

**THE INFLUENCE OF ORGANIZATIONAL  
INNOVATIVE CLIMATE, KNOWLEDGE SHARING  
AND WORK ENGAGEMENT ON INNOVATIVE  
BEHAVIOR AMONG ENGINEERS IN ELECTRICAL  
AND ELECTRONIC MNCs IN MALAYSIA**

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**UNIVERSITI SAINS MALAYSIA**

**2019**

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AND ELECTRONIC MNCs IN MALAYSIA**

by

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**Thesis submitted in fulfillment of the requirements  
for the degree of  
Doctor of Philosophy**

**March 2019**

## **ACKNOWLEDGEMENT**

First and foremost, thanks to Allah the Al-Mighty for His blessing in my PhD journey. I would like to express my sincere gratitude to my main supervisor, Associate Professor Dr. Hazril Izwar Ibrahim, for his constructive criticism and assistance throughout my PhD journey. I appreciate his relentless efforts in imparting his knowledge to me, readings and correcting my writings. It is a great privilege to work and study in his guidance.

My special thanks to my husband for his understanding, patients and courage throughout this PhD journey. Without your support, this thesis would not be completed. Also, my lovely kids, thank you because you are my truly inspirations and motivation in finishing this study. My sincere thanks also to my parents, my parents in law, my sister and my family in law for all the prayers, support, and encouragements.

I would also like to thank to Dr. Devaraj from Graduate School of Business for his assistance during the pre-test process. Also, thank you for the respondents for their valuable feedbacks concerning my draft questionnaire. I am also grateful to my circle of friends and staff from University Sains Malaysia who helping me unwaveringly even on trivial queries. I am lucky to have fellow researchers like Siti Fatimah Zakaria, Dr. Jeniboy Kimpah, Stephanie Chuah Hui Wen, Dr. Azam Abdel Hakeem, Dr. Haniruzila Hanifah, Dr. Ali Vafae Zadeh who helped me in various ways. I also like to express my heartfelt gratitude to my examiners, Professor Dr Noor Hazlina Ahmad, Professor Muhammad Madi bin Abdullah and Dr Daisy Kee Mui Hung for their valuable feedbacks and suggestions that helped better my thesis.

Last but not least, I would like to extend my appreciation to the Institute of Postgraduate Studies of Universiti Sains Malaysia for organizing workshops throughout the year at affordable fees. I have learned so many things from the various workshops I have attended throughout those years.

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## **LIST OF ABBREVIATIONS**

<b>CB-SEM</b>	Covariance Based – Structural Equation Modeling
<b>CFA</b>	Confirmatory Factor Analysis
<b>D&amp;D</b>	Design and Development
<b>E&amp;E</b>	Electrical and Electronic
<b>EDA</b>	Exploratory Data Analysis
<b>ETP</b>	Economic Transformation Program
<b>FDI</b>	Foreign Direct Investment
<b>GNI</b>	Gross National Income
<b>HR</b>	Human Resource
<b>ICT</b>	Information and Communication Technology
<b>MIDA</b>	Malaysia Investment Development Authority
<b>MNC</b>	Multinational Corporation
<b>NKEA</b>	National Key Economic Areas
<b>PLS-SEM</b>	Partial Least Square – Structural Equation Modeling
<b>R&amp;D</b>	Research and Development
<b>SCT</b>	Social Cognitive Theory
<b>SLT</b>	Social Learning Theory
<b>TPB</b>	Theory of Planned Behavior
<b>TRA</b>	Theory of Reasoned Action

**PENGARUH IKLIM INOVATIF ORGANISASI, PERKONGSIAN  
PENGETAHUAN DAN IKATAN KERJA TERHADAP TINGKAH LAKU  
INOVATIF DI KALANGAN JURUTERA SYARIKAT MULTINASIONAL DI  
SEKTOR ELEKTRIK DAN ELEKTRONIK DI MALAYSIA**

**ABSTRAK**

Kepentingan tingkahlaku inovatif di kalangan jurutera pada masa ini adalah penting dan persaingan yang berasaskan inovasi boleh dijadikan asas untuk pembangunan mampan, terutamanya bagi syarikat-syarikat multinasional dalam sektor elektrik dan elektronik di Malaysia. Berdasarkan teori kognitif sosial, kajian ini menggunakan satu model penyelidikan untuk memeriksa faktor-faktor iklim inovatif organisasi (sokongan untuk orientasi inovasi, daya saing dan prestasi), faktor-faktor individu (altruisme, pengetahuan sendiri, sikap timbal-balik, reputasi dan kepercayaan), dan ICT sebagai ramalan terhadap tingkah laku inovatif dengan perkongsian pengetahuan (ilmu memberi dan menerima ilmu) sebagai pembolehubah perantaraan. Di samping itu, ikatan kerja (semangat, dedikasi dan penyerapan) sebagai pembolehubah perantara untuk mengukuhkan hubungan antara perkongsian pengetahuan (ilmu memberi dan menerima ilmu) dan tingkah laku yang inovatif. Sejumlah 309 jurutera daripada syarikat-syarikat multinasional dalam kejuruteraan elektrik dan elektronik di Malaysia mengambil bahagian dalam kajian ini. Berdasarkan analisis partial least squares structural equation modeling, hasil kajian tersebut mendedahkan bahawa sokongan untuk inovasi, daya saing, orientasi pencapaian, pengetahuan kemampuan dan amanah mempunyai hubungan yang signifikan terhadap ilmu memberi. Keputusan juga menunjukkan bahawa daya saing,



orientasi pencapaian, pengetahuan kemampuan, reputasi, amanah, dan penggunaan ICT mempunyai hubungan yang signifikan terhadap menerima ilmu. Hasil kajian juga mendapati bahawa pengetahuan menerima memainkan peranan sebagai pembolehubah perantara dalam hubungan antara pemboleh ubah bebas dan tingkah laku yang inovatif, serta memainkan peranan untuk meningkatkan hubungan antara perkongsian pengetahuan (memberi pengetahuan dan menerima pengetahuan) dengan tingkah laku inovatif. Dapatan kajian ini sangat berguna kepada kedua-dua pihak sama ada ahli akademik dan pengurusan syarikat yang ingin mengetahui peramal tingkahlaku inovatif supaya tingkah laku inovatif boleh ditingkatkan terhadap jurutera, dan seterusnya, meningkatkan kejayaan syarikat.

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**ABSTRACT**

The importance of innovative behavior among engineers currently is vital and competition based on innovation can serve as a basis for sustainable development, especially for multinational companies in Electrical and Electronic sector in Malaysia. Grounded by the social cognitive theory, this study utilized a research model examining organization innovative climate factors (support for innovation, competitiveness, and performance orientation), individual factors (altruism, knowledge self-efficacy, reciprocity, reputation, and trust), and ICT use as predictors of innovative behavior with knowledge sharing (knowledge giving and knowledge receiving) as mediating variables. In addition, work engagement (vigor, dedication, and absorption) as moderator to strengthen relationship between knowledge sharing (knowledge giving and knowledge receiving) and innovative behavior. A total of 309 engineers from multinational companies in electrical and electronic in Malaysia participated in this research. Based on partial least squares structural equation modeling analysis, the study revealed that support for innovation, competitiveness, performance orientation, knowledge self-efficacy, and trust have a significant relationship with knowledge giving. The results also indicated that competitiveness, performance orientation, knowledge self-efficacy, reputation, trust, and ICT use have a significant relationship with knowledge receiving. It also found that

knowledge receiving play a mediating role in the relationship between independent variables and innovative behavior, as well as work engagement play a moderating role to strengthen the relationship between knowledge sharing (knowledge giving and knowledge receiving) and innovative behavior. The findings of this study are useful to both academics and practitioners who wish to understand the predictors of innovative behavior so that the innovative behavior can be increase among the engineers, and thus, increase the success of the companies.

# **CHAPTER 1**

## **INTRODUCTION**

### **1.1 Introduction**

Innovation has become the most important challenge for all types of organizations and has been widely accepted among economists, scholars, and practitioners that ‘innovation is power’ (Drach- Zahavy, Somech, Granot, & Spitzer, 2004). Researchers also believed that competition based on innovation can serve as a basis for sustainable development in post-industrial knowledge economy (Romer & Kurtzman, 2004) as the cost of technology and the growing need for increased flexibility in production (Hanssen-Bauer & Snow, 1996; Schulze, Behling, & Buhrs, 2008; Volberda, 1996). Innovation also plays a role as an enabler for organizations to progress (Drucker, 1999; Hamel, 2009; Porter, 1998; Shoham & Fiegenbaum, 2002; Subramaniam & Youndt, 2005) and to achieve and maintain competitiveness in the global market (Kuncoro & Suriani, 2017; Miron, Erez, & Naveh, 2004). In fact, innovation is critical to the organization to seek markets and determine viability in the future. Therefore, the development of innovation and commercialization have been emphasized by the 2015 budget allocation, under the 11th Malaysia Plan, targeting 360 high-impact innovative products that will be commercialized within the next five years (Ministry of Finance Malaysia, 2015).

To overcome this crucial issue of innovation, innovative behavior is an important matter to be considered by every organization as the primary resource to be possessed by their employees. Organizations employ multiple resources, but now organizations are increasingly aware that other organizations are likely to have the same resources and

managerial expertise (Harrison & Samson, 2002), especially in MNCs of E&E manufacturing sector, where competition is increasing day by day. Innovative behavior among the employees is an important factor for the realization of innovation, as it can lead the change to a more improved innovation process either in the production or to produce new ideas (Arif, Zubair, & Manzoor, 2012), in addition to the support provided by the organization to implement reform processes, methods and operations (Delaney & Huselid, 1996). Katz (1964) argued that the organization will be more innovative with capitalized employee's ability to innovate. Employees can help improve organizational performance and capabilities through their behavior to generate new ideas and make it as building blocks for new and better products, services, and work processes (Michailova & Minbaeva, 2012), and thus being as important interest subjects as potential source for creativity and innovation for organizations (Farid, Hakimian, & Ismail, 2017).

To address innovative behavior among employees, certain vital influences need to be considered. These influences including support for innovation, organizational culture, altruism, knowledge self-efficacy, reciprocity, reputation, trust, and ICT use. According to Devloo, Anseel, De Beuckelaer, and Feys (2016), support for innovation is a main approach as a contextual antecedent of innovative behavior. Jassawalla and Sashittal (2002) in their study provide a real-life illustration of support for innovation settings which fosters teamwork, promotes risk-taking and creative actions that increase effectiveness of product development and create innovativeness. Aside from that, organizational culture provide a significant effect on innovativeness. Hogan and Coote (2014) approved that culture have a positive relationship with innovative behaviors. Efrat (2014) in his findings found that most of cultural aspects demonstrate strong and lasting impact on the tendency to innovate. Furthermore, Ullah, Akhtar, Shahzadi, Farooq, and

Yasmin (2016) in their study proved that altruistic intention have a positive relationship with the innovation. Also, Kumar and Uz Kurt (2011) in their study stated that there is a positive relationship between self-efficacy and innovativeness. Additionally Viale, Zouari, and Samuel (2015) in their case study shows that reciprocity promotes the success and lead companies to innovation. Then, Yuan and Woodman (2010) found significant effect on employee reputation towards innovative behavior. Moreover, Savolainen and Lopez-Fresno (2013) in their study believed that trust is a resource that creates validity and enable innovativeness. Finally, Bourke and Crowley (2015) reveals that ICT use positively influence firm innovation performance and innovativeness.

However, the most important resource an organization can ever have is their employees and their knowledge (Cohen & Levinthal, 1990). This is because each employee has valuable knowledge and it plays a very important role to improve the environment of the organization holistically. Knowledge is one of the most important resources to the organization (Conner & Prahalad, 1996; Grant, 1996; Nahapiet & Ghoshal, 1998), permits novel organizational outcomes, including the process of innovation (Aiman-Smith, Goodrich, Roberts, & Scinta, 2005; Kogut & Zander, 1996). There is also increasing evidence that knowledge is a key building block to the process of innovation, in particular to the management of innovation (Darroch & McNaughton, 2002; Nonaka & Takeuchi, 1995).

The importance of knowledge workers has been discussed by previous studies and Drucker (1993) in his findings as cited in Liao, Wu, Hu, and Tsui (2010), highlighted that equipment, capital, materials, and labor will be replaced by the importance of knowledge possessed by workers in all types of businesses. Later, Drucker (1993) made it clear that the innovation and competitive advantage of the organization will depend on knowledge

workers rather than physical resources that they possess. Employees are the most important asset to any organization because knowledge is able to improve overall organizational condition (Choy, Yew, & Lin, 2006). By combining the employee's knowledge and using it efficiently, organizations will be able to achieve their goals and gain competitive advantage. For this purpose, the organization has given more emphasis on knowledge sharing, as was highlighted by Ju, Li, and Lee (2006) which in their findings, it is discovered that in order to improve the innovation process, organizations need to increase the dissemination of knowledge and information among their employees. With the increasing use of new techniques and knowledge sharing among employees, innovation will have a positive impact on organizational performance (Gupta, 2003).

Knowledge Sharing is considered as the most important processes in Knowledge Management. According to Reid (2003), knowledge sharing can encourage individuals to become more innovative and provide opportunities to maximize the organization's ability to meet those needs and generates solutions that provide an organization with competitive advantages. Renzl (2008) explains that knowledge sharing plays an important role in the organization because it allows them to remain sustained and have a competitive advantage. This may be due to the intangibility of knowledge which makes knowledge difficult to be imitated by other organizations. Furthermore, knowledge sharing will lead to synergies of cooperation among workers, and later opened a broader ability to produce innovation through ideas, products, services and technologies (Renzl, 2008). According to Handzic (2003) and Parirokh, Daneshgar, and Fattahi (2008), knowledge sharing requires effective facilitators and help in terms of technology and adequate organizational culture. Exchange and sharing of knowledge among employees are able to help the organization maximize their ability to meet demand and changing customer needs and, in

turn, increasing profit margin (Cabrera & Cabrera, 2002). Expanding manufacturing organizations will eventually inject a positive effect on the economic growth of Malaysia (Reynolds & Bygrave, 2004). With the challenges in today's business environment, E&E manufacturing organizations should encourage innovative behavior and knowledge sharing among employees to stay alive and competitive, while increasing the economic growth of the organization.

However, not everyone is willing to share knowledge naturally (Kankanhalli, Tan, & Wei, 2006). While there is a growing body of literature emphasizing on innovative behavior and knowledge sharing and its importance in the workplace, but very few studies adequately examined these concepts in MNCs, and very rarely in the Electrical and Electronic manufacturing sector in Malaysia. Recently, W. Kim and Park (2017) in their study related with knowledge sharing and innovative behavior for sustainable organizations focus on Korean company, as well as B. Hu and Zhao (2016) studied on knowledge sharing and employee innovation get the data from high technology to service companies in China. While C. Yu, Yu-Fang, and Yu-Cheh (2013) studied knowledge sharing and innovative behavior involved the participation from employees of public corporations in the Taiwanese finance and insurance industries. Although the knowledge sharing process existed in the companies, not every employee is engaged with their work to spur their knowledge behavior. The importance of work engagement is its ability to enhance the innovation process and innovative behavior among employees. Work engagement is driven by employees intrinsic motivation that related to innovation and innovative behavior in terms of enhancing of personal initiatives (Park, Song, Yoon, & Kim, 2014). According to Zhang and K. M. Bartol (2010), the employees confidence in their personal ability to achieve goals to facilitate their creativity by enabling them to



devote their time and energy to perform their work. In addition, Hakanen, Perhoniemi, and Toppinen-Tanner (2008) found that individual work engagement promotes personal initiative, and consequently influence innovation attitude among employees.

Thus, this study was conducted to see whether the key factors involved are able to influence the existence of an employee's innovative behavior through knowledge sharing and the role played by work engagement in strengthening this relationship to spur innovation and innovative behavior in the context of MNCs in the E&E manufacturing sector in Malaysia. In line with Social Cognitive Theory, which is the underpinning theory of this research, the key factor all operates as variables that influence the behavior to innovate, can be used by the organization to predict the appropriate decisions related to policies, and regulations, to enhance innovative behavior among their employees.

#### **1.1.1 Electrical and Electronic (E&E) Sector in Malaysia**

As Malaysia aspires to become a developed country, innovation becomes much more urgent to achieve the status. According to Global Competitive Report 2015-2016 World Economic Forum, Malaysia ranked in top 20 out of 144 countries as a competitive country for the first time since 2006, ahead from China, Republic of Korea, and most of other developing Asian economies. This development was driven by the growth of E&E industry (Schwab, 2015).

E&E industry in Malaysia has grown rapidly since 1972 and is a leading industry in the manufacturing sector to contribute to the national development. Since the establishment of the first semiconductor plant in Penang in 1972, Malaysia has become a major global manufacturing hub for electrical and electronic industry, as exhibited by the ongoing investment of foreign MNCs from the US, Japan, Europe, Taiwan and Korea in

Malaysia. Recently, under the Economic Transformation Program (ETP), E&E sector was identified as a National Key Economic Areas (NKEAs) because it is expected to contribute to the country income and boost economic growth.

The E&E sector has grown into the largest contributor to Malaysian Foreign Direct Investment (FDI), Design and Development (D&D), and Gross National Income (GNI). With the employment of about 700,000 people in E&E sector, which is 27.2 percent in 2013, whom 30 to 40 percent is made up of engineers and managers (Authority, 2015), the FDI and D&D also recorded significant growth. In 2014, there was a strong growth for Malaysia E&E industry. GNI of E&E increased at the rate of RM44.1 billion, compared with RM38.7 billion in 2013, an increase of 14 percent (Authority, 2015). An E&E contribution of 25.7 percent value remains the largest contribution to the manufacturing sector in the Malaysian economy. Furthermore, Malaysia also ranked as fourth place in financial market development and is relatively easy for E&E companies to access capital and ranked at 10<sup>th</sup> place in incentive for investment, procedure and formalities in starting an E&E business.

The importance of innovation and innovative behavior for competitiveness and organizational effectiveness is widely accepted (Yuan & Woodman, 2010). This is because by producing the new products and ideas, it leads the companies in E&E industry to remain competitive. However, Malaysia GDP growth decomposition on sectoral in year between 2016 until 2018 (first quarter) shows an increasing number except for year 2017 and 2018 (first quarter) shows the decreasing numbers of GDPs, which mean there is need for urge improvement, as shown in Table 1.1 below.

**Table 1.1:**

***Malaysia GDP Growth Decomposition (Sectoral) 2016-2018***

<b>GDP/ YEAR</b>	<b>Q1 2016</b>	<b>Q2 2016</b>	<b>Q3 2016</b>	<b>2016</b>	<b>Q1 2017</b>	<b>Q2 2017</b>	<b>Q3 2017</b>	<b>2017</b>	<b>Q1 2018</b>
<b>Agriculture</b>	-3.9	-7.9	-6.2	-5.2	8.4	5.9	4.1	7.2	2.8
<b>Mining</b>	-1.3	2.1	2.8	2.1	1.4	0.1	3.0	1.0	0.1
<b>Manufacturing</b>	<b>4.6</b>	<b>4.2</b>	<b>4.3</b>	<b>4.4</b>	<b>5.6</b>	<b>6.0</b>	<b>7.0</b>	<b>6.0</b>	<b>5.3</b>
<b>Construction</b>	8.0	8.9	7.9	7.4	6.6	8.3	6.1	6.7	4.9
<b>Services</b>	5.2	5.8	6.2	5.7	5.8	6.3	6.5	6.2	6.5

(World-Bank-Group, June 2018)

The E&E sector is one of the most globally dynamic industry with regard to innovation (Kammerer, 2009). This is because innovation is a vital process to produce new products and improve the production of goods and fulfill the variety of customers' demands. According to Table 1.2 Global Innovation Index Ranking year 2016 until 2018, report released by Cornell University, INSEAD, and the World Intellectual Property Organization, Malaysia is ranked at 35<sup>th</sup> in 2016, a drop and at 37<sup>th</sup> place in 2017. The report also shows that Malaysia was among the top 10 economies in Asia, behind Singapore, Republic of Korea, Japan, Hong Kong, China, New Zealand and Australia, and was among the middle-income economy that were the closest to the top 25 this year. However, there is certain arears that need to be improved thus, leading to the importance of innovative behavior in the E&E sector in Malaysia.

**Table 1.2**  
***Global Innovation Index Rankings Year 2016 – 2018***

(Cornell University, INSEAD, & WIPO, 2016, 2017, 2018)

The E&E manufacturing sector in Malaysia is broadly divided into two divisions and sub-

Country/Economy	Year/Rank		
	2016	2017	2018
<b>Singapore</b>	6	7	5
<b>Republic of Korea</b>	11	11	12
<b>Japan</b>	16	14	13
<b>Hong Kong (China)</b>	14	16	14
<b>China</b>	25	22	17
<b>Malaysia</b>	<b>35</b>	<b>37</b>	<b>35</b>
<b>United Arab Emirates</b>	41	35	38
<b>Thailand</b>	52	51	44
<b>Vietnam</b>	59	47	45
<b>India</b>	66	60	57
<b>Saudi Arabia</b>	49	55	61
<b>Brunei Darussalam</b>	129	71	67
<b>Philippines</b>	74	73	73
<b>Indonesia</b>	88	87	85

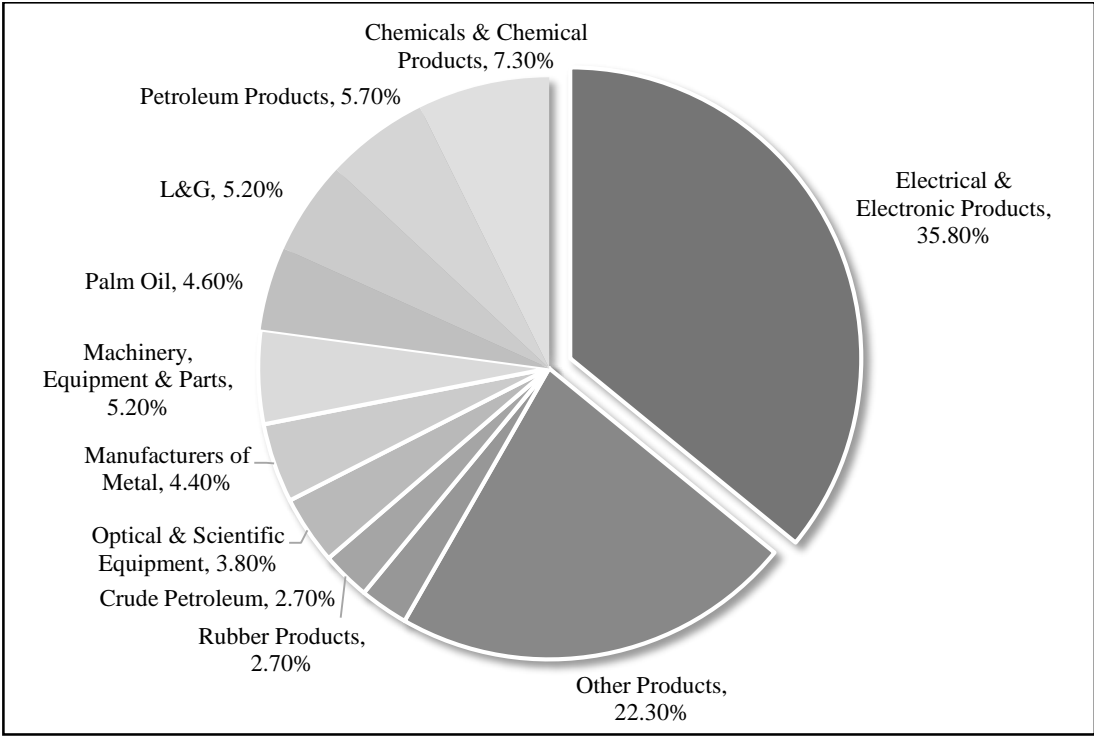
sectors, which consists of electrical equipment, electronics as components, consumer, and industrial as shown in Table 1.3 below.

**Table 1.3:**  
*Structure of the E&E Industry in Malaysia*

Sectors	Sub-sectors	Example of Products
<b>Electrical</b>		Distribution boards, control panels, switching apparatus lightings, electrical transformers, cables and wires, primary cells and batteries, solar cells and modules, air conditioners and household appliances.
<b>Electronics</b>	Components	Semi-conductors, passive components, printed circuit boards, metal stamped parts and precision plastic parts.
	Consumer	Audio visual products such as television receivers, portable multimedia players (PMPs), speakers, cameras and electronic games.
	Industrial	Multimedia and information technology products such as computers and computer peripherals, telecommunications equipment, office equipment and boxes build products for industrial appliances.

MITI (2016)

In 2016, electrical and electronics products contribute to the largest total export of Malaysia at 35.8 percent, followed by other products (22.3 percent), chemical and chemical products (7.3 percent), petroleum products (5.7 percent), LNG (5.4 percent), machinery, equipment and parts (5.2 percent), palm oil (4.6 percent), manufacturers of metal (4.4 percent), optical and scientific equipment (3.8 percent), and remaining rubber products and crude petroleum at the same contribution at 2.7 percent. These percentages illustrated in Figure 1.1 as below:



**Figure 1.1:**  
***Total Exports of Malaysia Industries, 2016***  
***Source: Department of Statistics Malaysia, Malaysia External Trade Development Corporation***

Although Malaysia is a competitive investment destination for more than 30 years, but now it faces competition from Singapore and Thailand. E&E sector trends show that it continues to grow by leaps and bounds and this creates an opportunity for Malaysian talent

to develop new products and advanced technologies such as design and manufacturing of advanced semiconductor devices. To further spur the growth of E&E industry in Malaysia, the industry player including private business organizations such as the MNC's are encouraged to continue to pursue innovation and innovative workforce to add value for E&E industry in Malaysia in line with the transformation towards a high economy income status.

Based on justification as explained earlier, the researcher found that it is very relevant to focus on MNCs in the E&E manufacturing sector in Malaysia to investigate the factors involved in influencing employee's innovative behavior as it is an important criterion towards the development of the country, as proven by the GDP of first quarter 2015, that this sector has contributed towards the vigorous economic activity (Malaysia Productivity Corporation, 2015).

### **1.1.2 Engineers in Malaysia**

To attain the status of a developed nation and deal with the challenges of Industrial Revolution 4.0 (IR 4.0), Malaysia needs at least 200 000 to 500 000 engineers by 2020 while currently there is only 70 000 registered engineers in this county (Mustafa, 2017; Vuaindren, 2018). Engineers works in many areas such as mechanical, electrical, electronic, civil, aerospace, nuclear, structural, biomedical, chemical, computer, industrial and environmental. However, there is about 30 percent of engineers are involved in the electrical and electronic engineering industries .This indicates that there is a shortage of qualified engineers (D. Tan, 2015), as the importance of engineers to the country is significant to enhance the E&E industry, and contribute to the GDP's.

Electrical and electronic engineers work in a very wide range of industries, required the skills and knowledge, may involve the tools and equipment from a simple voltmeter to a top end analyzer to sophisticated design and manufacturing software. They are designed and developed a new electrical system, solves problems and tests equipment. The innovation process and innovative engineers may lead to the success of these process (Ronalds, 2016). Thus, the study recognized engineers as the main subject in play a role increasing innovative development in MNC's because there have the sophisticated knowledge and related specifically with the process and decision of innovativeness in the companies.

### **1.1.3 Knowledge Sharing in MNCs**

The future success of economy should be based on how MNCs acquire, use, and leverage the knowledge in an effective ways (Chmielecki, 2017). Knowledge sharing is a relevant issue especially for MNCs, which typically consist of multiple organization (sub) cultures, that requires sharing of knowledge across borders (Michailova & Minbaeva, 2012), and this has become an ubiquitous topic in research (Kasper, Lehrer, Mühlbacher, & Müller, 2013) . According to Zhang and Zhao (2006), knowledge is an element that has always played an important role in business success, similar to interest in oil and coal during the industrial era. Voelpel, Leibold, Tekie, and Von Krogh (2005) looked at the individual knowledge derived both internally and externally as a sustainable resource to maintain the competitiveness of an organization, while Nilakanta, Miller, and Zhu (2006) emphasized that the knowledge of the organization plays an important role not only in the performance but also to provide a competitive advantage to organizations, especially for organizations such as MNCs. Knowledge held by an employee in the MNCs will be more effective and

can give a more significant contribution to the organization if it can be shared with other members of the organization. Knowledge sharing and exchange process is also central to the growth of MNCs as the development of the companies is strongly contingent on ability to create and replicate knowledge. MNCs also continuously need to share and transfer their knowledge and technology within their subsidiaries and across national boundaries (Cavaliere & Lombardi, 2015).

In the context of MNCs, effective knowledge sharing can be performed in various ways, for example through the organization of a more open environment, as stated by Wasko and Faraj (2000) that knowledge sharing in firms could foster innovation by encouraging the free flow of ideas. Knowledge sharing provides benefit to manufacturing firms in terms of the development of product and services as well as the development of vision and strategies (Sanchez & Palacios, 2008). In addition, knowledge sharing assists in building competencies manufacturing firms, and improving customer service by improving response times (Garcia-Murillo & Annabi, 2002). By sharing knowledge effectively, manufacturing firms will be able to provide products and services more quickly and effectively, and thus can increase their capacity to boost revenues (Davenport & Prusak, 1998). Furthermore, knowledge sharing can improve employee retention rates and reduce the negative impact of brain drain when employees leave the organization. This can be done by identifying and recognizing the value and knowledge held by an employee and reward them accordingly (Swart & Kinnie, 2003). In addition, through knowledge sharing, organizational operations can be adjusted based on the overall knowledge of the workers, and can eliminate redundant operations, thus reducing the operating costs of the organization (Porter & Millar, 1985).



## **1.2 Problem Statement**

Malaysia has the potential to post productivity growth of 3.7 percent in the next five years. To achieve this, the country needs to unlock new catalysts for growth to close the gap and challenge the global productivity frontier set by the world's top-performing developed economies (Malaysia Productivity Corporation, 2015). Domestic demand is expected to continue to anchor growth, driven by private sector spending. Private consumption is forecasted to record a more moderate growth during the year, after registering five consecutive years of above-average growth rates since the financial crisis (Malaysia Productivity Corporation, 2015). Industrial trends show that it continues to grow by leaps and bounds and this creates opportunities for Malaysian talent to develop new products and advanced technologies such as design and manufacturing of advanced semiconductor devices. However, Global-Innovation-Paremeter-2018 (February 2018) indicated that Malaysia with 26 percent is still left behind in terms of multinational growing reputation on innovation, compared to other Asian country such as Indonesia (30 percent) and India (31 percent). To further spur the growth of E&E industry in Malaysia, the industry player including private business organizations such as the MNC's are encouraged to continue to pursue innovation and innovative workforce to add value for E&E industry in Malaysia in line with the transformation towards a high income nation.

Although Malaysia is a competitive investment destination for more than 30 years, currently it is facing increasing competition especially from Singapore, Vietnam, Taiwan and China (Authority, 2015). China is recognized as a strong threat after emerging as the global center for assembly manufacturing. Based on World Bank study, they found increased export competition between Malaysia and China. As stated by Prime Minister's Department (2011) on Economic Transformation Report Malaysia (2011, pg. 359):

*“In 2007, 59 percent of Malaysia’s export to European Nation (EU) were under threat from China compared to only about 31 percent in 1990”.*

Another challenge to the Malaysian E&E sector is Vietnam, which is fast attracting low-cost companies in the E&E industry while the high-end manufacturers include Singapore and Taiwan. This situation indicates that it is critical for E&E organizations to find a way to remain competitive not only in the country but also regionally and globally. According to Agarwal and Brem (2012), to sustain and maintain the competitive position, MNCs are obliged to participate in the new innovation paradigms. They added that the country like China and India emerges because of their initiative to become global innovation hubs. Thus, to optimize innovation in Malaysian MNCs, the employee’s innovative behaviour is urgently needed so that the collection of new ideas, process and its’ implementations will move the organization forward.

E&E sector employed a total of 700,000 people, reportedly 27.2 percent in 2013, whom 30 to 40 percent is made up of engineers and managers (Authority, 2015). While in 2014, labor productivity in the manufacturing sector increased to a level of RM90,556 from RM87,248, supported by double-digit productivity growth in E&E sectors. With the present economic challenges, E&E plays an important role in contributing to national development. Thus, one of the critical medium that can create innovative behavior among MNC employees is through knowledge sharing. However, most workers feel that knowledge is the exclusive property and cannot be shared. It is a problem and an obstacle to the MNCs to create innovative behavior without the sharing of ideas, it is difficult to produce new ideas that are more dynamic and unique.

In brief, innovation and innovative practices in Malaysia private organization such as MNCs still remain relatively under-researched (Idris, 2000; Mohamed & Rickards, 1996; Sta Maria, 2000). According to Axtell et al. (2000), there is a large literature on creativity generally but very limited literature related to innovation and innovativeness per se. Studies indicated that there is a huge volume of research on innovation with 3,085 publications on the diffusion of innovation out of which 2,297 are empirical works but surprisingly good models and principles of innovation have yet to be developed (Rogers & Shoemaker, 1983; Zairi, 1994). Based on the previous study, organizations without innovative behavior among their employees will face obstacles and challenges that may reduce organizational ability to sustain and compete in the market, locally or globally. Agarwal and Brem (2012) mention that the MNCs without innovation normally practice imitation will not be capable to sustain in a competitive market and has been pushed to merge like Siemens-Nokia or in some extreme cases like Nortel, to go bankrupt. Lack of technological innovation capabilities among the workers also causes the small and declining of value-added and low total factor productivity that reflect low-income level per capita of the company (Best, 1999). In addition, the limited innovation-related knowledge and skills have limited the skill formation capabilities in the area such as design engineering, computer science, systems analysis, and information technology generally (Best, 1999).

Moreover, the performance of sales value in the manufacturing sector in Malaysia shows the decreased from RM765.8 billion (13.7 percent) in year 2017 to RM824.8 billion (7.7 percent) in year 2018 (Department-of-Statistic-Malaysia, 2018). Without the enhancement of the discovery and innovation process in Malaysian manufacturing sector, namely in electrical and electronic, since E&E sector was the most larger contribution for

manufacturing sector (Department-of-Statistic-Malaysia, 2018), the country will continuously be left behind compared to other nations (such as Korea, Singapore, India, and China) especially in terms of R&D, since innovation is widely recognized as key factor in sustaining Malaysian competitiveness in rapid globalization. These studies also indicated that the country's weak position in terms of R&D and innovative capability poses major challenges, such as failure in attracting MNC headquarters to be located in Malaysia (headquarters significantly contribute to R&D activities), lack of skilled professionals in supplementing the industries, and lack of entrepreneurship and innovative culture among Malaysians (Chandran, Rasiah, & Wad, 2009).

Subsequently, lack of innovative behavior among employees may reduce the effectiveness of organizational success elements such as competitive strategy, behavioral standards, financial objectives, concern for survival, concern for customers, employees and shareholders, and organizational vision (Bart, 1998). Organizations which lack the practice of innovative behavior have been found that their competitive strategy was unclear in their mission statements. Without a better understanding of organization competitive strategy, organizations lose their focus, become confused and operate without direction. From an employee's behavioral standards perspective, the low level of employees that practice innovation will automatically reduce the levels of organization's innovativeness. As well as in the context of financial objectives, the organizations that do not encourage innovative behavior, unfortunately, will not able to prepare and provide the guidelines to define success or failure of projects undertaken, and prepare where initial losses are expected to be high before the action taken, organizations directly will suffer the consequences. Furthermore, organizations may appear to be working in a state of imbalance and may, in fact, be focusing on the customer to the detriment of other critical

stakeholder groups. Last but not least, lack of innovative behavior in organizations may result in the diversion of vision, losing the sense of direction and ability to meet future demand.

### **1.3 Gaps in the Study**

Despite knowledge sharing having an impact on innovative behavior have been established in past studies, this research investigates different variables. C. Yu et al. (2013) encourage researchers to examine slightly different variables to enhance a different aspect of framework and SCT theory. Bandura (2011) also suggests that SCT theory as a useful theory to further explain the theoretical linkages on studying relating to individual behavior, even as innovative behavior. Therefore, this study lends further support and contribution through the application of SCT theory on an innovative behavior study among engineers. This study examines variables from the organization innovative climate factors, individual factors, ICT use as the predictors of innovative behavior through knowledge sharing process as recommended by past researchers to extend and explore more variables of variables that influent innovative behavior (Kraiczy, Hack, & Kellermanns, 2015).

Prior studies have shown that role of knowledge sharing effect innovative behavior (Lin, 2007b). However, this study found that knowledge sharing does not have a strong effect on innovative behavior among engineers. Thus, this study found the gap and introduced work engagement through vigor, dedication, and absorption due to this inconsistent relationship. Previous study has proven that work engagement contributes to the positive consequences towards organization and the employees itself by increasing job performance (Salanova, Agut, & Peiro, 2005; Vogelgesang, Leroy, & Avolio, 2013), job

description (Williams. & Anderson, 1991), extra-role performance (George & Brief, 1992), and personal initiative (Sonnentag, 2003), thus decreasing turnover intentions (Schaufeli & Bakker, 2004).

#### **1.4 Objective of the Study**

The main objective of this paper is to understand innovative behavior through knowledge sharing among MNCs employees. Several factors have been identified from previous studies as independent variables that will affect knowledge sharing, including support for innovation and organizational culture. In addition, work engagement is identified as a moderator that can play a role in strengthening the innovative behavior among employees through knowledge sharing. In particular, the main objectives of this study were:

- (1) To examine the influence of organizational innovative climate factors (support for innovation, competitiveness, and performance orientation), individual factors (altruism, knowledge self-efficacy, reciprocity, reputation, and trust), and ICT use on knowledge sharing;
- (2) To examine the influence of knowledge sharing on innovative behavior;
- (3) To determine whether knowledge sharing mediates the relationship between organizational innovative climate factors (support for innovation, competitiveness, and performance orientation), individual factors (altruism, knowledge self-efficacy, reciprocity, reputation, and trust), and ICT use on innovative behavior;
- (4) To determine whether work engagement (vigor, dedication, and absorption) moderates the relationship between knowledge sharing and innovative behavior.

## **1.5 Research Questions**

Based on the background of the study, problem statement, significant and contribution of the study, and research objective, it is guided the researcher to formulate the following research questions:

1. Does organizational innovative climate factors (support for innovation, competitiveness, and performance orientation), individual factors (altruism, knowledge self-efficacy, reciprocity, reputation, and trust), and ICT use influence the knowledge sharing?
2. Does Knowledge sharing have a relationship with innovative behavior?
3. Does knowledge sharing mediate the relationship between organizational innovative climate factors (support for innovation, competitiveness, and performance orientation), individual factors (altruism, knowledge self-efficacy, reciprocity, reputation, and trust), and ICT use and innovative behavior?
4. Does work engagement (vigor, dedication, and absorption) moderate the relationship between knowledge sharing and innovative behavior?

## **1.6 Significance of the Study**

Despite the findings from previous research that focus on the factors that influence innovative behavior through knowledge sharing, especially in the context of Malaysian MNCs, there are the various significances of doing this study, divided on practical and theoretical significance of the study. The first and second of significance of the study were practical, while the third and fourth were theoretical significance of the study. The first practical, this study investigates the factors that influence MNC's employees to share their knowledge among the colleagues, which consequently provides empirical evidence to

various parties, especially potential investors (local and foreign investors) and Malaysia government on the significant environment for MNC's development. All the related parties on MNC's will able to develop the most suitable preparation for providing the right climate for an organization to become innovative, realize ICT technology, and thus select the right employees that have an altruism, knowledge self-efficacy, reciprocity, and desire to increase their reputation, and trust each other in sharing their knowledge to become innovative. This empirical evidence thus will be a form of encouragement to convince the related parties as mentioned previously, that innovative behavior is the main key to success and remains sustain in the adventures local and global market and because of that, it is very important to adapt the suitable and right organizational climate, technology, and employee's behavior.

The second practical, by investigating knowledge sharing, the study also helps to determine the existence of MNC's employees' ability and capacity to giving and receiving knowledge among the colleagues, which will serve as a basis for future plans of action by the organizations related to the necessarily knowledge sharing development activities in ensuring the utilization of the employee's knowledge, and thus, increase the knowledge giving and receiving process to obtain the valuable information. Additionally, it also helps the researcher to investigate the relationship of both giving and receiving the process of assimilating the knowledge towards the innovative behavior of MNCs employees. Other than that, employee's innovative behavior may provide a clue and help the decision makers regarding on how organizations can promote knowledge sharing culture to sustain competitively. This research is also expected to provide further explanation of the concept of knowledge sharing in the wider context. Underpinned by the application of social



cognitive theory (SCT), the concept of knowledge sharing is investigated from an individual perspective that has previously received less attention among scholars.

The third theoretical significance, according to SCT, the human behavior of a person is influenced by the personal factors of that particular individual. However, there is lack of empirical evidence to confirm the role of ‘organizational innovative climate factor’ which integrated with ‘support for innovation’ and ‘organizational culture’ to determine the relationship towards knowledge sharing in innovative behavior. In previous research, the organizational enablers of knowledge sharing preferred to focus on senior and top management support, organizational reward, teamwork, and organizational commitment (Aulawi, Sudirman, Suryadi, & Govindaraju, 2009; Cabrera, Collins, & Salgado, 2006; Lin, 2007a; Rahab, Sulistryandari, & Sudjono, 2011; Tangaraja, Rasdi, Ismail, & Samah, 2015). Besides that, previous study that used organizational culture as a knowledge sharing enabler used different items and perspectives which are not related directly with innovative behavior (Chen & Cheng, 2012; Vouri & Okkonen, 2012; Wang & Noe, 2010). Other than that, there is also scarce empirical evidence to confirm the role of ‘individual factor’ which integrating ‘altruism’, ‘knowledge self-efficacy’, ‘reciprocity’, ‘reputation’ and ‘trust’ to determine the relationship towards knowledge sharing and innovative behavior. The individual factor in this study was comprehensive, integrated and relate with the wider perspective to investigate the relationship and this will become a significant to provide new empirical evidence in the area of the study.

Furthermore, the study will also serve as a theoretical model for further studies in the same research setting that will benefit the future researchers in the same research area. On this basis, the study will incorporate to the extension of work engagement as a moderating variable in the relationship between knowledge sharing and innovative

behavior as previous research in this area of the study that intends to focus the variable of work engagement in the psychological area.

### **1.7 Scope of the study**

Regarding the problem statement, research objectives, and research questions, this study focus on the context of individual, which are the employees of MNCs Electrical and Electronic (E&E) manufacturing sector in Malaysia. It examines the influence of organizational innovative climate factor, individual factor, and ICT use on knowledge sharing activity in MNCs, the impact of knowledge sharing activities on innovative behavior, the role of knowledge sharing as mediator variable between the independent variable (organizational innovative climate factor, individual factor, and ICT use) and dependent variable (innovative behavior), and the role of work engagement as a moderating variable in the relationship between knowledge sharing and innovative behavior.

The selection of MNCs employees in E&E sector in Malaysia as the main context of the study is based on the suitability of the subjects to portray the concept of innovative behaviour through knowledge sharing by giving and receiving activities. MNCs is an enterprise that engages in foreign direct investment (FDI) and owns or, in some way controls value-added activities in more than one country (Dunning & Lundan, 2008). In order to maintain their competitive position, MNCs are being forced to focus on developing products and new solutions in this emerging and challenging market. In other words, MNCs are obligated to participate in these new innovation paradigms, thus, produces successful innovative products.

In the process of realizing the innovation, knowledge sharing is a vital part that must be considered by the organization, as it able to increase the assimilation of the knowledge and create a potential of produce new creative ideas. In other words, knowledge sharing can stimulate employees to think critically and creatively (Lindsey, 2006). Based on this scenario, the innovative behaviour is an emerge needs for MNCs towards their employees. Thus, the researcher chooses to select the MNCs employees in the E&E sector as the respondent because it closely related with the theoretical framework and matches the research objective and research questions of the study.

## **1.8 Definition of Key Terms**

The following definitions explain the terms that used in this study:

### **1.8.1 Innovation**

The generation, acceptance, and implementation of new ideas, processes, products or services (Thompson, 1965). It also is known as the successful implementation of creative ideas within the organization (Amabile, Conti, Coon, Lazenby, & Herron, 1996).

### **1.8.2 Innovative Behavior**

An act of creating, introducing, and applying new ideas with the purpose of increasing group or organization performance (Scott & Bruce, 1994).

### **1.8.3 Knowledge Management**