

THE MODERATING EFFECT OF TRANSFORMATIONAL AND
TRANSACTIONAL LEADERSHIP TO THE RELATIONSHIP OF SELF-
LEADERSHIP STRATEGIES ON INNOVATIVE WORK BEHAVIORS
AMONG ENGINEERS

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DEDICATION

This thesis dedicated to
My beloved father, Omar bin Jantan,
My beautiful mother, Sarinah binti Jenal,
My charismatic supervisor, Dr. Norashikin binti Mahmud,
My lovely brothers:
Ahmad Nor Hafiz bin Omar
Aiman Muzzamir bin Omar
My lovely sisters:
Nurazureen binti Omar
Puteri Marwarddah binti Omar
My beloved grandfather, Jenal bin Budit and Jantan bin Abdul Ghani
My beloved grandmother, Saripah binti Hamid and Maimon binti Hashim
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Without whom none of my success would be possible.

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Bismilla Al-Rahman Al-Rahim
Verily, with every difficulty, there is relief

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ABSTRACT

Innovative work behavior has gained considerable attention in the organizational behavior literature. In the literature, factors that can give influence to employee innovative work behavior are discussed by prominent theoretical theory such as Diffusion Innovation Theory. However, research on an integrated framework that covers personal predictors of innovative work behavior is still limited specifically in Malaysia. This research incorporated the components of an individual's behavioral (behavior-focused), cognitive (constructive thought pattern and natural reward) and physiological (physical vitality) approach as self-leadership strategies that serve as predictors of innovative work behavior. Therefore, the research investigated the effect of self-leadership strategies on innovative work behavior. In addition, it also extended the existing innovative work behavior theoretical model by investigating transformational and transactional leadership as the moderator in the relationship between self-leadership strategies and innovative work behavior. This research utilized quantitative approach where questionnaires were distributed to 745 manufacturing engineers in Malaysia as the research population. 485 completed questionnaires were usable for data analysis. *IBM Statistical Package for Social Science 19* statistical program was used to analyze the data. The findings indicated that behavior-focused, constructive thought pattern, natural reward and physiological strategies significantly affected innovative work behavior. In terms of moderation effect, only transformational leadership moderated the relationship between each self-leadership strategy with innovative work behavior. Overall, this research expanded the Diffusion Innovation Theory by incorporating self-leadership strategies as the personal component and studied the role of transformational and transactional leadership as the moderator for innovative work behavior. The findings of the study may help organizations to increase employees' innovative work behavior by improving employees' self-leadership strategies and applying transformational leadership style at the workplace.

ABSTRAK

Tingkah laku kerja inovatif telah mendapat perhatian yang sewajarnya dalam kajian kelakuan organisasi. Dalam literatur, faktor-faktor yang boleh memberi pengaruh kepada tingkah laku kerja inovatif pekerja dibincangkan oleh teori terkemuka seperti Teori Inovasi Difusi. Walau bagaimanapun, kajian ke atas rangka kerja bersepadu yang meliputi peramal peribadi kelakuan kerja inovatif masih terhad khususnya di Malaysia. Kajian ini menggabungkan komponen tingkah laku pendekatan individu (kelakuan-fokus), kognitif (corak yang membina pemikiran dan ganjaran semula jadi) dan fisiologi (daya hidup fizikal) sebagai strategi kepemimpinan diri yang menjadi peramal tingkah laku kerja inovatif. Oleh itu, kajian ini mengkaji kesan strategi kepemimpinan diri terhadap tingkah laku kerja inovatif pekerja. Di samping itu, kajian ini juga mengembangkan model teori yang sedia ada tentang tingkah laku kerja inovatif dengan mengkaji kepemimpinan transformasi dan transaksi sebagai pengantara dalam hubungan antara strategi kepemimpinan diri dan tingkah laku kerja inovatif. Kajian ini menggunakan pendekatan kuantitatif di mana soal selidik telah diedarkan kepada 745 jurutera pembuatan di Malaysia sebagai populasi kajian. 485 soal selidik yang lengkap telah digunakan untuk analisis data. *IBM Statistical Package for Social Science 19* digunakan untuk menganalisis data. Dapatan kajian menunjukkan bahawa tingkah laku berfokus, corak pemikiran yang membina, ganjaran semulajadi dan strategi fisiologi mempengaruhi tingkah laku kerja inovatif. Dari segi kesan penyederhanaan, hanya kepemimpinan transformasi menyederhanakan secara signifikan antara setiap strategi kepemimpinan diri dengan tingkah laku kerja inovatif. Secara keseluruhannya, kajian ini mengembangkan Teori Inovasi Difusi dengan menggabungkan strategi kepemimpinan diri sebagai komponen peribadi serta mengkaji peranan kepemimpinan transformasi dan transaksi sebagai penyederhana bagi kelakuan kerja inovatif. Dapatan kajian ini boleh membantu organisasi untuk memperbaiki tingkah laku kerja inovatif dengan meningkatkan strategi kepemimpinan diri pekerja dan menerapkan gaya kepemimpinan transformasi di tempat kerja.

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LIST OF SYMBOLS

MIDA	-	Malaysia Investment Development Authority
E&E	-	Electric and Electronics
UAE	-	United Arab Emirates
TFL	-	Transformational Leadership
TSL	-	Transactional Leadership
MLQ	-	Multifactor Leadership Questionnaires
MATRADE	-	Malaysia External Trade Development Corporation
ICT	-	Information and Communication Technology
R&D	-	Research and Development
WCY	-	World Competitiveness Yearbook
MESTI	-	Ministry of Science, Technology and Innovation
α	-	Alpha Cronbach
RSLQ	-	Revised Self-Leadership Questionnaires
SPSS	-	Statistical Package for Social Science
SEM	-	Standard Equation Model
EFA	-	Exploratory Factor Analysis
KMO	-	Kaiser-Meyer-Olkin
RMSEA	-	Root Mean Squared Error of Approximation
GFI	-	Goodness-of-fit Index
AGFI	-	Adjusted Goodness of Fit
CFI	-	Comparative Fit Index
TLI	-	Tucker-Lewis Index
NFI	-	Normed-Fit Index
AMOS	-	Analysis Structure Moment
VIF	-	Variance Inflation Factor
EM	-	Expectation Maximisation
%	-	Percentage
N	-	Frequency
P	-	Significant value

MI	-	Modification index
R	-	Pearson correlation
AVE	-	Variance value
B	-	Parameter

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CHAPTER 1

INTRODUCTION

1.0 Introduction

The only way for the organization to become more innovative is to capitalize on their employees' ability to create and to innovate. Self-leadership strategies have been given the credit of bringing success to organizational performance. However, not much empirical discussion could be found on innovative work behavior research. Therefore, this thesis aims to explore the role of self-leadership strategies on innovative work behavior especially within the context of Malaysia's electrical and electronics manufacturing industry companies. Furthermore, it is assumed that the efficient role of individual self-leadership strategies also influenced by leader leadership styles (transformational and transactional) to innovative work behavior. This chapter discusses the background of this study. It explores several important sections comprised in background of the research and problem statement. It also focuses on research objectives, research questions, and significance of the study, delimitation and the conceptual definition of the research variables.

1.1 Background of the study

Research on employee personal factor and employee innovative work behavior has presented significant empirical evidences and theories for over many

years (Janssen, Vliert, & West, 2004). Innovative work behavior refers to as an individual's behavior that aims to achieve the initiation and intentional introduction of new and useful ideas, processes, products or procedures (Yuan & Woodman, 2010). Following the diffusion innovation model and literature review, the dimension of innovative work behavior has been identified. This diffusion innovation model has been proposed to explain the specific dimension of innovation that contributes to the prevalence of innovative work behavior.

The literature in organizational behavior has focused on the impacts of self-influence factors on employees' innovative work behavior. The research on employees' innovativeness has gain attention in innovation literature since employees are the most valuable factor asset in conducting and implementing the innovation phase to the organization (Scott & Bruce, 1994c). Specifically, being self-influence in promoting the innovative work behavior is valuable in order to maintain the innovation growth rate. The idea that actions of individual employees are crucial importance for continuous innovation is not just found in academic literature on innovation (Burns, 2007). Numerous studies were conducted to investigate the personal factor specifically self-influences personal factor to innovative work behavior. In term of this finding, the studies have found that psychological empowerment (Ertiirk, 2012; Singh & Sarkar, 2012), self-esteem (Rank, Nelson, Allen, & Xu, 2009), self-efficacy (Michael, Hou, & Fan, 2011), personality (Kwang & Rodrigues, 2002), psychological capital (Abbas & Raja, 2015; Ziyae, Mobaraki, & Saeediyoun, 2015) and problem solving (Kleysen & Street, 2001b) have an encouragement factor toward employee's innovative work behavior. Employees are needed to the management of self-influence as innovation of today requires individual who can build an identity and create meaning in their work environment (Behn, 1995). These requirements for innovation success directly relate to empowered self-leadership. Innovative work behavior among employees is moving toward decentralized organizations and highlights the need for more participatory management such as self-leadership. Self-leadership strategies have been justified to be favourable factor towards the employees especially on their innovativeness (Carmeli, Meitar, & Weisberg, 2006b).

Self-leadership is defined as a systematic set of strategies through which individuals can influence themselves toward higher levels of performance and effectiveness (Houghton & Neck, 2002b). Several theoretical contexts have been developed to address the basic concept of self-leadership strategies at work. For more than a decade, previous researchers referred to general self-control theories in their research as the fundamental theories of self-leadership (Houghton & Neck, 2002b; Manz, 1986; Stewart, Courtright, & Manz, 2010). According to this literature review, self-control theories basically explained about the assumption that behavior is caused by internal states (Bailey, Barber, & Justice, 2016). It also suggested that self-control theories operate within the framework of inhibitory control aspect where is the concept of the ability to control one's emotions, cognitive processes or behavior in the face of temptations and impulses (Bong & Skaalvik, 2003). These models discussed the basic concept of each of self-leadership strategies. Among the most popular self-control theories are the self-regulation theory, social cognitive theory, self-management theory and cognitive evaluation theory. These theories highlight the control that an individual has over setting their own performance standards.

Anderson and Prussia (1997) explain three primary categories of self-leadership which are behavior-focused, constructive thought pattern and natural reward. Self-leadership strategies lie as the very heart of the empowerment process and these self-leadership strategies are essential for employees to perform successfully in innovation situations (Hauschildt & Konradt, 2012). The autonomous nature of the innovation and all the individuals leads itself to ensuring employees understand and employ self-leadership. New landscape of innovation with the new technologies available and employed, should allow less control with the ability to continue to be in command. Although the study of self-leadership strategies has gained attention for a long time, it still considered to be reliable predictors of employees' innovative work behavior (Kör, 2016). The current self-leadership factors differ from the previous working environment due to the additional of new approach of in self-leadership. Aside from demanding innovation tasks, the nature of work in the current global technologies change needs more on physical work (Zagenczyk, Murrell, & Gibney, 2008). Therefore, employees are more distressed when they are exposed to insecure and demand work environment. This situation might leads to impair their physiological and consequently affect their health and

well-being. The present research intended to study the effect of physical vitality factor in self-leadership towards innovative work behavior.

In addition, innovation also requires leaders to shift focus from trying to retain what little control they have (Stone, 1981). Following the most popular theory of leadership, transformational and transactional leader are suggested to be as a moderator in the relationship between self-leadership strategies and innovative work behavior. It is believed that a leader is a buffer aspect of enabling the cultivation of self-leaders that will work to understand and accomplish goals. As mentioned previously, the most appropriate leader is one who can lead others to lead themselves (Yidong & Xinxin, 2013). Transformational or maybe transactional leadership helps to facilitate self-leadership within individuals by letting them recognize their right to guide their own destiny rather than bending to the will of another. Thus, in world competition, the workforce's desire for greater meaning in work, and innovation contribute to a greater need for self-leadership in individuals and leaders who are adept at developing human resources or follower who became self-leaders.

In conclusion, the development of self-leadership strategies addresses the importance of innovative work behavior in ensuring an innovated work environment. This study offers a wider range of self-leadership strategies that are relevant with the culture of Malaysia. The application of behavior, cognitive and physiological management leads to employees' innovativeness. Specifically, the current study also investigated the moderator effect of transformational and transactional leadership in buffering the effect of self-leadership on innovative work behavior.

1.2 Problem of Statement

Yet until today, innovative work behavior standpoint was still undersized (Fakhrorazi, Osman, & Hazril Izwar, 2013). It has become increasingly difficult to ignore Malaysian employee's innovative work behavior since it has tremendously increased in Malaysia since the past decade. Malaysia is currently attempting to create a modern, innovative economy under the Government Transformation

Programme inspired by Malaysian Prime Minister Dato' Sri Mohd Najib bin Tun Haji Abdul Razak, which requires a new type of worker and a new and more cooperative style of management. There are at least five major problems that interest the researcher to investigate innovative work behavior in Malaysia's electrical and electronics manufacturing industry companies.

Firstly, innovative level or innovative performance in Malaysia's companies is at decreasing momentum. According to Ministry of Science, Technology and Innovation, Malaysia (MOSTI), there are still many economic sectors in Malaysia that lacked of innovation in all its manifestation especially in E&E manufacturing industry. Although E&E manufacturing industry has grown significantly, however, this sector only contributes about 10.4 per cent of product innovation within the times from 2010 until 2013 (Fakhrorazi, Osman, & Hazrillzwar, 2013). As highlighted by the former Malaysia's Minister of International Trade and Industry, Datuk Seri Mustapa Mohamed, the E&E industry's sluggish performance on 2012 had caused the drop in investments in the manufacturing sector with RM4 billion approved in 2012 as compared to RM20 billion in 2011 (Bekhet, 2013). These situation arises due to the changing trend away from personal computers to newer mobile electronic devices such as tablets and smart phones that new growth segments in which Malaysia is not heavily involved in (Zainal Abidin, 2009). Because of that, the performance of the E&E industry had also pushed down foreign investment to RM34.8 billion, making up only 22 per cent of the total investment approved in 2012 (Bekhet, 2013). Indeed, the E&E manufacturing sector in Malacca has been exposed as a major contribution development towards Malaysian manufacturing sector. Among Johor and Negeri Sembilan, Malacca has the biggest industrial park area known as the Free Industrial Zone (FIZ) in the Southern region that cover up about 80 per cent of E&E industry (Kewangan, 2008), Second, Malacca has more main Electricals and Electronics (E&E) Research and Development (R&D) centers compare to Johor and Negeri Sembilan which have less R&D center (Wad, 2012). Based on this reasons, this research focuses on E&E manufacturing sector specifically in Malacca to identify the research hypotheses.

Secondly, many arguments have been made pertaining to the researcher interest to explore the phenomena on issues related to innovative work behavior

among engineers. A study done by Yogun and friends (2015) have commented on engineer's innovative behavior, reported that engineers were found to be weak in associating skills, experimenting skill, observing skills and questioning skill. Besides, they also not a collaborators and were described as people who do not challenge the status quo (Fakhrorazi, Osman, & Hazril Izwar, 2013). They were seen as someone who minimizes risk, is not persistent in generating new approaches to problem solving and think short term. Staying within the system, using established solutions and not collaborating with others were described as hallmarks of the manufacturing engineers (Todd, Red, Magleby, & Coe, 2001). It is therefore very important to give focus on engineer's innovative work behavior as engineers are organization's special professional workforce that has the role to produce and develop innovations (Menzel, Aaltio, & Ulijn, 2007). Engineers have a compulsory function in organization innovation in producing a standardization product to compete with others organization in term of heighten product appeal, win over new distributors and permit higher selling prices. If the products created cannot be marketed effectively, the firm is likely to fail. In addition, previous literature has suggested that engineers who were evaluated with higher levels on innovative behavior do not value skills and mindsets essential for innovation. Because of this situation, engineers have shown a low level of innovative work behavior as they tend to emphasize technical details over a more holistic understanding of a design problem and are unable to identify design solutions that are both feasible and novel. This paper, therefore, aims to investigate the issues of innovative work behavior which possibly important among engineers in Malaysia context.

Thirdly, another problem that triggers the researcher interest is to explore the crucial role of each of self-leadership strategies to build a sound innovative work behavior performance. Past researches study self-leadership strategies as one dimension in predicting innovative work behavior without considering efficiency for each strategy (Kör, 2016). Furthermore, ongoing debates on which strategies within self-leadership give the most proactive effect in managing innovative work behavior. However, to date there have been little attempt made to empirically discuss the influence of behavior-focused strategies, constructive thought pattern strategies or natural reward strategies in innovative work behavior individually. This scenario is critical and need further investigation in term to get one specific strategies that give

the most influence on innovative work behavior (Carmeli, Meitar, & Weisberg, 2006a).

Fourthly, from the previous studies, it was found that individual have the ability to lead themselves in such conditions of having control over their behavior and cognitive and also having a good physiological condition (Hu, Wayne, Bauer, Erdogan, & Liden, 2016). Thus, this study will also fill the gap by expanding the element of self-leadership strategies in predicting innovative work behavior. Previous studies indicated that strategies focusing on physical vitality represent an independent category of self-leadership and not included in three recent categories of self-leadership (behavior-focused strategies, constructive thought pattern strategies and natural reward strategies) (Müller, Georgianna, & Roux, 2010; Ute & Natasha, 2013). This indication basically based on the single factor finding that have found from the dimension of physical vitality when researchers run confirmatory factor analysis and structural equation modeling toward behavior-focused, constructive thought pattern, natural reward and physical vitality in the self-leadership strategies. This research has suggested that the realm of self-leadership might need to be expanded beyond behavioral and cognitive elements to include physiological components as well. The inclusion of physical component in self-leadership strategies can be best explained by the ego-depletion theory. Due to a comprehensive view, the potential of individuals to truly self-lead themselves certainly must be impacted by their fitness level and nutritional habits (Christopher P. Neck & Houghton, 2006). This statement supported by Neck and Cooper (2000b) when they said that those who enjoy optimal fitness can handle physical demands more effectively and thus perform better in their daily tasks. Physical demands are referred to amount of travel, stress related to the success of the company, endless meetings and also extremely long working hours. Therefore, current research will investigate the relationship of physical vitality as one of the self-leadership strategies with innovative work behavior.

The last issue that contributes to innovative work behavior performance and finally intrigues the researcher in analyzing the situation is moderation function of transformational and transactional leadership in the relationship between self-leadership and innovative work behavior. As innovation is a complex process and not

happened in a vacuum situation, interaction between each of the organizational members (employee-leader, leader-employee) is very important. Transformational leaders play their critical role in guiding employee to truly be independent and self-managing on their work. This type of leader usually involves offering support and encouragement to individual follower by individualized consideration. They believe that the employees have a will and aspirations for self-development and autonomy for their tasks (Kelloway & Barling, 2000). Transformational leadership gets people to look beyond their self-interest. Leaders with this style provide meaning for the task at hand and make employees feel enjoyable with the task given as they get support, encouragement and motivation from their leader (Barbuto, 2005). In contrast, transactional leadership gives followers clarity about rules and standards to protect the status quo and entails closely monitoring and correcting followers' errors to ensure short-term success. Transactional leadership may be seen as encouraging followers to carry out their work in a prevention-focused manner and may accordingly elicit fit for those who prefer to use prevention means of self-regulation (Elenkov & Manev, 2005). Transactional leaders strive to have their employees carry out their formally prescribed job responsibilities. In other words, this type of leader aspires for employees to achieve solid and constant performance that meets fixed goals. So that, employees do not have the opportunity for self-awareness toward their own actions which in turn can promote increases in task focus and ultimately in task performance. Therefore, the researcher proposes to investigate transformational and transactional leadership in the Malaysian context specifically its role to moderate the effect of self-leadership strategies towards innovative work behavior.

In conclusion, this study is significant to investigate the effect of self-leadership strategies on the E&E manufacturing engineers' innovative work behavior. Physical vitality plays the role as an additional dimension of self-leadership in effecting innovative work behavior. Additionally, this study seeks to identify the role of transformational and transactional leadership as the potential moderator in the relationship between self-leadership strategies and innovative work behavior.

1.3 Research Questions

The research is related with the issues of innovative work behavior among Research and Development (R&D) professional in Malaysia. The research sought to identify the factors in influencing innovative work behavior of electric and electronics manufacturing engineers in Malaysia. Below are twelve research questions addressed in this research :

1. What is the effect of behavioral-focused strategies of self-leadership on innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia?
2. What is the effect of constructive thought pattern strategies of self-leadership on innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia?
3. What is the effect of natural reward strategies of self-leadership on innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia?
4. What is the effect of physical vitality strategies of self-leadership on innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia.?
5. Does transformational leadership moderate the relationship between behavior-focused strategies of self-leadership and innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia?
6. Does transformational leadership moderate the relationship between constructive thought pattern strategies of self-leadership and innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia?

7. Does transformational leadership moderate the relationship between natural reward strategies of self-leadership and innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia?
8. Does transformational leadership moderate the relationship between physical vitality strategies of self-leadership and innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia?
9. Does transactional leadership moderate the relationship between behavior-focused strategies of self-leadership strategies and innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia?
10. Does transactional leadership moderate the relationship between constructive thought pattern strategies of self-leadership and innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia?
11. Does transactional leadership moderate the relationship between natural reward strategies of self-leadership and innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia?
12. Does transactional leadership moderate the relationship between physical vitality strategies of self-leadership and innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia?

1.4 Research Aims and Objectives

The aim of this research is to examine the effect of self-leadership strategies on innovative work behavior. This research is also highlights the role of transformational and transactional leadership in moderating the relationship between self-leadership and innovative work behavior. In the current research, the researcher focused on electrical and electronics manufacturing engineers to achieve the following objectives in the end of this study:

1. To determine the effect of behavioral-focused strategies of self-leadership on innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia.
2. To determine the effect of constructive thought pattern strategies of self-leadership on innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia.
3. To determine the effect of natural reward strategies of self-leadership on innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia.
4. To determine the effect of physical vitality strategy of self-leadership on innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia.
5. To investigate the moderating effect of transformational leadership in the relationship between behavioral-focused strategies of self-leadership and innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia.
6. To investigate the moderating effect of transformational leadership in the relationship between constructive thought pattern strategies of self-leadership and innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia.
7. To investigate the moderating effect of transformational leadership in the relationship between natural reward strategies of self-leadership and innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia.
8. To investigate the moderating effect of transformational leadership in the relationship between physical vitality strategies of self-leadership and

innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia.

9. To investigate the moderating effect of transactional leadership in the relationship between behavioral-focused strategies of self-leadership and innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia.
10. To investigate the moderating effect of transactional leadership in the relationship between constructive thought pattern strategies of self-leadership and innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia.
11. To investigate the moderating effect of transactional leadership in the relationship between natural reward strategies of self-leadership and innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia.
12. To investigate the moderating effect of transactional leadership in the relationship between physical vitality strategies of self-leadership and innovative work behavior among Electrical and Electronics manufacturing engineers in Malaysia.

1.5 Scope of study

In this research, the scopes to be covered include several issues. First, the present study involved the participation of engineer as one of the R&D professionals from electric and electronics (E&E) manufacturing industries in Malaysia. The companies of E&E manufacturing were chosen by referring to the list from the Federation of Malaysian Manufacturers. It is included all the E&E manufacturing companies in Malacca state. Engineers who involved in R&D activities and innovation related activities are the population and also the sample for this research.

It is because the number of engineers in E&E who work with the R&D related activities in each of organization is limited in number.

Second, this research involves three types of variables; independent variable, moderator variables and dependent variable. Independent variable in this research is self-leadership with four dimensions of self-leadership variables: behavioral-focused, constructive thought pattern, natural reward and physical vitality. Research is consisting of two moderators which are transformational and transactional leadership. The dependent variable of the present study is innovative work behavior which was measured as unidimensional item.

Third, in terms of research design, researcher utilizes cross-sectional study approaches with quantitative method. The data for this study is collected by utilizing questionnaire and just collect at a time. The questionnaires used as the research instrument were distributed with four of section. Section A provides the questions about self-leadership strategies, section B is related with innovative behavior questions, section C provides the questions regarding to transformational and transactional leadership and section D focuses on the demographic information of the respondent.

1.6 Significant of the study

The significant of this study can be divided into two important aspects which are for the theoretical implication and practical contribution.

1.6.1 Theoretical implication

The present research draws important contributions to the literature on self-leadership strategies and innovative work behavior in the E&E manufacturing sector particularly in Malaysia. The research findings yield a comprehensive model

innovative work behavior by extending the diffusion innovation model by Rogers Everett. As suggested by the diffusion innovation model, this research grant empirical evidence on self-leadership strategies (behavior-focused, constructive thought pattern, natural reward and physical vitality) that contributes to individual's innovative work behavior and also the moderator function of transformational and transactional leadership in the effect of self-leadership strategies on innovative work behavior.

First, this research expanded the diffusion innovation model by adding four new dimension of innovative work behavior named by opportunity exploration, idea generation, idea championing and idea implementation. As stated earlier, dimension of innovative work behavior provided by diffusion innovation theory consist of only four dimensions which are knowledge, persuasion, decision and confirmation (Rajagopal, 2002). But as shown by the literature, the innovative work behavior begin with the opportunity exploration about the innovation (Greve, 2007) where it is includes the activity that looking for ways to improve current products, services or processes and the needed of innovation in the organization. Followed by stage of knowledge as stated by diffusion innovation model, at this stage individual seeks information about the innovation. Next step is the persuasion stage where an individual built a negative or a positive attitude toward the innovation. Then, the individual will choose to adopt or reject the innovation at the decision stage provided by diffusion innovation model. As an individual decided to proceed the innovation, idea generation is placed as the next step as suggested by Scot and Bruce (1994d). As stated by the diffusion innovation model, the last stage of innovation is confirmation stage where the individual looks for support of his or her innovation's decision. However, other additional dimension was added into this model which is idea implementation as suggested by Robert and Christopher (2001) where at this stage the ideas need to be implemented in the real work environment and making the innovation as part as the regular work processes.

Second, this research explained the diffusion innovation model by integrating self-management theory and ego-depletion model components to represent the self-leadership strategies in affecting innovative work behavior. The integration of self-management theory and ego-depletion model capture a broader aspect of self-

leadership strategies. The self-management theory model is related to the process of empowering an individual with the minimum knowledge and skills needed in a certain area until the person can recycle that knowledge and skills and so improve on it over time until the individual can exercise self-lead in that particular area. Meanwhile, ego-depletion model covers the need of physical vitality elements in the self-leadership strategies which refer to targets individuals' intentions to participate in programs that improve physical health and fitness.

As far, this study is adding on in the literature review by studying the self-leadership theory that used separated dimension of self-leadership strategies in measuring innovative work behavior. The implication concerns the specification of which strategies that give the most influence on innovative work behavior. This research is inconsistent with Carmeli, *et al.*, (2006a) research showing the generalizability of the self-leadership strategies in innovative work behavior study. In light of this inconsistency, it should not be assumed that findings from generalizability of self-leadership strategies as one dimension also can be generalize to conclude the dissimilar effect of each self-leadership strategies separately.

As highlighted in literature review, it is known about the effect of self-leadership strategies to innovative work behavior previously but it is not clear which dimensions are dominant to innovative work behavior. It is because literature review have shown that study on self-leadership strategies in predicting innovative behavior normally combined all the strategies as one independent variable of self-leadership. The findings of this study will enrich self-leadership literature particularly on ways in which each of self-leadership strategies (behavior-focused strategies, constructive thought pattern strategies, natural reward and a new strategies; physical vitality) separately give effect on innovative behavior as the dependent variable for this study. The study has discovered that all four of self-leadership strategies have significant effect on innovative behavior and the dimension of behavior-focused strategies is essential to contribute towards fostering innovative behavior in the organizations with the highest beta value ($\beta = .720$). The evidences denotes that employees who have the nature of applying behavior-focused strategies play the most significant role in fostering innovative behavior among employees by using self-observation, self-punishment, self-goal setting, self-reward and self-cueing.

Moreover, this research extended the diffusion innovation model by studying the physiological component namely physical vitality in predicting innovative work behavior. Apart from the behavioral and cognitive aspect of self-leadership strategies, this research verified the physiological component as the predictor of employees' self-leadership as highlighted by the ego-depletion model about the importance of physical vitality management in leading oneself. Physical vitality refers to the capability to have energy to do things. In other words, the use of these strategies makes people more efficient users of physiological, bodily and energetic resources they have. The inclusion of physical vitality in this research was supported by the ego-depletion model when this model explains that intrinsic motivation that a person gets from the feel of joy of physical health and vitality will lead them to experience feelings of enjoyment and exercise of their self-skills to personal accomplishment (Teixeira, Carraca, Markland, Silva, & Ryan, 2012). This adds a unique dimension to a context-based framework.

Third, the present research expanded the diffusion innovation model in terms of the moderator in the relationship between self-leadership strategies and innovative work behavior. This research investigated transformational and transactional leadership as the moderator. By including transformational and transactional leadership as the moderator, this research studies the leader's leadership aspect in buffering individual's self-leadership strategies at the workplace.

1.6.2 Practical contribution

This study practically contributes with two-fold. First, it helps the organization to identify relevant factors which promote the process of innovative work behavior. Innovative work behavior is well known with innovation-related behaviors which are opportunity exploration, idea generation, idea championing and idea implementation. One main predictor that is individual self-leadership strategies will be integrated in this study. Self-leadership strategies employed behavior-focused, constructive thought pattern, natural reward and

physical vitality in predicting innovative work behavior. Besides, this study also integrated how leadership styles can moderate the relationship between these two variables. Findings from current research can give an improvement towards innovation practices among engineers in manufacturing industries in Malaysia. As mentioned early, this research focusing on the influence of self-leadership towards innovative work behavior. This research is focusing on individual psychological contribution (self-leadership) in fostering the innovative work behavior. The identification of this individual effect on innovative work behavior will allow the top management to plan more innovation activities in their organization in order to compete with others organization. It is because employees who know how to lead and motivate themselves will be able to accept any type of tasks. Thus, organization will be more active with innovation practices time by time consequently can increase organization productivity.

Furthermore, from the context of organization management, findings can help an organization in reducing their cost problem. Organization can focus on the training strategies to improve self-leadership among employees during innovation process without need to change the work environment in order to support the innovation activities. It is valuable for the organizations to be able to continually self-diagnose and respond to needed changes as the environment changes. It is because organizations that seek ways in which to foster innovative work behavior in their employees, need to recognize the importance of building up self-leaders who can successfully meet the required expectations and standards of innovative work behavior. A workforce with strong self-leaders working in environments that support innovation could synergistically assist organizations in maintaining an all important competitive advantage.

1.7 Limitation of the study

Despite contributions of the present study, three limitations must be noted. The first pertains to generalizability. Because innovative behaviors in a manufacturing sector were used as the dependent variable, findings may be limited to

other contexts involving innovativeness. Also, a sample of manufacturing's engineers may have characteristics that distinguish them from other engineers, limiting generalizability. The second limitation involves the method used in getting information from respondents. With an exception of a few studies, the researcher has found that the majority of innovative work behavior researchers had used single source data. Although previous research have suggested to expand the data collection from multiple raters including self-report, peer-report and supervisor-report, current research only focused on self-report. It is because discrimination among supervisor and peer can occur while reporting the data for their coworkers. They might give a lower rate about innovative work behavior for their coworkers that they dislike. The third limitation involves the method bias. The findings in this research depend on the respondent's honesty in answering the questionnaires. This may lead to the over-reporting about their self-leadership and innovative work behavior because of the influence of social desirability bias.

1.8 Conceptual and Operational definition

The following section will discuss about the conceptual and operational definition of each variables in the present research.

1.8.1 Self-leadership strategies

The conceptual definition of self-leadership has been defined as a process through which individuals control their own behavior, influencing and leading themselves through the use of specific sets of behavioral and cognitive strategies (Prussia, Anderson, & Manz, 1998b). In this study, self-leadership is referring to individual self-control in their behavior, cognitive and physical condition in achieving a specific behavior. Self-leadership contains four dimensions: behavioral-focused strategies, constructive thought pattern strategies, natural reward strategies and physical vitality strategies. For behavioral-focused, constructive thought pattern

and natural reward strategies, all of these strategies measured by The Revised Self-Leadership Questionnaire (RSLQ) (Houghton & Neck, 2002a) while for the new strategy that focus on physical vitality measured by eight items from Muller, et al., (2010).

1.8.2 Behavioral-focused strategies

The conceptual definition of behavioral-focused strategies is strategies that are self-discipline oriented to manage ourselves in doing difficult, unattractive, but necessary tasks (Politis, 2006). For the operational definition, behavioral-focused strategies refer to management of individual behavior to the positive side with the using of self-observation, self-goal setting, self-reward, self-punishment and self-cueing. From RSLQ, the behavior-focused dimension is represented by five sub-scales labeled self-goal setting (5 items), self-reward (3 items), self-punishment (4 items), self-observation (4 items) and self-cueing (2 items).

1.8.3 Constructive thought pattern strategies

The conceptual definition of constructive thought pattern strategies is referring to establishing and changing thought patterns in meaningful ways (Lee, Lee, & Kim, 2007). For the operational definition, constructive thought strategies refer to the built up of positive thinking through the reduction of negative thinking and increase of positive self-image by using visualizing successful performance strategy, evaluating beliefs and assumptions strategy and self-talk strategy. From RSLQ, the constructive thought pattern dimension is represented by three sub-scales labeled visualizing successful performance (5 items), evaluating beliefs and assumptions (4 items) and self-talk (3 items).

1.8.4 Natural rewards strategies

The conceptual definition of natural rewards strategies refer to task's features focused and enhancement in increasing of feelings of competence and self-determination (Kaboli, Shaemi, & Teimouri, 2007). The operational definition for natural rewards strategies is positive perceptions and feeling of enjoyable with tasks to be accomplished. Natural rewards strategies include seeking work activities which are pleasant and enjoyable. From RSLQ, a single sub-scale consisting of five items represents the natural reward dimensions which focusing thoughts on natural rewards.

1.8.5 Physical vitality strategies

The conceptual definition of physical vitality strategies refer to the ability to perform routine physical activity without undue fatigue (Christopher P. Neck & Cooper, 2000b). The operational definition for physical vitality strategies is referring to the habitual action to achieve an optimal level of fitness by exercise and diet by health program, healthy nutrition and physical activities. Strategies that focus on physical vitality were measured by eight items from Muller, et al., (2010).

1.8.6 Transformational leadership

The conceptual definition of transformational leadership refers to behaviors of leaders who motivate followers to perform and identify with organizational goals and interest and who have the capacity to motivate employees beyond expected levels of work performance (Sarros, Cooper, & Santora, 2008). For the operational definition of transformational leadership, it refers to a process of influencing employees by using idealized influence, inspirational motivation, intellectual stimulation and individualized consideration. Idealized influence refers to leaders

behaving as role models for their followers. Meanwhile, inspirational motivation refers to encouragement given by a leader for generating ideas by energizing followers to work towards the organization's vision. Intellectual stimulation refers to the degree to which the leader promotes intelligence, rationality and careful problem solving. In addition, individualized consideration refers to the degree to which the leader gives personal attention, treats each employee individually, coaches and advises.

1.8.7 Transactional leadership

The conceptual definition of transactional leadership refers to leaders who inspire followers to transcend their own self-interests and who are capable of having a profound and extraordinary effect on followers (Robbins, 2003). For the operational definition of transactional leadership, it refers to leaders who guide or motivate their followers in the direction of established goals by clarifying role and task requirements. Characteristics of transactional leadership are contingent reward and management by exception (active or passive). Contingent reward refers to the leader provides rewards if followers perform in accordance with contracts or expend the necessary effort. Management by exception (active) refers to watches and searches for deviations from rules and standards and takes corrective action. Meanwhile, management by exception (passive) refers to the leader avoids giving directions if the old ways are working and allows followers to continue doing their jobs as always if performance goals are met.

Transformational and transactional leadership behavior were measured by Multifactor Leadership Questionnaires Form 5X with transformational leadership was measured with 20 items cover up the dimension of intellectual stimulation, idealized influence, inspirational motivation and individualized consideration and transactional leadership was measured by 12 items included the dimension of contingent reward and management by exception (passive and active) (Avolio, Bass, & Jung, 1999).

1.8.8 Innovative work behavior

The conceptual definition of the innovative work behavior can be described as individual different actions and behavior necessary at each stage of multistage process of innovation (J. Jong & Hartog, 2010). The operational definition for innovative work behavior is behavior that covers up all the behavior on opportunity exploration, idea generation, idea championing and idea implementation and measured as unidimensional variable on innovative work behavior.

1.9 Summary

In summary, this chapter discusses on the background of the research which is about innovative work behavior among Electrical and Electronics (E&E) manufacturing engineers. Besides, this chapter also discusses about the relationship between behavior-focused strategies, constructive thought pattern strategies, natural reward strategies and physical vitality strategies of self-leadership with innovative work behavior. Follow by the discussion on the moderator function of transformational and transactional leadership in the relationship between each of self-leadership strategies with innovative work behavior. Each of problem statement occurs within scope of innovative work behavior, self-leadership strategies and transformational and transactional leadership among Electrical and Electronics (E&E) manufacturing engineers have been discussed and were supported with literature review and previous findings. In addition, conceptual definition and operational definition for each of variables used in this study were discussed to provide a clear explanation and definition for each used terms in this research.

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