2009-2016

Sourced: *Thailand Automotive Institute (TAI), February 2017*

"Thailand has abundant of skilled labors which there are more than 700,000 labors in the automotive industries in 2016" (Sourced: BOI 2017, Automotive industry). Automobile industry in Thailand is considered one of industries and has demand of high skilled labors to covering in every process of production and most of them are Japanese vehicle production in Thailand industrial estate in Eastern region

and Eastern Sea broad area, especially Cholburi province or Rayong province. Thus, most of automobile manufacturing have encourage new technology knowledge to improve their competitiveness and efficiency as well as optimistic in performance (TAI, 2017).

Figure 3: Thailand's Human Resource in Automotive Industry 2010-2016



Sourced: *Thailand Automotive Institute (TAI), February 2017*

Generally, every organization has composed with the important key factors in organizational for manager to consider innovation in product and process, competitive advantage in new hi-technology and that leading to industrial performance (Galbrith, 2002). Knowledge transfer from both obvious and implicit knowledge impacts to enhance the success of organization especially automobile industry which effecting on global supply chains and leading in the organizational controls (Turner and Mahija 2006) were explained in the prior research. Thus, knowledge transfer with IT networking by sharing in innovative knowledge among subsidiary or business alliance/ partnership. However, the innovation trade-off is necessary to integrates both in the firms as learning strategy in double learning strategic (Seng, 1990) and concentrated in knowledge management process framework for organizational supporting along with a structured IT network sharing by individual or group (Bukowitz and Williams, 1999). This study considers to the gap in the existing literature argued to the impact of the various organizational factors in Automobile

industry especially in the way on innovative structure may not be sufficient in term of the relationship between organizational factors and organizations' capacity upon innovation knowledge transfer as well as innovative performance and global innovation. In this study based on the previous literature analysis and manufacturing environment, corporate with the full value of innovation, technology supporting, business collaboration among partnership and alliance, local innovation, internal/external knowledge etc. Thus, this study ensuring on the level of direct intervention on efficient operating procedure through employees or subsidiaries instruction (Foss *et al*., 2012).

At present, the International Business managed under cross cultural boundaries between headquarter and subsidiary in the global imaging country which increasingly volatile global situation. The International organizations have focused on the managing from large MNCs to small firms which increasingly recognizing with multicultural employees and more local production at a new estate of industry area across cultures (Hong & Doz, 2013) while the Multicultural in the country have internalized with several culture in workplace (Kostova & Roth, 2014). In Southeast Asian regional, there are several investors from multicultural countries have come to extend business and utilized local production to help factory operators and utilized raw materials from foreign countries. Thus, the unique perspective expected them to bring a different internal and external integration capabilities and skills to roles such as foreign expertise, subsidiary becoming to act in the best interests of innovation and networks supporting.

As we know on the past decades, the appearance of Multinational Corporation innovation networks combined with business alliance and partnership to increase globalization and continued innovation such as control the complex R&D process in the international aspects on the global economy. In term of the international business (IB) practice, all business operated in the objective of international investment under the concept of the multinational corporation (MNC) as subsidiary or branch trend to managing on the local capability perspectives, and particularly highlighting through integration capacity on create value as "co-creation" and subsidiary roles as

“orchestrators” meaning for value creation in organizational processes. In addition, the value co-creation in MNCs established to changing economic geography on local production as innovation specialization by subsidiary development in several organization units. Thus, MNCs has transparent on knowledge creation by working experience between Headquarter and subsidiary along with innovation knowledge transfer as well as to extant literature on different specialization that can be combined efficiency work in a cross-broader. In addition, the international cultural across the region considered to effectiveness on innovative knowledge complexity in most of organizational context. This paper focuses on the organizational contexts of MNCs in Thailand in how the innovative knowledge transfer are affecting to the Thai workers in term of innovative capacity in the firms especially in the Automotive industries in host countries in ASEAN as Thailand.

In particularly, Multinational corporations (MNCs) are type of company impacts and compounding effects on global innovative company in the global business (Cantwell, 1989; UNCTAD, 2005). Hymer (1960) described on the successful of MNCs as performance and business growth and achieved in the strong competitive advantages in local markets such as ASEAN countries. Thus, most of MNCs can overcome on intangible assets and liabilities from foreign subsidiary in ASEAN market.

Hence, Innovative knowledge transfer activities established in all department of MNCs. In the other hand, we determined that MNCs transfer knowledge to company process and operations such as know-how, technique, personal knowledge, tacit from expertise etc. Likewise, the knowledge transfers as technology transfer in foreign market as cost to the knowledge value creation to company competitiveness (Hymer, 1960; Buckley & Casson, 1976; Berry, 2015).

In paper is organized as follows. The section on Location, Organizational context, Innovative Knowledge Transfer, Innovative Capacity, and the Firms performance. Thus, prior international management theory discusses the implication of the development of the national of innovation system which it’s become to be successful of MNCs.

Recently, most of multinational corporation as automobile company has developed a new production with new high technology implementation in their product portfolio to improve firm's value and targeting on moving forward in sustainability development as well as to be a leading in high profitability and maximized their efficiency on revenue especially in automobile industry. Thus, many researchers concern in innovative knowledge transfer which is the main factors on firm performance with technology learning, adaptation, and R&D innovation industry. Consequences, the impartial of this paper is to study how innovative knowledge transfer affects the company's innovation capacity and in role of organization contexts and knowledge transfer as the important key ever for reaching innovation achievement. We studied the prevailing distributed substantial on innovative management in MNCs and focusing on the organization contexts and innovative knowledge transfers, by reflecting barriers and relevant success factors with employees or co-works on innovative knowledge which to achieve innovation success interplay between innovative knowledge transfer in their organization and innovative management is mandatory.

This study determined as follows: *First,* to consider in the organizational context literature with innovative knowledge transfer in MNCs organization with the supporting on the evolution and vitalization in knowledge integration in organization contexts. Previously, the organization contexts and innovative knowledge transfer and innovative capacity are the key factors for MNCs organizational structure as successful innovative knowledge transfer that we can ensure on sustainable transfer of knowledge transfer. Thus, this research acquired to further research opportunities which benefit to some managerial implications.

In addition to, international business contributes several key factors on organizational. We focus on the process of replication knowledge transfer and adaptation knowledge transfer which are the key factors of effectively organizational controls, technological advancement, environment, demographics as well as globalization are reflected decisive. Meanwhile, O'Dell and Grayson, 1998 argued that the ability among MNCs organizational can deploy for innovative organizational

knowledge transfer in all departments as a flat structure or hierarchy and bureaucracy organizational especially in MNCs in Thailand which encourage for firms' performance as incentives and rewards by learning strategy (Senge, 1990). Nevertheless, Knowledge management performed for learning strategy and internal/ external integration which enables knowledge transfer by capacity integration by dynamic knowledge activities in organization (Bukowitz & Williams, 1999). In this study, we focus on the key significant factors contributed high influence to innovative MNCs organization such as local innovation, internal/external capacity integration, strategic alliance and partnership which concentrated in organization as we proposed to findings the relationship between organizational context and innovative knowledge transfer.

A major consideration in the choice of the variables was general that we could applied to any kind of organization. S.F. Nadel, the theory of Social Structure has noted as formal characteristics are on a high level of abstraction for example, Simmel's has discussion of the number of individuals in a group indicates how size is a formal characteristic of groups independent of the specific individuals and numerous innovation plans effort on the organizational level. However, especially in MNCs in substantial companies that firm has enhanced to increases innovativeness in all departments on innovativeness product with the new high technology enhancement in their organization. Thus, the influence of innovativeness is benefit on corporate advantage in MNCs in all department. In this study about the innovative knowledge transfer only in manufacturing organization. we used employees in the production department as the unit of analysis. We realized that all innovation are significant factors in competitive advantage to the MNCs manufacturing that begin with inventive ideas. Productive implementation of new procedures, new products & service introductions and new operating process and working in individual or a team developing provided concrete suggestion to great ideas in corporate management (Amabile, Conti, Coon, Lazenby, & Herron, 1996). Therefore, we concentrate on innovative knowledge transfer, Innovative Capacity on co-workers' creativity. Meanwhile, we conceived of employee innovative capacity and knowledge transfer in work environment creativity as an specific level perceive the knowledge and all of

this depend on the organization contexts such as internal/external integration capacity, strategy alliance and partnership, and local innovation as MNCs organizational context.

Many researchers are supported on the theory pouring technological capability development inspires knowledge transfer, knowledge creation, which in turn moves innovation capacity to the firm. Nonetheless, the creativity on process in operational (Shalley & Gilson, 2004). Prior study, Amabile *et al*. (1996) organized research to perform public sensibility employees' creativity in company, though, other research is needed for a realized innovative practice because innovation is particularly significant in term of new hi-technology knowledge corporation (Weggeman, 1997).

In typically, knowledge and innovation with technology are the complementing strategies executed by the prevailing leaders of innovative companies. Amabile (1977) argued componential study between an individual creativity resource that achieve competitive advantage on the theory of *organizational* creativity which explained on three broad organizational factors as the following:

1) Organizational toward innovation enhance the provision of motivate on the creativity of organizational contexts in motivation to innovated in knowledge sharing in all departments.
2) Management practices: provide the important role in the autonomy in the benefit of new idea creation which can be challenging in workplace.
3) Resources: contribute a new innovative targeted among employees, customers, and suppliers in business activities by improving the competitiveness of the firm with knowledge sharing from expertise or class learning, etc.

This paper is controlled as follows: in the next segment, we review the literature on MNCs organizational contexts as local innovation, Internal integration capacity, external integration capacity, and strategic alliance/partnership on the relationship with innovative knowledge transfer as adaptation knowledge and replication knowledge. Based on the literature review, we develop hypotheses on: (1) the

relationship between organizational contexts and the level of knowledge transfer and (2) Innovative knowledge transfer as a mediating of adaptation knowledge and replication knowledge affecting to innovative performance and global innovation. Finally, It is apparent from the working process to employed and discussion related to organizational context with the results and implications of this study.

1.1.4 Organization Culture in MNCs in Thailand

In what way of organizational cultural barriers can influence to knowledge sharing on difference countries. The American Productivity & Quality Center (APQC) argued to study on corporate culture that difficult to supports on sharing knowledge in large organization. In this study, we notice that society in particular country are the important role in the achievement of innovative knowledge in emerging country. Thus, we noticed that the process on innovative knowledge management faced with hardly in some organization cause failed in innovative knowledge implementation in organization because lack of well adequate supporting by senior manager such as in large organization.

Schein (1985) defined organizational culture as the mutual values, beliefs, and traditions of the individuals' employees on particular society. Thus, Culture in automobile industry workplace reflected to organizational value aspects as value creation. We can explain that culture like the way how people act and behaviors on social occurs collection of organizational value and practices as inform in actions of all members in their group as well, inserted in the behaviors people working in their team such as the think of collection of traits, what organizational believe and supporting idea of employee's activities. Totally, culture is deep-rooted in the organization's core values and expectations. In Automobile organizational with learning experience and knowledge transfer culture by team leader share about cumulative and composite knowledge to employees or working in workplace with knowledge sharing culture such as new ideas and insights on the routine technique,

problems solve, new knowledge working schedule, etc. We implied that the sharing ideas is required to learn and training course which organizations are strongly support on course training in very period. We indicated that the organizations show interest in subsidiary core value are in knowledge and internationalization. Therefore, organizational knowledge core values are identified throughout the organization.

On the past research, we found that an internationalization model's basic orientation to motivate innovation to sustainable performance and the extensive of literature on knowledge and internationalization as employees' creativity appears to be very important. We supported prior literature on organizational contexts to arise hypotheses involving automobile industry on creativity and innovative knowledge transfer are positive effects of these emerging issues.

1.1.5 Innovative knowledge transfer Dimension

In this study, we have identified relevant article concerns to the key word of "knowledge transfer" through academic journal database between the last decade that publication during 2010 to 2020, such as ABI/Inform and Business journal, Emerald, JSTOR. Innovative knowledge transfer as definitions, academic theoretical approach, methodology and conceptual framework or empirical findings across all levels in organizational contexts for future study and future research directions are also with knowledge transfer criteria are publication dates range from 1996– 2016. We determine as MNCs management aspect to improve with academic theoretical perception.

Definition of Knowledge Transfer

Apart from the prior research, there are numerous of knowledge transfer theoretical have summarizing on the definition of knowledge transfer as are available in literature. Kirchner (1997) argued knowledge transfer seeks to organize creation by using employee experience and converting knowledge into core value of organization such as knowledge management by communication problem and memorandum or a

meeting to accomplish knowledge in organizational members. Davenport and Prusak (1998) maintained that knowledge and human capital as a means to improving the competitiveness of their country and transformation to organizational members by tacit which difficult to articulate knowledge. Later, Rennie (1999) considered organizations' knowledge management become to be managerial expertise as managerial expertise to contribute business competitive advantage and become to create future revenues.

The previous study by Nonaka and Takeuchi (1995) most of organization used to perform tacit knowledge and explicit knowledge for transferring knowledge inside organizational. Recently, large organization required operate internationally and knowledge are deeply embedded in local beliefs, employee attitudes, personnel value creation, and long-term experience, while internationalization as Automobile industry in Thailand facilitates innovation which combines internal and external knowledge combination on organizational (Jasimuddin *et al*., 2005). Likewise, it is contingent on a significant issue having imperative impact on the business operation and competitiveness in the global market such as sustainable strategic performance (Jones and Mahon, 2012).

In additional, Szulanski (1996) defined knowledge transfer as a process of knowledge exchange between the headquarter and subsidiaries or business alliance/ partnership in knowledge process especially firm with international activities invest in innovation. Szulanski (1996) further takings knowledge transfer perspective on an important factors of knowledge transfer in four knowledge proceeding as knowledge initiation, working implementation, working ramp-up and knowledge integration. As the knowledge initiation step consisted with all case for manager decision making to transfer knowledge. The implementation state focusing in manager decision making in the operating process and transfer knowledge between receiver and the source of knowledge that can integration step for the results of transferred knowledge gradually on the working routinized.

Thus, the knowledge transfer in the other word, Wang *et al.* (2004) argued technology and information of knowledge base has been growing interest in the internationalization in organizational learning such as knowledge collaborative with R&D by organized learning of information and practices for employee's skills. As *a learning process* noted as positively on perspective knowledge transfer (Saka-Helmhout, 2009). In spite of knowledge transfer entity is directly transfer one unit to group, department, division in international activities which more likely to invest in innovation adoption by knowledge transfer (Argote and Ingram, 2000).

We referred to the previous study knowledge transfer in organizational with the strategies implemented by knowledge in organization. as knowledge strategies in organization by actively consulting among expertise what they skills and experience (Van den Hoof and De Ridder, 2004), while transferring knowledge by social networks between subsidiary or business alliances, department to division of tasks and technology linking among employees and expertise can achieved in organizational learning (Argote and Ingram, 2000). Thus, the problem of manager in large organization how to manage international activities with knowledge dynamic which it hard to imitate knowledge in organization, so that knowledge transfer within the firm may be adaptation by business alliance or partnership (Faria and Sofka, 2010; Jensen and Szulanski, 2007; Szulanski and Jensen, 2006; Van Wijk *et al*., 2008).

1.1.6 Knowledge Management in MNCs organization

In order to achieve in internationalization by MNCs, knowledge is a key important role of business success and competitive advantage especially knowledge in innovation processes (Grant, 1997). Knowledge resources in the firms can create a cumulative with technology across-functional as possess value creation, rare, inimitable which has given the opportunity by a tacit dimension (Polanyi, 1996; Hall and Sapsed, 2005). However, Knowledge management in MNCs as true knowledge transfer, creating or sharing with learning are limited such a moving forward in the high technology development in this century and changing our idea and design thinking with new technology and innovation through internationalization as

subsidiary or branches. Thus, how business sustainability development is suitable in business operation especially manufacturing and automobile industry that required for the new innovation technology knowledge. In consequence, there are some questions how MNCs manager can create new knowledge and maximize to sufficiently in term of utilization of resources by knowledge creation, it cannot be clarified satisfactorily in terms of internal and objective knowledge or problem solving. Thus, we understood organizational process in Automobile industry which distinguished company experience knowledge and new adaptation knowledge in organization be suitable to solve the process problems (Nonaka, 1994).

Previous studies have examined MNCs as a subsidiary company internationalization concerned in knowledge transfers between branches unit and subsidiaries (Minbaeva *et al*., 2003) and between overseas branches in the internationalization management (Gupta and Govindarajan, 2000). Following the study of innovative knowledge transfer in business alliance and network perspective (Tsai, 2001), and the productivity approach from product and innovative development perspective through internationalization perspective (Ghoshal *et al*., 1994), For instance, international unit of knowledge transfer in the international marketing which create innovation performance and global innovation by extensively in the literature on knowledge transfer (Bennett *et al.*, 1999). However, during 1985 to 2005, the variety of knowledge transfer studies provide by individuals as employees and units or division in MNCs organizational (Frishammar *et al*., 2005).

Furthermore, on the prior study there are a few of empirical evidence on Thailand Automobile industry on innovative knowledge transfer research during 2010 to 2019. Thus, this study focuses on the innovative knowledge transfer process which extensively to innovation performance and global innovation, in particular subsidiaries which located in Industrial Estate in Automobile industry, we play a significant role in innovative knowledge transfer in several division especially in production units, assembly lines, inventory, purchasing, R&D, etc. which relied on innovative strategies and new production development on Thailand location. Thus, the

important part of this research have integrated successfully in marketing strategy and manufacturing management with innovative production.

There are some arguments on Hansen's (1999) studied the link between organizational knowledge transfers, innovation, and internationalization on the units in organization context with target knowledge among themselves. Thus, MNCs has knowledge transfer between units in several companies were influence by the experience of another (Argote and Ingram, 2000). Likewise, Darr and Kurtzberg's (2000) described innovation plan implemented with hi-technology development and innovative process changing strategy. In the literature on knowledge and on innovation, we examine knowledge transfer when knowledge sent from Head Quarter by expertise or innovative technology information & knowledge to subsidiary or branches, for example internationalization in the globally business yet globally distributed units, hence knowledge transfer to inter-unit knowledge which are the same as at headquarters or in subsidiaries organization.

This research was building on the MNCs organization, knowledge transfer and innovative capacity to the firm viewpoint that consider as knowledge transfer from product development department. Thus, there are important elements on knowledge transfer identical on innovation with composite knowledge are effectively such as in Automobile industry. Nonetheless, we concentrated on knowledge transfer by organization context that effect on the innovative capacity role of the firm. There has been discussed in the knowledge transfer structured as follows: First, Knowledge transfers. Consequence, we determined for the research discussion as following: *First,* in organization has been growing interest in cumulative and composite knowledge as a network-based view on production and operation perspective, *Second,* Organization can explore the redundancy and diversity the knowledge dynamics on the business during internationalization such as headquarters and subsidiary in the regional.

1.1.7 Strength of network ties in knowledge search and transfer in MNCs.

In ASEAN counties are challenging with international business investment which developed in knowledge activity and pay particular attention to knowledge as a source of innovation and technology to new venture of technology in manufacturing processes (Belzowsky *et al*., 2003). In previous research, the complexity of knowledge application is not only created by employee or staffs for training and sharing experience or sharing the idea in problem solving in working process (Chini and Ambos, 2005). Hence, how the firms can improve and obtain relevant knowledge to leading position worldwide, whereas the industrialization in this region is dual problem of transferring complex knowledge transfer (Hansen, 1999). In contrast, the company implemented the strong network between workers in difference subsidiary can generate innovative value under knowledge flow and performance.

Nonetheless, there are significant factor which effect to create internal knowledge transfer on innovation perceived benefits as subsidiary and headquarter on knowledge sharing with the technology advancement to MNCs and connected with external and internal knowledge inside organization (Argote and Ingram, 2000) and integration with high collaboration between several units in organization and extent internal knowledge to tacit knowledge (Nonaka, 1994 and Souder, 1990). Furthermore, the cross-border knowledge management of MNCs can create local innovative capabilities as the new production development in automobile industry (Cavusgil *et al*., 2003; Nonaka, 1994). Therefore, Global technology of knowledge transfer represents the operating process of subsidiary performance and innovative globalization by using knowledge (Wang *et al*., 2016) to promoting technology and innovation of automobile manufacturing firm. MNCs networking refer to transferring knowledge with the strong relationship among partnership/ business alliance and suppliers in collaboration with innovative knowledge transfer such as R&D, new technology feature, technology enhancement, training and IT supports, and expertise training, technical skill employees exchange, etc. Hence, Automobile industry in Thailand argued to promoting technology infrastructure to the firm and remained to the reginal center of automobile industry in ASEAN regional according to BOI (Thailand Board of Investment) enhanced incentives for automobile industry to boost

investments in automobile, auto parts and accessories production by using advanced technology in Thailand.

1.1.8 Headquarters-subsidiary technology transfer

Due to the large organizational as automobile manufacturing company emerged as global company which contributed national innovation system which MNCs reflects the influence local capability as innovative knowledge from headquarters to subsidiary challenges of innovative development and technological advancement (Ghoshal and Barlett, 1988). MNCs cope with emerging innovative knowledge issues and expect to achieve in all subsidiaries in difference regional. Meanwhile, Prior researchers argued that MNCs firms cand promote innovation into production as value-creating on knowledge generation on subsidiary by using knowledge (Dyer and Singh, 1998; Schulz, 2001). In the emerging business has to shift in both knowledge and technology as R&D which are intelligence property assets created and apply knowledge to improve production practice to generate innovative value into local's firm (Li, 2005). However, MNCs can integrate existing innovation and learn from subsidiary on respondence with intra-firm technology knowledge transfer which can help the headquarter effectively acquire (Chesbrough, 2012). Moreover, an increasing number of MNCs automobile manufacturing by integration capacity with innovative knowledge activities. Although Headquarters and subsidiary must be accepted that technology transfer is consecrated with previous literature in the period.

1.1.9 The relationship between Innovative knowledge transfer and Innovative capacity dimension

The investigation started with a review of innovative knowledge transfer that on the new situation in this century on MNCs has adaptation and diversify their business to more increasing with new high technology in their manufacturing of product. In study the cost of technology and new innovation are considered in cos to product as production flexibility which are competition cost in the market (Schulze *et al*, 2008). Recently, the innovative products and services generated the high income

and performance in the certain competitiveness market in automobile industry (Miron *et al*., 2004). Moreover, innovation and effective integration with existing environment and sharing of internal knowledge resource are seeking to find the new market of investment to ensure on global business survival. In the past decade, MNCs extant literature in the field of innovative knowledge transfer to derive a set of value creation to the firm (Drach-Zahove *et al*., 2004). Although this research has been discussed in two factors as an integral part of organizational innovation strategies along with knowledge (Capon *et al*., 1992). Therefore, based on knowledge creation is the most important to create firm's value in MNCs organizations (Nahapiet and Ghoshal, 1998), moderating effect on innovation (Smith *et al*., 2005). Thus, knowledge is a key driving effect on above relationship innovation process and utilization of knowledge innovation (Darroch and McNaughton, 2002; Nonaka and Takeuchi, 1995).

The Innovative Capacity increase innovation quality concept on employee innovative activities in working routine in organizational success. However, Automobile industry are highlighting the shortcomings of the innovative capacity among the co-workers and employees' innovative capacity. We propose the roles of innovative knowledge transfer and innovative capacity among employees in MNCs automobile industry that drawing upon theories of workplace knowledge transfer which describing how supporting employees' behavior and build up their innovative capacity.

Apart from prior theoretical, we propose to explore on the mediating roles of innovative knowledge transfer in the automobile industry in Thailand. This concept provides several theoretical contributions on the lightening of global business an MNCs business strategy and gain competitive advantage which improved in their innovative performance and global innovation. The theoretical contributions mainly are classic model in international business in the industrial world. We focus on the innovative knowledge transfer conceptual by offering guidance managerial insights into employee innovative perspective that fostering through make strategic decision

on innovative capacity and organizational learning with new innovative technology in operation practice in large organization.

Innovative capacity of innovative in the market of MNCs strategic expect to grow and innovate in the global market that great significance for MNCs automobile industry by classification and definition in employees' capacity adopted by Subramaniam and Youndt's (2005). Thus, innovative capacity used in various aspects and reinforce in the moderating effect of production and services in production department and marketing such as new high technology model of automobile product with EV or executive service on car care service, quality assurance in production, etc. Furthermore, Abernathy and Clark (1985) argued that innovative quality helped firms to derive a set of innovation and fostering innovation capacity into new products, processes or service, thus innovative capacity focused on the existing dominant knowledge by converting external new knowledge into internal knowledge integration. As a result, MNCs can explore new knowledge with radical innovative capability by use new knowledge and the existing knowledge to improve innovation efficiency.

In general, Most of large organization as MNCs automobile industries in Thailand have offers the fundamentals for essential innovations because it includes the internal measures that increasing employment and creating benefit for innovation and knowledge integration (Yan and Lin, 2009) such as Japanese Automobile companies in Amatanakorn Industrial Estate and all several Automobile companies surrounding along with EEC(Eastern Economic Corridor) or Eastern Seaboard in Thailand that Thailand Government development plan under scheme of Thailand 4.0 aim to drive for the country's investment in up-lifting innovation and advanced technology for the future generation. On the purpose of this study, MNCs in Automobile industries has been to concentrate in the Technology and Innovative Knowledge Transfer to the local employees, which we can determined in manufacturing practices as observed to create knowledge and create opportunities with solution that provide into organization as follows.

First, we observed knowledge as opportunities on MNCs knowledge to create and apply innovative knowledge transfer between headquarter and subsidiary by integrate the existing knowledge of each subsidiary (Moreland and Myaskovsky, 2000). As based on knowledge management theory, MNCs supposed to create knowledge and utilization upon innovative capacity.

Second, Innovative knowledge transfer explore to motivate cooperation in organizational learning that courses transferring and applying among employees in operation department (Beugelsdijk, 2008).

Third, Innovative knowledge transfer consider to affects innovation quality and increase employees' capacity which integration internal knowledge and external knowledge into their practices and acquisition of heterogeneous in more knowledge opportunities (Huselid, 1995). As a result, the possibility of effective incremental cross-border knowledge increases.

In addition, Human capital management are significant in management supporting to control and motivate co-worker and staffs collaborate into match and sustenance each department of MNCs. In case, knowledge, and innovative practical motive on the satisfactory score, which ensure a reward structure will benefit each employee's knowledge and create more training in working skills, could establish on the productivities and strengthen in working routine processes. Specifically, manufacture employees in assembly line are more likely to working in teamwork and supporting on team success according to time schedule. Thus, employees can prove their ability by periodic training and on the group discussion to sharing working ideas on the way of solving the problem and correct for a new solution. As a result of knowledge transfer on working area, they have collected experience and more opportunity and working under supervisor controls with operation guideline (Huselid, 1995) to make its innovative on their process and production which learning from their knowledge and assorting their experience. By the way, employees consider solving a problem and improve their innovative capacity on processing and production activities.

1.2 Statement of the Problem

MNC's 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. However, in difference of organizational contexts and innovative knowledge transfer take a benefit from innovation capability and extent knowledge. 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 innovative (Yi and Xue, 2016) and competitive advantage (Wassmer *et al*., 2014) in the research framework. We consider the significant of organization context and knowledge transfer to understand how it internal and external knowledge can integration with capacity. Innovative capacity and competitive advantage as key driving for firm's achievement. However, hi-technological in knowledge transfer create innovative capacity are contextual for MNC's automobile industries in such a highly competitive market have high innovative capability to produce innovative productivity. Thereby we concentrated and acquired that does organization context and innovative knowledge transfer are highly influence on the innovative capacity? In the other hand, In the context of innovative organizational contexts and innovative knowledge transfer also improve innovation capability to be competitive advantage in the future? However, How the firm can created innovative capacity to the Thai employees in line of knowledge transfer in their organization. In several research, there are not implied the knowledge transfers with the Product innovation and Process innovation. That is the questioned that how to employees in Thailand's MNCs have to adapt and combine the new knowledge and create the substantial innovative ideas as innovative capacity with production innovation and process innovation to the firms. In this research we have studied on the influence of knowledge transfer on innovation cause of the world economic crisis in 2020 the shortage in technology and supply chain are increased demand for production flexibility to reduce the cost of production.

The contribution of this research lies in MNCs as subsidiary in automobile industry and studied in advancing knowledge transfer theoretical and empirical understanding of industry area such as local innovation, internal/ external integration capacity, strategic/ alliance, and partnerships in organizational contexts. The theoretical explanations and evidence to understanding in how the development of innovative products and services support subsidiary firms in Thailand to achieving and retaining competitiveness in global markets (Miron *et al*., 2004). In recently, we found that most of MNCs in automobile industry has accessed to entry to the new market as Southeast Asia countries for investment and challenge of global competition to ensuring long-term survival. In this international context, innovation is power for firms by using its innovative in Southeast Asia organizations (Drach-Zahovy *et al*., 2004). In the literature there are two factors reflected and make it more crucial for long-term success of the firm involves the increasing related concepts of innovation (Capon *et al*., 1992) and knowledge. The discussion of automobile manufacturing, Knowledge one of the most essential resource of international manufacturing strategy (Grant, 1996), innovation with the global leadership issue by process and practice of new innovation structure (Smith *et al*., 2005; Kogut and Zander, 1996). From the previous study, an increasingly important issue of MNCs in innovation model by using its innovative offshore approach with new innovation process model (Darroch and McNaughton, 2002; Nonaka and Takeuchi, 1995). Similarly, Knowledge base across the region does not depend on resources and information and R&D networking for maximizing specialized capabilities with internal and external collaboration. Thus, the workers in organization need to fit the organizational context and moving the networks involving people and created for worker innovative capacity within organization. The innovative capacity considered crucial for attaining long-term survival that we considered collaboration networks. Moreover, many researchers focused on industry collaboration networks which allow firms obtain new products and services based on information technology and innovative knowledge (Del Giudice *et al*., 2015; Del Giudice and Della Peruta, 2016; Soto-Acosta *et al.,* 2015; Soto-Acosta and Cegarra-Navarro, 2016; Soto-Acosta *et al.,* 2016a; Soto-Acosta *et al.,* 2016b) on the important factors with complementary knowledge. The problem of the MNCs on the difference location and people in the

region e.g., work capacity, different service providers, rule and regulation. Thus, current study focusses on knowledge adaptation and knowledge replication which integrated all knowledge related activities and flexibility to create organization value (Ganguly *et al.*, 2013). Most of manufacturing companies seek knowledge sharing, which external knowledge can be exchange between individuals and external knowledge from other organizational units (King, 2006, p. 498) and external knowledge in automobile industry as R&D outsourcing, critical resources, adoption of new ideas for achieve competitive advantage (Nonaka and Takeuchi, 1995; Prahalad and Hamel, 1990). While automobile company consider to reducing cost, improving team technical and engineer by knowledge sharing to improve innovation and performance (Cummings, 2004; Darroch, 2005; Lin, 2007). Likewise, several MNCs companies in automobile industry in Thailand are faced with the employee's capacity in term of innovation contribution problems and how firms could handle with the related research studies to exposed with innovation capacity and new knowledge combinations of knowledge and innovation capacity in an organization (Lin, 2007).

1.3 Research Objectives

This research aims to concentrate on the role of organizational context in fostering innovation capacity and innovative knowledge transfer as replication knowledge and adaptation knowledge of an organization. Specifically, the study considers in local innovation and integration capacity among employees through innovative knowledge transfer in the automotive industry. Thus, this study are to confirm that innovative knowledge transfer dimension as replication knowledge and adaptation knowledge (Peeters and Martin, 2017; Williams, 2007) have an important role in MNCS in automobile industry such as improving innovative performance, global innovation. The study focuses on MNCs in automobile manufacturing in Amata Nakorn industrial estate, which have dominant demand in automobile manufacturing and automobile business alliances sections and examine what significant factors in MNCs' organizational have been caused the successful of innovative knowledge transfer dimension in automobile section. The objectives are as follows:

Objective 1: To study the important factors of organizational context as local innovation, internal integration capacity, external integration capacity, strategic alliance/partnership have relationship with innovative knowledge transfer as knowledge replication and knowledge adaption in MNCs in automobile industry in Thailand.

Objective 2: To examine the relative of MNC's organizational context as local innovation have positive influence of innovative knowledge transfer dimension.

Objective 3: To examine the relative of MNC's organizational context as internal integration capacity and external integration capacity have positive influence of innovative knowledge transfer dimension.

Objective 4: To examine the relative of MNC's organizational context as strategic alliance/partnership has positive influence of innovative knowledge transfer dimension.

Objective 5: To understand the moderating effect of innovative knowledge transfer as knowledge replication and knowledge adaptation in MNCs automobile industry on the effects of positive influence of innovative performance and global innovation.

1.4 Research Questions

The research questions of this study are:

1. Which the organizational factor has the greatest influence on innovative knowledge transfer as knowledge replication and knowledge adaption?

2. Is there a significant relationship between local innovation and innovative knowledge transfer as knowledge replication and knowledge adaption?

3. Is there a significant relationship between internal integration capacity and innovative knowledge transfer as knowledge replication and knowledge adaption?

4. Is there a significant relationship between external integration capacity and innovative knowledge transfer as knowledge replication and knowledge adaption?

5. Is there a significant relationship between strategic alliance/partnership and innovative knowledge transfer as knowledge replication and knowledge adaption?

6. Does innovative knowledge transfer moderate the relationship between the independent variables and innovation performance?

7. Does innovative knowledge transfer moderate the relationship between the independent variables and global innovation?

1.5 Scope of the Research

This is aimed at examining the relationship between organization contexts in MNCs Automobile industry and the mediating innovative knowledge transfers has influence to innovation performance and global innovation. The focus is on selection of MNCs organizations contexts (i.e., local innovation, internal integration capacity, external integration capacity and strategic alliance/partnerships) and innovative knowledge transfer dimension (i.e., knowledge replication and knowledge adaption). Therefore, the area focusing on the main independent variables incorporated in the study include local innovation, internal integration capacity, external integration capacity and strategic alliance/partnerships in the organizational working as MNCs Automobile industry in Thailand. The moderator in the research framework focusing on innovative knowledge transfer dimension as knowledge replication and knowledge adaption and two dependent variables in this model are influence to innovation performance and global innovation. The area in focus with target respondents of this study are MNCs Automobile located in Thailand.

1.6 Significance of the Study

The findings of the study can contribute useful knowledge in terms of MNCs organizational context as the subsidiary innovative management and innovative knowledge transfer and the terms of managerial internal integrate capacity and external integrate capacity which are the relevance to innovative knowledge transfer

dimension for the firm to achieve in innovation performance and global innovation. While the theoretical contribution to the MNCs Automobile industry is important as discussed as follow:

This study can contribute practices of theoretical to study how the significance of local innovation, internal integrate capacity, external integrate capacity and strategic alliance/ partnership are very important variable which is amplified through the mediating as innovative knowledge transfer as replication and adaption theoretical leading to have an impact on firms' innovation performance and global innovation.

The significant of this study is to better understand the impact of innovative knowledge transfer and subsidiary itself in the local area in Thailand that replicate and adaption of knowledge in between home and host country. Therefore, the international business has an opportunity to learn and bring about benefits to the operations of headquarters and subsidiary especially automobile industry which is engagement innovative process to leading in the global innovation.

However, this study is limited to examining in MNCs Automobile industry in Thailand. Therefore, this study will be directly important to several department in MNCs especially for production department, human resource, administrative, R&D, purchasing department, etc. to pay specific attention to the innovative knowledge transfer and overall innovative knowledge on their business operation. According to the implementation of knowledge replication and knowledge adaption with adaptation practice will occur in local MNCs as supporting to local implementation. Internal integration capacity (Boer, 2010) and External integration capacity (Kogut and Zander, 1993) are another important factor for effective replication or adaption planning for implementation the innovative knowledge at the local company.

Apart from the important of the study show the relationship strength in local entity and global innovation (Birkinshaw, 2001; Frost *et al*., 2002) thru the mediating of innovative knowledge transfer base on prior studies as knowledge replication and knowledge adaption (Peeters and Martin, 2017; Williams, 2007) that can explore their differential roles on the innovation performance of MNCs (Luo and Wang, 2012; Qian *et al*., 2016) and global innovation (Birkinshaw, 1997; Birkinshaw *et al*., 1998a) as a result of MNCs innovation.

The study also focuses on the strategic alliance/ partnership (Levin and Cross, 2004) that MNCs acquiring source of new knowledge and new information from the relationship of business alliance and partnership e.g., R&D, new technology design and techniques, subsidiary alliance supporting, etc. Therefore, this study will help to enhance MNCs performance which will also increase the innovation performance and global innovation as well.

1.7 Definition of Terms

This section presents the definitions of terms/ concepts used in the study:

Local innovation mentions to product and service of the local firms that has self-initiative on the local practice way by localized knowledge and idea which create great potential and innovative capacity of firms to become global innovation (Birkinshaw, 1997; Schmid, Dzedek, and Lehrer, 2004).

Internal integration capacity defines as internalization of the knowledge and learning for new idea to build up a new knowledge between inside of organizations (Boer, 2004).

External integration capacity defines as Externalization of the knowledge from their suppliers or partnership by managing of relationship on sharing idea, know-how and joint decision which can integrate knowledge for supporting their organization such as collective buyer-supplier associations (Xie *et al*., 2008) or combine the knowledge with individual units and networking (Kogut and Zander, 1993).

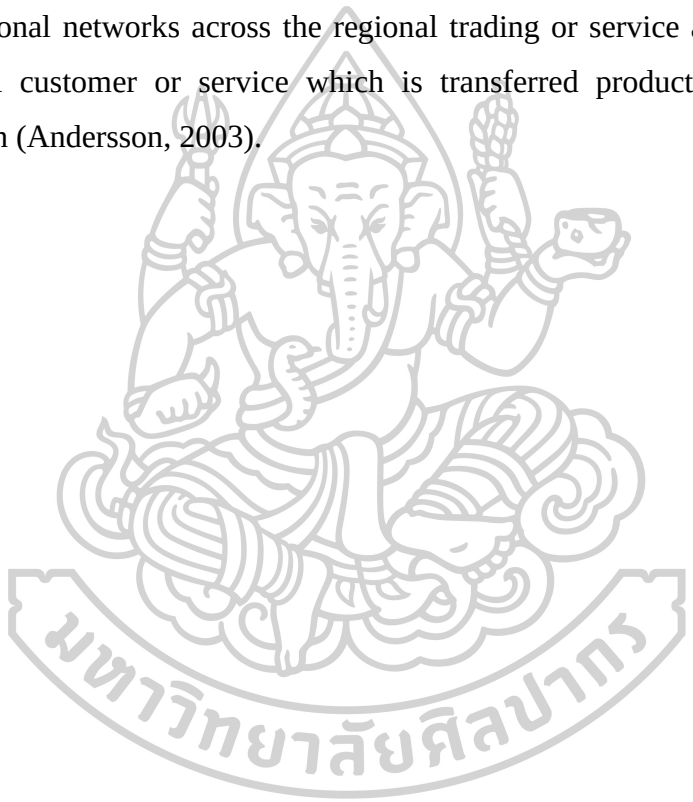
Strategic alliance/partnership defines as a new knowledge from R&D alliance / partnership that sharing between group of industry as knowledge transmission across company such as working experience course work from partnership by training in knowledge transfer perspective (Argote *et al*., 2003; Easterby-Smith *et al*., 2008; Lin *et al*., 2012).

Replication knowledge defines as require to utilized with the same pattern as other subsidiary which benefit to our operation by acquire same knowledge to learning (Argote *et al*., 2003; Easterby-Smith *et al*., 2008; Lin *et al*., 2012).

Adaption knowledge perform to using require knowledge from outside of the firm to benefit to the firms by building based on our firm's requirement under new innovation aspect (Peeters and Martin, 2017; Williams, 2007).

Innovation performances refer to a good proxy for innovation as correlates well innovation of new product in the firm that providing a valuable source of new knowledge through the development of new products and technology (Pearce, 1999; Zander, 1999).

Global innovation refers to the transfer of knowledge and innovation reflecting for international networks across the regional trading or service and concentrated to international customer or service which is transferred production and service to globalization (Andersson, 2003).



CHAPTER 2
LITERATURE REVIEWS

This chapter covers definitions of all variables, theories related to the research constructs and variables, summary of theories related to all the variables and previous studies including various of elements of organizational context, innovative transfer in MNCs organizational of Automobile industry in Thailand. As the issue of innovative knowledge transfer reaches further than the principles of any factors in organization contexts (Seuring and Gold, 2013), multination corporations (MNCs) with new high technology and innovation integration on sustainability development (Andersson *et al.,* 2005). MNCs contributed to be important to facilitate in all producers of technologies for industrial applications as automobile industry in Thailand (Zeile, 2014). According to MNCs in the world contribute to 20 per cent of the world's economic activity. In spite of its extent acknowledge that technology transfer is acquired with a rich body of literature, that we consider on this study consider the organizational contexts and the intersections of host-country features, local innovation, internal capacity integration, technology transfer, innovative knowledge transfer and organizational innovative performance as well as global innovation has interested in term of knowledgeable innovation and knowledge transfer exposure in this research area. Particularly in the context of Automobile industry in Thailand as a country trying hard to move toward a high technology and skilled labor as engineering, technician, computer expertise, supply chain & logistics, R&D, construction, etc. combined with intensive knowledge-based economy by 2020 (Ramayah *et al.,* 2014), such an empirical exploration is both timely and significant in the following contract variable.

Table 1 : Summary of Theory

Variable	Theory
Local innovation	-The theory of networks (Support) (Andersson, 2003; Andersson; Bjorkman;

	Forsgren, 2005; Heidenreich *et al.*, 2012). -Knowledge transfer and innovation

Variable	Theory
Internal integrate capacity	-The theory of absorptive capacity of knowledge (Yukika, 2006; Yang *et al*, 1999; Okamuro, 2007). -Knowledge integration capacity (Blumenberg *et al*., 2009).
External integrate capacity	-The theory of absorptive capacity of knowledge (Yukika, 2006; Yang *et al*, 1999; Okamuro, 2007). -Knowledge integration capacity (Blumenberg *et al*., 2009).
Strategic alliance/ partnership	-Strategic alliance (Yukika, 2006; Yang *et al.,* 1999; Okamuro, 2007).
Knowledge replication	-The theory of Knowledge transfer in asymmetric R&D alliances (Peeters and Martin, 2017; Williams, 2007). -Organizational learning (Argote *et al*., 2003; Easterby-Smith *et al*., 2008; Lin *et al*., 2012). -The explicit or tacit knowledge transfer (Cavusgil *et al*., 2003; Shu *et al*., 2017; Vivas and Barge-Gil, 2015).
Knowledge adaption	The theory of Knowledge transfer in asymmetric R&D alliances (Peeters and Martin, 2017; Williams, 2007)

Variable	Theory
Innovation performance	The theory of two dimension of innovation performance (Luo and Wang, 2012, Qian *et al.,* 2016)
Global innovation	-The theory of networks (Main) (Birkinshaw, 1997, 2001; Birkinshaw; Hood; Jonsson, 1998a) -Entrepreneurial orientation and subsidiaries (Schmid; Dzedek; Lehrer, 2014).

2.1 Asymmetry Knowledge transfer and different learning Capabilities

This study focuses on the new trend of technology and information era of industrial. Recently, the trend of knowledge on MNCs establish subsidiaries to expanding in the international arena (e.g., Gupta and Govindarajan, 2000). Knowledge transfer is used to measure to the growth of global changing and innovative economies and applied to higher value-added on industries as global value chains (Alcacer & Oxley, 2014; Spencer, 2008). Thus, one variable commonly environment and establish for knowledge absorption capacity (Cohen & Levinthal, 1990). MNCs managed with technology on the operation process that knowledge can transferred across headquarter to subsidiaries knowledge integration (Holm and Pedersen, 2000). Such in Thailand, the theme of knowledge transfer can locate to other locations and learning in organizational as internal transfer of knowledge by local subsidiary countries. Hedlund 1986, Bartlett & Ghoshal, 1989 establish a presence in organizational and technology information flows and technology knowledge transfer know-how to support their operation. According to Szulanski (1996) argued MNCs managed with technological knowledge, telecommunication, transportation, network system, infrastructure is distinct experience on process of dissemination. In this case, we stated that knowledge transfer between all units in

organization has consisted of four stages: initiation, implementation, ramp-up and integration upon their ability in employee and co-worker in new knowledge as transparency to automobile subsidiary in emerging country. Hedlund (1986) and Bartlett and Ghoshal (1989) explained on the new type of technique and know-how in MNCs at local knowledge contribution as internal knowledge inflow in all departments in MNCs organization.

One of the major challenges on knowledge transfer in an organization face is the movement of knowledge transfer as a basis for organizational process of dissemination that can be managed on knowledge management (Szulanski, 1996). In this study, we explore knowledge transfer as the key factors that have been cited as important influences on the ability to create innovative knowledge transfer between the source as headquarter and recipient unit as subsidiary in local country with the four factors: initiation, implementation, ramp-up and integrated knowledge into operation implementation. In this regard, our study showed about knowledge transfer in subsidiary that can lead management and subsidiary's decision on the actual flow of knowledge. Accordingly, this study focuses on innovative knowledge transfer factors that utilized in organizational context as a process of innovation process as local innovation, internal integration capacity, external integration capacity, strategic alliance/partnership to innovative knowledge transfer by adaptation knowledge and replication knowledge by the receiving unit as employees in MNCs organization. In the knowledge management of MNCs, which headquarters and other subsidiaries or partnership as suppliers & customers, automobile partner companies, R&D, etc. in business collaboration in their business assessment.

Thus, knowledge transfer is not a chance in operation process at subsidiary which have managed in difference policies and controls procedure so that learning process in organizational are facilitated (Inkpen, 1998). According to Argote (1999) argued for intra-company on knowledge transfer stimulate for empirical research with organizational factors. Meanwhile, Ghoshal and Barlett (1988) summarized the important of organizational contexts in several departments can facilitates on the stream of knowledge to supporting on organizational of MNCs. In additional, knowledge is provided a important role in mediator for exploratory variable (e.g., tacit-ness, working experience from expertise in organization, cultural behavior,

management in complexity, and organizational characteristic) as well as knowledge transfer efficiency which effect to employee capacity and firm performance. Thus, in the case of knowledge inflows in large organization as automobile manufacturing firm, are positively influence to the subsidiary partnership and company policy in knowledge management to acquire knowledge, employee capacity, and knowledge absorb through working operation (Gupta and Govindarajan, 2000). Thus, in this condition our study has focus on internal integration capacity and external integration capacity and both of them are the key elements to influence to innovative knowledge transfer activities in their operating process.

In additional, knowledge transfer from international joint ventures has defined on the purposely designed on the working routines, working in process, can initiated facilitate knowledge transfer as scheduled plant, software, and systematic sharing of knowledge such as learning and join committees, teams work, task forces, job rotation on production and working routine. While the relationship between social capital and social approach suggests knowledge transfer informal mechanism in trust (Dhanaraj, Lyles, Steensma, & Tihanyi, 2004) which most likely adjustment and adaptation for new employee in organization (Van Maanen & Schein, 1979), thus driving the ineffective socialization that cause high rate in employee turnover and redesign (Fisher, 1986) and section employee and training is necessary in socialization in organization management (Kammeyer-Muller & Wanberg, 2003). Thus, the concept of knowledge transfer socialization mechanism can success with the key knowledge formation by intra-firm networks transformation (Szulanski, 1996; Tsai & Ghoshal, 1998). This concept contributed local firms in absorption capacity and develop their operation in competitive advantage as the way upgrade their knowledge in MNCs organization.

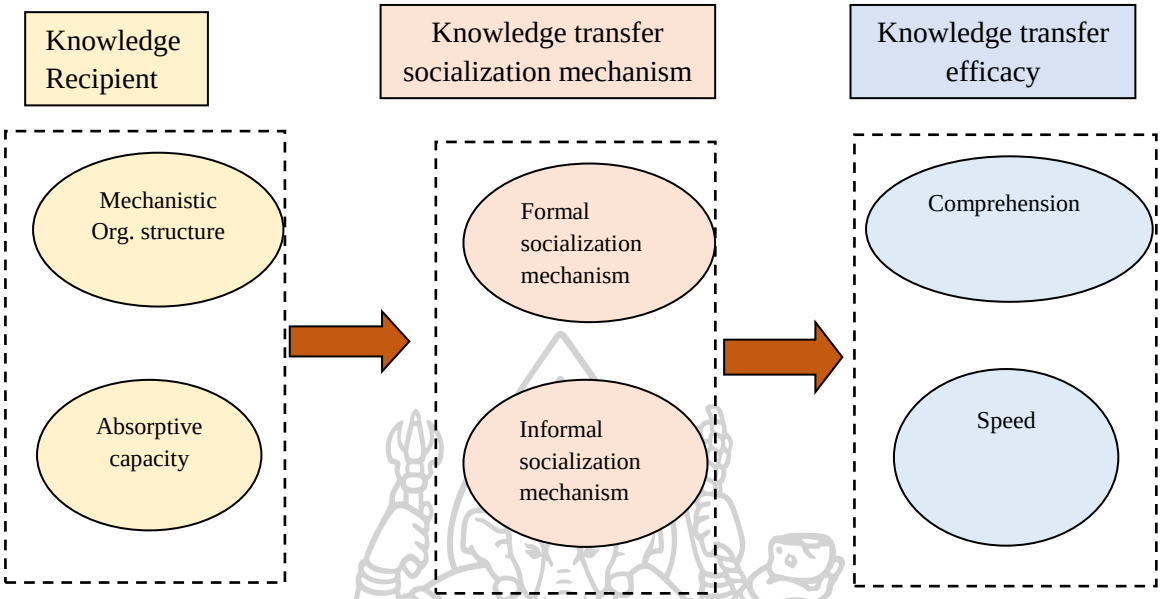
In spite of the role of socialization mechanism in knowledge transfer, MNCs have a knowledge-based and developed their operation knowledge context as greater knowledge asymmetry by exchange the new idea of innovation to improve their learning capacities between their knowledge exchange to the other subsidiaries or headquarter. Interestingly, the knowledge mechanism always facilitates between alliance partners (Bjorkman, Barner-Rasmussen, & Li, 2004; Song, 2014). Scholars suggest the transform knowledge are success by the relationship between control and

coordination to suppliers and customers in emerging countries when MNCs posited decentralization on knowledge transfer mechanism (Brenner & Ambos, 2013; Corredoira & McDermott, 2014; Lee, 2011).

However, the concept of knowledge mechanism helps new employees to produce more work productivity on working routine (Cross & Cummings, 2004; Jones, 1986; Keller, 2001; Klein & Heuser, 2008) and sharing in technology knowledge as organizational learning, flexibility with their responsibilities and bring knowledge into combination and internalization of knowledge in MNCs organizational. On this study, MNCs can differ in the extent of knowledge search transformation and firms can search broadly and earn on benefit from external company linkages. Therefore, knowledge transfer and employee absorptive capacity is a wide variety of technologies capacities component which improved employee's absorptive capacity (Faems *et al*., 2010; Love *et al*., 2014). All above reasons assume knowledge transfer socialization mechanism and knowledge absorptive capacities to improve and cause innovation which firms differ in the extent of knowledge search activities on their working process.

Therefore, most of automobile manufacturing provided formal accommodate in socialization mechanisms such expertise in engineering try to teach working in job routine such as codified or technique on framework in job procedure (e.g., Allen, 2006; Jones, 1986; Saks, Uggerslev, & Fassina, 2007), knowledge transfer in job procedure from expertise to employee's adaption on their job activities or adjustment on working practice (Allinson, 1984; Cogswell, 1968). This step can imply as working on coordination in assembly line for learning and working practice for employee productivities or unit of productivities after learning from expertise (Dodgson, 1993). Thus, asymmetric knowledge transfer use to implement in production line of worker which flexible and on duty responsibilities in organization (Burns & Stalker, 1961; Galbraith & Lawler, 1993). Nonaka and Takeuchi's (1995). This model of knowledge transfer used to combine internal and external knowledge in organizational structure.

Figure 4 : Asymmetric Knowledge Transfer



Source: Zaheer Khan, Oded Shenkar & Yong Kyu Lew (2015)

Socialization mechanisms and knowledge transfer efficacy

Interestingly, for the automobile industry that most of employee from several department has divided into section or group working of sufficient in knowledge transfer across unit of division in organizational such as assembly line or mechanic division to learn on new knowledge model, which helps information and knowledge transparency in all organizational flow (Hansen, 2002). Different assessed have been used to convey knowledge transfer ability (Perez Notrdtvedt *et al*., 2008; Szulanski, 1996; Tsai, 2001). Moreover, MNCs focused on the role of networking with partnership in the same industry such as R&D, new technology, new design, etc. (Van Wijk, Jansen, & Lyles, 2008). Speed up in technology and innovation in organizational have catch-up and comprehension in working system in automobile industry, especially in highly competitive market in the region (Kumaraswamy *et al*., 2012). We found that most of researcher concentrated in knowledge transfer mechanism in technology transparency between subsidiary to subsidiary or headquarter to subsidiary (e.g., Perez Nordtvedt *et al*., 2008; Zahra *et al*., 2000).

2.1.1 Knowledge replication

In the large organization, knowledge is a strategic resource for employee capability to achieve industrial competitive advantage in the markets. Most of automobile industry used a replication strategy on their production in line of conceptual similarity to create new innovation in large organization (Rogers, 1995), cross-functional increasing with technology (Cool *et al*., 1997) and knowledge innovation transfer to give the opportunity to knowledge replication in a context of internationalization (O'Dell *et al*. 1998; Szulanski, 1996). For instance, replication strategy on knowledge transfer appears to be very important in industrial practices within the firms and tend to be dynamic capabilities at headquarter or subsidiary.

In this study we focus on the replication knowledge strategy in knowledge transfer approach. As the knowledge transfer was conduct with new high technology by portion of the knowledge endowment with subsidiaries organizations which are transferred during replication. However, technology and innovative knowledge, knowledge replication, learning, sharing are greatly modified the organizational context of subsidiaries' organization as modify knowledge to ensure complementarity between headquarter and subsidiary to maximize the utilization of resources such as operation practice, technology, assembly routine with mechanics equipment's.

For this analysis, these factors have studied on a relationship of knowledge replication strategy which create automobile manufacturing company on their capable of locally producing to distinguishes replication strategy on automobile business, for example, new hi-technology from headquarter or others business alliance to implement on their production line with new knowledge on training with engineering experts, etc. Thus, this a replication strategy requires new technology on automobile business model to be replicated on the existing in automobile environments such traits can be successfully in manufacturing operation. Replication knowledge to create new innovation and technology knowledge on the complementary features appeal in many local manufacturing being replicated to local production. Most of automobile industry environment can be success at a new product between the production line on local manufacturing under the industrial procedure and procurement features. Accordingly,

increased replication knowledge strategy implemented to manufacturing created high profitability and operating performance. Therefore, the key success of the firms to replication in process and procedure on subsidiary business model by adopting implicit interest in all knowledge activities of the firm that influence in firm value added.

In contrast, replication adopting in local processing such as automobile industry in Thailand and most of local are success in their business by open-minded learning from the actual basis of success. An understanding of global automobile industry is crucial to knowledge replication strategy in auto industry in competition with Asian and Western European automakers.

2.1.2 Knowledge adaptation

Apart from previous research on knowledge adaptation accessed and contributed knowledge production from business alliance partnership that is the development of knowledge for innovation with new technology adaption to local manufacturing (Peeters and Martin, 2017; Williams, 2007). Thus, R&D alliance partnership by automobile industry is driven by business alliance adaptation, consumer demands for utilizing on more product classification and better performance. This study focuses on knowledge adaption that transmission of knowledge across subsidiary by organization learning from engineering expertise or leaning know-how and transmission of knowledge from their experiences of headquarters or business alliance (Argote *et al.*, 2003); Easterby- Smith *et al*., 2008; Lin *et al*., 2012). As automobile industry in Thailand is a main driver of manufacturing on macroeconomic growth and transmission technological advancement in both developed headquarter and developing countries.

In this study, the R&D technology development and activities of subsidiaries focused on local adaptations that understanding in the local market with high technology transmission such adapted influences the automobile industry (Jaworski and Kohli, 1993; Sethi and Iqbal, 2008).

We argue that MNCs automobile manufacturing need to develop their own absorptive capability such as local innovation capability on the way of knowledge

adaption (Volberda *et al.*, 2010), we believe in the role of cumulative learning and the positive impact of MNCs local innovation and internal innovative knowledge transfer (Lan *et al*., 2006; Lin *et al*., 2012). Based on adaptive absorptive capacity knowledge on automobile manufacture as most of MNCs subsidiary practice, which have R&D in new hi-technology strategy equipped with adaptive and more likely to integrate new hi-technology to automobile operation which transfer more by knowledge adaptation in local subsidiary such as new model design car, EV car, new type of car by regional demand, etc. (Deng *et al*., 2018).

Thus, on analytically, we consider how an MNCs recognized organizational context to integrate into global R&D and hi-technology innovation with knowledge replication and knowledge adaptation issue to supporting MNCs automobile industry such as MNCs need to accelerate develop local innovations based on local adaptations (Gemunden and Lechler, 1997; Iammarino et al., 2008) by increased product and process innovations in their manufacturing plan. We test these relationships with a sample of hi-tech automobile company in Amata Nakorn Industrial Estate, Cholburi province.

2.2 Local innovation

In order to Foreign direct investment and multinational corporations in Thailand especially most of them from various industry as automobile industry, electronic and computer industry, manufacturing, transportation, telecommunication, agriculture & food science, construction, pharmaceutical, hotel industry, real estate, education institution, TV/radio, insurance, banking, etc. MNCs contributed product and service that organizations utilize as management services cater to various aspects of managing the independent service such as transportation and logistics supply chains in Thailand. Automobile and auto-part and assembly in Thailand Industrial Estate are the largest manufacturing to development to local innovation on production, air condition, air supply, and other electronic alliance factory. Hence, automobile industry has reported growth by average 5% during year 2016 to 2018 (Krungsri research, 2020). We consider that MNCs in the large industrial always concerns with technological processing which depend on how country is to be a

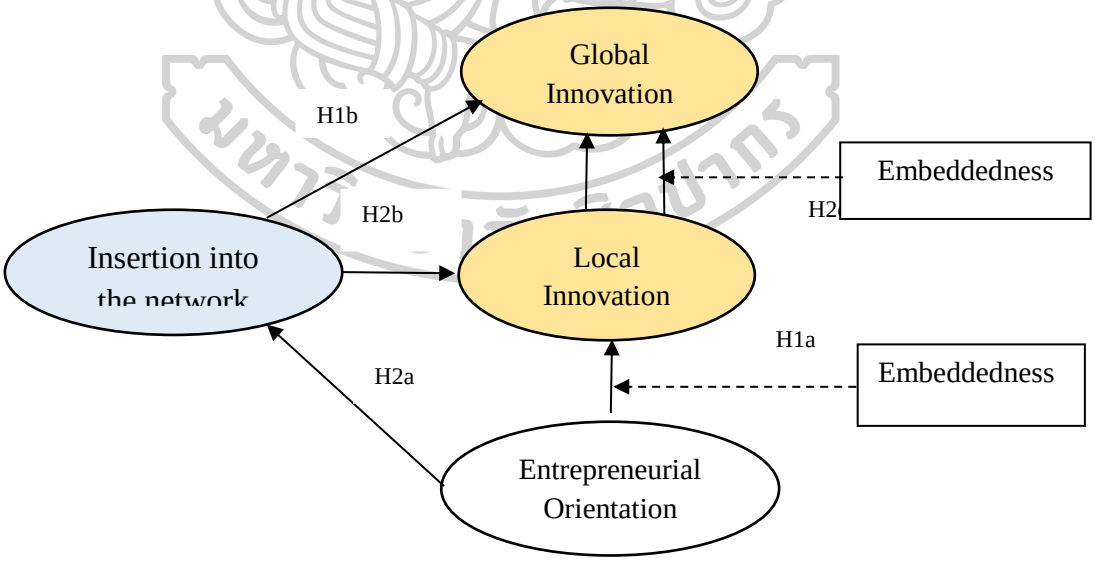
leadership in hi-technology development though R&D in the automobile competitive market, be industrial practice on the extensive research and development (R&D) working practice (Zeil, 2014). Accordingly, FDI (Foreign direct investment) encourage to various industries to contribute the high employment especially in the Industrial Estate zone on country's residents (Noor, 2000). Thailand has share of reinvested earning in FDI 94% the largest top high country in Southeast Asia (SEA) (source: UNCTAD, FDI/MNE database). Meanwhile, Japan remained the largest investor in the world especially automobile industry in Thailand which Japanese MNCs investment rose by 58 per cent to a record $227 billion, due to a spike in cross-border M&As (reaching $104 billion from $36 billion in 2018) (source: UNCTAD, FDI/MNE, 2020). According to MNCs business, the local factory for subsidiary operates require supporting and promote (Edquist, 1997) and increase their local capability especially the study of the relationship between relevant independent variable as MNCs in local country on characteristic such as local innovation and the dependent variable (i.e., improved knowledge adoption and corporates performance. Teasley and Robinson (2005) stated technologies and the organizational contextual in the automobile factory are high influence to impact with organizational contexts such as local innovation and local capability which related to technology transfer and knowledge sharing between local environment and organizational factors such as local environment, country law and regulation and employee capacity in new technology process. If local innovation can produce the new product and process innovations by local adaption to increase the local competitive advantage. Moreover, Dunning (2003) argued that developing technology-based is the new trend to corporate among employees and business partnership on relational collaboration such as Headquarter and subsidiary or subsidiary to other subsidiary on knowledge creation and technology transfer. On the other hand, automobile industry concerned with technologies and innovation transfer to improve subsidiary capacity and knowledge creation and how to drive organizational innovation performance and sustainability performance (Lin and Wu, 2014). This research focuses on theoretically organizational context of MNCs subsidiary in the context of local capacity and innovative knowledge transfer in automobile industry to concentrate in this study.

In order to improve in the innovation performance with transferred technologies and new innovation structure in MNCs organizational, developing and employee training to create valuable capacities to local employees is necessary in term of automobile business competitiveness in this region (Wernerfelt, 1984) which in organizational contexts such as manufacturing operational, human capital, employee's capability, innovation & technology advantage as well as innovative knowledge transfer, etc. The literature shows two perspectives about what innovative knowledge transfer is. On stage of market dynamism and competitive advantage in technology strategic management, innovation is related to all relevant production unit of innovation adoption (Pikkemaat and Reters, 2005; Rogers, 2003). On the prior literature shows, Waroonkun and Stewart (2008) stated that in organizational contexts of manufacturing which required employees' capacity and local innovation have enhanced by working practice on their operation with innovation activities adoption (Gilbert and Cordey-Hayes, 1996; Glod *et al*., 2001). In addition, Al-abed *et al*. (2014) stated that companies can adopt their technology and innovation knowledge to accelerate management techniques on technology and innovation in company process.

Interestingly, MNCs in emerging country organized by FDI (Foreign direct investment) on difference environment which subsidiary integrated knowledge from external sources to process their technology and innovation operation such as production, development and design, marketing, quality assurance, etc. (Hjalager, 2010; Ottenbacher and Harrington, 2007). Furthermore, we found innovation strategic perform by local innovation and operation integration for highly competitive market in Asian as well as the manufacturing intensity and nature of competition demand in automobile industry in Asian (Cui *et al*., 2006). We refer to the prior research global innovation, local innovation, and insertion with the network (Birkinshaw, 1997, 2001; Birkinshaw; Hood; Jonsson, 1998a) studied on collaboration and networking practice in large manufacturing, and it is so important for automobile companies to develop innovations through international organizational cooperation practices as MNCs automobile industry in the region. However, Chen and Lin (2004) argued competitor strategy and consumer preferences are highly influence to competitive market such as innovation knowledge externally and market turbulence in automobile industry which perceives to improve innovation and technology on knowledge enhancement.

Consequence, Innovation is the key element of a product (good or service) or a new or significantly improved process in the firms and their achievement when product contribute to the market or implement to take as product or process. In the previous research, there are two types of innovation in product and process (Hamel; Breen, 2007). Consequence, Chesbrough, 2006 argued that the source of innovation has two ways such as 1) within the company on internal R&D and organizational functions and 2) outside company with partnerships and collaborative networks. Chesbrough, 2006 furthered this idea by testing on the embeddedness issue between headquarters and subsidiary to emphasize the idea of aligning local innovation of subsidiaries with the corporate strategy of the MNCs (Achcaoucaou *et al*., 2014; Ciabuschi *et al*., 2014; Figueiredo, 2011; Meyer *et al.*, 2011). Because of these findings, this study hypothesizes to articulate these three concepts in order to focusing on the local innovation and global innovation in subsidiaries in our conceptual framework.

Figure 5: The development process of the global innovation in *subsidiaries*



Source: developed by Birkinshaw, 1997, 2001; Birkinshaw; Hood; Jonsson, 1998a)

2.2.1 The relationship of Local innovation and innovative knowledge transfer

This study is based on subsidiary knowledge adaptation to improve local operation practice and depend on MNCs at home country to develop their internally operation according to headquarter policy and working condition and local practice. Studies concern in organizational factors followed by prior researchers and practitioners as an important instrument in knowledge supervision is 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. We determined on local orientation has strong need for integration with Head Quarter as they able to become to global innovation by Meyer, Mudambi (2011) and Narula (2014). Literature summarized that local innovation, determined that technical knowledge is experiencing on long life working that 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 Head Quarter as they may be able to become to global innovative (Bouquet, Birkinshaw, 2008). Furthermore, the integration of Local Innovation into business intelligence areas such as, Knowledge replication from Head Quarter. Based on the above discussion we predict the following:

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

In regarding to organizational learning – the skill to understand from others, and the background of directness within the organization could have a considerable influence on how knowledge is transferred (Senge 1990). As known by Bukowitz and Williams (1999) Local knowledge in subsidiary MNCs suggests that the defensive factor forms part of the innovative knowledge in the next procedure: receive, do,

educate and sharing. The MNCs subsidiaries can improve local practice on working routine to define which local knowledge contexts on local practice for innovation in different types of complementary and competing to their working routine. Local innovation improves and diverse knowledge bases on integrate for new knowledge, new practice in organizational that is called create new skills as knowledge adaptation (Mudambi *et al*, 2007). We realized that knowledge sharing on working process are determine to knowledge management strategy on MNCs innovation in overall capability and innovation performance within the MNCs organization, we proposed:

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

2.3 Internal and external knowledge integration capacity

Internal knowledge is important in large organization to referred on manufacturing operated as culture environment of particular industry. Since MNCs organizational culture can identify firm values and beliefs on organizational behaviors as Thailand automobile industry with Japanese company culture and operation practice can identified in the national culture of home country as one type of people from another (Cui *et al*., 2006). Thus, internal, and external knowledge from difference practice as host country and home country of an MNCs are identified as national culture distance (Cui *et al*., 2006). Culture organizational level are differentiated as national level and national level (Cui et al., 2006; Hofstede, 1980). Therefore, for the purpose of this study, internal knowledge integration capacity related to RBV, that contributed new knowledge from external business can integrate to operational knowledge for company performance (Donaldson, 2001; Wernerfelt, 1984; Zack, 1999; Zack, 1999), as we specific on the international technology transfer have learn that innovative activity in automobile industry using cross-cultural hi-technology infrastructure and computer software for organization and determine on problem-solving approaches in MNCs organization. This study focuses on the literature of knowledge transfer among subsidiary and headquarter in term of local employees learning and receiving technology knowledge by using information and communication on knowledge sharing in all department (Cui *et al*., 2006).

In additional, the most important of internal and external knowledge capacity is local government encouraging for FDI and local people. Nonetheless, Government policy for improved knowledge as expansion of domestic outputs, employment, capital formation and exports. According to Thailand government has established Thai labor capacity by training and up skills for engineering and labor workers for high capacity in Automobile industry at Amata Nakorn industrial estate and other part of the region. In fact, how the firms can lead to increased technology transfer in highly competitive market of automobile industry in Thailand. However, some areas of government of local authority policy are obvious determinants of FDI spillovers, such as host-country policies regarding to internal knowledge and external knowledge integration capacity to local employees such as skill, technology knowledge, up skill in high performance etc. FDI trade and technology, which impose restrictions on the extent and nature of foreign ownership (Blomstrom *et al*., 2001). This study, therefore, aim to focusing on technology transfer as innovative knowledge transfer from the influence factors in organizational as internal and external integration capacity as significant dimension of the host's country's technology policies that are expected to affect improved knowledge gained through intra-firm technology transfer.

Definition of knowledge integration capacity has been developed by numerous researchers is combined the organizational knowledge concepts to integrate internal and external knowledge for staff & employee to practice or operation such as company guideline, production training, application & manufacturing training, etc. as system support (Radim, 1990). Significantly, Blumenberg *et al.* (2009) have showed the relationship between internal and external knowledge integration that can reduce the contract costs and create high benefit and improve efficiency of external knowledge integration in the firms, who's managed in operational on the basis of transaction cost theory. Meanwhile, Jiang and Hao (2012) stated out that there are some obstacles of knowledge integration between oriented and procedural obstacle when implement the knowledge as obstacle in strong relationship which cannot implement requirement knowledge in the same objective coordination between both parties. Thus, internal knowledge and external knowledge can make it jointly by knowledge planning, promote technical information standardization to the firm and

keep knowledge in consistency of the operation process, which cand help to overcome the procedural obstacle. In contract, several studies have proved that internal knowledge integration related to performance as mixed results. Nonetheless, some authors pointed that a positive relationship between internal integration and performance (Chew *et al*., 1990; Kawai and Strange, 2014). Meanwhile, Flynn *et al*. (2010) stated both internal and external network integration and find a positive relationship between both types of integration and performance. Other researcher, focusing on both types of integration does not find any significant effect on performance (Gimenez and Ventura, 2005; Vereecke *et al*., 2006). Thus, the previous researcher, pointed the mixed results show that internal integration is a difficult contract to measure, it might be the different contexts that subsidiary face. One reason for MNCs automobile in difference country, Tsai and Ghoshal (1998) argued MNCs as a large organizational can take knowledge management for potential advantage from difference culture, core value of employees, experience in working which benefit to company as knowledge sharing, learning from expertise, communication, coordination among leader and employees, collaboration in working as team work, etc. that focuses on headquarters knowledge sharing by knowledge integration process with business alliance with other subsidiaries in the region. Thus, internal and external knowledge extremely contribute company capability within subsidiaries to headquarter such as automobile subsidiary in Thailand generate new innovation on product and process across subsidiary to parent company.

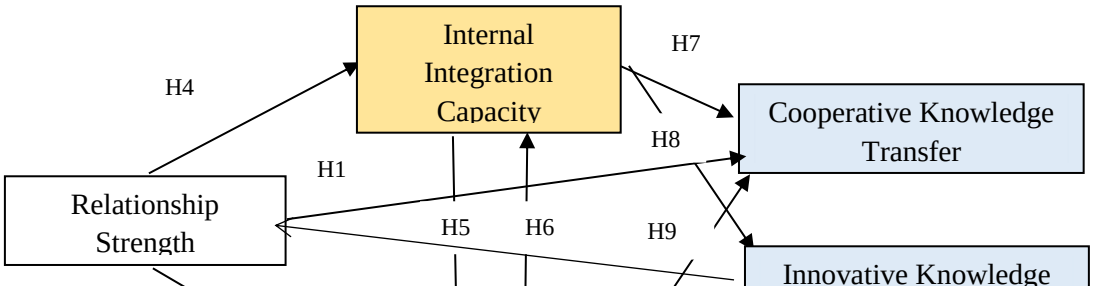
2.3.1 Internal knowledge integration capacity and External knowledge integration capacity

The collaboration between internal and external knowledge integration capacity has affected the strong relationship with knowledge transfers efficiency. We refer to the previous finding on literature as knowledge integration capacity with first empirical study that lead more efficiency on innovative knowledge transfer dimension. According to Boer & Berends, H. (2010) argued that “integration capacity was a key factory to improve in the firm efficiency of externalization and internalization of the knowledge as mutual transfer process between or inside the

organization". Meanwhile, this study has focused on Automobile industry in Thailand has support from the literature and some concept of knowledge that intend to be more innovative knowledge integration with employee capacity for firm performance. Elena and Veronica (2012) highlights the benefits form MNCs knowledge integration in both of suppliers and customers by driving with company policy and managing by managerial decision making on the joint sense meaning in business information, which is the best support to our study in order to automobiles' business have more opportunity to achieve with buyer-supplier collaboration. Moreover, Xie *et al.* (2008) believed that the knowledge transfer driving force between organizations transfer through by the operational processes as selection, absorption, internalization, externalization, etc. which extend to generated employee capacity in all department and also knowledge absorption efficiency inside organization. In large industries as automobile industry, we considered that most of external innovation across the manufacturing enterprises was supported from the literature especially external innovation could be made in the establishment of mechanism knowledge transfer among the users, suppliers and manufacturers, there by the internal integration capacity and external integration capacity bringing to the magnificent factor among organizational and innovative knowledge transfer to improve on manufacturers enterprises as the following concepts.

The previous theory showed the impact of automobile company in the relationship between business alliance and internal employee capacity in automobile organization and external integration capacity which highly influence with cooperative knowledge transfer as a large automobile company can optimize the innovative knowledge transfer integration in organization by Ma Shu-Wen and Pan Wen-an in 2003 are significant study on innovative knowledge transfer between internal environment and external environment integration which provide them with the access to integrate capacity from internal and external knowledge in the same industry such as between MNCs headquarter and their subsidiaries as following;

Figure 6: The Impact of relationship strength



source: developed by Ma Shu-Wen and Pan Wen-an, 2013

2.3.2 Internal knowledge integration capacity and External knowledge integration capacity and efficiency of knowledge transfer

Particularly interesting for our research in subsidiaries of automobile companies operate as the internal manufacturing network and the external network of supply chain alliances and partnerships. MNCs need to concern the knowledge integration capacity and efficiency of knowledge transfer by internalization and externalization of knowledge during transfer process inside the organizations (Boer, 2010) and promote collaboration to connect with intra-flow of knowledge exchange and combine the knowledge with individual units and networking (Kogut and Zander, 1993; Ferdows, 2006). Thus, there are several elements among subsidiaries' networking to intense participation knowledge activities in company group (Vereecke *et al*., 2006). In addition, MNCs automobile industry that most of them have generate new technology and play an important role in coordinating activities in business alliances and partnership e.g., production flows between subsidiary (Rudberg and Olhager, 2003) which provided a comprehensive framework to evaluate the knowledge transfer their organizational through a series of internalization and externalization. Significantly, Clark and Iansit (1995) stated that internal knowledge integration 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.

2.4 Strategic alliances/ partnerships

By the local companies continue to globalization as multinational corporation (MNCs) become to extend for the international marketing concerns on international business activities (Lee, 2010; Phersson, 2009; Pinho, 2007; Sakarya et al., 2007) especially manufacturing in the globalization. Meanwhile, MNCs business try to take competitive advantage in reduce low-cost in workers, nearby raw material in difference resource, well-develop production in emerging market as Southeast Asia countries, extend more international business in several subsidiaries in the region and access to new expertise, technology and innovation in their production development (Lee, 2010; Mudambi, 2002) connected with business partnership for knowledge sharing network (Lee, 2010; Roth et al., 2009; Zhan *et al*., 2009). Under international business strategic management to develop on business growth in a large economic of scale in automobile industry in MNCs contemplating foreign expansion, must be based on an assessment of innovative knowledge with hi-technology and local knowledge contribution in MNCs organizational as local employees and local

customers in knowledge integration associated with business alliance networking for innovation (Hewett and Bearden, 2001; Roth *et al.*, 2009; Solberg, 2002). As a result, the big advantage of establishing MNCs depend on the innovative knowledge transfer process outcome if the firm is concentrated in employees' capabilities (e.g., the results of knowledge acquisition, knowledge conversion and knowledge application (Gold *et al*., 2001; Inkpen, 1998; Simonin, 1999). This is a very important advantage for local subsidiaries to acquired innovative knowledge and try to enter foreign to global business in the global marketplace (Grant, 1996; Roth *et al*., 2009; Schlegemilch and Chini, 2003).

Significantly, we are concerned specifically with strategic alliances between MNCs in local markets and MNCs firs from different country or headquarter in the adaptation knowledge to international business strategy explosion (e.g., Griffith, 2010; Viswanathan and Dickson, 2007).

From the perspective of strategic alliance/ partnership on innovative knowledge transfer in enterprises, the strategic alliances run the range from formal joint ventures by technology alliance and business collaboration with the technology alliance networking such as innovation network for MNCs. As the way for partners in automotive industry MNCs has to obtain the knowledge which complied with business activities from the perspective of knowledge source that effect the weak relationship between MNCs and other subsidiary in new knowledge and technology information (Levin and Cross, 2004). As a result, Strategy & alliance structure can be designed to make it strong relationship on innovative knowledge and can be structured with sensitive technologies in term of promoted alliance strategy and created absorptive capacity to employees in all levels (Yukika, 2006; Yang *et al.*, 1999; Okamuro, 2007). To complied with previous literature on this research can suggested that:

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

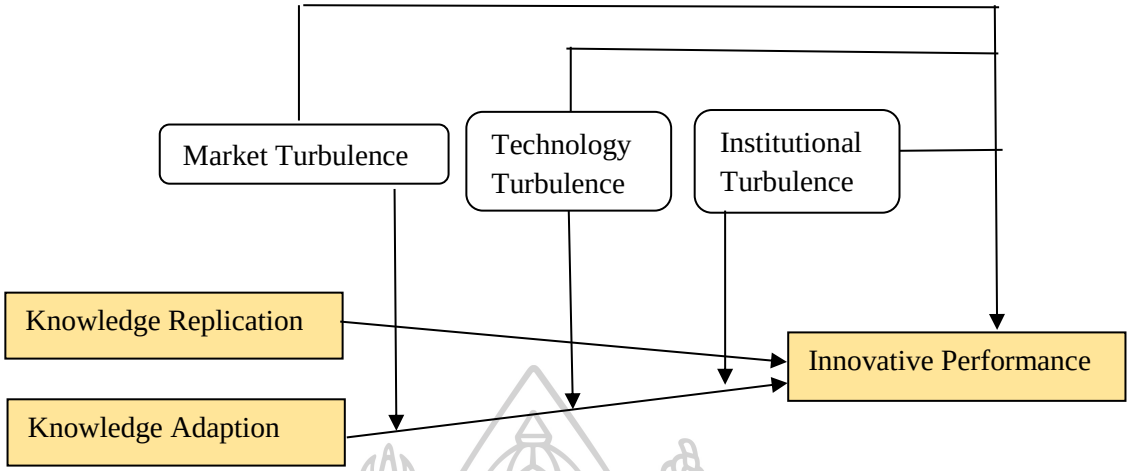
H8: Strategic alliance/ partnership has a positive correlation with knowledge adaption transfer.

2.5 Innovative Knowledge Transfer with Adaptation knowledge and Replication knowledge

In previous study of Yang Liu, Ping Deng, Fiang Wei, Ying Ying, Mu Tian and Madrid, Spain (2018) purposed a significant function in R&D issues in organizational learning as knowledge transfers across organizational boundaries, meanwhile knowledge learning from staff & employees as expertise transfers to excess the key competitive technology between employees and senior workers on learning (Argote *et al.* 2003; Easterby-Smith *et al.*, 2008; Lin *et al.*, 2012). In spite of the innovative explosion for employees leaning for business strategic in organizational management, we refer to the previous study of Wang and Rajagopalan, (2015); Williams, (2007) on knowledge are mixed and even misleading under the same knowledge transfer label. In this study, we explored the knowledge transfer in all departments or functions based on the innovation capacity of MNCs with two constructs such as knowledge replication which work like the previous success and knowledge adaption (Peeters and Martin, 2017; Williams, 2007). As this study support by the previous study from literature, we define knowledge adaption is suitable for the automobile industry caused of benefit for R&D alliance in MNCs organizational that implement and using accessed new high technology knowledge from an subsidiary, alliance partnership as R&D technology and innovation base and knowledge replication as most of MNCs organizational can explore knowledge base as permitted use of alliance partnership in the same technology and accessed with the same working process.

Base on the most persistence has often been studied in terms of innovative knowledge transfers. Li *et al.*, (2013); Zhang and Li, (2010) found that there was explicit (codified) knowledge of MNCs (e.g., technology and manufacturing processing in working routines) learned mainly through technology spillovers. Consequence, the recent researchers found that most of organizational can learn and practice by imitable and substitutable (Li *et al*., 2013; Zhang and Li, 2010). As the following research conceptual by Yang Liu, Ping Deng, Fiang Wei, Ying Ying and Mu Tian, (2019) showed the significant of knowledge replication and knowledge adaption construct on the innovative knowledge transfer dimension that we proposed to study into our research.

Figure 7: Knowledge Transfer in asymmetric R&D alliances



Source from Yang Liu, Ping Deng, Fiang Wei, Ying Ying and Mu Tian, 2019

2.6 The role of Innovative performance Effectiveness

Prior research, Knowledge activities in local MNCs knowledge transfer are now more completely and transparently new technology procedure which impact organizational learning through performance e.g. MNCs subsidiary in automobile industry in Thailand focuses on transmitting the knowledge enabling in working process action in all plants or knowledge created between subsidiary to other subsidiary in the same region or headquarter to subsidiary based on innovative knowledge facilitating to employees to improve business core value. Consequently, previous literature argued that innovation knowledge base has introduced several rewards to acknowledge innovation performance of multinational corporation that must reflect the importance of an innovation to automobile customer and company image for more efficiently in production and service (Kogut and Zander, 1993; Almeida, 1996; Ameida *et al*., 2002).

Interestingly, Gupta and Govindarajan (1991, p. 773) made substantial investigated in intercorporate knowledge transfer among expertise who have high working experience and capability as expertise staffs such as ability on working skills and working talent in product and process design or efficient in problems solving in production line with technical know-how etc. Moreover, the next step of external

market solution to assessed information on clients, business competitors or business suppliers in specific problems with the knowledge-capturing process in the company's thought and innovation leadership. Thus, the relationship between departments or division inside MNCs organization especially Japanese's automobile manufacturing company become more important for knowledge-creation with innovation activities which now more completely and transparently working routine in enabling more significant knowledge and innovation process (Hansen, 1999). Multinationals should access more critical value its information-technology capability on manufacturing technological platform which firm might be evaluating their sustained business contribution (Schiuma *et al.,* 2008; Schiuma, 2009). Furthermore, good communication in personal employees or departments are highly important to encourage technological knowledge in MNCs organization such as Assembly line employees and Engineering supervisor, Technical and R&D, etc. are supported working in process and working relationship which motivate working environment and employees' capacity as innovation excellence (Monteiro *et al.,* 2008; Crespo *et al*, 2014). The need for innovation performance in a globally MNCs, increases the capability for MNCs in its creation and ultimately seeking to globally integrated working process with high innovation and new technology. Nonetheless, MNCs are evolving toward on integrating into innovation strategic aspects to improve their potential on the large scale of business and MNCs networking under unique market conditions (Luo, 2003). In particular, the literature explanation MNCs involvement in innovation performance is remarkably threatened (Mirvis *et al*., 2016). The main motivation behind including MNCs in knowledge, ultimately pursuing to continue expand the performance of MNCs in both subsidiary and headquarter (Luo, 2003).

Crespo *et al*. (2014, p. 996) point out that "as MNC subsidiaries transfer knowledge horizontally, other subsidiaries are able to build their knowledge stores and learn from peer experiences, thus making the subsidiary more effective, which when aggregated, increases the MNC's performance too. As for vertical knowledge flows, because a subsidiary engages in vertical knowledge outflows, the knowledge that it shares with its headquarters can help the MNC to develop strategies that are more effective across its global operations, thus enhancing its overall performance".

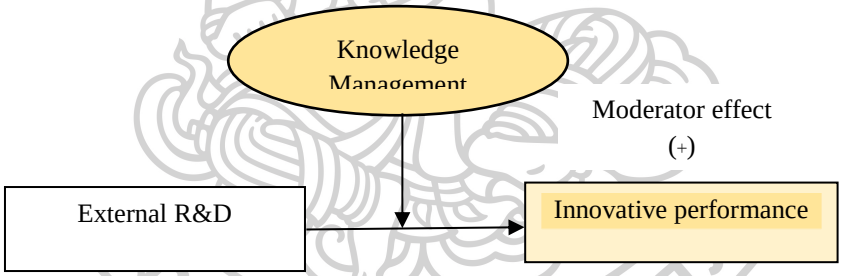
MNCs' subsidiaries may rely on difference of information and knowledge sources, whereas the evidence of MNCs differs on a changing of business venture on the worldwide environment in which multinational corporations as environmental contexts (Deng and Zhang, 2018; Hoskisson *et al*., 2013; Luo and Wang, 2012). In inclusive, MNCs knowledge can implement by local subsidiary by educated and training on operation practice which have interactive between local employee's background and their working experience in the specifically working routine especially assembly department of automobile manufacturing training and knowledge accumulating with hi-technology to engineering staffs on directional effects on innovation performance (Luo and Wang, 2012; Qian *et al*., 2016).

In particular MNCs automobile industry can increase the profitability of company by create more value by combined and adaptation on new knowledge from R&D alliances and create measured on the quality of production and costs those consumers perceive in its products as vehicle, EV, accessory products, etc. as firm's absorptive capacity of integrate source of knowledge (Barley *et al*., 2018; Deng *et al.,* 2018; Deng and Zhang, 2018; Volberda *et al*., 2010).

According to the literature, the innovation knowledge process is the most important in process of acquiring, sharing to support its capabilities and performance (Nonaka and Takeuchi, 1995) which combines its existing business goals in home market on composition of customer and competitors in the region (Jaworskin and Kohli, 1993; Sethi and Iqbal, 2008). In the context of automobile industry which are highly market volatility, new customers demand and new hi-technology on disruption era, the innovative knowledge management in practices for innovation are the most important in generate new knowledge from both of internal and external knowledge structure across subsidiary and headquarter (Liu *et al*., 2018; Sethi and Iqbal, 2008). Specially, in this study we focus on the transfer of knowledge from subsidiaries to subsidiaries or headquarters to subsidiaries, as it is effectively investigated by current literature in knowledge management and external R&D which could be more innovation-oriented and evolving with create more hi-technology in automobile production and service following by their customers' preferences (Sethi and Iqbal, 2008). In addition, based on the innovative knowledge transfer concepts, this research argues that MNCs' automobile innovation can affect on the innovation capacity of

company. Conversely, the emphasis has shifted to consider in recent years, as automobile industry with innovation performance often have internal capabilities and R&D knowledge which become to be serves as a company strategy in a process involving every corporation division in MNCs organization. Despite the innovative knowledge, the increasing multinational cooperation has caused a huge number of MNCs across the region to spreading hi-technology and information to emerging investing country. Local country and local employees are more likely to absorptive capacity for company innovation performance (Volberda *et al*., 2010), with subsidiary allows to acquire and combine knowledge from either internal network (headquarter from and subsidiaries) or from the alliance networking in the same industry or knowledge sharing between subsidiary to other subsidiary. Therefore, the following theory related to offering innovative performance.

Figure 8: MNCs subsidiary Hypothesized relationship



Source by Yamin and Andersson's methodological approach (2011)

This study has referred innovative performance. Show in Figure 2

2.6.1 Mediating role of Innovative Knowledge transfer dimension between organization context and innovation performance

For the purpose of filling the above research gaps, we explored the ideas on the previous significant study and insights found the previous idea to filling the above research gaps in MNCs automobile manufacturing company has study for transferring knowledge while defending it is inconsistent from the difference between explicit and

tacit knowledge in large organizational context (Nonaka and Takeuchi, 1995). In the light of this research, MNCs organizational contexts are contained with four key factors such as Local innovation, Internal/ External integrate capacity, Strategic alliance & partnership that give its meaning to formalized in organizational contexts with the mediating role of innovative knowledge transfer. Moreover, transfer strategies focus on two elements of hi-technology manufacturing as 1) Replication knowledge, and 2) Adaptation knowledge that is more importance of transferring in organizational which pointed out their ability to transfer knowledge more efficiently learning in organizational as automobile manufacturing (Argote *et al*., 2003; Easerby-Smith *et al.*, 2008; Lin *et al*., 2012). Nevertheless, in the previous study the significant in knowledge learning across division has complied for the existence of multinationals firm and new strategy performance and most of them examine knowledge transfer under the mechanism's knowledge transfer flow e.g., skills and capabilities in product and process design in manufacturing (Wang and Rajagopalan, 2015; Williams, 2007). This research developed from the prior literature base on innovation performance and global innovation which became to create more valuable knowledge for employees in the large organizational as MNCs in Automobile industry. Knowledge transfer strategy has significant consequence for innovation management (Barley *et al*., 2018; 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). MNCs should adopt innovative knowledge transfer in a process and transmitting the technical and know-how inside MNCs organization as sender and receiver (Szulanski, 1996). As the

results of innovative knowledge transfer mediating enabling knowledge and useful exchange of valuable knowledge across division of department in organization (Tsai and Ghoshal, 1998; Tsai, 2000).

Similar to the meaning of knowledge transfer, Wang, Tong, and Koh (2004) defined knowledge is easily transferred from source to others for exchange information and expertise know-how as work experience or skills. Kalling, 2003 argued that the knowledge as transmitted valuable information to staff& employees to learning for process in an organization. As a learning process also be one of the conceptualize knowledge transfer (Saka-Helmhout, 2009). Nevertheless, knowledge transfer trying to cover existing gaps of information and improve by modified knowledge resource to facilitating knowledge on development of company capability. As such objective, these innovative knowledge needs to arise as one of the key elements to facilitate and created knowledge-base value in MNCs organization. Thus, Organizational context acquire the most specific functions as local innovation, internal integration capacity, external integration capacity, and strategic alliances/partnerships in consequence of knowledge replication and knowledge adaption that coordinated by teams and operating processes which showing them how to practice and influencing on innovation performance and global innovation.

Most scholars focus on R&D offshoring by knowledge-based activities that its increasing importance for firms as offshoring innovation (Ellram, Tate, & Billington, 2008; Kenney *et al.*, 2009; Stringfellow *et al.*, 2008; Westner & Strahringe, 2010; Younghahl & Ramaswamy, 2008). To explore theoretically and empirically the implications of innovation capacities of the firms by using R&D offshoring as a strategy to improve their innovative capabilities (Manning *et al.*, 2008). In this research, we set out to discover whether MNCs firms can create the innovation performance to the firms by make use of overseas resources. Therefore, the following hypothesis is proposed:

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

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

2.6.2 Mediating role of Innovative Knowledge transfer dimension between organization context 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*a*) as the results of entrepreneurial orientation in their development processes as to leads to local innovation of the subsidiary can become to global innovation. In this scenario, we advocate that creation of local innovation-based in subsidiary organizational has to be moderated by a strong embeddedness between subsidiary and the headquarters especially in automobile industry. Therefore, the following hypothesis is proposed:

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

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

2.7 Innovative Knowledge Transfer Dimension

In this study, we have identified relevant article to include in this review by searching articles with keyword “knowledge transfer” through academic journal database, such as ABI/Inform and PsychInfo, Emerald, JSTOR. Knowledge transfer is an p-concern with knowledge transfer criteria are publication dates range from 1996–2016. We review knowledge transfer literature in terms of definitions, theoretical perspectives, methodology and empirical findings across levels and contexts, Future research directions are also discussed.

2.7.1 Definition of Knowledge Transfer

Before summarizing on the definition of knowledge transfer, we discuss the definition of knowledge. There are numerous definitions of knowledge are available in literature. Since 1997 Kirchner has referred to knowledge as the process involving a person using people experience and converting it into knowledge. Davenport and Prusak (1998) argued that knowledge is neither data, nor information and include a

mix of framed experience, value, contextual information, and expert insights. Later, Rennie (1999) has defined knowledge as the intangible economic resource from which future revenues will be derived.

2.7.2. Knowledge Management in MNCs organization

In prior literature, Knowledge in MNCs is defined as a key success of competitive advantage for business strategy development as can help managers to achieve in the highly competitive market (Grant, 1997). Knowledge is characterized as the key component to possess valuable to the firm as rare and represent ability to create efficiently to the firm with tacit knowledge combination (Polanyi, 1996; Hall and Sapsed, 2005). Thus, in the recently high technology infrastructure development have create a new idea of innovation in human activities and disrupted the existing on traditional practice to a new modern of high technological development especially in multinational corporation business development as automobile industry, electronic industry, etc. In consequence, the key value of organization is knowledge creation which help the firm to run business process with high technology and innovation processing as well as helping on manager problem solving. Thus, MNCs makes sense to understand the importance of company core value in the innovation into organizational process and expand its vision of enabling global innovation an innovation performance such as identify problems and encompasses complementary solution in new knowledge (Nonaka, 1994).

Advancement in technological innovation in various fields e.g., knowledge transfer between headquarters and subsidiaries in various region are more important which transform new knowledge to subsidiaries (Minbaeva *et al*., 2003) and between subsidiaries to subsidiaries in other countries (Gupta and Govindarajan, 2000). However, Tsai (2001) argued that networking for MNCs business alliance and transform innovative knowledge among networking has to improve their innovative production and service base on technological development knowledge evolving (Ghoshal *et al*., 1994; Griffin and Hauser, 1996; Gupta and Govindarjan, 2000; Souder, 1988).

Furthermore, based on the knowledge management theory, this paper argues that MNC's automobile industry can benefit the hi-technology knowledge not only internal knowledge integration but also external knowledge integration through their networks of subsidiaries in the same automobile industry among their employees learning and through their external expertise that play a significant role in implementing in automobile manufacturing. Nonetheless, Tsai and Ghosal (1998) studied and showed the evidence of the high influence of social capital on innovation among internal and external relationship in the context of MNCs such automobile industry. Thus, prior study, relied on marketing strategies especially MNCs automobile industry proposed that how to enhance MNC's innovation are corresponding in production development on the subsidiary area through the professional, discovery-driven planning on production development on subsidiary area. Meanwhile, company pursuing those technologies steadily and reduce cost with hi-technology development and used a knowledge-based development strategy. In particular, the NMCs in ASEAN countries become to be global initiative which high influence in automobile industry with hybrid production. Knowledge management is the core value of this business and increasing company capacity by integrating successfully in marketing strategy by adaptation of knowledge into production and business strategy into the context of knowledge transfer (Hansen, 1999).

Nonetheless, this study focuses on the global-local automobile production networks in Thailand automotive industry which knowledge transfer depend on several units e.g., groups of production, suppliers' alliance, departments, R&D coordinators, etc. was impact on knowledge and technology transfer (Argote and Ingram, 2000).

Correspondingly. Darr and Kurtzberg's (2000) supposed knowledge transfer to transpire in automotive industry make clear to educate and training of local working as sharing knowledge and technology on co-production agreement between headquarter to subsidiary or partnership in business (Darr and Kurtzberg, 2000, p. 29). In this research, we observe knowledge transfer when knowledge referred from MNCs by expertise or innovative technology information & knowledge to subsidiary or branches, technological development that linkages and networks between subsidiary in host country to the other countries in globally knowledge adaptation.

These are reflected in a number of MNCs in emerging market which knowledge refer to inter-unit for exchange and enhance the positive effects to employee's capacity and reduce the cost of production in subsidiary unit.

Thus, through the formal of studies in the automotive industry make clear the foreign company MNCs have extend important influences upon the global automotive industry in ASEAN. The researched manufacturing in term of knowledge and technology transfer from investment country as Japanese automobile company or other countries from USA. or EU countries. However, we focused on knowledge transfer by organization context that effect on the local innovative capacity role of the firm. The following argument is designed as follows: *First*, Knowledge transfer is defined as new technology transfer and knowledge are transferred aboard for local skill formation in a particular automotive cluster (Irawati, 2011) which benefit to create internal and external integration capacity on product development perspective, taking into accounts its complexity and relevance for organizations, *Second,* the choice to study the automotive industry in term of innovative knowledge transfer and technology aspect which explored on existing literature knowledge transfer practices.

2.8 Strength of network ties in knowledge search and transfer in MNCs.

Additionally, we defined knowledge transfer of MNCs in the automobile sector in Thailand are truly expanding on "know-how" globally (Irawati, 2011) especially in the context of knowledge transfer in Japanese MNCs. As determined be the most important through foreign direct investment (FDI) especially ASEAN countries by extend the most challenging knowledge activity and become to increasingly expertise-intensive in the high complexity in automotive value chains (Belzowsky *et al*., 2003). By the numerous researchers, MNCs global learning has attracted attentions of knowledge and technology transfer associated with the greater productivity between headquarter and subsidiary which embedded in the way of individuals or team-work idea and working practice (Chini and Ambos, 2005; Kostova, 1999; McDermott, 1999). Furthermore, the clear importance of MNCs networks, past research on international knowledge and technology transfer has traditionally focus on relevant

knowledge to and from other units in the MNCs organization most professionally and successfully in term of knowledge integration and MNCs networks (Argote and Ingram, 2000). Furthermore, Burt (1997, 1992) defined that the most MNCs networks knowledge sharing involving a whole set of MNCs structural in organization that are associated with MNCs networks and efficient leaning among employees of the network *intra-network knowledge sharing* in the knowledge flow (Burt, 1992).

In MNCs, however, knowledge management is considered to be a critical notion and perceived know-how of business strategy as knowledge consistent with the global strategic from external knowledge to upstream value-added to MNCs such as R&D, product development and manufacturing strategically (Argote and Ingram, 2000; Menon and Pfeffer, 2003). Traditional MNCs in automobile industry facilitated know-how for product development for creating new design by learning from achieved in the market and integrated with different departments (Cooper and Kleinschmidt, 1986; Frishammar and Hoerte, 2005; Jassawalla and Sashittal, 1998; Kahn, 2005; Moenaert and Souder, 1990). Consequently, it would be difficult to identify fully tacit knowledge embedded in local employees practice in every country (Nonaka, 1994 and Souder, 1990), since it would become more interesting on how to assess the abilities of local employee and monitor their performance and innovative capabilities (Cavusgil *et al*., 2003; Nonaka, 1994).

Furthermore, the knowledge transfer for MNCs in ASEAN would encounter with greater knowledge barrier such as culture, local practice, law & regulation, environmental and societal norms in knowledge base resource (Hennart/Larimo, 1998).

While the transfer of knowledge created the great opportunities as a new set of challenges for ASEAN in automobile industry such as the innovation trade-off as 70 per cent of companies nowadays confirmed innovation is more important than the last decade (Shukla-Pandey, 2012). Moreover, MNCs or subsidiary company with the capacity on innovative knowledge as replication knowledge or adaptation knowledge able to cope with increasing complexity innovation into products, processes or services and high-speed change (Brown and Eisenhard, 1995).

2.9. Headquarters-subsidiary transfer

As the innovation trade-off between headquarters and local subsidiary on knowledge transfer in many countries in ASEAN, it might be increase and play more important role to create local employees' capacity with innovative knowledge to value creation firm (Conner, 1991; Foss, 1997). In this view, the literature specifies how the headquarters engages in knowledge transfer strategy, knowledge sharing with training, supporting production and transfer across the MNC network by organizational control (O'Donnell, 2000). However, in reality, headquarter as "entrepreneurial" (value creating) how knowledge generation by deploying knowledge created at subsidiary level (Dyer and Singh, 1998; Schulz, 2001) also make the task of supporting subsidiary by play a significant role of value chain (Li, 2005).

As to theoretical perceptions, as stated previously, the advantage of findings do not draw upon any theoretical perspective to develop hypotheses by using theories concepts as Organizational context.

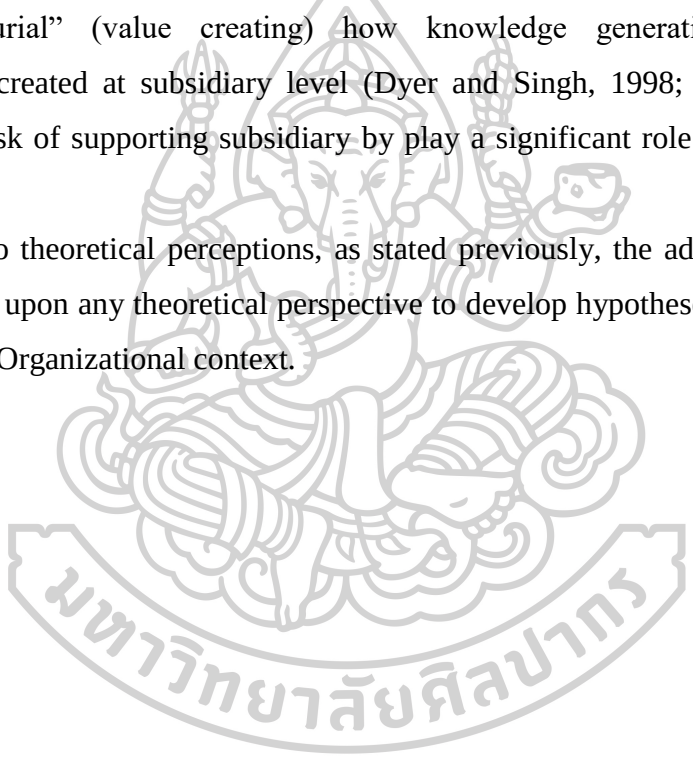


Table 2: Previous research studies and their key findings.

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
Organizational Controls					
1.	Galbraith	2002	Organizational factor Theory	- Strategy - Structure - Culture - Technology	Every organization unique environment on particular key organizational factors such as Strategy, Structure, Culture and Technology play a crucial role in the overall performance of the organization. Culture and Technology determine to be significant in organization context.
2.	Turner and Mahija	2006	Organization Controls on explicit and tacit knowledge.	- Organization Control - Explicit and Tacit knowledge	Organization Control are enhanced to the process of explicit and tacit knowledge process.
3.	Bhagat et al.	2002	Organizational Controls with culture	- Culture	Culture is useful. This factor has affected the behavioral in organization. Culture has to adopt the most influencing in culture trust in organization.
4.	Ives et al. and Spender	2003 1996	Organizational knowledge transfer as structure, culture, processes, and IT	-Culture -Process -IT	Organizational knowledge transfer adoption intentions of culture, process and IT which are affected by organizational knowledge transfer. We determined Culture and IT are the most influencing factor in the adoption of organizational knowledge transfer.
5.	Bukowitz and Williams	1999	Learning Strategy by Knowledge Management Process framework.		

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
6.	Hanssen-Bauer and Snow, 1996; Schulze *et al.*, 2008; Volberda, 1996	1996-2008	Innovative Knowledge Transfer in MNC	MNCs	MNCs has adaptation and diversify their business to more increasing with new high technology in their manufacturing of product. Hence, the decline in cost of technology and the increased need for production flexibility has caused competition between firms and organizations to intensify
7.	O'Dell and Grayson	1998	Ability to transfer knowledge in organization enhanced by a structured IT network.	-IT network	The Ability to transfer knowledge effectively in an organization enhanced by a structured IT network and a trust culture where knowledge transfer relationships between individuals and groups are transparent.
8.	Miron *et al.*	2004	Innovative Knowledge Transfer in MNC	MNCs	The development of innovative products and services has become essential for achieving and retaining competitiveness in global markets
9.	Drach-Zahove *et al.*	2004	Innovative Knowledge Transfer in MNC	innovation is power	Moreover, innovation is crucial for firms seeking to find their place in the market and ensuring long-term survival. In the last decade, there has been widespread acceptance among scholars and practitioners. Innovation is power for the firm and organization.
10.	Capon *et al*	1992	Knowledge transfer in Organization	Innovation	The two factors considered essential for long-term success of the firm involves the related concepts of innovation and knowledge.

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
11.	Nahapiet and Ghoshal, 1998; Conner and Prahalad, 1996; Grant, 1996; Smith *et al*., 2005; Kogut and Zander, 1996; Darroch and McNaughton, 2002; Nonaka and Takeuchi, 1995	1995-2005	Innovative Knowledge in Organization	Innovation	One of the most important resources of organizations permits novel organizational outcomes, including the process of innovation There is also increasing evidence that knowledge is a key building block for the innovation process, and in particular for innovation management.
Information & Technology					
1.	Ives et al, (2003) and Spender (1996)	1996-2003	The key to organizational factors effected through the organizational knowledge transfer.	Organization structure, Culture, Process, Strategy, and Information technology	The effectiveness of organizational knowledge transfer is influenced by key organizational factors such as structure, culture, process and strategy and information technology.
2.	Calantone *et al*., (2002), Hurley and Hult,(1998)	1998-2002	The link between knowledge management and innovation.	Information technology, Innovation	The link between knowledge management and innovation and knowledge management and higher organization performance. Also, the relationship between innovation and organizational performance.

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
3.	Kasper & Muhlbacher,	2008	The core knowledge in product effect from externalized knowledge of technology-intensive firms.	Information technology, Innovation, codifiable	The core knowledge in the physical product itself and making R&D easy and effective to centralize including externalized knowledge where market requirements are easily codifiable, technology-intensive firms.
4.	Del Giudice *et al*., 2015; Del Giudice and Della Peruta, 2016; Soto-Acosta et at., 2015; Soto-Acosta and Cegarra-Navarro, 2016; Soto-Acosta *et al.,* 2016a; Soto-Acosta *et al.,* 2016b	2015-2016	The innovation of an organization related with information technology.	Information technology, knowledge management	The innovation of an organization has identified information technology and knowledge management.
			Learning Strategy		
1.	Senge	1990	Knowledge Transfer supported equitable performance and related incentives and rewards and double loop learning.	-learning strategy	Knowledge transfer in between individuals and groups are transparent which support through equitable performance related incentive and rewards and learning strategy as double loop learning.
			Culture Trust		

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
1.	Roberts	2000	The personal nature of tacit knowledge.	Culture Trust	The personal nature of tacit knowledge exchange is trust. The level of risk and uncertainty are associated with tacit knowledge transfer are reduced by trusting relationships. The exchange of knowledge, and particularly tacit knowledge is not amenable to enforcement by contract: hence, the important of trust in the exchange of knowledge. He advises that social and cultural influences must be taken into consideration.
2.	Cavusgil *et al*.	2003	Relationship strength	Culture Trust	Human beings view trust as one of the foundations to a healthy relationship as "Relationship strength" to describe inter-firm relationships where both parties hold each other in high regard.
3.	Granovetter,1973, Kraatz, 1998; Morgan and Hunt, 1995	1973-1955	Relationship strength	Culture Trust	The broader concept of relationship strength has been defined by other researchers and is characterized by mutual trust, commitment, and high quality and frequent communications.
4.	Cormican & O'Sullivan; Cav usgil *et al*.	2003	Relationship strength	Culture Trust	Personal and professional networks with high levels of relationship strength have been suggested to correlate to tacit knowledge transfer.

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
5.	Kogut and Zander	1992	The effective integration of external technology.	Culture trust	The success of external technology is strongly influenced both the source and recipient which involvement likely lead to long term relationship on which trust is built. The trading of know-how among firms often requires the establishment of long-term relationships.
	MNCs management & Subsidiary				
1.	Bartlett; Ghoshal, 1989, 1999	1989-1999	MNCs management	MNCs	• Relating to the transfer of knowledge and innovation back to the heart of corporate strategy since the advent of transnational strategy.
2.	Michailova; Mustaffa, 2012	2012			• Several factors are listed to explain the motivators and barriers in order to transfer knowledge and innovation.
3.	Andersson, 2003; Andersson; Bjorkman; Forsgren; Holm, 2002. Ciabuschi; Holm; Martin Martin, 2014; Dellestrand, 2011; Gnyawali;	2002-2014			• The theory of networks has highlighted the role of subsidiaries embedded in the host country networks as a determining factor to knowledge and innovation in the subsidiaries to globally to MNC.

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
4.	Birkinshaw, 1997, 2001; Birkinshaw; Hood; Jonsson, 1998a.	1977-2001			• The generation of global innovation, studies in management of multinational corporations were marked by the evolutionary of subsidiaries.
5.	Schmid; Dzedek; Lehrer, 2014	2014	MNCs subsidiary	Entrepreneurial orientation	• The entrepreneurism of subsidiaries paved the way for a series of investigating on the role of entrepreneurial orientation and subsidiaries self-initiative.
6.	Achcaoucaou; Miravitlles; Leon Darder, 2014; Figueiredo, 2011; Figueiredo; Brito, 2011; Meyer *et al.*, 2011; Narula, 2014.	2011-2014	MNCs subsidiary	Entrepreneurial orientation	• A modern process of local innovation is become global of networking and entrepreneurial orientation of subsidiaries.
	Subsidiary Innovation				
1.	Tidd; Bessant, 2015	2015	Subsidiary Innovation	Innovation	• Innovation as implementation of a producer (good or service) or a new or significantly improved process.

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
2.	Hamel; Breen, 2007	2007			• Two most research type of innovations are innovations in product and process.
3.	Chesbrough, 2006	2006		Global innovation	• Two ways of innovation as 1) Internal R&D and other organizational functions, 2) form outside the company base on partnerships and collaborative network.
4.	Michailava; erbeke, 2001	2001		Transfer of knowledge and innovation	• Transfer of knowledge and innovation is the source of much discussion on the subsidiaries management.
5.	Birkinshaw, 2001; Birkinshaw *et al*., Birkinshaw; Hood; Yong, 2005; Frost *et al*., 2002.	2001-2005		Global innovation	• Study shows the association between local and global innovations.
6.	Ciabuschi; Dellesrand; Holm, 2012; Dellestrand, 2011; Meyer *et al.,* 2011; Narula, 2014	2011-2014		Global innovation	• Local innovation development process to become a global innovation.
7.	Keupp; Gassmann, 2009; Scott; Gibbons;	2009-2010		Entrepreneurial orientation	• The entrepreneurial orientation would be essential to create innovation in subsidiaries.

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
8.	Achcaoucaou *et al*., 2014; Ciabuschi et al., 2014; Figueiredo, 2011; *Meyer et al.,* 2011.	2011-2014			• Subsidiary in the host country network allows access to differentiated business standards arising from the competitive environment stimulate subsidiary innovations that not from HO.
Knowledge Transfer					
Tacit knowledge					
1.	Michael Polanyi	1966	Tacit Knowledge Transfer	-Tacit knowledge	Tacit knowledge is knowledge that cannot be articulated or verbalized; it is a knowledge that resides in an intuitive realm.
2.	Kreiner	2002	Tacit Knowledge	-Tacit knowledge	Tacit knowledge is the antithesis of explicit knowledge that it is not easily codified and transferred by more conventional mechanisms such as documents, blueprints, and procedures.
3.	Nonaka &Takeuchi	1995-2000	Tacit Knowledge	-Tacit knowledge	-Tacit knowledge is derived from personal experience; that it is subjective and difficult to formalize. -Tacit knowledge is often learned via shared and collaborative experiences and learning knowledge that is tacit in nature requires participation and "doing".

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
4.	Chaudhuri & Tabrizi	2002	Tacit Knowledge & Knowledge sharing	-Tacit knowledge	One way to build this long-term relationship is to start the relationship as early as possible and he found that some to the best acquisitions as teamwork in acquisition process by developing relationships where tacit knowledge is prominent in the knowledge sharing process.
5.	Bou-Llusar & Segarra-Cipres, 2006; Goh, 2002; Lazarova & Tarique, 2005; Levin & Cross, 2004; Nonaka, 1991; Soosay & Hyland, 2008)	1991-2008	Explicit knowledge	Explicit knowledge	Explicit knowledge can be transmitted in formal and systematic language, is easier to transfer than tacit knowledge. Tacit versus explicit knowledge is the most widely studied dimension of knowledge transferred.
6.	Von Krough *et al.*	2000	Knowledge creation	-Knowledge transfer & Knowledge creation	Knowledge transfer is core idea of the performance of knowledge creation which related to leveraging that knowledge influence on greater organizational performance.
7.	Inkpen and Tsang and Hansen *et al.*	2005	Multiple social networks on knowledge transfer.	-Knowledge transfer	The effects of multiple social networks on knowledge transfer supports the premise that knowledge transfer.

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
8.	Brauer and Becker	2006	Management of Knowledge transfer system	-tacit knowledge and shared knowledge	The Management of Knowledge transfer systems concluded that it is explicit and unshared knowledge, rather than tacit and shared knowledge which is truly the most valuable for organizations.
9.	King, 2006	2006	The exchange of knowledge in an organization unit.	-Knowledge sharing	The exchange of knowledge between and among individuals and within an among teams, organizational units, and organizations.
Complexity, Specificity, Systemic					
1.	Kogut & Zander	1993	The degree of tacit knowledge & Explicit knowledge	Complexity	the degree of tacit-ness and explicitness, the second dimension of knowledge characteristic is the degree of *complexity* which refers to the manifestation of critical and interacting elements within the knowledge and difficult to separate and measure.
2.	Bou-Llusar & Segarra-Cipres; Sorenson, Rivkin, & Fleming	2006	The degree of tacit knowledge & Explicit knowledge	Complexity	It is argued and empirically demonstrated that the more complex the knowledge, the more difficult to be transferred.
3.	Barney	1991	The degree of tacit knowledge & Explicit knowledge	Specificity	The resource-based view holds that asset specificity is a source of causal ambiguity. Causal ambiguity refers to the difficulty for

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
					competitors to understand how a firm creates a competitive advantage.
4.	Bou-Llusar & Segarra-Cipres	2006	The degree of tacit knowledge & Explicit knowledge	Specificity	The lack of understanding causes difficulty in imitation. It is argued that the more specific the knowledge, the more difficult to be transferred.
5.	Bou-Llusar & Segarra-Cipres	2006	The degree of tacit knowledge & Explicit knowledge	Systemic	The systemic or dependent dimension is related to the dependence relationships that knowledge has with other systems of knowledge. for example, when working teams made up of workers from different functional areas take part in developing new products.
Codification & Teachability					
1.	Corbett & Coleman	2005	Coaching Approach	Codification	Coaching is a relatively new area of organization development; it involves regular meetings between a business leader and trained facilitator has designed to produce positive changes in business behavior in a limited time frame. More specifically, coaching is an experiential and individualized leader development process that builds a leader's capability to achieve short-and-long-term organizational goals.
2.	Ennis, *et al*	2004	Coaching Approach	Codification	It is conducted through one-on-one interactions between expertise and learners'

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
3.	ICF Global Coaching Survey, 2007; Sherman & Freas, 2004	2004-2007	Coaching Survey	Codification	As Worldwide revenues from coaching exceed one billion dollars.
4.	Corbett & Coleman	2008	Coaching Survey	Codification	Executive coaching initially focused on top managers, over forty-five percent of coaching services now are delivered to managers below senior executive.
5.	Riusal & Smale	2007	Codifiability & Teachability	Codification & teachability	There are two knowledge characteristics that refers to the extent to which knowledge can be explicitly articulated in document about the degree of difficulty involved in teaching the knowledge to a new audience.
Personalized Contact					
1.	(Davenport & Prusak, 1998; Tobin, 1998; Bertrams, 1999). According to McDermott (1999	1998-1999	Personal contact and trust	Personalized Contact	As Tacit knowledge is often unconscious and effective transfer requires extensive personal contact and trust. The Documenting tacit knowledge (i.e., transferring it into explicit knowledge) frequently does more harm than good, and often results in information junkyards and empty libraries. In particularly in complex and ambiguous environments, organizations should emphasize a strategy that Hansen,

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
2.	Wenger	1998	Personal contact	Personalized Contact	In organization, it seems liked one-on-one transfer of knowledge between individuals by building relationships between employees and encouraging face-to-face meetings. In the other hand, Organizations need to build communities of practice; groups of people who share insight, experience, and tools about an area of common interest.
3.	Lave	1988	Personal Contract & social learning theory	Personalized Contact	Lave's (1988) situated learning theory. In line with social learning theory, we defined knowledge sharing as ***the tendency to provide expertise to fellow professionals.*** In our study the definition embraces guidance of inexperienced employee, as well as interaction among experienced employees.
4.	Lave's (1988), Bandura's (1977), Kearsley's (2002)	1988-2002	Social learning & Skillful model & Behavior modeling	-Knowledge Sharing in professional organizations.	Lave's (1988) situated learning theory emphasizes social interaction as a critical component of learning and advocates that learner become involved in a "community of practice". Later the communities of practice are groups of people who share insight, experience, and tools about an area of common interest (Wenger, 1998). Lave's situated learning theory and Vygotsky's social development theory

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
	Knowledge Transfer in MNCs organization				
1. 2.	Nonaka (1991, 1994), Takeuchi, 1995; Toyama, 2003; and Teece, 2001. Porter, 1986, Gupta and Govindaraja, 2000, in Tayeb (2005:134).	1991-2001	Knowledge Transfer in Organization	MNCs' organization	• Knowledge can play a significant role in organizations' competitive advantage and his colleagues even argue that knowledge is the only source of competitive advantage over competitors. • Knowledge needs to be efficiently and effectively shared and utilize across the organization in MNCs where different units and subsidiaries are spread over a vast geographical area.
3. 4. 5.	Kotabe *et al.*, 2007 Wang *et al*., 2004 Andersson, 2003	2007 2004 2003	Organizational culture & Knowledge transfer	Knowledge transfer	• The potential advantage to become real is transfer knowledge form one location to the other one. • Knowledge transfer is a process of systematically organized exchange of information and skills between entities. • Successful knowledge transfer requires that the business unit which receipts knowledge has the capacity to absorb it and use it for developing innovations.
	Innovation				

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
1. 2. 3. 4.	Wolfe, 1994 Hage, 1999 Ciabuschi et al., 2012 The Oslo Manual (OCDE, 2005).	1994 1999 2012	Innovation		• Innovation has been conceptualized in a variety of ways. • It is the adoption of an idea or behaviors regarding a system, policy, program device, process, product, or service in organization. • Innovation processes consider crucial activities for the contemporary MNCs. • The implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices workplace organization or external relations.
Absorptive Capacity					
1.	Cohen and Levinthal	1990		Absorptive Capacity	The ability to use prior knowledge to recognize the value of new information, assimilate and apply it to create new knowledge and capabilities.
2.	Anderson, 2003			Absorptive Capacity	Successful knowledge transfer requires that the business unit which receipts knowledge has the capacity to absorb it and use it for developing innovations.

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
			Innovative Capacity		
1.	Subramaniam and Youndt's	2005	Innovative capability	Innovative capability	classification and definition of innovative capabilities, they have described incremental innovative capability as the capability to generate innovations that refine and reinforce existing products and services.
2.	Abernathy and Clark	1985	Innovative capability	Innovative capability	The incremental innovative capability focused on the accumulation and strengthening of the existing dominant knowledge, which helped to refine the dominant knowledge. As a result, radical innovative capability focused on changing and transforming the existing knowledge base as well as establishes a new set of dominant knowledge.
3.	O'Cnnor and McDermott	2004	Innovative capability	Innovative capability	As one of the main components of intellectual capital, significantly affects a firm's radical innovative capability
4.	Hsu and Fang	2009	Innovative in organization	Internal knowledge & External Knowledge	The organizations with high-quality, knowledgeable workers would not only succeed at refining their internal knowledge but also excel at absorbing external knowledge.

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
			Innovative Capacity		
5.	Subramaniam and Youndt	2005	Innovative in organization	Innovative capability	Type of outward exposure and access to new knowledge urges firms to question the premises behind their prevailing knowledge rather than merely depend on their preserved knowledge and thereby increases their radical innovative capability
6.	Moreland and Myaskovsky	2000	Innovative knowledge transfer	Innovative knowledge transfer	Innovative Knowledge Transfer provide opportunities for employees to exchange and combine the existing knowledge of each other's expertise.
7.	Beugelsdijk	2008	Innovative knowledge transfer	Innovative knowledge transfer	Innovative Knowledge Transfer tend to motivate cooperation and learning among employees who operate with preserved knowledge
8.	Huselid	1995	Innovative capacity	Innovative capacity	Innovative Knowledge Transfer are likely to increase employees' capacity to deepen their own existing knowledge. By attracting employees' involvement and granting them the discretion to solve problems and to participate in decision making such as employee has new knowledge transfer on practices and employee participation may increase the employees' discretionary efforts.

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
Innovative Capacity					
9.	Huselid	1995	Human Resource	Innovative capability	Each employee's knowledge and skills could strengthen the effects of the above processes. Specifically, employees are more likely to coordinate their preserved knowledge with one in another group. another in the group of working. As a result of knowledge transfer on working area, they have more opportunities to elaborate upon their knowledge to make its innovative on their process and production with learning from their knowledge and assorting their experience. That contribute their innovative capacity on processing and production.
Process Innovation & Product Innovation					
1.	Vanhaverbeke and Peeters, 2005; Laforet, 2008; Jayaram *et al.*, 2014	2005-2014	Process Innovation	Process Innovation	Ability of firm to stay align with the rapid changing of business environment can be seen through new technological adoption.
3.	Vonortas and Xue	1997	Process Innovation	Process Innovation	This associated with a firm's condition on economic incentives, technical and organizational competencies and external

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
4.	Schroeder et al	1989	Process Innovation	Process Innovation	Thus, incline to debug the technology after initial investment although the advantage is debated.
5.	Tushman and O'Reilly	1996	Process Innovation	Process Innovation	Process innovation is distinguished by incremental or evolutionary change as a following process after radical or revolutionary change of initiation process on producing new products.
6.	Piening and Salge, 2015; Papinniemi, 1999	1999-2015	Process Innovation	Process Innovation	The transformation can be done in the radically new way or significantly improved production.
7.	Yamanoto and Bellgran	2013	Process Innovation	Process Innovation	Process innovation relates to the inherent value added in the process manufacturing. Thus, establishing the process whether contain value or not needs to capture. In additional, not all processes of a firm are similar to others regards to the product which will produce and occupied technology. Relates to the manufacturing process innovation of innovativeness of change.
8.	Porter	1980	Process Innovation	Process Innovation	MNC's working through the strategy have defined three types of strategies; cost, leadership, differentiation, and focus.

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
9.	Gnyawali and Mdhavan, 2001; Zhou and Zhou, 2016; Yi and Xue, 2016	2001-2016	Process Innovation	Process Innovation, Network structure & process of supply chain	They have analyzed the innovation knowledge increase process of supply chain with different network structure.
10.	Rothaermel and Hess, 2010	2010	Process & Product Innovation	Product Innovation	There are four main approaches to innovation that a company can take (Rothaermel and Hess, 2010); (1) recruiting superior human capital, (2) internal R&D spending, (3) Sas (Strategic alliances) and (4) acquisitions. While (1), (2) and (4) could turn out to be very expensive, forming Sas is a better option, and it is faster, cheaper and carries less risk.
11.	Wassmer *et al*., 2014	2014	SAS (Strategic alliances) & innovation, Organizational sustainability	Product Innovation & Organizational sustainability	Sas and innovation have long been linked to organizational sustainability.
12.	Majidul Islam, Ashrafee Tanvir Hossain, Lokman Mia, (2016)	2016	SAS (Strategic alliances) & Product Innovation	Product Innovation	MNCs firms has to cooperate help in product development and innovation in a technologically dynamic environment by knowledge transfer form Sas (Strategic alliances) that innovativeness in turn helps in organizational sustainability.

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
Local Innovation					
1.	Birkinshaw Schmid; Dzedek; Lehrer	1997 2004	Entrepreneurial orientation	Local innovation	Role of entrepreneurial orientation in the firms has self-initiative in their product or service that great potential and become to global innovation.
2.	Rugman; Verbeke	2001	Entrepreneurial orientation	Local innovation in subsidiary	Determined local innovation-based subsidiary and the entrepreneurship orientation was acceptable with supporting and capability along with networking.
3	Meyer, Mudambi and Narula Narula	2011 2014	Entrepreneurial orientation	Head Quarter & subsidiary	Local innovation has strong need for integration with Head Quarter as they able to become to global innovative.
4	Bququet and Birkinshaw	2008	Entrepreneurial orientation	Innovative of MNCs	Strong capability networking at local MNCs can develop to innovative global by themselves but Head Quarter decrease a chance and still in differentiated moderating role.
Internal Integration capacity					
1.	Chesbrough	2006	Source of innovation	Internal Integration capacity	Internal capacity based on internally develop ideas with learning and adaption on the existing environmental for created a new

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
2	Bartlett; Ghoshal	1989	Transnational strategic	Internal Integration capacity	Transnational strategic from HQ. to local area with the adaptation on innovation develop in difference part of the world e.g., MNCs in Asia has innovative capacity by their own and go to the global markets.
3	Rugman; Verbeke	2001	Innovation results	Internal Integration capacity	We found that innovation result from subsidiaries was an important source of competitive advantage and can deliver to other business units.
4	Michailava; Mustaffa	2012	Knowledge transfer	Internal Integration capacity	Knowledge transfer and Innovation is significant effecting by Internal capacity internal MNCs organization.
5	Ciabuschi; Dellestrand; Holm	2012	Global Innovation	Internal Integration capacity	We determined that local innovation development led the firms to become a global innovation.
6.	Chew *et al*. Kawai and Strange	1990 2014	Internal integration capacity	Internal integration capacity	In subsidiary manufacturing, find a positive relationship between internal integration capacity and performance.
External Integration capacity					
1.	Chesbrough	2006	Source of innovation	External Integration capacity	Firms created capacity by sourced knowledge outside the company by partnership network and collaboration with local relationship.
2.	Jiang, Z.S. and Hao, Y.H.	2012	External knowledge integration capacity	External knowledge	There are some obstacles to joint undertake knowledge planning, promote technical

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
2.	Jiang, Z.S. and Hao, Y.H.	2012	External knowledge integration capacity	External knowledge	There are some obstacles to joint undertake knowledge planning, promote technical information standardization, and keep the consistency of the process, which help to overcome the procedural obstacle.
3.	Blumenberg *et al*.	2009	External knowledge integration capacity	The contract costs efficiency	The firm can reduce the contract costs during process of external knowledge integration.
Strategic alliances/ partnerships					
1	Andersson; Dellestrand; Figueiredo; Brito;Nell; Ambos; Schlegelmilch	2002 2011	Networking	Strategic Alliance	We argued that the most important of MNCs or subsidiaries is host country networking on access to standard pattern and supporting to innovative development in business model.
2	Achcaoucaou; Ciabuschi Figueiredo; Meyer	2014 2011	Networking	Strategic Alliance	The relationship between subsidiaries and HQ. in innovative development are the key success factors as corporate strategy of MNCs.
Innovative Knowledge Transfer					
	Knowledge replication				

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
Innovative Knowledge Transfer					
	Knowledge replication				
1	Casson *et al.*	2009	MNC's subsidiaries	Knowledge replication	A firm becomes a multinational when the same knowledge is exploited at several different locations and in several countries.
2	Andersson *et al.*	2001	MNC's subsidiaries	Knowledge replication	The effect of embeddedness of subsidiaries in the local business network is positively associated with their skills development.
	Knowledge Adaptation				
1	Mudambi *et al.*,	2007			MNC's 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 latter to create new skills.
2	Ma *et al.*	2013	MNC's subsidiaries	Local innovation system	MNC's subsidiaries explained the difference in foreign subsidiaries' performance.
3	Biggiero	2000	MNC's subsidiaries	Knowledge adaption	MNC's local strategies combined with the local tacit knowledge are effectively highlighted.
4	Mariotti *et al.*	2010	Knowledge transfer	Knowledge inflows & Knowledge outflows	The impact of knowledge flow transfer on the efficiency of location on local behavior of MNCs affiliates on the perceived balance

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
5.	Jiang, Z.S. and Hao, Y.H.	2012	External knowledge integration capacity	External knowledge	There are some obstacles to joint undertake knowledge planning, promote technical information standardization, and keep the consistency of the process, which help to overcome the procedural obstacle.
6.	Blumenberg *et al*.	2009	External knowledge integration capacity	The contract costs efficiency	The firm can reduce the contract costs during process of external knowledge integration.
Strategic alliances/ partnerships					
1	Andersson; Dellestrand; Figueiredo; Brito;Nell; Ambos; Schlegelmilch	2002 2011	Networking	Strategic Alliance	We argued that the most important of MNCs or subsidiaries is host country networking on access to standard pattern and supporting to innovative development in business model.
2	Achcaoucaou; Ciabuschi Figueiredo; Meyer	2014 2011	Networking	Strategic Alliance	The relationship between subsidiaries and HQ. in innovative development are the key success factors as corporate strategy of MNCs.

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
Innovation Performance					
1	Luo and Wang, Qian *et al.*	2012 2016	Two-directional effects	Innovation performance	Two-directional effects on their innovation performance, especially when combined with and adopted to knowledge accessed from R&D alliances with MNCs.
2	Jin *et al.*/	2016	Build up adaptive innovation	Innovation performance	To build up adaptive innovation which refers to creating new knowledge and placing it to productive use domestically.
3	Makino and Inkpen Cantwell and Mudambi	2003 2004	Knowledge networks	Innovation performance	As nodes in multinational companies' knowledge networks and these subsidiaries help their parents maintain a knowledge advantage.
4	Pearce Zander	1999	New knowledge	Innovation performance	Partly by providing a valuable source of new knowledge through the development of new products and technologies.
Global Performance					
1	Boutellier *et al*.	2008	Local talent	Global innovation	To deliver innovative products for global markets that meet local customer demand, MNCs became increasingly reliant on internationally innovation project teams include local talent.
2	Michailova & Mustaffa	2011	Effective governance	Knowledge intensive	On the effective governance of the knowledge intensive MNCs product innovation activities.

	Authors	Year	Theory/ Model	Examined Factors	Major Contributions
Innovation Performance					
2	Michailova & Mustaffa	2011	Effective governance	Knowledge intensive	On the effective governance of the knowledge intensive MNCs product innovation activities.
3	Nonaka & Takeuchi	1995	Individual expert knowledge	Global innovation	The combination and integration of individual expert knowledge which is of particular importance to successful innovation.

CHAPTER 3
RESEARCH METHODOLOGY

The proposed conceptual framework of innovative knowledge transfer of MNCs (Multinational corporation) in Automobile industry (Barley *et al*., 2008), It has become increasingly commonplace for firms to attain their competitive advantages from foreign-based activities, with foreign direct investment (FDI) being the preferred way of organizing such activities (Dunning, 2002). Depending on the nature of the advantage that firms are seeking, FDI may be classified into market seeking, resource seeking, efficiency seeking or strategic asset seeking (Dunning, 1993, 2000). In recently, Innovations in the automobile industry are increasingly creating on delivery from different technological field from Headquarter and Subsidiary on host country. Correspondingly, most subsidiary in this industry have learned from research and development (R&D) alliance that aim at innovating on new products/service by integrated internal knowledge capability and external knowledge capability in separated fields of their working routine. Thus, the innovative firms required specialized knowledge based on strategic alliance/ partnerships (Williams, 2007) and benefit from local innovation from the host country (Lehrer, 2004) such as R&D alliances and local innovation. In this study, we determined innovative knowledge transfer in automobile industry that combined with MNCs' own accumulated knowledge base such as local innovation knowledge, internal knowledge integration capacity, external knowledge integration capacity and strategic alliances/partnership based on the theoretical analysis through the efficiency of innovative knowledge transfer as knowledge replication and knowledge adaption which they are adopted as major theories, thereby influence the significance basis for innovation performance and global innovation through automobile industry in Thailand.

This framework is modified from the comprehensive model of innovative knowledge transfer which literature have provides ample evidence that has been discussed above. Although literature review indicates that organizational factors are contextual resulting in varying degrees of influence on the knowledge transfer ability of the organization. Furthermore, the direct and indirect effect of these organizational

factors can have significant impact on the firm's innovative capability. Finally, the relationship between knowledge transfer, innovation and organizational performance can be determined. The conceptual framework for this study is based on the above propositions (Figure 3).

3.1 Theoretical Framework

This study focuses on the influence of organization factors as the main factors in MNCs with the theoretical framework with modifications. This research is a comprehensive model that contributed for innovative firms from different technological fields such as local innovation, internal and external knowledge integration, strategic alliance/partnership through integrating separate fields and transferring knowledge success based on our theoretically explain and empirically to support in this research. Interestingly, the strengths of this model emerge from the integration of several theoretical and empirical contributions of the knowledge transfer in the automobile industry.

3.1.1 Conceptual Framework

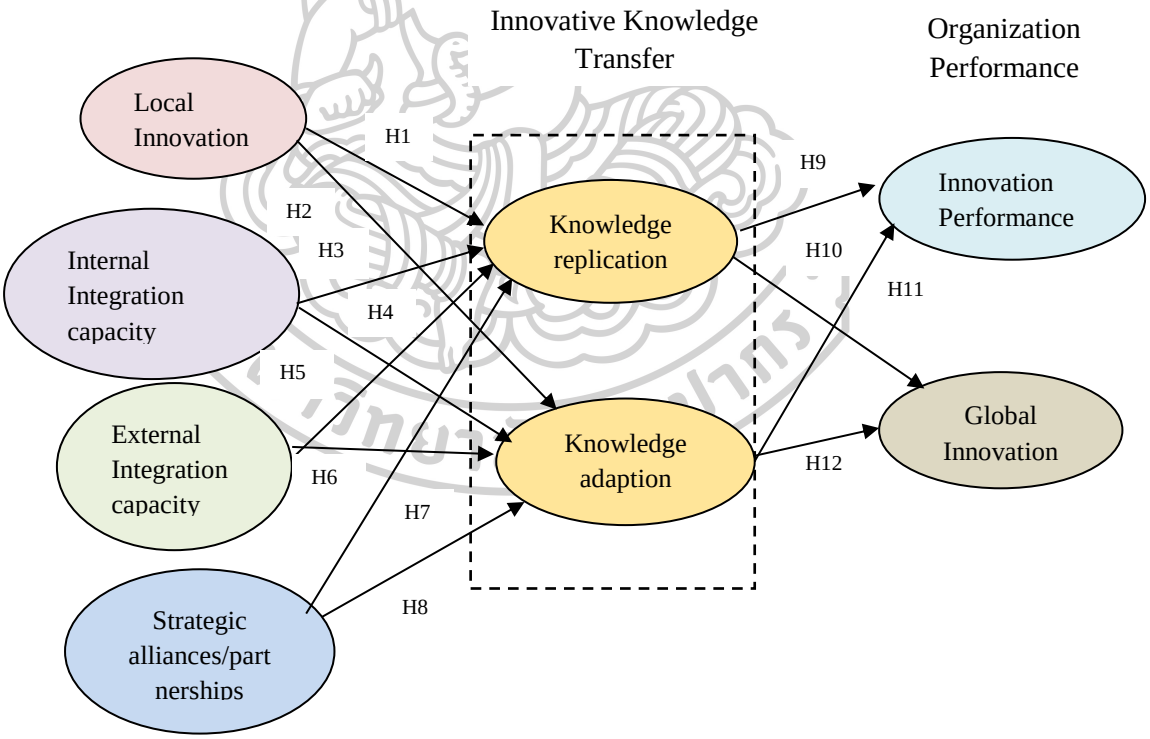
The previous section discusses the theoretical framework that this research applied to examine the influence of organizational factors on innovative knowledge transfers for MNCs automobile industry in Thailand. This section illustrates and discuss the research framework of this study. The following figure is illustrated the proposed conceptual framework that presents innovative knowledge transfer which derived from several factors in MNCs' organization.

In study in the innovative organization with prior empirical models, this research model incorporates all important variables especially in organizational context that are crucial to the innovative knowledge transfer for MNCs large organization. In spite of examining specific variable of interest as four important factors in organizational context, two factors in innovative knowledge transfer and two factor for organizational performance, this research framework is comprehensive research that is guided by several previous structured theories. Accordingly, the framework consisted of four core independent variables which include local

innovation, internal knowledge integrated capacity, external knowledge integrated capacity and strategic alliance/partnerships (i.e., R&D alliance, headquarter, subsidiary, business alliance networking, suppliers, customers etc.). Consequently, innovative knowledge transfer consists of two factors as knowledge replication and knowledge adaption which are significantly mediating factors to contribute innovative transferring knowledge. We considered on the literature provides ample evidence that innovative knowledge transfer ability is more likely successful especially knowledge transfer with R&D alliance in several automotive MNCs in Thailand.

Figure 9: Conceptual Framework of this study

"The Influence of Organizational Factors on Innovative Knowledge Transfers: Implication for MNC's Automobile Innovative & Performance in Thailand."



Source(s): *Adapted from authors based on Peeters and Martin, 2017; Williams, 2007, Nohria; Ghoshal, 1997, Birkinshaw et al., 1998a; Frost; Birkinshaw; Ensign, 2002; Song et al., 2006)).*

The conceptual framework postulates employees in innovative knowledge transfer as a dependent variable, Thus, the organization should focus on, to facilitate the desired results for both parties as organizational and organizational performance.

It should note that innovative knowledge transfer in two dimensions as knowledge replication and knowledge adaption (Peeters and Martin, 2017; Williams, 2007).

3.2 Research design

The methodology that is employed in this study is quantitative data collection and analysis. This study examines how organizational contexts of MNCs in automobile industry in Thailand. we exploratory with survey technique which is used to gather data from the target respondents in this study. The sample of staffs & employees in MNCs automobile was collected and statistical techniques were used to test the relationship based on the paths and hypotheses in the conceptual framework. This is conducted with the intention of generalizing the results to explain the whole population of staffs & employees who are working in MNCs automobile industry in Thailand. The study is aimed to analyze the impact of innovative knowledge transfer, innovation performance and global innovation effectiveness. The questionnaire items were adapted from previous literature and a pretest was conducted before the actual distribution in order to test reliability of questionnaire.

The survey technique helps to provide researchers with sufficient data from samples for generalization of results. The statistical analysis software will be used for data analyses such as reliability tests, confirmatory factor analysis of the measurement mode, structural equation modeling analysis and test the impact between variables as explained and hypothesized.

3.3 Research Hypotheses

Relationship between organizational factors and Innovative knowledge transfer

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

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

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.

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

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

H9: In an innovative MNCs. Knowledge replication will be positively associated with innovation performance.

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

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

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

3.4 Respondents of the Study

This section explains the characteristics of potential respondents such as working position, work experience, working department or division etc. and the determination of sample size and sampling procedures based on MNCs automobile factory in Thailand.

3.4.1 Characteristics of Respondents

The respondents of the study are company profile as 1) the operation model of company registered in Thailand, foreign subsidiary company, branches, or agency company etc., 2) type of industries on the company as automobile and automotive parts, electric appliances and components, appliances, computers and parts, textiles and garments, others, 3) period of company establish, the amount of employees in department, 4) the key driving to encourage innovative knowledge transfer, 5) staffs & employees perspective form several department in the firm which answer about the significant of innovative knowledge transfer. According to the survey techniques, we propose to be sampling companies with five of multinational corporation in automobile industry at Amata Nakorn Industiral Estate, Cholburi province, Thailand. Therefore, we survey with staffs & employees in several departments inside MNCs automobile industry in order to collect the questionnaires in approximated 400 questionnaires answer.

3.4.2 Respondents of automobile manufacturing

The respondents of this study by TAAIA (The Thai Automotive Industry Association) the number of companies in automobile industry in Thailand have registered with TAAIA. The primary respondents in this study were staffs & employees who are currently working in MNCs automobile industry. The target respondents were confined to staffs & employees working in each department in company such as production, R&D, technology & information, administration, marketing, purchasing, inventory, human resources, etc. Hence, this study focused on employees who are working in every chief of time.

The expected number of sample size is derived from the contribution of Soper Daniel formula (***DanielSoper.com***), A-priori Sample Size Calculator for Structural Equation Models (e.g., Anticipated effect size: 0.1, Desired statistical power level: 0.8, Number of latent variables: 8, Number of observed variables: 39, Probability level: 0.05) the number of sample size in this study is approximately 400, with it has 95% confident interval or error at 5%.

3.4.3 Sampling Procedures

As mentioned in the previous section, this study provided the details of the sampling procedures. Even though the comply listed in Amata Nakorn Industrial Estate with more than 206 companies is available, the actual unit of analysis in this study is the MNCs automobile industry and more that 90% of companies established in this industrial estate are in automobile industry (amata.listedcomany.com).

To obtain the respondents for this study, the researcher used convenience techniques and selected 5 companies from the list. The selected companies were contacted to ascertain the telephone no. to contact with Human Resource department to request access for data collection via a questionnaire survey and online mobile phone questionnaire survey for staffs &employees in several departments such as 1) Denso company, 2) Thai Seatbelts company, 3) TBKK (Thailand) company, 4) Bridgestone (Thailand) company, 5) Siam Toyota company. With the assistance of the Human Resource Departments in these companies, questionnaires were launched to all staffs & employees who employed in each of the selected automobile company.

3.5 Data collection

The data of this research was acquired through questionnaires. We consider the cost and convenience of survey during COVID19 pandemics on 1st September to 30th November 2022, the sources of survey samples were mainly in automotive industry including automotive parts, automobile manufacturers and assemblers in MNCs Thailand's Industrial Estate (Amata Nakorn Industrial Estate, Cholburi province), which was one of the most developed areas in Thailand and centralized numerous enterprises of the technology alliance. The survey samples concerned with the staffs & employees or worker from production line and administrative officers in various departments such as in production, inventory, purchasing, Q&A, marketing, administrative officers, human resources etc. On a survey method examined the relationships between organizational factors, innovative knowledge transfer, innovation performance, and global innovation. A self-administered survey questionnaire was used Five-point Likert scale was used in the questionnaire and the

relevant items of evaluation in the factory and office. A total of 400 sets of questionnaires were issued in this survey and 380 were returned rate being 95 percent, out of which there were 380 effective returns.

3.6 Data analysis

For the data analysis of the current study, we used the Statistical Packages for Social Sciences (SPSS) version-23 and Analysis Moments of Structure (AMOS version-24) 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 thirteen research hypotheses the we made use of two-stage method: ***the first*** stage was to carry out Cronbach's coefficient analysis and confirmatory factor analysis on individual variable and its item so as to know reliability and validity of variable and its variable items**;** ***the 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 (EXT), strategic alliances/partnerships (NT), knowledge replication (KR), knowledge adaption (KA), innovation performance (INP), and global innovation (GI).

3.6.1 Demographic Profile

There are two demographic profiles in this study as 1) company profile, 2) respondent profile as staffs & employees who are working in the company.

3.6.1.1 Company Profile

Company profile will be measured using to identify company type as a) local company registered in Thailand, b) foreign subsidiary company, c) branches or agency company, d) others. The type of industries of your company will also be measured using categories (a = automobile and automobile parts, b = electric appliances and components, c = appliances, d = computers and parts, e textiles and garments, f = others. The period of company established in Thailand using categories (a = less than 10 years, b = 10-19 years, c = 20-29 years, d = 30 – 39 years, e = more

than 40 years). No. of employees in your department where you work will be measured using categories (a = less than 10, b = 10-20, c = 21-50, d = 51- 100, e = more than 101). From your perspective, the innovative knowledge transfer practiced in your workplace using categories (a = not knowledgeable about, b = somewhat knowledgeable about, c =knowledgeable about, d = very well knowledgeable about. The most important driving force to encourage innovative knowledge transfer in your workplace was measured based on the reasons of employees by using categories (a = cost reduction, b = increasing efficiency and effectiveness, c = creating positive social image and reputation, d = influence by peers, e = others.

Table 3: Respondent MNCs Automobile Company in Amata Nakorn industrial estate

Company name	Sized	No. of sampling data
1) Denso (Thailand) Co.Ltd.	L	60
2) ARST (Thailand) Co.Ltd.	L	60
3) Nipponseki Co.Ltd.	L	60
4) Siam Denso Manufacturing Co.Ltd.	L	60
5) Siam Toyota Manufactring Co.Ltd.	L	60
6) Thai Seat Belt Co.Ltd.	M	50
7) Hino Manufacturing (Thailand) Co.Ltd.	L	50

3.6.1.2 Respondent profile

This section explains the characteristics of potential respondents and the determination of sample size and sampling procedures based on automobile manufacturing in industrial estate area. The respondents of this study are staff & employees in Automobile manufacturing and the focused areas for respondent are Amata Nakorn Industrial Estate, Cholburi province, Thailand which are where most of the automobile manufacturing companies located in Thailand. and have currently

been the working in each level of production, assembling line, R&D, purchasing, inventory, quality assurance, administrative office, marketing, etc., as a target respondent of this study especially in production and technology & information department are concerning to innovative knowledge transfer on their productivity. Stratified sampling is often used when this a large variation in the population. The objective is to ensure that every division has sufficient representation (Ackoff, 1953). The target of population of this study focused on both automobile company and vehicle component company. This study followed Hair (2014)'s recommendation though using of general rules of calculating the minimum sample size that there must be five times the number of variables to be analyzed and a more acceptable sample size will have a ratio of 10:1. Therefore, thus, there are 39 indicators (39 x 8 = 312), which mean that 312 is the minimum required sample size for this study with 95% confidence interval or of the allowable error of 5%.

Since this study is exploratory research. In order to test all proposed hypotheses, the Structural Equation Modeling (SEM) will be applied to help the researchers with more flexibility in terms of the complexity of models and relationship definitions. As suggested by Ho (2014), the SEM is considered as a complete model in which the pattern of relationships among constructs in indicated. The sample size of this study is sufficient for the minimum requirement of using SEM which generally run in the 200 to 400 range of samples as an analytical tool (Hair, 1998).

In addition, the respondent of this study is including gender, age, education background, working in department, working experience and position. Gender will be measured using categories (1 = male, 2 = female. Age will be measured using categories (1 = below 30 years old, 2 = 30 – 39 years old, 3 = 40 – 49 years old, 4 = 50 – 59 years old, 5 = 60 years or above) (Peltokorpi, 2008). Education will also be measured using categories (1 = high school/ college, 2 = bachelor's degree, 3 = master's degree, 4 = doctorate degree) (Lee & Li, 2008). For working in department or division in company will be measured using categories (1 = human resource, 2 = marketing, 3 = operation/ customer service, 4 = general administration, 5 = information & technology, 6 = manger/ director, 7 = R&D, control & quality

assurance, production development. Working experience based on the total length of time that the respondent has worked in this company will be measured using categories (1 = less than one year, 2) 2- 5 years, 3) 5 -10 years, 4) more than 10 years.

Table 4: Summary of Questionnaire Items and Constructs

Construct/ Dimension	Variable Name	Measurement Items	Previous Studies
Local Innovation	• **Local Innovation**		
	LI1	Change in the design of product/service offered.	*Birkinshaw; Hood; Jonsson, (1998)*
	LI2	Create new products/service.	
	LI3	Entering new markets inside the country.	
	LI4	Changing production processes.	
	LI5	Developing new suppliers and partners.	
Strategic alliances /partnerships	• **Strategic alliance/partnerships (Insert into the network)**		
	NT1	Our subsidiary has extensive experience with strategic partnerships and alliances with our suppliers.	*Doz, Santos and Wililiansons (2001); Anderson, Forsgreen and Holm (2002) and Lakshman and Parente (2008).*
	NT2	Our subsidiary has a long history in the preparation and development of partnerships in the past.	
	NT3	Our subsidiary has as common practice the development of partnerships.	
	NT4	Our subsidiary considers strategic partnerships and alliances matters of vital important to our business.	
Internal Integration capacity	• **Internal Integration capacity**		*Ledgerwood and Broadhurst, 1997, Patricia, 2004, Boer, 2010.*
	IN1	Improve information sharing for the coordination of the flow of goods between your plant and other plants of the network.	
	IN2	Improve joint decision making to define production plans and allocate production	

		in collaboration with other plants in the networking.	
	IN3	Improve innovation sharing/joint innovation with other plants.	
	IN4	Improve the use of technology on support communication with other plants of the network.	
	IN5	Developing a comprehensive network performance management system.	
External Integration capability	• **External Integration capability**		*Clark and Iansiti, 1994, Kogu and Zander,1992; Yang and Lee-Kwang, 2000*
	EXT1	Sharing information with key suppliers.	
	EXT2	Developing a comprehensive network performance management system.	
	EXT3	Joint decision making with key suppliers.	
	EXT4	Sharing information with key customers.	
	EXT5	Developing collaborative approaches with key customers.	
	EXT6	Joint decision making with key customers (e.g., about product design/modification, process design/modification, quality improvement and cost control).	
Innovative Knowledge transfer	• **Knowledge replication**		*Peeters and Martin, 2017; Williams, (2007); Wang and Rajagopalan, 2015; Willians, 2007; Barley et al. 2018; Williams, (2007)*
	KR1	We tried to manage our business exactly like our partner.	
	KR2	We tried to implement practices from our partner exactly as they existed.	
	KR3	We tried to copy practices from our partner down to smallest detail.	
	KR4	We spent substantial time making sure practices we adopted from our partner worked just as they did there.	
	• **Knowledge adaption**		
	KA1	We usually modified practices from our partner when we implemented them in our business.	
	KA2	We usually combined ideas from our partner with other ideas when we adopted them.	

	KA3	We spent substantial time modifying practices from our partner to make them work in our business.	
	KA4	We carefully selected practices for our partner to adopt in our business.	*Birkinshaw, 1997: Birkinshaw et al., 1998a. Schmid; Dzedek; Lehrer, 2014*
Global Innovation	• **Global Innovation**		
	GI1	The subsidiary has permission headquarter to perform innovation projects.	
	GI2	Develops products that today are sold by other subsidiaries.	
	GI3	Developed organizational processes that are now adopted in other subsidiaries.	
	GI4	Develops organizational products/ processes in partnership with suppliers and that are now adopted in other subsidiaries.	*Song et al., 2006; B. Paladino, 2010*
	• **Innovation Performance**		
Innovation performance	INP1	The overall performance of our new product development at home program has met our objectives.	
	INP2	From an overall profitability standpoint, our new product development program at home has been successful.	
	INP3	The compared with our major competitors, our overall new product development program at home is far more successful.	
	INP4	When the firm introduces products or services into the market that are new, or which offer a significant improvement on the basic characteristics, technical specifications, software or other intangible component.	
	INP5	When the firm implements new or significantly improved production processes, distribution methods or support activities for its goods and services.	

3.7 Research Instruments / Questionnaire

3.7.1 Local innovation

This study adopted the first section of the questionnaire on local innovation from the classic work done by Birkinshaw; Jonsson (1998). Before Chesbrough, 2006 explained the source of innovation has two ways as 1) within the company on internal R&D and in organizational functions and 2) outside company with partnerships and collaborative networks, Chesbrough, 2006 emphasized the idea of aligning local innovation of MNCs or subsidiaries with the corporate strategy of MNCs (Ciabuschi *et al*., 2014; Figueiredo, 2011; Meyer *et al*., 2011). Therefore, the items used in this study have been test for reliability in prior research. The reliability statistics of internal consistency measurement are all above the limit of 0.7. The Cronbach's Alphas of LI (Local innovation) is 0.826 which consisted of L1 (Change in the design), LI3 (Entering new markets inside the country), LI4 (Changing production process) and LI5 (Company developing new suppliers and partners) with the factor loading 0.621, 0.842, 0.868 and 0.768, respectively. The scale of measurement of these five items follows prior research in using a five-point Likert scale. Respondents were asked to indicate their lever of agreement towards each statement, from 1 = not at all, 2 = to some extent, 3 = to a moderate extent, 4 = to a great extent, 5 = to a very great extent.

3.7.2 Strategic alliances/partnerships (NT)

This study adopted the first section of the questionnaire on strategic alliances/partnerships (NT) based on the perspective of strategic alliance on subsidiary or MNCs organizational that focused on the relationship between headquarters and their subsidiary on alliances partnership in automobile industry in Thailand. The innovative knowledge perspective and join the business activities are acquired from the effective of business relationship linking which are from the study of Levin and Cross, 2004. This study is extensive experience with the relationship with alliances as suppliers and customers. The relationship scaling consists of four

items that acceptable validity for all strategic alliances and partnerships with influence for firm's innovative knowledge. There Cronbach Alpha coefficients of strategic alliances and partnerships (NT) is 0.886 which consisted of NT1 (MNCs extensive experience), NT2 (long history in development of partnership), NT3 (common practice in development of partnership) and NT4 (MNCs consider strategic partnerships and alliance is vital important of our business) with the factor loading 0.755, 0.871, 0.844, 0.735, respectively. All above items were measured on a five-point Likert scale. Respondents were asked to indicate their level of agreement towards each statement, from 1 = not at all, 2 = to some extent, 3 = to a moderate extent, 4 = to a great extent, 5 = to a very great extent.

3.7.3 Internal integration capacity (IN)

This study used five question items to measure internal integration capacity (IN). The items were adapted from Clark and Iansit, (1995) that stated internal knowledge integration improved firms' competitive in advance product and service to create its stronger capacity in technology support. The first section of the questionnaire on internal integration capacity based on the subsidiary has perspective of IN1 (improve information sharing for the coordination), IN2 (improve joint decision making to define production plans and allocate production in collaboration), IN3 (improve innovation sharing/joint innovation with other plants), IN4 (improve to use of technology on support communication), and IN5 (developing a comprehensive network performance management system). Their Cronbach Alpha coefficients of internal integration capacity (IN) is 0.809 which consisted of with the factor loading 0.812, 0.864, 0.839, 0.747, respectively. All above items were measured on a five-point Likert scale. Respondents were asked to indicate their level of agreement towards each statement, from 1 = not at all, 2 = to some extent, 3 = to a moderate extent, 4 = to a great extent, 5 = to a very great extent.

3.7.4 External integration capacity (EXT)

This study used five question items to measure internal integration capacity (IN). The items were adapted from Chia and Chang, (2009) that supported the innovations of some industries as telecommunication technology developed from suppliers and customers' suggestions in term of industrial created new ideas, innovative knowledge transfer on developing enterprises. The fourth section of the questionnaire on external integration capacity based on the subsidiary has perspective of EX1 (sharing information with key suppliers), EX3 (join decision making with key suppliers), EX4 (sharing information with key suppliers), EX6 (joint decision making with key customers). Their Cronbach Alpha coefficients of external integration capacity (EX) is 0.885 which consisted of with the factor loading 0.777, 0.852, 0.844, 0.752, respectively. All above items were measured on a five-point Likert scale. Respondents were asked to indicate their level of agreement towards each statement, from 1 = not at all, 2 = to some extent, 3 = to a moderate extent, 4 = to a great extent, 5 = to a very great extent.

3.7.5 Knowledge replication (KR)

This study used five question items to measure knowledge replication (KR). The items were adapted from Barley *et al.,* (2018) and Williams, (2007) that used to imply on innovation management in the large organizational for innovation management in order to transmission of knowledge across organizational with knowledge replication and knowledge adaptation to extent a possess of high technology performance. The five sections of the questionnaire on knowledge replication based on the subsidiary has perspective of KR1 (manage our business exactly like our partners), KR3 (copy practices from our partner down to smallest detail), KR4 (making sure practices worked just as they did), KR5 (implement our business exactly like our partner). Their Cronbach Alpha coefficients of external integration capacity (EX) is 0.887 which consisted of with the factor loading 0.749, 0.863, 0.876, 0.833, respectively. All above items were measured on a five-point Likert scale. Respondents were asked to indicate their level of agreement towards

each statement, from 1 = not at all, 2 = to some extent, 3 = to a moderate extent, 4 = to a great extent, 5 = to a very great extent.

3.7.6 Knowledge adaption (KA)

This study used four question items to measure knowledge adaption (KA). The items were adapted from Williams, (2007) that defined to modified practices from the partners when we implement them into our business base on innovation. Knowledge adaption (KA) is highly significant to comply for the large firm's innovation as R&D implementation in automobile industry usually managed by knowledge transfer under the mechanism's knowledge transfer label (Wang and Rajagopalan, 2015; Williams, 2007). The four sections of the questionnaire on knowledge adaption based on the subsidiary has perspective of KA1 (modified practices from our partner when we implemented them in our business), KA3 (spent substantial time to modifying practices), KA4 (selected practices for our partner to adopt in our business), KA5 (try to manage our business exactly like our partner). Their Cronbach Alpha coefficients of external integration capacity (EX) is 0.900 which consisted of with the factor loading 0.662, 0.879, 0.880, 0.814, respectively. All above items were measured on a five-point Likert scale. Respondents were asked to indicate their level of agreement towards each statement, from 1 = not at all, 2 = to some extent, 3 = to a moderate extent, 4 = to a great extent, 5 = to a very great extent.

3.7.7 Global innovation (GI)

This study used five question items to measure global innovation (GI). The items were adapted from Birkinshaw, 1997; Schmid; Dzedek; Lehrer, 2014) with the growing importance of networks that defined to generation in multinational corporation or subsidiaries. Previous researchers explained the way for a series of studies investigating in the role of subsidiaries self-initiative that may have the potential to become a global innovation (Schmid; Dzedek; Lehrer, 2014). In this study, we provided the two aspects report above, as the inclusion of subsidiaries in the network of automobile industry and entrepreneurial orientation create an important

question in relation to the automobile innovation networking in Thailand especially, we focused on the scope of innovation which derived from several sourced of innovation such as local innovation, headquarter or business alliance/partnership. The four sections of the questionnaire on global innovation based on the subsidiary has perspective of GI1 (subsidiary has permission headquarter to perform innovation projects), GI2 (develops products that today are sold by other subsidiaries), GI3 (develops organizational processes now adopted in other subsidiaries), GI4 (develops products/ processes in partnership with suppliers are now adopted in other subsidiaries). Their Cronbach Alpha coefficients of global innovation (GI) is 0.883 which consisted of with the factor loading 0.831, 0.869, 0.821, 0.734, respectively. All above items were measured on a five-point Likert scale. Respondents were asked to indicate their level of agreement towards each statement, from 1 = not at all, 2 = to some extent, 3 = to a moderate extent, 4 = to a great extent, 5 = to a very great extent.

3.7.8 Innovation performance (INP)

This study used four question items to measure innovation performance (INP). The items were adapted from Song *et al.*, (2006) and Tzabbar *et al*., 2013; Wang *et al*., (2016) that defined to modified practices from an advanced alliance partner's knowledge into their own innovation practices and technical in process in transforming the information into innovation performance of MNCs. This study focusses on the significance of connection between organization and their local environment of subsidiary, to transfer knowledge effectively. Meanwhile, the firms must adapt tacit knowledge accessed from alliance partners to fit with the existing environment that they could improve their innovation performance at host country as many automobiles' MNCs in Thailand. The four sections of the questionnaire on knowledge adaption based on the subsidiary has perspective of INP1 (overall performance of our new product development at home program), INP3 (compared with our major competitors our new product has been successful), INP4 (our overall new product development at home is far more successful), INP5 (new significantly improved production processes distribution or support activities for goods and service). Their Cronbach Alpha coefficients of innovation performance (INP) is 0.882

which consisted of with the factor loading 0.639, 0.877, 0.909, 0.862, respectively. All above items were measured on a five-point Likert scale. Respondents were asked to indicate their level of agreement towards each statement, from 1 = not at all, 2 = to some extent, 3 = to a moderate extent, 4 = to a great extent, 5 = to a very great extent.

CHAPTER 4
RESEARCH RESULT

This chapter examines the research methodology selected to pragmatically test the relationship between the independent variables, a moderator to the dependent variables, which is automobiles' organization in Thailand and significant of innovative knowledge transfer through innovation performance and global innovation. The following sections discussed in this chapter are methods of research used respondents and sampling procedures, data collection procedure, and statistical treatment of data.

4.1 Pretest / Measure of Internal Consistency

The questionnaires set (Innovative knowledge transfer cover letter, questionnaire) were launched in automobile companies around Amata Nakorn Industrial Estate, Cholburi province, Thailand. These areas were selected in launching questionnaires for pretest because most of automobile manufacturing and automobile parts manufacturing were established in this industrial estate according to Industrial Estate Authority of Thailand (IEAT, 2019). MNCs automobile companies were contacted through human resource departments and requested for helping in cooperation to launch questionnaires. We explained the purpose of this questionnaires research and the target of respondent including the scope of question and submit the questionnaire thru human resource managers to investigate and approved to allow to conduct this questionnaire to their staffs & employees who are working in the

manufacturing line. The questionnaires were launched internally by their human resource officers by appointments were made one or two week later to collect the filled in questionnaires for further analysis.

During the pretest process, we found the type of diagnostic measure used is the reliability coefficient to assess the consistency of the entire scale (Hair, Black, Babin, Anderson & Tatham, 2006). The reliability coefficient takes the form of the Cronbach's Alpha. It is a single correlation coefficient that is an estimate of the average of all the correlation coefficients of the items within the test (Ho, 2006, p. 240). Cronbach's Alpha is the most widely used measured for internal reliability and a commonly agreed rule of thumb is having the cutoff point at 0.70 (Hair *et al.*, 2006) but some scholars expect a higher alpha of 0.80 (Ho, 2006).

The following table presents the reliability statistics obtained from the pretest. The organizational context of MNCs' automobile in Thailand consisted of local innovation, strategic alliance/ partnerships, internal integration capacity, external integration capacity. The Cronbach's Alphas for these items were 0.8701, 0.8210, 0.8713 and 0.8373, respectively. These reliability coefficients for are all above the cutting points of 0.7 (Hair *et. al*., 2006) and 0.8 (Ho, 2006). The mediating variable of innovative knowledge transfer are knowledge replication and knowledge adaption have the Cronbach's Alpha of 0.8731 and 0.8362 from reliability test of 10 measurement items. Organizational performance on the effectiveness of innovation performance and global innovation has 9 measurement items with the Cronbach's Alpha of 0.8347 and 0.8142. The overall Cronbach Alpha this moderator is 0.8962 which suggests that it is highly reliable.

Table 5: Summary of Reliability Statistics (Pretest)
(Using by Principal component analysis by Varimax with Kaiser Normalization)

Variables	***Sub Variables***	***Cronbach's Alpha (α)***

Local innovation (LI)	LI1 (α =0.870) LI3 (α = 0.747) LI4 (α =0.716) LI5 (α =0.768)	**0.8701**
Strategic alliances/ partnerships (NT)	NT1 (α = 0.879) NT2 (α =0.833) NT3 (α =0.829) NT4 (α = 0.870)	**0.8210**
Internal integration capacity (IN)	IN1 (α = 0.872) IN2 (α = 0.829) IN3 (α =0.844) IN5 (α = 0.888)	**0.8713**
External integration capacity (EX)	EX1 (α =0.869) EX3 (α =0.835) EX4 (α =0.825) EX6 (α = 0.880)	**0.8373**
Knowledge replication (KR)	KR1 (α =0.897) KR3 (α =0.838) KR4 (α =0.830) KR5 (α =0.845)	**0.8731**
Knowledge adaption (KA)	KA1 (α =0.911) KA3 (α =0.851) KA4 (α = 0.845) KA5 (α = 0.870)	**0.8362**
Global innovation (GI)	GI1 (α = 0.866) GI2 (α = 0.833) GI3 (α =0.829) GI4 (α = 0.868)	**0.8142**
Innovation performance (INP)	INP1 (α = 0.918) INP3 (α = 0.826) INP4 (α =0.807) INP5 (α = 0.827)	**0.8347**

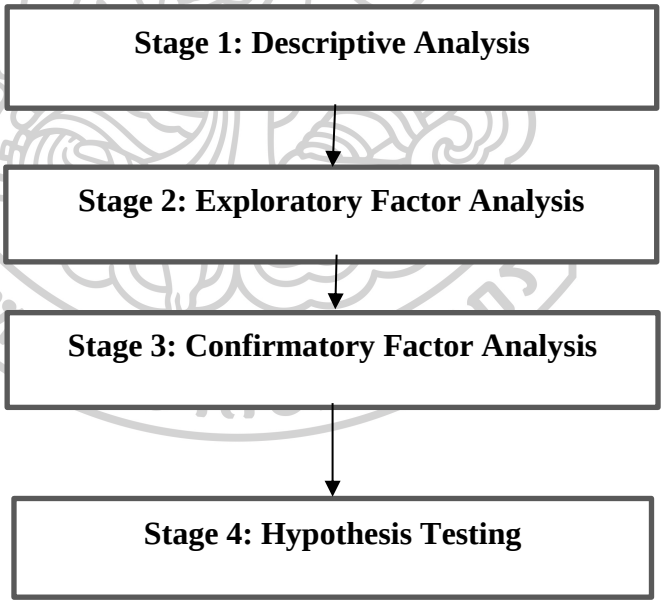
This Chapter presents the data and results from the analysis of 400 respondents to test the twelve research hypotheses as per the research framework employed in this study. The data analysis consists of four main sections ranging from descriptive analysis, exploratory factor analysis, confirmatory factor 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 organizational by adapting the concept of local innovation (LI), internal integration capacity (IN), external integration capacity (EXT) and strategi alliances/ partnership (NT) between organization and co-workers (such as engineering, supervisor and co-workers in the production line or others department related to manufacturing activity as R&D, human resource, purchasing, inventory, marketing and administrative officers, etc. who working in the MNC's automobile factory in Industrial Estate in Thailand. Finally, the data collection was 400 respondents composed with structured questionnaires from 5 MNCs' automobile companies. All data relevant variable in organizational context have to explain the potential mediator of innovative knowledge transfer dimension as knowledge replication and knowledge adaptation becoming to the efficiency of dependent variable of the performance as innovation performance and global innovation in the emerging MNCs automobile industry in Thailand. The data analysis consists of four 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 four independent variables, which to examine the relationships between organizational context of MNCs automobile as local innovation, strategic/ partnerships, internal integration capacity, external integration capacity and the mediator of innovative knowledge transfer as knowledge replication (KR) and knowledge adaptation (KA) to effective on the innovation performance (INF) and global innovation (GI).

4.2 Presentation of Data analysis

The presentation of data analysis in this chapter comprises four main stages which includes: 1) presentation of descriptive statistics on Thai Workers' demographic profile and the company 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). Figure 4.1 summarizes and illustrates stages of presentation for data analysis in this chapter. Therefore, the following section presents descriptive statistics on the demographic profile of Thai Co-workers respondents in Thailand's automobile industries.

Figure 10: The Stages of Presentation for Data Analysis



4.3 Demographic Profile of Thai Workers Respondents

Demographic profile is one the interdependent variables that will be analyzed to determine the difference in the degree of overall cross-cultural adjustment and

knowledge transfer with the new technology in MNC's automobile industries. The demographic profile variable in this study comprises five sub-variables to determine groups of personal information pertaining to the target respondents for example gender, age, educational levels, working in department, working experience and work position. Table 5.1 summarizes demographic profile of Thai worker respondent in automobile industry.

Table 6 : Demographic Profile of Automobile company in Thailand

Company Profiles of Automobile's MNC		**Descriptive Statistics**		
		Frequency	**Percent**	**Cumulative Percent**
Company Operation				
Group	Local company registered in Thailand	162	42.1	42.1
	Foreign subsidiary company	187	48.6	90.6
	Branch or agency company	36	94	100.0
Company Industries				
Group	Automobile and automotive parts	133	34.5	34.5
	Electric appliance and components	130	33.8	68.3
	Appliances	87	226	90.9
	Computer and parts	33	86	99.5
	Textiles and garments	2	5	100.0
Company Established				

No.	Less than 10 years	6	1.6	1.6
	10-19 years	39	10.1	11.7
	20-29 years	106	27.5	39.2
	More than 40 years	88	22.9	100.0
Company Employees				
No.	Less than 10	4	1.0	1.0
	10-20	11	2.9	3.9
	21-50	27	7.0	10.9
	51-100	136	35.3	46.4
	More than 101	206	53.5	100.0
Driving Force				
Group	Cost reduction	42	10.9	10.9
	Increasing efficiency / effectiveness	136	35.3	46.4
	Creating positive social image	100	26.0	72.4
	Influence by peers	105	27.3	99.7
	others	1	3	100.0
Perspective				
Levels	No knowledgeable about	10	2.6	2.6
	Somewhat knowledgeable about	135	35.1	37.7
	Knowledgeable about	189	49.1	86.8
	Very well knowledgeable about	51	132	100.0

Table 7: Demographic Profile of Thai co-worker respondents

Thai Co-worker respondents in Automobile's MNC		Descriptive Statistics		
		Frequency	Percent	Cumulative Percent
Gender				
No.	Male	300	77.9	78.1
	Female	84	21.8	100.0
Age				
Groups	Below 30-year-old	3	0.8	0.8
	30-39	106	27.5	28.4
	40-49	142	36.9	65.4
	50-59	117	30.4	95.8
	60 years old or above	16	4.2	100.0
Education				
Levels	High school/ college	1	0.3	0.3
	Bachelor's degree	325	84.4	84.7
	Master's degree	59	15.3	100.0
Working Department				
Groups	Human resource	61	15.8	15.8
	Marketing	53	13.8	29.6
	Operation/customer service	191	49.6	79.2
	General Administration	46	11.9	91.2
	Information & Technology	25	6.5	97.7
	Manager/Department head	3	0.8	98.4
	R&D, controls & QA, product development	6	1.6	100.0
Working experience				
No.	Less than 1 year	35	9.1	9.1
	2-5 years	164	42.6	51.8
	5-10 years	185	48.1	100.0

According to table 5.2, the respondents' is divided into five main groups, which consist of the Thai co-worker and staffs who below 30 years old, 30-39 years old, 40-49 years old, 50-59 years old. From 385 responses of Thai co-worker in automobile factory, there are 3 responses in the first age group which accounted for 0.8 percent of the total respondents. The second age group has 106 responses in the second age group which accounted for 27.5 percent of the total respondents. The third age group has 142 responses in the third age group which accounted for 37.0 percent of the total respondents. The fourth age group has 117 responses in the fourth age group has 30.4 percent of the total respondents. The fifth age group has 16 responses in the fifth age group which accounted for 4.2 percent of the total respondents.

The next factor in the demographic profile of Thai co-worker in automobile factory is educational level. Education is provided into four levels which includes the employees who have lower than bachelor's degree, bachelor's degree, master's degree, doctoral degree. From the descriptive statistics show that there are 1 respondent who have below than bachelor's degree which is 0.3 percent of the total respondents. Most of the Thai co-worker are bachelor's degrees as it accounts for 84.4 percentage or 325 respondents. Master's degree holders are the second group in which there are 59 respondents of Thai co-worker and 15.3 percent of the total respondents. There is no doctoral degree in this group.

Consequence, the number of working experiences in the demographic profile showed that significant of working experience in their job. Working experiences is divided into four levels as less than one year, 2-5 years, 5-10 years, and more than 10 years from these four levels. Descriptive statistics show that there are 35 respondents who have less than one year which is 9.1 percent of the total respondents. And there are 164 respondents who have work experience 2-5 years which 42.6 percent of the total respondents. The most Thai co-worker are 185 who has working experience for 5-10 years which 48.1 percent of the total respondents.

To summarize the descriptive statistics presented above, the highest number of respondents are working in operation department with 191 respondents or 49.6 percent of the total respondents, the highest number of respondents in the age group

of 40-49 years old or 36.9 percent, holding with bachelors'' degree 325 respondents or 84.4 percent of the total respondents and most of them are technician and engineering in the operation line as production department with the range of working experience with 5- 10 years in their routine job assignment.

4.4 Exploratory Factor Analysis (EFA)

This section presents the results of exploratory factor analysis for each latent construct or determinant of organization context and innovative knowledge transfer dimension. The objective of factor analysis to identify the clusters of highly intercorrelated items in measuring and representing the independent latent constructs. In identifying the clusters of intercorrelated items, there is an underlying assumption for factor analysis in that all variables are correlated in some degree (Hair *et al*., 2006; Ho, 2006), hence, those items that explain similar dimensions should appear to be highly correlated and those items that measure different dimensions should yield low correlations (Ho, 2006). Tables 5.3 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. Factor loading and Cronbach's Alpha of organization context and Innovative knowledge transfer dimension are shown in table 5.3.

Factor loading and Cronbach's alpha of all variance construct are shown in table 5.3. The results demonstrate that the reliability coefficients of internal consistency (Cronbach's Alpha) from 0.826 to 0.900 which imply that these items measure the same phenomenon, so they hang together in a consistent manner (Ho, 2006). In consequence, they all exceed the recommended level by Hair *et al*., (2006) at 0.7 and Ho (2006) at 0.8, so it can be perceived that all of the measured items ae reliable and the entire test is internally consistent (Hair *et al*., 2006; Ho, 2006).

Table 5.3 also illustrates that all measurement items yield acceptable correlation coefficients, which are all greater than 0.4 or meet the minimal level for interpretation of structure (Hair et al., 2006). We determined that the factor loading of all variable

are: local innovation (LI) items range from 0.621 to the highest coefficient of 0.868, strategic alliance/partnership (NT) items range from 0.735 to the highest coefficient of 0.871, internal integration capacity (IN) items range from 0.747 to the highest coefficient of 0.864, external integration capacity (EX) items range from 0.752 to the highest coefficient of 0.852, knowledge replication (KR) items range from 0.749 to the highest coefficient of 0.876, knowledge adaptation (KA) items range from 0.662 to the highest coefficient of 0.880, global innovation (GI) items range from 0.734 to the highest coefficient of 0.869, innovation performance (INP) items range from 0.639 to the highest coefficient of 0.909.

Table 8: Factor Loading and Cronbach' Alpha of Total Variance Explained

Total Variance Reliability								
Measurement Items	**Components**							
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
LI1								0.621
LI3								0.842
LI4								0.868
LI5								0.768
NT1				0.755				
NT2				0.871				
NT3				0.844				
NT4				0.735				
IN1		0.812						
IN2		0.864						
IN3		0.839						
IN5		0.747						
EX1					0.777			
EX3					0.852			
EX4					0.844			
EX6					0.752			
KR1	0.749							
KR3	0.863							
KR4	0.876							
KR5	0.833							
KA1						0.662		
KA3						0.879		

KA4						0.880		
KA5						0.814		
GI1							0.831	
GI2							0.869	
GI3							0.821	
GI4							0.734	
INP1			0.639					
INP3			0.877					
INP4			0.909					
INP5			0.862					
Cronbach's alpha (α)	0.887	0.882	0.861	0.886	0.885	0.900	0.883	0.826

Note: LI = local innovation, NT = strategic alliance/partnership, IN = internal integration capacity, EN = external integration capacity, KR = knowledge replication, KA = knowledge adaptation, GI = global innovation, INP = innovation performance.

The Table 5.4 showed the model validity measures in between the constructs and result of discriminant validity test which was conducted by comparing the square root of the mean variance extracted with the relationship between the structures of model. The result of discriminant validity test reveals that the correlations for all the construct was surpassed the square root of the average variance extracted. According to Higgins and Huff (1999), when each construct had more variance with its measurement items, it indicated that the result of discriminant validity test was valid.

Table 9: Model validity measures: Means, standard deviations and correlations

	CR	AVE	MSV	MaxR(H)	LI	SA	IN	EXT	KR	KA	GI	INP
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**			

K	0.91	0.72	0.20	0.942	0.187	0.287	0.265	0.357	0.452	**0.852**		
A	3	6	4		*	*	*	*	*			
IP	0.86	0.62	0.12	0.979	0.173	0.274	0.173	0.247	0.213	0.351	**0.788**	
	3	1	3		*	*	*	*	*	*		
GI	0.88	0.66	0.08	0.957	0.137	0.275	0.174	0.243	0.147	0.280	0.287	**0.81**
	2	2	2		*	*	*	*	*	*	*	**4**

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

Apart from total variance of construct reliability test of Cronbach's Alpha have shown that all eight variables are valid for further analysis.

Table 10: 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*: Our subsidiary has extensive experience with strategic partnerships and alliances with our suppliers*	4.07	0.630	0.755	
NT2: *Our subsidiary has a long history in the preparation and development of partnerships in the past.*	4.04	0.654	0.871	
NT3: *Our subsidiary has as common practice the development of partnerships.*	4.00	0.637	0.844	
NT4: *Our subsidiary considers strategic partnerships and alliances matters of vital important to our business.*	4.03	0.661	0.735	
Internal integration capacity (IN)				0.809
IN1*: Improve information sharing for the coordination of the flow of goods between your plant and other plants.*	4.14	0.627	0.812	
IN2: *Improve joint decision making to define production plans and allocate production in collaboration.*	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 implement 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 manage our business exactly like our partner.*	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	
GI3: *Develops organizational processes that are now adopted in other subsidiaries.*	4.20	0.635	0.821	
GI4: *Develops organizational products/processes in 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 is far more successful.*	4.14	0.588	0.909	
INP5: *When the firm implement new or significantly improved production processes, distribution or support activities for goods and services.*	4.18	0.611	0.862	

(Table 5.5: Principal component analysis by Varimax with Kaiser Normalization)

4.5 Confirmatory Factor Analysis (CFA)

This section demonstrates the results of confirmatory factor analysis (CFA). The computations of confirmatory factor analysis require the results from the process of EFA as the items need to hang together and load highly in measuring their own factors before the CFA can be computed (Hair *et al*., 2006).

The objectives of confirmatory factor analysis are to determine the degree of model fit as well as the sufficiency in the factor loadings (EFA), that also provides the standardized residual and explained variances for the measurement variables (Ho,

2006). Confirmatory factor analysis is also known a measurement model as it is used to compute for a confirmatory test of the measurement theory (Hair *et al.,* 2006; Ho, 2006).

In spite of the determinant of results of measurement model, the statistical criteria for investigate goodness-of-fit will be involved which are both absolute fit measures and incremental fit measure (Ho, 2006). According to Ho (2006), Absolute fit measures defined as the degree that the proposed model predicts or fit with the observed covariance matrix which include statistical analysis of Chi-square statistic, Goodness-of-Fit Index (GFI) and Root Mean Square Error of Approximation (RMSEA).

Table 11: Summary of Fit Statistics and their Recommended Fit level

	Measures of Absolute Fit					**Measures of Incremental Fit**				
Fit Indices	p		RMSEA	GFI		NFI	TLI	RII	IFI	CFI
Rules	>0.05	<2.0	<0.1	>0.9		>0.9	>0.9	>0.9	>0.9	>0.9

This section presents the results of two measurement models in which the innovative knowledge transfer model on the results has demonstrated as following.

Results of CFA from the Innovative knowledge transfer model

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 12: Model Fit Measures

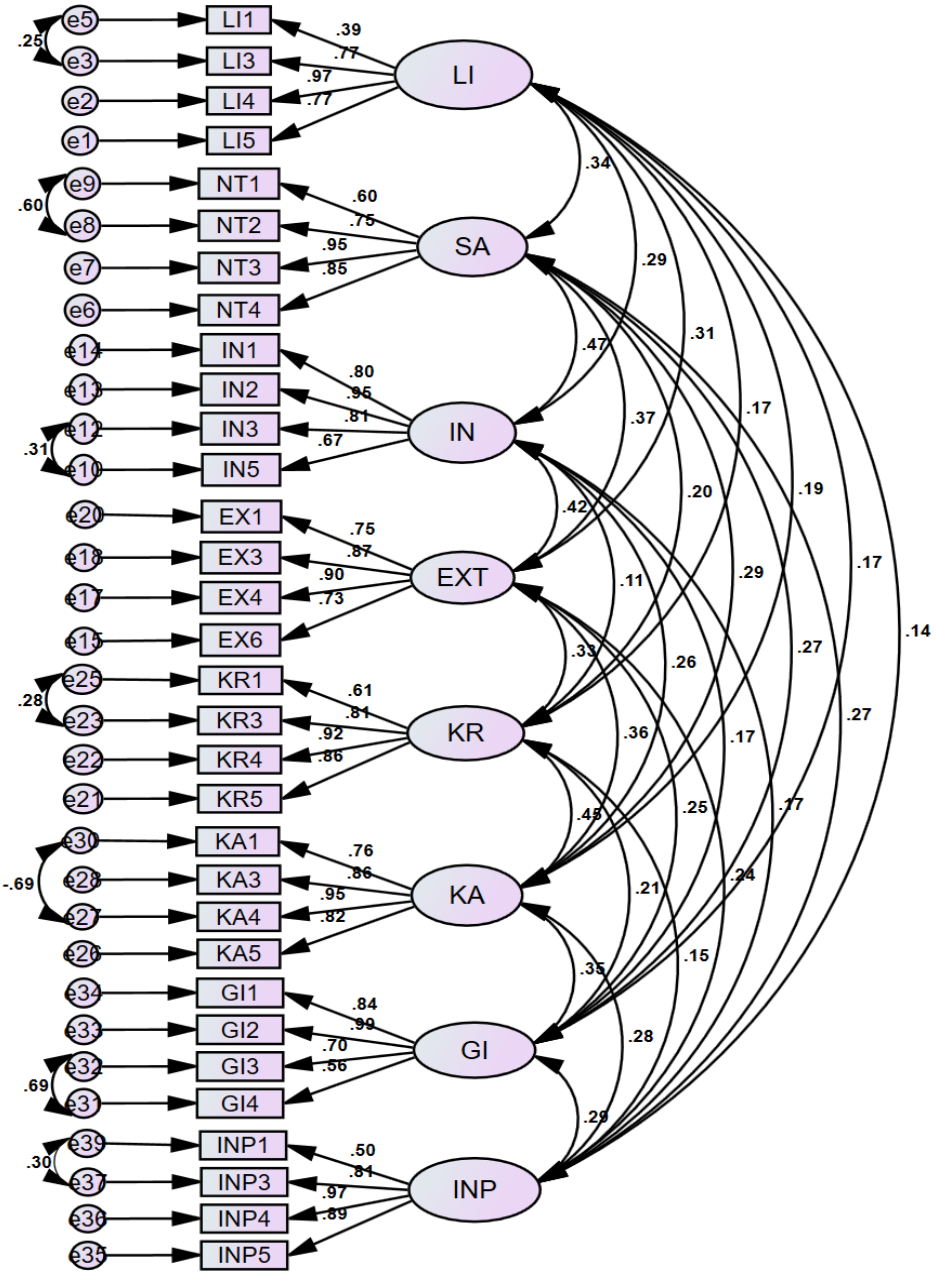
Measure	Estimate	Threshold	Interpretation
CMIN	855.569	--	--
DF	429.000	--	--
CMIN/DF	1.994	Between 1 and 3	Excellent
CFI	0.951	>0.95	Excellent
SRMR	0.064	<0.08	Excellent

RMSEA	0.051	<0.06	Excellent
PClose	0.378	>0.05	Excellent

Tables 5.6: 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.

Figure 5.2 below shows the measurement model of Innovative knowledge transfer which comprised of four variable of organization contexts, local innovation, strategic alliance/partners, internal integration capacity, external integration capacity and innovative knowledge transfer dimension.

Figure 11: Measurement Model of Innovative knowledge transfer



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 (EX), 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. Finally, the data collection 400 from 4 automobile companies with questionnaires in knowledge transfer dimension. All data relevant to the innovative by the criteria of organizational contexts and innovative knowledge transfer thru the dependent variable of the performance as innovative performance and global innovation.

This section demonstrates the results of confirmatory factor analysis (CFA). The computations of confirmatory factor analysis require the results from the process of EFA as the items need to hang together and load highly in measuring their own factors before the CFA can be computed (Hair et al., 2006).

The objectives of confirmatory factor analysis are to determine the degree of model fit as well as the sufficiency in the factor loading (EFA); it also provides the standardized residual and explained variances for the measurement variables (Ho, 2006). They explained about Confirmatory factor analysis is also known as measurement model as it is used to compute for a confirmatory test of the measurement theory (Hair et al., 2006; Ho 2006).

In order to determine the results of this measurement model, the statistical criteria for determining goodness-of-fit will be involved which are both absolute fit measures and incremental fit measure (Ho, 2006). Absolute fit measures determine the degree that the proposed model predicts or fit with the observed covariance matrix which include statistical analysis of Chi-square statistic, Goodness-of-Fit Index (GFI) and Root mean Square Error of Approximation (RMSEA) by Ho, 2006. We presented in table 4.5, Summary of fit statistics of Measurement Model, the rules of thumb are Chi-square statistics ($\chi 2$) should not be significant, GFI should exceed 0.9 and RMSEA should not be greater than 0.1 (HO, 2006). As this study we have the sample size of 198, chi-square statistics of both chi-square per degree of freedom ($\chi 2/df$) and significance level of chi-square ($p > 0.05$) are not acceptable for interpreting the

degree of model fit. Nonetheless, chi-square statistics are more appropriate for a study with the sample size between 100 and 200 (Hair *et al*., 2006). However, they will be incorporated into the analysis of both confirmatory factor analysis (CFA) and structural equation modeling (SEM) with reliance on other meaningful indices (i.e., GFI, RMSEA, and incremental fit measures) to confirm the model fit.

In consequently, how to show the absolute fit measures, incremental fit measures will also be elaborated via five indices. These measures take the role of comparing the proposed model to the independent or null model which is sometimes known as baseline model (Ho, 2006). The indices measuring incremental fit include Tuker-Lewis Index (TLI) is 0.952, Normed Fit Index (NFI) is 0.902, Relative Fit Index (RFI) is 0.858, Incremental Fit Index (IFI) and Comparative Fit Index (CFI) is 0.958 and 0.917 respectively. It is recommended that the incremental fit indices should be above 0.9 (Hair et al., 2006; Ho, 2006). We measured that Table 4.5 summarizes absolute fit and incremental fit indices together with the rules of thumb to determine the acceptable degree of model fit.

Table 13: Summary of fit statistics of Measurement Model ORG

	Measure of Absolute Fit				**Measures of Incremental Fit**				
	P	χ2/df	RMSEA	GFI	NFI	TLI	RFI	IFI	CFI
Rule	> 0.05	< 2.0	< 0.1	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9
Model	0.378	1.994	0.051	0.796	0.902*	0.952	0.858	0.958*	0.917*

This section presents the results of two measurement models in between Organization Context and Innovative Knowledge Transfer Dimension relationship and effects.

Results of CFA from the Direct Model

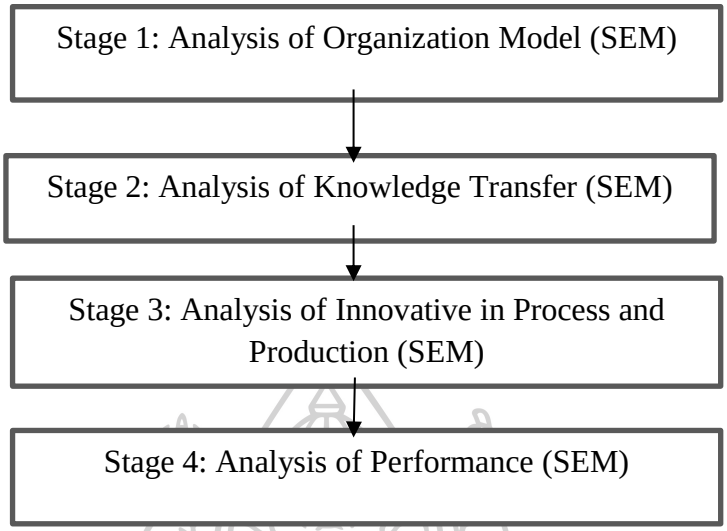
In Figure 4.1 above shows the measurement model of ORG (Organization Context) which comprises four variables of Information Technology (OFIT_ORG), Learning Strategy (LS_ORG), Trust Culture (TC_ORG) and Flexible Structure and design (FSD_ORG).

For the direct model, the results of absolute fit measures are $\chi 2/df = 2.672$, $p < 0.05$ GFI = 0.861 and RMSEA = 0.092*. Although the Chi-square statistics do no show satisfactory results, these statistics are not reliable in this study as Chi-square gets inflated by large sample sized (sample size > 200). Apart from chi-square and its significance, other statistics of absolute fit measures show that the model fit the data well. In addition, the incremental fit measures are: NFI = 0.860, RFI = 0.825, IFI = 0.907*, TLI = 0.883 and CFI = 0.906*. Therefore, the baseline comparison fit indices have confirmed for a model fit through the improvement achieved by this proposed model over the independence model.

4.6 Structural Equation Modeling

Structural equation model (SEM) is the main statistical treatment used in this study to carry out multiple regressions in finding relationships between the predictor variables and the dependent variables of Thai Co-Workers in Automobile Industries in the Innovative Knowledge Transfer Dimension in Thailand. We realized that only independent variable that could not enough to analyze via the structural equation model is the demographic profile of Organization Context and the Thai Co-Workers (e.g. Engineers, Technician, Assembly line workers, related staffs etc.). In this connection, the Analysis of Variance (ANOVA) will be performed in order to find the differences among variables in the demographic profiles. Figure 4.3 demonstrates the process of analysis and statistical treatments that are performed in the following sections.

Figure 12: Stages of Analysis and Statistical Treatment



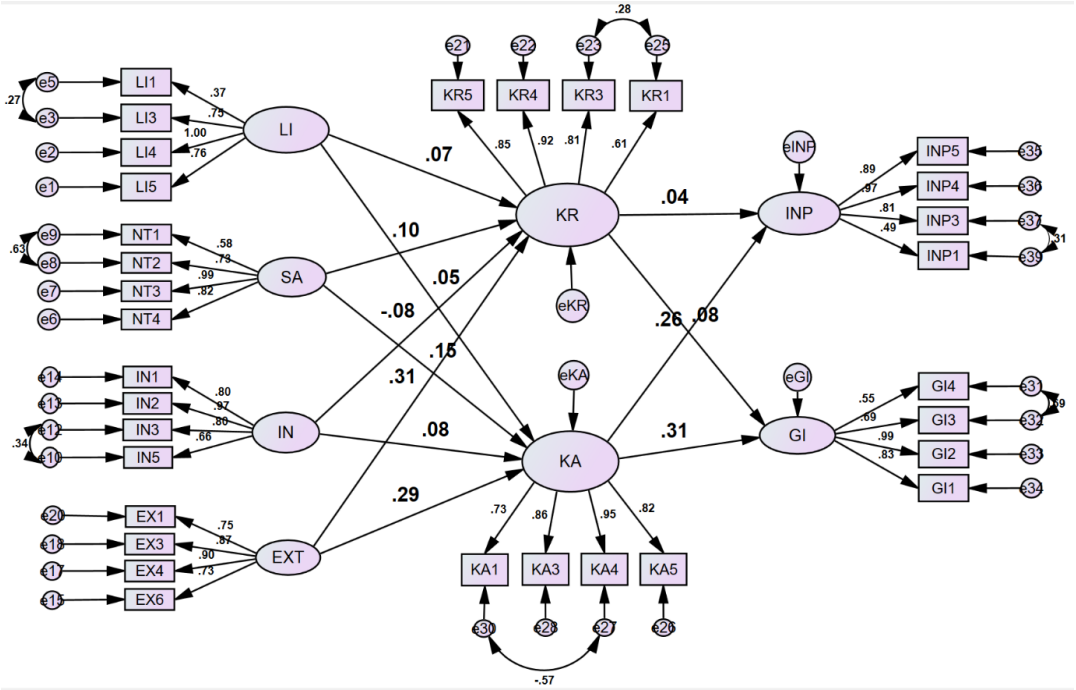
4.6.1 The Innovative Knowledge Transfer and the performance effects model

In order to obtain the significant paths of relationships in all models of knowledge transfer, the hypothesized research framework is transformed into a structural equation model as presented in **Figure 5.3.**

On the Objective Model, there are three main independent variables which include Innovative Knowledge transfer dimension, Innovative Knowledge in Process and Product innovative and Organization Context. These latent constructs are termed as unobserved or exogenous variable in SEM as variability is assumed to be determined by factor outside the causal model (Ho, 2006).

The steps and criteria that are used to analyze structural equation models are in line with the confirmatory factor analysis in which absolute fit indices and incremental fit measures are employed to determine fit of a Objective Model. Thus, there are additional indices and statistics involved in testing the hypotheses as have been proposed earlier (Chapter III Conceptual Framework Model). This study has included the Maximum Likelihood Estimates, and also the interpretation of residual of squared multiple correlations (R^2). After these have been analyzed, the findings of hypotheses tests are interpreted and summarized.

Figure 13: Objective Model



CMIN/DF = 2.611, CFI = 0.917, GFI = 0.836, TLI = 0.907, RMSEA = 0.065

Table 14: Direct Effect and Indirect Effect

Relation	ORGANIZATIONAL				IKT		INP	GI
	LI	SA	IN	EXT	KR	KA		
LI	-	-	-	-	0.066	0.050	-	-
SA	-	-	-	-	0.102	0.150	-	-
IN	-	-	-	-	0.075	0.085	-	-
EXT	-	-	-	-	0.313	0.286	-	-
KR	-	-	-	-	-	-	0.037	0.077
KA	-	-	-	-	-	-	0.260	0.315

Table 15: Model Fit Index

Index	Value	Criteria
CFI	0.917	> 0.9
NFI	0.873	> 0.9
GFI	0.836	> 0.9
RMR	0.086	< 0.08

Table 16 Summary of fit for this Research

	Measure of Absolute Fit				Measures of Incremental Fit				
	P	χ2/df	RMSEA	GFI	NFI	TLI	RFI	IFI	CFI
Rule	> 0.05	< 2.0	< 0.1	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9	> 0.9
Model	0.000	2.611	0.065	0.836	0.873	0.907	0.858	0.917	0.917

Note: * satisfactory fit

For this research model in Table 5.10, the results of absolute fit measures are χ2/df= 2.611, p < 0.05 GFI = 0.836 and RMSEA = 0.065. Chi-square and its significance show that the model does fit well with the data set, and its significance shows that model is sensitive to large sample size (should more than 200). Nevertheless, chi-square and its significance, other statistics of absolute fit measures show that the model fits the data well. In addition to these statistics, incremental fit measures are NFI = 0.873, RFI = 0.858, IFI = 0.917, TLI = 0.907 and CFI = 0.917. Therefore. The baseline comparison fit indices have confirmed for a model fit through the improvement achieved by a proposed model over the independence model. Table 5.10 presents both measures of absolute fit and measures of incremental fit of this research model against the recommended rules of thumb that χ2/df should be less than 2 and its p-value should not be significant, RMSEA should be lower than 0.1 and GFI should be more than 0.9 (Hair et al., 2006; Ho, 2006). The incremental fit indices are recommended (NFI, TLI, RFI, IFI and CFI) to be more than 0.9 (Hair et al., 2006; Ho, 2006).

Table 5.11 summarizes that the model fit moderately well to the data set as RMSEA, NFI, TLI, IFI and CFI earn satisfactory fit. Except for chi-square which is inflated by sample size (N = 380), GFI has the score of 0.836 and RFI has score of 0.858 which fall within the satisfactory level.

In related to the above implications that the model fits the data set well, there is strong improvement of the proposed model to the baseline model otherwise known as the

null or independence model. The interpretation of structural relationships and their related hypothesis are discussed in

Table 17: Structure Relationship between Path in the Model

Hypothesis	**Path in the Model**	**Standardized regression weight (*β*)**	**Critical ratio (C.R.)**	***P*-value**	**Interpret**
H1	LI -----> KR	0.066	1.295	0.195	Not Support
H2	LI ----->KA	0.050	1.020	0.308	Not Support
H3	IN ------> KR	-0.075	-1.440	0.149	Not Support
H4	IN ------->KA	0.085	1.663	0.096	Not Support
H5	EXT ----->KR	0.313	5.584	***	Support
H6	EXT----→KA	0.286	5.234	***	Support
H7	SA------→KR	0.102	1.986	0.047	Support
H8	SA------→KA	0.150	2.976	0.003	Support
H9	KR-----→INP	0.037	0.699	0.484	Not Support
H10	KR-----→GI	0.077	1.493	0.135	Not Support
H11	KA-----→INP	0.260	4.901	***	Support
H12	KA-----→GI	0.315	5.486	***	Support

Notes: $\chi 2/df=2.611$; NFI=0.873; RFI=0.858; IFI=0.917; TLI=0.907; CFI=0.917; RMSEA=0.065; RMR=0.086; GFI=0.836; AGFI=0.805

C.R. are significant at *p<0.05 **p<0.01 ***p<0.001 (CR ~ ± 1.96, 2.79, and 6.65 respectively).

Not supported represents coefficients that are not significant from zero at a 0.05 significance level. Source: Author's own.

The twelve hypotheses are tested with the structural equation model and all relationships were presented in the table 5.12 in structural equation models present a marginally acceptable fit for the hypothesized models that is close to 0.9 (χ2/df=2.611; NFI=0.873; RFI=0.858; IFI=0.917; TLI=0.907; CFI=0.917; RMSEA=0.065; RMR=0.086; GFI=0.836; AGFI=0.805).

Relationship between organizational factors and Innovative knowledge transfer

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

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

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.

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

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

H9: In an innovative MNCs. Knowledge replication will be positively associated with innovation performance.

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

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

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

Table 5.12 shows that organization context characteristics and its sub-variable show significant relationship with Innovative Knowledge Transfer in Automobile Industries. The findings indicate that Organization (LI, IN, EXT, SA) is positively related to Knowledge Replication Transfer with the Standardized Coefficient 0.066, -0.075, 0.313 and 0.102 and positively related to Knowledge Adaptation Transfer with the Standardized Coefficient 0.050, 0.085, 0.286, and 0.150 as follows by H1-H8. In addition, research hypotheses H9-H10 explained about Innovative Knowledge replication transfer related to Innovative performance (INF) and Global innovation (GI) with Standardized Coefficient 0.037, 0.077 respectively. Meanwhile, H11-H12 explained about Innovative Knowledge adaptation transfer related to Innovation performance (INP) and Global innovation (GI) with standardized coefficient 0.260 and 0.315, with P-value is 0.000. The statistics showing significant relationships between Innovative Knowledge integration by Local innovation, Internal integration capacity, External integration capacity, Strategic alliance/partnership and Knowledge Transfer dimension are high related with Innovation performance and Global innovation with the P-value is 0.00 and Standardized Coefficient is 0.03, 0.07 and 0.26, 0.31 respectively. Therefore, research hypotheses H1- H12 are all supported.

CHAPTER 5
DISCUSSION AND CONTRIBUTIONS

5.1 Summary of the Finding

We conduct the testing with goodness-of-fit among variables as the following concluding that:

- ***Local innovation*** has a significant positive correlation with Innovative knowledge transfer with Replication knowledge and Adaptation knowledge.
- ***Strategic alliance/ partnership*** had a significant and positive correlation with Innovative knowledge transfer with Replication knowledge and Adaptation knowledge.
- ***Internal integration capacity*** had a significant and positive correlation with Innovative knowledge transfer with Replication knowledge and Adaptation knowledge.
- ***External integration capability*** had a significant and positive correlation with Innovative knowledge transfer with Replication knowledge and Adaptation knowledge.
- ***Innovative replication Knowledge transfer*** had a significant and positive correlation with innovation performance and global innovation.
- ***Innovative adaptation Knowledge transfer*** had a significant and positive correlation with innovation performance and global innovation.

This implies the stronger the innovative knowledge transfer with replication knowledge and adaptation knowledge, the better the innovation performance and global innovation for Thailand's Automobile Industries. Although the organizational factors are high rapid change with the adapting on a new innovation of high technology and IT infrastructure. These reasons are effect to the international R&D alliance and MNCs' organizational characteristic for emerging market multinational such as local innovation, internal/external integration capacity, and strategic alliance/partner. The result of this study showed

that innovation performance and global innovation of MNCs in automobile industry in Thailand is positively influenced by innovative knowledge transfer activities (knowledge replication and knowledge adaption).

- This study could use time-series analysis to test the reliability and validity of this research such as tacit knowledge is an important source of knowledge transfer in the various MNCs environment in the different countries.
- However, Firms need to deeply understand in knowledge management and organizational context in difference environment effect.

5.2 Discussion of the Findings

Overall, the results presented below shows the direct and indirect relationships of the variable under investigation, in which local innovation, internal integration capacity, external integration capacity, strategic alliance/partnership are drawing ideas and insights in innovative knowledge transfer , we empirically examined how different types of knowledge transfer and organizational contexts jointly and interactively affect innovation performance and global innovation of MNCs in the context of asymmetric innovative knowledge transfer. With detailed survey data of Automobile industry MNCS firm in Industrial Estate, we find the following:

- ***Direct relationship results***

1) There are the four key results in the organizational contexts, which showed its important role in automobile manufacturing *H1:* (LN -> KR) and *H2*: (LN-> KA), which means that LN (Local innovation) is not affect both KR (knowledge replication) and KA (knowledge adaptation) according to IN(internal integration capacity) as *H3* (IN -> KR) and *H4* (IN -> KA) that are not support the results.

2) The influence of EXT (external integration capacity) highly affects both KR (knowledge replication) and KA (knowledge adaptation) according to *H5* (EXT -> KR) and *H6* (EXT -> KA) that support the results.

3) The high relationship between SA (strategic alliance/partnership) and both of KR (knowledge replication) and KA (knowledge adaptation) in *H7* (SA-> KR) and *H8* (SA -> KA) means that strategic alliance among automobile manufacturing networking in exchange technology innovation or R&D played an

important role in automobile industry in supporting innovation performance and global innovation, in which the *H11* (KA -> INF) and *H12* (KA-> GI) are supported.

We considered that organization's four factors (LI, SA, IN and EXT) directly influence innovative knowledge transfer environmental collaboration with knowledge replication and knowledge adaptation. Meanwhile, the results indicated that strategic alliance/partnership (SA) and external integration capacity (EXT) provided an important role in innovative knowledge transfer practices in automobile manufacturing especially in terms of knowledge adaptation (KA).

- ***Indirect relationship results***

1) The influence of two factors of organizational including SA (strategic alliance/partnership), EXT (external integration capacity) significantly affect the factors that lead to INP (innovation performance) and GI (global innovation) in automobile industry through Hypothesis *H6, H11* (EXT -> KA ->INP) and Hypothesis H6, H12 (EXT -> KA -> GI), and Hypothesis *H8, H11* (SA -> KA -> INP) and Hypothesis *H8, H12* (SA -> KA -> GI) which showed that both EXT and SA plays the important role in mediating KA (knowledge adaptation) which affect both INP (innovation performance) and GI (global innovation).

More interestingly, SEM analysis discovered that *H6, H11* and *H6, H12* which involves EXT (external integration capacity) and KA (knowledge adaptation) in external integration which also partially mediates the influence effect to innovation performance and global innovation. They therefore relate to findings that correspond with the past studies of Ve Ferdows, (2006).

Consequently, it is an important trend for a innovation and technology play the important role in coordinating activities in business alliances and partnership (Rudberg and Olhager, 2003) in automobile industry in Thailand to have deep understanding on the relationship of production flows between subsidiary as SA (strategic alliance/partnership) in Hypothesis *H8, H11* (SA -> KA -> INP) and Hypothesis *H8, H12* (SA -> KA -> GI). This conceptual framework proposed the core value of business alliance among the relational factors that built the firms' values to achieve innovation performance and global innovation adoption. This is done using

the survey on automobile industry in Thailand as Amata Nakorn Industrial estate. This present is constructed based on the studies of Peeters and Martin, 2017 Williams, 2007, Nohria; Ghoshal, 1997; Birkinshaw *et al*, 1998a; Ensign, 2002; Song *et al*., (2006). The sample data set from smaller to large-sized organization have been tracked in order to investigate their innovative knowledge transfer-related activities such as knowledge replication and knowledge adaptation in practice, innovation performing projects, strategic partnership, and alliances with supplier of networking etc., which are expected to influence innovative knowledge transfer and innovation performance in the future.

The conclusions of the result of research is able to answer the research question in which organizational factor has the greatest influence on innovative knowledge transfer as two dimensions as knowledge replication and knowledge adaptation as a mediator which influences the innovation performance and global innovation. According to the findings of the research, it confirmed that an association between external integration capacity (EXT) and strategic alliance/ partnership (SA) have important to the MNCs organization to achieve in innovation performance. Furthermore, for research question 6 and 7, “Does innovative knowledge transfer moderate the relationship between the independent variables and innovation performance?” and “Does innovative knowledge transfer moderate the relationship between the independent variables and global innovation?”. The results demonstrated that there is a positive relationship between external integration capacity and strategic alliance/partnership and both of innovation performance and global innovation.

5.2 Theoretical Contribution & Managerial Implication

Overall, of this research topics addressed with scholars’ theoretical concept to applied notions of innovative knowledge transfer in an organizational sense that have been keen interest in organizational management especially MNCs or subsidiary in the emerging country since the early twentieth century. When foreign automobile industrial management try to increase industrial productivity with new a high technology and pursue innovative process into efficiency production line.

5.2.1 Theoretical implications

This present study contributes to the ongoing efforts in making the significant of innovative knowledge transfer as the key driver for innovation and change in the automobile industry. This present study most of MNCs and subsidiary have policy-level from headquarter, theoretical and practical implications. As regards the policy implications, the results provided important notion that in order to enhance local employees or staff's ability, motivation, opportunity, knowledge sharing in company's management should proceed towards and collaborated with local environment e.g., local innovation, strategic alliance/partnership, internal integration capacity, and external integration capacity. Overall, this study has fulfilled the research objectives as the findings have suggested some important influence on innovation performance as well as mechanisms for innovative knowledge transfer dimension for automobile industry in Thailand to minimize the impact of discrepancy in operational practice by employees & staffs in local country and headquarter.

This present study also lays out a research agenda that identifies theoretical opportunities and methodological challenges for the automobile innovation performance strategies by innovative knowledge transfer practice. *First*, the study goes beyond the traditional definition of local innovation, strategic alliance/partnership, internal integration capacity, external integration capacity as it is constructed most MNCs organizations. More specifically, local innovation can affect different organizational levels such as individual, team and organizational (Birkinshaw, 1997; Schmid, Dzedek, and Lehrer, 2004). Internal integration capacity defines as internalization of knowledge during mutual transfer process inside organizations (Boer, 2004), external integration capacity has related to joint decision and collaborative with supplier or business alliance (Xie et al., 2008; Kogut and Zander, 1993), strategic alliance/partnership defines as a key benefit of R&D (Argote et al., 2003; Easterby-Smith *et al.*, 2008; Lin *et al*., 2012). *Second*, in this present study, the focus is linking innovative knowledge transfer dimension as replication knowledge which permitted use of partner's knowledge to accessed in their processing (Argote et al., 2003; Eastery-Smith *et al*., 2008; Lin *et al*., 2012) and adaptation knowledge by using accessed knowledge from an alliance partner for

creating innovation (Peeters and Martin, 2007; Williams, 2007) that can be defined as direct involvement of automobile organizations to the two scales design to capture the use of innovative knowledge transfer activities of employees & staffs internal operation and some acquire from the external knowledge such as new R&D, technology & information system networking etc. *Third*, this research refers to innovation performances as a good proxy for innovation as new product in the firm providing a value source of new knowledge (Pearce, 1999; Zander, 1999), global innovation refers to transfer of knowledge and innovation reflecting for international networks as globally to MNCs (Andersson, 2003).

5.2.2 Practical implications

From innovative performance perspective, this present study's results have direct implications for automobile manufacturing practices. *First*, how to promote local innovation and retrieve the knowledge of tacit (habit, assumptions, skills, etc.) and explicit knowledge (codified, record, easily articulated) by Nonaka and Takeuchi (2011). We used the tools for knowledge application to encourage workers' capacity according to our research aspect as following:

1) ***Adaptive technologies***: these technologies are used to support on the specific knowledge worker who work in the subsidiary by sharing and learn for new technologies in adaptive technologies to encouraged in the organization such as to make knowledge automation with computer technology for a company's information technology infrastructure ideal.

2) ***Replication knowledge*** from R&D: typically, most of manufacturing and automobile industry always applied quality techniques to manufacturing processes and focus on value create of user satisfaction by using replication knowledge on sharing larger information technology and information science world to in house and manipulate it.

In business practices that have brought a lot of relevance to innovative knowledge transfer management thru information management, quality techniques which are derived from strategic alliance and partnership in industry especially automobile industry in Thailand.

In order to the research finding showed that strategic alliance/ partnership has a significant impact on adaptation knowledge transfer and hence their innovative performance and global innovation. It is identified by asking a number of questions can be helpful for the firm to achieve the right balance for given company. MNCs automobile industry might consider as the following.

1) What should automobile advancement strategy if they are to secure future in global innovation and innovative performance?

2) How do we need to change our survival strategy to retain or improve us profile level?

3) What should be company future sources of competitive advantage, and how could these be made sustainable.

4) How do MNCs business create new knowledge that can become a source of sustainable competitive advantage? How does business make this? knowledge difficult to imitate and substitute at the creation process that they can use tacit knowledge to business advantage.

5) How do company transfer new knowledge across products, markets, businesses, and organizational units?

Such above question keeps some ground rules in business practice as First, this research encourage company in developing advancement strategies and management team needs to go through a process of envisioning future knowledge such as adaptation knowledge (Willians, 2007; Barley *et al*. 2018; Williams, (2007).

5.2.3 Managerial implications

Our findings also generate important managerial implications particularly for MNCs to launch innovation initiatives in terms of how to use local innovation (Birkinshaw; Hood; Jonsson 1998), internal integration capacity (Ledgerwood and Broadhurst, 1997, Patricia, 2004, Boer, 2010), external integration capacity (Kogu and Zander, 1992; Yang and Lee-Kwang, 2000), Strategic alliance/ partnership (Doz, Santos and Williansons, 2001) and innovative knowledge transfer into two distinct mechanisms: knowledge adaptation and knowledge replication (Peeters and Martin, 2017; William, 2007). Our findings show that knowledge replication and adaption

significantly influence the innovation performance of MNCs and global innovation. In business management, manager of MNCs have long been advised to copy or imitate business models and knowledge practices from automobile industry. However, our study also highlights the important role of refining and combining internal integration and external integration capability (Ledgerwood and Broadhurst, 1997) (Kogu and Zander, 1992; Yang and Lee Kwang, 2000) with strategic alliance and partnership about technology, R&D, new innovation practice, markets, and institutions, which may constitute a firm-specific advantage in highly competitive market when compared to others alliance and partnership or competitors in automobile market. Moreover, both innovative knowledge transfer are significant in business practice in term of knowledge creation and enhance in employees capacity. Our findings place emphasis on the capacity integration of knowledge base on the MNCs automobile, especially their accumulative technology and market knowledge such as new product design, new process as well as business's innovative strategic adaptation. Hence, these results focusing on the external integration capacity on accumulative technology of R&D from business alliance and partnership and market knowledge, in modifying external knowledge and hence improving their innovation performance not only subsidiary in Thailand but affect to another subsidiary and headquarter.

Interestingly, we found that knowledge replication and adaptation also have been examined in different situations; in different company using their own strategic policy, it depends on company policy and business practice such as Automobile company in Thailand may be different from headquarter or Indonesia subsidiary. In our research setting, it involves creatively integrating externally accessed alliance knowledge with internally generated knowledge base. This integrative mixture constitutes the basis of creative thinking, which can be defined as the notion of recombination as innovation (Barley et al., 2018; Peeters and Martin, 2017) for example Siam Toyota company is the largest MNCs in Amata Nakorn industry has create R&D center by their own with the high-end in technology and organizational practice in completely in term of strategic alliance and knowledge sharing among internally generated knowledge base. This integrative mixture constitutes the basis of creative thinking, which can be defined as the notion of recombination as innovation (Barley *et al*., 2018; Peeters and Martin, 2017). In other company, the employees have

worked on three chiefs as the morning chief, afternoon chief, night chief that are difficult to communicated on knowledge sharing as training or discussion.

5.2.4 Societal implications

More recently, however, most of automobile company has been increasingly subjected to refocus its employee-efficiency and innovative strategy towards complexity and creative capacity by organizational learning and management (Taylor 1911). At the same time, this study complies with global compact for social systems to presence of flexible and long enduring and environmental responsibility. Overall, the resilience and adaptive capacity and adaptive management makes firms to consider eco-efficiency strategy that will contribute to environmental and societal likelihood to adopt new innovation in product and service, technologies, and networking relationships in order to achieve innovation benefits in such a highly competitive market in this industry in the region.

5.3 Limitations

Throughout the scope of this present study, its effort is mainly focused on MNCs in automobile industry. Thus, other hotels that may have been practicing sustainability in other provinces are not necessarily covered. Moreover, some causes of limitations are the following: 1) there are some differences in company size, company's policy, management team as well as location, which are to contextualize and summarize, and 2) there has been limited time in conducting the research as it was only performed between October 2021 to November 2021. It is the intention of this present study to expand its scope to include more respondents and participants in future studies. We found that has several limitations which may inspire scholars in their future research inquiry. ***First***, our analysis is based on cross sectional survey questionnaires in design, but the driving forces for innovation performance of MNCs change over time. By adopting a longitudinal research design, future studies may better capture and depict the dynamic process of an MNCs innovative development. ***Second,*** the measurement of many of our variables is perceptual and self-reported as individual questionnaires. Although, we have addressed potential concerns such as

common method bias, the validity of these survey items could be subject to somewhat challenges. One mechanism that may reduce such potential biases is to use secondary data set and measure some of our variables in a relatively more objective manner. By combining both primary and secondary data in measuring variables, future studies may further assess the causality of our hypothesized relationships and improve validation of the findings. ***Third***, we did not identify whether the alliance takes place especially automobile industry in Thailand are highly complicated in terms of business alliance and partnership. Future research could test whether the location differentials of the R&D alliances matter in our study. ***Fourth,*** our sample only include MNCs who seek for learning through international R&D alliances in on Cholburi province, Thailand (Industrial zone of Thailand). We cannot explain actual and potential variances across the modes related to innovation performance and global innovation. As there are substantial market and institutional differences in large and complex emerging markets such as Thailand, Rayong and other countries, it will be fruitful for future research to explore how and to what extent our results from factory in Thailand could be applicable explore. Finality, we used the integration capacity perspective essentially as an explanatory mechanism and did not directly observe and empirically test it. Future studies may build on these ideas and explore in greater depth the capacity aspects of a firm that directly facilitate international R&D alliances and their various influences on innovation performance.

5.4 Concluding remarks

Despite the above limitations, our study develops a richer perspective on knowledge transfer strategy that adapts and recombines alliance knowledge to foster innovation performance of MNCs by carefully considering different types of organization characteristics. This is especially relevant and insightful for MNCs managers who are tasked with strategically as General manager, Production manager of HRM manager, etc. and coordinating R&D partners' actions that protect their intellectual assets within their broad appropriability regime of the alliance and also reap optimal benefits from the R&D alliance. The exponential growth of the internationalization of R&D alliances from emerging economies has become an important driving force which could fundamentally shape and/or reshape global

strategic collaborations. We believe that a more nuanced analysis of international R&D alliances involving MNCs regarding their distinct knowledge transfer mechanism, home country environmental contingencies and innovation performance will become an increasingly interesting topic of vital importance.

REFERENCES

A., C. Y. K. I. a. T. (2004). Internal capabilities and external knowledge sources: complements or substitutes for innovative performance? Tech-innovation 24(1): 29-39.

Alessia D'Amoto Nigel Roome. (2009). Toward an integrated model of leadership for corporate responsibility and sustainable development: a process model of corporate responsibility beyond management innovation, Corporate Governance: The international journal of business in society. Vol 9, Issue: 4, pp. 421-434.

Amabile T.M. (1988a). A model of creativity and innovation in organizations. Research in organizational behavior, Vol. 10 (1), pp. 123-167, 1988

Amabile T.M. (1988b). A model of creativity and innovation in organizations. Research in organizational behavior, Vol. 10 (1), pp. 123-167, 1988

Amabile T.M. Ross L.D. & Steinmetz J.L. (1977). Social roles, social control, and biases in social-perception processes. Journal of personality and social psychology, Vol. 35 (7), pp. 485, 1977.

Anna Sankowska. (2013). Relationships between organizational trust, knowledge transfer, knowledge creation, and firm's innovativeness, The Learning Organization, Vol. 20 No. 1, 2013, pp. 85-100.

Argote, L., McEvily, B. and Reagans, R., . (2003). Managing knowledge in organizations: an integrative framework and review of merging themes, Management Science, Vol. 49, No.4, pp. 571-582. .

ASEAN Investment United Nations Conference on Trade and Development https://asean.org/wp-content/uploads/2021/09/AIR-2020-2021.pdf (2000).

Blumenberg, S. W. H. T. a. B. (2009). Knowledge transfer processes in IT outsourcing relationships and their impact on shared knowledge and outsourcing performance International Journal of Information Management Vol. 29 No. 5 pp. 342-352.

Blumenberg, S., Wagner, H.T. and Beimborn, D. (2009). Knowledge transfer processes in IT outsourcing relationships and their impact on shared knowledge and outsourcing performance, International Journal of Information Management, Vol. 29 No. 5, pp. 342- 352.

Boer, N. L., Berends, H. and van Baalen, P. (2010). Baalen relational models for knowledge sharing behavior. European Management Journal of Information Management Vol. 29 No. 5 pp.342-352.

BOI, T. (2020). Thailand Board of Investment, 2020, https://www.bot.or.th/English/Economic Overview.

Bouquet, C. B., J. (2008). Weight versus voice: How foreign subsidiaries gain attention from corporate headquarters. Academy of Management Journal 51(3), 577-601 2008.

Cameron, K. S., & Quinn, R.E. (1999). "Diagnosing and Changing Organizational Culture". New York: Addison- Wesley. .

Cavusgil., G. A. K. a. S. T. (2004). Gary A Knight and S Tamar Cavusgil. Innovation, Organizational capabilities, and the born-global firm, Journal of International Business Studies, (2004).

Chang, C.-H. L. C.-S. C. S.-F. (2012). Understanding knowledge-sharing motivation, incentive mechanisms, and satisfaction in virtual communities. Social Behavior and Personality: an international Journal 40 (4) 639-647 2012. .

Chesbrough, H. W. (2006). The Era of Open Innovation. Managing Innovation and Change 127 34-41.

Chew, B. W., Bresnahan. T.F. and Clark, K.B. (1990). Measurement, coordination and learning in a multi plant network in Kaplan R.S. (Ed.) Measures for Manufacturing Excellence Havard Business School Press Boston MA pp. 129-162. .

Chiasson, C. S. a. M. (2007). Managing Innovative Knowledge: Cultural Perspectives on Patenting "Cross-Cultural Perspectives on Knowledge Management" by David J. Pauleen 2007.

Choo, J. H., Sim, Y. S., Lee, K. H., & Kim, B. H. (2014). The effect of consumers' involvement and innovativeness on the utilization of fashion wardrobe. International Journal of Consumer Studies, 38(2), 175-182.

Clark, J. a. S., F. (1997). Application of scoring method for measuring the value of knowledge base systems to key employees. Journal of Systems and InformationTechnology, 1(2), 23-40.

Conner, K., & Prahalad, CK. . (1996). A resource-based theory of the firm: Knowledge Versus opportunism. Organization science, 1996- pubsonline.informs.org.

D., L. (2014). The foreign direct investments in South-East Asia during the last two decades. Procedia Economics and Finance, Vol. 15 (2014), pp. 903- 908.

Dautrey, J. (2010). "Foreign Direct Investment and Thailand's Color-coded Politics: The Thai Paradox – Will it Endure?" AU-GSB e-Journal, Assumption University, Graduate School of Business.

Deng, P., Liu, Y., Gallagher, V.C., & Wu, X. (2018). International strategies of emerging market multinationals: a dynamic capabilities perspective. Journal of Management & Organization, available at: https://doi.org/10.1017/jmo.2017.76.

Deng, P. a. Z., S. (2018). Institutional quality and internationalization of emerging market firms: focusing on Chinese SMEs, Journal of Business Research, Vol. 92, pp.279-289.

Dicken, P. (2007). Global Shift: Mapping the Changing Contours of the World Economy, London: Sage. .

Dicken, P., & Henderson, J. (2003). Making The Connections: Global Production Networks In Britain, East Asia and Eastern Europe, Final report on ERSC project R000238535.

Driffield, N., Bhaumik, S.K. & Pal, S. (2010). Does ownership structure of emerging market firms affect their outward FDI? The case of the Indian automotive and pharmaceutical sectors, Journal of International Business Studies, Vol. 41, issue 3, pp. 437-450.

Dunning, J. H. (1993). Multinational Enterprises and the Global Economy. Addison-Wesley Publishers Company Inc.

Dunning, J. H. (2002). Trade, Location of Economic Activity, and the Multinational Enterprise: A Search for An Eclectic Approach. Theories and Paradigms of International Business Activities: The Selected Essays of John H. Dunning, 1: 52-76.

Easterby-Smith, M., Lyles, M.A. and Tsang, E.W.K. (2008). Inter-organizational knowledge transfer: current themes and future prospect, Journal of Management

Studies, Vol. 21 No. 4. Pp. 345-367.
Ellram, L. M., Tate, W. L., & Billington, C. (2008). Offshore outsourcing of professional services: A transaction cost economics perspective. Journal of Operations Management, 26(2): 148-163.
Ernst, D. (2000). Global Production Networks and the Changing Geography of Innovation Systems: Implication for Developing Countries, East-West Center Working Papers Economic Series, 9.
Feist, G. J. (1998). A meta-analysis of personality in scientific and artistic creativity. Personality and social psychology review, Vol. 2 (4), 290-309, 1998
Ferdows, K. (2006). Transfer of changing production know-how. Prod. Operation Management. 15 (1), 1-9. .
Feurer R., C. K., Wargin J. (1996). Developing creative teams for operational excellence International, Journal of Operations & Production Management, 16 (1),1996 , pp. 5.
Flores, R., Aguilera, R.V., Midian, A. and Vaaler, P.M. (2013). How well do supranational regional grouping schemes fit international business research models?, Journal of International Business Studies, Vol. 44 No. 5, pp. 451-474.
G., S. (1996). The process of knowledge transfer: A diachronic analysis of stickiness. Organizational behavior and human decision, 82(1), 9-27, 2000- Elsevier.
Galbraith, J. R. (2002). Designing Organizations: An Executive Guide to Strategy, Structure, and Process, 2 nd. Edition, ISBN-13:978-0787957452, ISBN-10: 0787957453.
Georg Von Krogh, K. I., Ikujiro Nonaka. (2000). Georg Von Krogh, Kazuo Ichijo, Ikujiro Nonaka. Enabling Knowledge Creation, Oxford University Press, 2000.
Gilbert, M., & Cordey-Hayes, M. (1996). Understanding the process of knowledge transfer to achieve successful technological innovation. Technovation, 1996 - Elsevier.
Gimenez, C. V., E. (2005). Logistics-production, logistics-marketing and external integration: their impact on performance. International Journal of Operations & Production Management, Vol. 25 No. 1, pp. 20-38.
Gnyawali Devi R., M. (2001). Cooperative networks and competitive dynamics: A Structural embeddedness perspective, The Academy of management Review, 26(3): 431- 445.
Gold, A. H., Arvind Malhotra, & Segars A. H. (2001). Knowledge management: An organizational capabilities perspective. Journal of management information systems, Vol. 18 (1), 185-214, 2001.
Grant, R. (1996). Prospering in dynamically competitive environments: Organizational capability As knowledge integration. Organization science, 1996, pubsonline.informs.org.
Gupta K. Anil, G. V. (2000). Knowledge management's social dimension: Lessons from Nucor Steel, MIT Sloan Management Review, 42 (1), 71, 2000.
H, B. R. S. K. B. L. E. P. D. T. (2002). Cultural Variations in Cross-Border Transfer of Organizational Knowledge: An Integrative Framework. Knowledge Management Research. The Academy of Management Review Vol. 27(2):17. .
Hair, J. F., Black, W.C., Babin, B.J. and Anderson, R.E. (2010). Multivariate Data Analysis – A Global Perspective, 7th ed., Pearson Prentice Hall, Upper Saddle

River, NJ.
Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2018). When to use and how to report the results of PLS-SEM. European Business Review, 30(1), 2-24.
Hansen, P. R. (2005). A test for superior predictive ability. Journal of Business & Economic Statistics, Vol. 23 (4), pp. 365- 380, 2005.
Hoskisson, R. E., Wright, M., FILATOTCHEV, I. and Peng, M.W. (2013). Emerging multinationals from mid-range economies: the influence of institutions and factor markets, Journal of Management Studies, Vol. 50 No. 7, pp. 1295-1321.
Hsu, Y., & Fang, W. . (2009). Intellectual Capital and New Product Development Performance: The mediating role of organizational learning capability: Technological forecasting and social change, 76, 664-677.
Ikujiro Nonaka, H. T. (1995). The Knowledge-Creating Company, How Japanese Companies Create the Dynamics of Innovation, Oxford University Press, 1995.
Irawati, D., & Charles, D. (2010). The involvement of Japanese MNEs in the Indonesian automotive cluster, International Journal of Automotive Technology and Management, 10(2/3): 180- 196.
J., B. (1997). Entrepreneurship in Multinational Corporations: The characteristics of Subsidiary Initiatives. Strategic Management Journal 18: 207-229 1997. .
Jansen, J., & Lyles, MA. (2008). Inter-and intra-organizational knowledge transfer: meta-analytic review and assessment of its antecedents and consequences, Journal of
management, 2008 – Wiley Online Library. J. David Johnson, William A. Donohue, .
Jaworski, B. J. a. K. A. K. (1993). Market orientation: antecedents and consequences. Journal of Marketing, Vol. 57 No. 3, pp. 53-70.
Jiang. Z.S. and Hao, Y. H. (2012). Game analysis on the stability of technology innovation alliance: a perspective of knowledge transfer, Science Research Management, Vol. 33
No. 7 pp. 88-98.
Jo Rhodes, R. H., Peter Lok, Bella Ya-Hui Lien, Chi-Min Wu. . (2008). Factors influencing organizational knowledge transfer: implication for corporate performance, Journal of Knowledge Management, Vol. 12 Issue: 3, pp.84-100.
Johnson Sally, C. K. A. (1973). The Journal of Business Communication (1973) 1994 31: 2, 111-122. .
Jon-Arild Johannessen, B. O. (2009). Systemic knowledge processes, innovation and sustainable competitive advantages. Kybernetes, Vol. 38 Issue: ¾, pp. 559-580.
Jones, B. J. F. M. (2012). Knowledge Transfer and Innovation, 2018, New York, DOI: https://doi.org/10.4324/97813152
Jonsson., B. J. H. N. Building firm-specific advantages in multinational corporations: The role of subsidiary initiative. Strategic Management Journal V. 19, n.3. p.221-242 1998. .
Jordaan, D. B., & Surujlal. J. (2013). Social Effect of Mobile Technology on Generation Y Students. Mediterranean Journal of Social Sciences, Vol. 4, No. 11 (2013). .
Jose' David Vicente-Lorente, J. A. Z.-V. (2012). Effects of process and product-oriented innovations on employee downsizing", International Journal of Manpower, Vol.33 Issue:4. Pp.383-403.
K.B., C. B. W. B. T. F. a. C. (1990). Measurement, coordination and learning in a multi plant network in Kaplan, R.S. (Ed.), Measures for Manufacturing

Excellence, Havard Business School Press, Boston, MA, pp. 129-162. .
Kalling, T. (2003). The business model concept: Theoretical underpinnings and empirical illustrations. European Journal of Information Systems, 12(1), 49-59.
Kaser, P. A. W., & Miles, Raymond, E. (2002). Understanding knowledge activists' successes and failures, Long Range Planning, 35(1), 9-28, 2002.
Kawai, N. a. S., R. (2014). Subsidiary autonomy and performance in Japanese multinational in Europe, International Business Review, Vol, 23 No. 3, pp. 504-515.
Keh, T. H., Ji, B. W., Wang, X., Sy-Changco, A. J., & Singh, R. (2014). Online movie rating: a cross-cultural, emerging Asian markets perspective. International Marketing Review, 32(3/4), 366-388. https://doi.org/10.1108/IMR-08-2013-0161.
Kenney, M., Massini, S., & Murtha, T.P. (2009). Offshoring administrative and technical work: new fields for understanding the global enterprise. Journal of International Business Studies, 40(6): 887-900. .
Knapp, E. M. (1998). Knowledge management. Business and Economic Review, 44(4), 3-6.
Kogut, B. Z., U. (2003). Knowledge of the firm and the evolutionary theory of the multinational corporation. Journal of International Business Studies, 2003, Vol. 34,
issue 6, pp. 516- 529. .
Kogut, B. Z., U. . (1996). What firms do? Coordination. Identity, and learning, Organization science, 1996 – pubsonline.informs.org.
Kostova, T. a. R., K. (2002). "Adoption of an organizational practice by subsidiaries of multinational corporations: institutional and relational effects", Academy of Management Journal, Vol. 45 No. 1, pp. 215-233.
Levin, Z. D. a. C., R. . (2004). The strength of weak ties you can trust: the mediating role of trust in effective knowledge transfer, Management Science, No. 11, pp. 1477-1490. .
Lin, C., Wu, Y., Chang, C., Wang, W., & Lee. (2012). The alliance innovation performance of R&D alliance – the absorptive capacity perspective, Technovation, Vol. 32 No. 5, pp. 282-292.
Livermore, D. (2015). Leading With Cultural Intelligence. The Real Secret to Success, 2nd edition, 2015.
Luiz Antonio Joia, B. L. (2010). Relevant factors for tacit knowledge transfer within organizations, Journal of Knowledge Management, Vol. 14 Issue:3, pp.410-427.
Luo, Y. a. W., S.L. (2012). Foreign direct investment strategies by developing country multinationals, Global Strategy Journal, Vol. 2 No. 3, pp. 244-261.
M., C. (1996)). Managing International Technology Transfer London: International Thomson Business Press. .
M., G. R. (1996). Toward a knowledge-based Theory of the Firm, Strategic Management Journal, 17, 109-22.
Ma, X., Tong, T.W. and Fitza, M. (2013). How much does subnational region matter to foreign subsidiary performance? Evidence from Fortune Global 500 Corporations' investment in China, Journal of International Business Studies, Vol. 44 No. 1, pp. 66-87. .
Majidul Islam, A. T. H., Lokman Mia. (2012). Role of strategic alliance and innovation

on organizational sustainability. Benchmarking: An International Journal, Vol. 25 Issue:5, pp. 1581-1596.
Makhija, T. a. (2006). The Role of Organizational Controls in Managing Knowledge. The Academy of Management Review, 31(1), 2006 DOI:10.5465/AMR.2006.19379631.
Manning, S., Massini, S., & Lewin, A. Y. (2008). A dynamic perspective on next generation offshoring: The global sourcing os science and engineering talent. Academy of Management Perspectives, 22(3): 35-54. .
Marchiori, D., & Franco, M. (2019). Knowledge transfer in the context of inter-organizational networks: Foundations and intellectual structures. Journal of Innovation & Knowledge, 1–10. https://doi.org/10.1016/j.jik.2019.02.001.
Mark, B. (2001). Belief and Investing: Preferences and Attitudes of the Faithful. Australasian Accounting Business and Finance Journal Vol. 3 Issue 1 Article 3 2013.
Masaaki Kotabe, D. D.-H., Ronaldo Parente and Harsh A. Mishra. (2006). Determinants of cross-national knowledge transfer and its effect on firm innovation, Journal of International Business Studies, (2007) 38, pp. 259-282.
Meyer, K., Kudambi, R., & Narula, R. (2011). Multinational Enterprises and Local Contexts: The Opportunities and Challenges of Multiple Embeddedness. Journal of Management
Studies, 48(2), 235-252, 2011. .
Mudambi, R., Susan M., Mudambi, & Pietro Navarra. (2007). Global Innovation in MNCs: The Effects of Subsidiary Self-Determination and Teamwork, Journal of Product Innovation Management, 24(5), 442-455, 2007. .
Murray, M. K. a. J. Y. (1989). Linking Product and Process Innovations and Modes of International Sourcing in Global Competition: A Case of Foreign Multinational Firms. Journal of International Business Studies, Vol. 21, No. 3 pp. 383-408.
N., B. R. C. (1992). The network structure of management roles in a large matrix firm. Evaluation and Program Planning 1992 – Elsevier.
Nadel., S. F. (2004). The Theory of Social Structure, 1st Edition, 2004, London, https://doi.org/10.4324/97813150.
Nonaka, I. (1991). The knowledge creating company. Havard Business Review, 69, 96-104.
Nonaka, I., & Takeuchi, H. (1995). The knowledge-creating company: How Japanese companies create the dynamics of innovation, OUP USA, 1995, books.google.com.
Nunnally. J. C., B., I. H. (1994). Psychometric theory (3rd ed.). McGraw-Hill.
O., C. C. G. (2002). Exploring Human Resource Management Practices in Small and Medium Sized Enterprises. Personnel Review, Vol. 31(6), DOI:10.1108/00483480210445962.
O'Dell, C., & Grayson, C.J. (1998). If only we knew what we know: Identification and transfer of internal best practices. California Management Review, Vol. 40 (3), pp. 154-174, 1998.
O'Dell., R. M. D. a. C. (2001). Overcoming cultural barriers to sharing knowledge, Journal of Knowledge Management, Volume 5, Number 1-2001, pp. 76-85. .
Oberty, B. P. Z. (2008). Determinants of the success of international Assignees as knowledge transferors: A theoretical framework The International Journal of

Human Resource Management 19(1): 1-18. .
Oddou., B. J. S. M. M. G. (1991). Toward a Comprehensive Model of International Adjustment: An Integration of Multiple Theoretical Perspectives Academy of Management Review Vol. 16(2). Apr 1991.
Okamuro, H. (2007). Determinants of successful R&D cooperation in Japanese small businesses: the impact of organizational and contractual characteristics, Research Policy,Vol. 36, No. 10, pp. 1529-1544.
Ozawa, T. (2005). Institutions, Industrial Upgrading, and Economic Performance in Japan-The Flying-Geese Paradigm of Catch-up Growth, Northampton, Massachusetts: Edward Elgar Publishing.
Paladino, B. (2010). Innovative corporate performance management: five key principles To accelerate results John Wiley & Sons 2010. .
Qian, L., Yang, P. and Li, Y. (2016). Does guanxi in China always produce value? The contingency effects of contract enforcement and market turbulence., Journal of Business & Industrial Marketing, Vol. 31 No. 7, pp. 861-876.
Radim, J. (1990). A survey of methods used in probabilistic expert systems for knowledge integration, Knowledge-Base Systems, Vol. 3 No. 1, pp. 7-12. .
Richard Lynch, Z. J. (2016). Exploring the institutional perspective on international business expansion: Towards a more detailed conceptual framework, Journal of Innovation & Knowledge, March 2016, 117-124.
Rogers, E. (1983). Diffusion of Innovations. Free Press, 1983, New York.
Rothaermel, F., & Hess, A. . (2010). Intellectual human capital and the emergence of biotechnology: Trends and patterns, 1974-2006. IEEE Transactions on Engineering Management, 59(1), 65-76, 2010.
Rudberg, M., & Olhager, J. (2003). Manufacturing networks and supply chains: an operations strategy perspective. Omega 31(1), 29-39.
Rungpry, S. (2007). National Innovation Agency (NIA), ASEAN Innovation Management, 2007.
Rutten, D. I. R. (2014). Emerging Knowledge Economies in Asia, Current trend in ASEAN5, Routledge, Taylor & Francis Group, London, and New York, 2014.
S., B. R. W. R. E. (1999). Human capital measurement. Research-Technology Management 47(3) 43-49 2004.
Saka-Helmhout. (2011). Different Forms of Agency and Institutional Influences within Multinational Enterprises, Management International Review, 51(5): 567-592.
Schmid, S. D., L. R.; Lehrer, M. (2014). From Rocking the Boat to Wagging the Dog: A Literature Review of Subsidiary Initiative Research and Integrative Framework. Journal of International Management, 20(2), 201-218, 2014. .
Senge, P. M. (1990). The responsible learning organization: Can teach organizations how to become responsible innovators? The Fifth Discipline, 1990.
Sethi, R. a. I., Z. (2008). Stage-gage controls, learning failure, and adverse effect on novel new products. Journal of Marketing, Vol. 72 No. 1, pp. 118-134.
Shalley, C. E., & Gilson, L.L. (2004). What leaders need to know: A review of social and contextual factors that can foster or hinder creativity. The leadership quarterly, 2004, Elsevier.
Simmel, G. S. (1950). Individuality and social forms. University of Chicago Press, 2011. .
Soliman, F. (2009). Modelling the role of HRM in the innovation chain. The

Employment Relations Record, 11 (2), 1-20.
Staub, S. (2016). What affect sustainability and innovation – Hard or soft corporate identity? Technological Forecasting and Social Change, Vol. 102(1), 2016 DOI: 10.1016/j.techfore.2015.06.033.
Stein, R. B. (1974). Peripheral control of movement. Physiological reviews, Vol. 54 (1), pp. 215-243, 1974.
Stephen P. Robbins, T. A. J. (2015). Stephen P. Robbins, Timothy A. Judge. Organizational Behavior, 16th edition, 2015.
Stringfellow, A., Teagarden, M. B., & Nie, W. (2008). Invisible costs in offshoring services work. Journal of Operations Management, 26(2): 164-179. .
Subramaniam, M., & Youndt, Mark A. . (2005). The Influence of Intellectual Capital on the Types of Innovative Capabilities. The Academy of Management Journal, 48(3): 450- 463, DOI:10.5465/AMJ.2005.17407911.
Swierczek, F., & Onishi Jun. (2003). Culture and conflict: Japanese managers and Thai subordinates. Personnel Review, Vol. 32(3): 187-210.
T., B. W. C. T. J. W. K. (2008). Valuing multiple trajectories of knowledge: a critical review and agenda for knowledge management research Academy of Management Annals Vol. 12 No. 1 pp. 278-317.
T., C. Y. a. C. (2009). The impact of knowledge stickiness on knowledge transfer implementation internalization, and satisfaction for multinational corporations. International Journal of Information Management Vol. 29 No. 6 pp. 425-435.
Tain-Jy Chen, H. C. a. Y.-H. K. (2004). Foreign Direct Investment and Local Linkages, Journal of International Business Studies, Vol. 35, No.4 (Jul. 2004).
The Industrial Estate Authority of Thailand. (2020). The Industrial Estate Authority of Thailand, Annual Report, 2020.
Tsai, W. a. G., S. . (1998). Social capital and value creation: the role of intrafirm networks, Academy of Management Journal, Vol. 42 No. 2, pp. 464-476.
Tsou, C.-W. (2012). Consumer acceptance of Windows 7 and Office 2010: the moderating effect of personal innovativeness. Journal of Research and Practice in Information Technology (Center for General Education, I-SHOU University), 44(1), 1.
Ulrich, W. (2014). The Effect of Corporate Environmental initiatives on firm value: Evidence from Fortune 500 Firms, Management, 17(1): 1-19.
Vereecke, A., Van Dierdonck, R., & De Meyer, A. (2006). A typology of plants in global manufacturing networks, Management. Science., 52 (11), 1737-1750.
Volberda, H. W., Foss, N.J. and Lyles, M.A. (2010). Absorbing the concept of absorptive capacity: how to realize its potential in the organization field. Organization Science, Vol. 21 No. 4, pp. 931-951.
W., C. J. C. Y. V. (2011). The influence of scope depth and Orientation of external technology sources on the innovative performance of Chinese firms Technovation Vol. 31 No. 8 pp. 362-373.
W.J., C. A. a. I. (1995). Industrial clusters knowledge integration and performance. World Development, Vol. 32 No. 2, pp. 305-326.
Wahab, S. A. (2012). Defining the Concepts of Technology and Technology Transfer: A Literature Analysis. International Business Research, Vol. 5(1): 61-71
Wang Pien, T. W. T., & Koh Chun Peng. (2004). An integrated model of knowledge transfer from MNC parent to China subsidiary, Journal of World Business 39(2):

168-182. .
Wang. Y., R., N. (2015). Alliance capabilities: review and research agenda. Journal of Management, Vol. 41 No. 1, pp. 236-260.
Weggeman, M. (1996). Knowledge management: the model operates for a learning organization. Knowledge management: organization, competence, and methodology, 175-188, 1996.
West, A. M., & Anderson A. Neil. (1996). Innovation in top management teams. Journal of Applied psychology, Vol. 81 (6), pp. 680, 1996.
West, P. (2000). Organizational Learning in the Automotive Sector, London: Routledge. .
Westner, M., & Strahringer, S. . (2010). Determinants of success in IS offshoring projects: Results from an empirical study of German companies. Information & Management, 47(5/6): 291-299. .
Williams, C. (2007). Transfer in context: replication and adaption in knowledge transfer relationships, Strategic Management Journal, Vol. 28 No. 9, pp. 867-889.
Wong, P. K., Ho, Y.P., & Autio, Erkko. (2005). Entrepreneurship, Innovation and Economic Growth: Evidence from GEM Data. Small Business Economics, Vol. 24(3): 335- 350.
Woodman, R. W., Sawyer John E., & Griffin Ricky W. . (1993). Toward a theory of organizational creativity. Academy of management review, Vol. 18 (2), pp. 293-321,1993.
Xu, C., Tao, D., & Xu, C. (2015). Muti-view self-paced learning for clustering, Twenty-Fourth international joint conference, 2015- aaai.org.
Y., B. R. a. S. (2004). Introduction in Sadoi B. (ed.) Production Networks in Asia and Europe: Skill Formation and Technology Transfer in the Automobile Industry London: Routledge.
Y., C. S. C. R. Z. (2003). Tacit knowledge transfer and firm innovation capability. Journal of business & industrial marketing 1 Feb. 2003.
Yang, X., Taylor, M. and Stoltenberg. C. . (1999). Assessing the effects of structural and Project characteristics on R&D strategic alliance performance: a unified approach, Journal of High Technology Management Research, Vol. 10 No. 1, pp. 105-121. .
Youngdahl, W., & Ramaswamy, K. . (2008). Offshoring knowledge and service work: A conceptual model and research agenda. Journal of Operations Management, 26(2): 212-221. .
Yu., D. Z. C.-H. W. D. Z. X. (2018). Process of innovation knowledge increase in supply chain network from the perspective of sustainable development, Industrial Management & Data Systems, Vol. 118 Issue: 4, pp.873-888.
Yuji Yamamoto, M. B. (2013). Four types of manufacturing process innovation and their managerial concerns. SciVerse ScienceDirect, Procedia CIRP 7 (2013) 479-484.
Yukika, A. (2006). Managing technology alliances: the case for knowledge management. International Journal of Information Management, Vol. 26 No.6, pp. 484-493. .
Z., X. (2008). Dissecting autophagosome formation: the missing pieces. Autophagy 4(7):920-2.
Zander, B. K. U. (1993). Knowledge of the Firm and the Evolutionary Theory of the

Multinational Corporation Journal of International Business Studies Fourth Quarter1993; 24 4; ABI/INFORM Complete.

VITA

NAME Phairat Boonsuwan