

**DETERMINANTS OF INNOVATIVE WORK
BEHAVIOR AMONG WHITE-COLLAR
WORKERS: A STUDY OF THE
MANUFACTURING FIRMS WITHIN THE
ELECTRICAL AND ELECTRONIC (E&E) SECTOR
OF PENANG**

Lam Sook Mee

**Research report in partial fulfillment of the requirements
for the degree of Master of Business Administration**

UNIVERSITI SAINS MALAYSIA

2010

DEDICATION

Dedicated with love to my dearest parent,

Mr. Lam King Hong and Madam Yan Yew Yee

and my beloved siblings,

Sook Wai, Sook Lai, Sok Fun, Soke Kam, Sook Kuan and Chin Leong.

ACKNOWLEDGEMENT

First and foremost, I would like to express my deepest gratitude and appreciation to my supervisor, Assoc. Prof. Dr. Aizzat Hj. Mohd. Nasurdin for her patience, invaluable suggestions, understanding ways and unequivocal support. Dr. Aizzat has always provided me with insightful ideas in designing the research model and in analyzing the results. Under her guidance, I learned not only specific analytical skills, but also how to learn.

Next, my sincere appreciation and thanks are dedicated to all my respondents for their valuable feedback. Their willingness to answer my questionnaire helped me without a doubt, to carry out the work for this research, in a smooth and systematic manner.

Apart from that, I would like to convey a special note of gratitude and appreciation to all the lecturers in the MBA programme. I also wish to thank Puan Florence Kannu Nagaratnam, for her editing services, Mr. David Mah, Mr. Gooi Bor Chun, Miss. Lynn Tan and Miss Cheng Li Guat for their invaluable advice and assistance in this research.

To my parents and family members, I would like to express my love and deep appreciation for their patience and moral support, specifically my dear sisters, Sook Wai and Sook Lai who made sacrifices along the way to help me complete this research on time.

Finally, I would like to thank all those who have rendered their help directly or indirectly throughout this project paper. Their encouragement, assistance and support are highly appreciated.

TABLE OF CONTENTS

	Page
TITLE	i
DEDICATION	ii
ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	x
LIST OF FIGURES	xi
ABSTRAK	xii
ABSTRACT	xiii
CHAPTER 1: INTRODUCTION	
1.0 Background of Study	1
1.2 Problem Statement	2
1.3 Research Objectives	8
1.4 Research Questions	8
1.5 Significance of the Study	9
1.6 Definition of Key Terms	11
1.6.1 <i>Innovative Work Behavior</i>	11
1.6.2 <i>Organizational variables</i>	11
1.6.3 <i>Job variables</i>	12
1.6.4 <i>Personality variables</i>	13
1.7 Organization of Remaining Chapters	14

CHAPTER 2 LITERATURE REVIEW

2.0	Introduction	15
2.1	An Overview of Innovative Work Behavior	15
2.2	Theories that Related to Innovative Work Behavior	19
2.2.1	<i>Exchange Theory</i>	19
2.2.2	<i>Norm of Reciprocation</i>	21
2.2.3	<i>Person-Environment (P-E) Fit Theory</i>	21
2.2.4	<i>The Five Factor Theory</i>	23
2.3	Organizational Variables	24
2.3.1	<i>Leader-Member Exchange</i>	24
2.3.2	<i>Supervisory Support</i>	25
2.3.3	<i>Organizational Justice</i>	25
2.3.3.1	<i>Distributive Justice</i>	26
2.3.3.2	<i>Procedural Justice</i>	26
2.2.4	<i>Organizational Climate for Innovation</i>	27
2.4	Job Variables	28
2.4.1	<i>Job Autonomy</i>	28
2.4.2	<i>Job complexity</i>	29
2.4.3	<i>Time Pressure</i>	30
2.4.4	<i>Work Overload</i>	31
2.5	Personality Variables	32
2.5.1	<i>Proactive Personality</i>	33
2.5.2	<i>Openness to Experience</i>	34
2.5.3	<i>Conscientiousness</i>	34
2.6	Control Variables	35

2.6.1	<i>Age</i>	35
2.6.2	<i>Gender</i>	35
2.6.3	<i>Job Tenure</i>	36
2.6.4	<i>Job Position</i>	37
2.7	Theoretical Framework and Hypotheses	37
2.8	Hypotheses Development	39
2.8.1	<i>The Relationship between Organizational Variables and Innovative Work Behavior</i>	39
2.8.2	<i>The Relationship between Job Variables and Innovative Work Behavior</i>	42
2.8.3	<i>The Relationship between Personality Variables and Innovative Work Behavior</i>	44
2.9	Summary	45

CHAPTER 3 METHODOLOGY

3.1	Introduction	46
3.2	Research Design	46
3.2.1	<i>Sample and Unit of Analysis</i>	46
3.2.2	<i>The Sampling Method</i>	48
3.2.3	<i>Time Horizon</i>	50
3.3	Variables and Measurements	50
3.3.1	<i>Dependent Variables</i>	51
3.3.2	<i>Independent Variables</i>	52
	3.3.2.1 <i>Organizational Variables</i>	53
	3.3.2.2 <i>Job Variables</i>	54
	3.3.2.3 <i>Personality Variables</i>	55
3.4	Pilot Testing	55

3.5	Data Collection Technique	56
3.6	Data Analysis Techniques	56
3.6.1	<i>Descriptive Analysis</i>	57
3.6.2	<i>Factor Analysis</i>	57
3.6.3	<i>Reliability Analysis</i>	58
3.6.4	<i>Correlation Analysis</i>	58
3.6.5	<i>Hierarchical Regression Analysis</i>	59
3.7	Summary	61

CHAPTER 4 DATA ANALYSIS AND RESULTS

4.1	Introduction	62
4.2	Overview of Data Collected	62
4.3	Demographic Profile of Respondents	63
4.4	Analysis	66
4.4.1	<i>Factor Analysis</i>	66
4.4.1.1	<i>Factor Analysis of Innovative Work Behavior</i>	66
4.4.1.2	<i>Factor Analysis of Organizational Variables</i>	67
4.4.1.3	<i>Factor Analysis of Job Variables</i>	70
4.4.1.4	<i>Factor Analysis of Personality Variables</i>	72
4.4.2	<i>Restatement of Research Hypotheses</i>	73
4.4.3	<i>Reliability Test</i>	75
4.4.4	<i>Descriptive Statistics</i>	76
4.4.5	<i>Correlation Analysis</i>	78
4.4.6	<i>Hierarchical Regression Analysis</i>	81
4.5	Summary	83

CHAPTER 5 DICUSSION AND CONCLUSION

5.1	Introduction	86
5.2	Recapitulation of Study	86
5.3	Discussion	87
5.3.1	<i>The influence of Organizational Variables on innovative Work Behavior</i>	87
5.3.2	<i>The Influence of Job Variables on Innovative Work Behavior</i>	89
5.3.3	<i>The influence of Personality Variables on Innovative Work Behavior</i>	91
5.4	Implication of Study	93
5.4.1	<i>Theoretical Viewpoint</i>	93
5.4.1	<i>Managerial Viewpoint</i>	94
5.5	Limitations	96
5.6	Suggestions for Future Research	97
5.7	Conclusion	98

REFERENCES	99
APPENDICES	110
APPENDIX A: Cover Letters and Questionnaires	111
APPENDIX B: CODING VARIABLES	118
APPENDIX C: SPSS ANALYSIS	
C1: Frequencies and Frequency Table	119
C2: Factor Analysis	121
C3: Reliability Analysis	130
C4: Descriptive Statistics	134
C5: Correlation Analysis	135
C6: Hierarchical Regression Analysis	136

LIST OF TABLES

	Page	
Table 1.1	Patents/Publications Per Million Population, Number of USPTO Utility Patents and Relative Citation Index (2001- 2005)	5
Table 1.2	Top 10 Organizations with Malaysia Patents (1986-2006)	6
Table 3.1	Sample Distribution	49
Table 3.2	Layout of Innovative Work Behavior Questionnaire and Sources	51
Table 4.1	Questionnaires Distributed to Manufacturing Firms	63
Table 4.2	Summary of Demographic Profile	65
Table 4.3	Rotated Factors and Factor Loadings for Innovation Work Behavior	67
Table 4.4	Rotated Factors and Factor Loadings for Organizational Variables	68
Table 4.5	Rotated Factors and Factor Loadings for Job Variables	71
Table 4.6	Rotated Factors and Factor Loadings for Personality Variables	72
Table 4.7	Reliability Coefficient of the Study Variables	76
Table 4.8	Descriptive Statistics of the Study Variables (N=227)	77
Table 4.9	Pearson's Correlation Analysis of the Study variables	80
Table 4.10	Hierarchical Regression for Hypothesis 1 to Hypothesis 10	83
Table 4.11	Summary of the results of all hypotheses.	84

LIST OF FIGURE

	Page
<i>Figure 2.1: Research Framework of this Study</i>	39

ABSTRAK

Kajian ini bertujuan untuk menguji perhubungan di antara tiga kategori variabel penentu (variabel organisasi, variabel pekerjaan, dan variabel personaliti) dengan gelagat kerja inovatif. Sample dalam kajian ini terdiri daripada 227 pekerja kolar putih yang bekerja dalam tujuh belas organisasi pembuatan di Pulau Pinang. Analisa regresi kajian ini menunjukkan dua variabel organisasi (perhubungan penyelia-subordinat dan iklim organisasi untuk inovasi) mempunyai perhubungan positif dengan gelagat kerja inovatif. Di samping itu, dua variabel pekerjaan (autonomi kerja dan kompleksiti kerja) juga didapati mempunyai perhubungan positif dengan gelagat kerja inovatif. Dari segi pengaruh personaliti, kajian ini mendapati dua variabel personaliti (personaliti proaktif dan keterbukaan kepada pengalaman) mempunyai perhubungan yang positif dengan gelagat kerja inovatif. Implikasi, limitasi, dan cadangan untuk penyelidikan akan datang juga dibincangkan.

ABSTRACT

This study sought to examine the relationship between three categories of predictor variables (organizational, job and personality) and innovative work behavior. The sample in this study consisted of 227 white-collar employees from 17 manufacturing firms in the state of Penang. Regression analyses on the data showed that two organizational related variables (supervisor-subordinate relationship and organizational climate for innovation) were positively related to innovative work behavior. In addition, two job variables (job autonomy and job complexity) were found to be positively related to innovative work behavior. With regard to the influence of personality, this study found that two personality variables (proactive personality and openness to experience) were positively related to innovative work behavior. The findings, implications, limitations, and suggestions for future research were discussed.

CHAPTER 1

INTRODUCTION

1.0 Background of Study

Today, we live in a globally competitive world of rapidly changing technologies. Innovation plays a major role in the long term survival and growth of organizations (Correa, Morales, & Pozo, 2005). Those organizations that are unable to initiate better and innovative ways to solve old and new problems may soon become extinct. It is through innovativeness that industrial managers devise solutions to business problems and challenges, which provide the basis for sustainable competitive advantage. According to Porter (1990), firms create a competitive advantage by perceiving new or better ways to compete in a new product design, new production process, new marketing approach or new way of conducting training, which is ultimately an act of innovation. Therefore, much innovation depends on the cumulative small insights rather than major technological breakthrough.

Having a competitive advantage causes repercussions on the growth of the firm, including its sales, profits, and employment. According to Alonso-Borrego and Collado (2001) employment dynamics is one of the main sources of innovation. In this regard, the innovative potential of a firm's human assets is critical because through their innovative behavior, firms are able to generate more innovative products, services and processes in the rapidly changing environment. This capacity to innovate is one of the most important variables that affect business performance (Porter, 1990).

Although innovativeness is one of the variables over which the management has considerable control, the innovation process is uncertain and the timing of an

innovation or the opportunity to innovate is unpredictable. Therefore, managing innovation is different from the managing ongoing and established operations that are routine and the degree of changes is expected to be smaller. Consequently, innovative results are highly uncertain and actual costs are often unanticipated (Kanter, 1988). On the other hand, the innovation process is knowledge-intensive and crosses boundaries. According to Quinn (1979), the innovation process relies on individual human intelligence, creativity and involves interactive learning. In addition, Kanter (1988) has highlighted the fact that the success of an innovative ideas relies on the interdependence of the cooperation of employees from various departments as no function can contribute to the innovation process by itself. The integrated approach to cooperation, taken by different departments is the key driver for the success of an innovative idea. Therefore, in order to gain competitive advantages via innovation, it is critical for a firm to maintain its competitiveness by promoting innovative work behavior (IWB) among its employees across all functions.

1.2 Problem Statement

Malaysia is moving towards the status of a developed country by year 2020 (Pakiam & Adam, 2009). In the past, the key comparative advantage of many countries' industrial growth and development was derived from the low labor cost in their respective manufacturing variables (Malaysian Science and Technology Information Centre (MASTIC), 2003) The wealth of developed and developing nations continues to depend on technological innovation in the new millennium (MASTIC, 2003). As Malaysia enters the rank of middle income countries, it finds itself in an awkward position of having neither low-cost production associated with

the developing countries nor the high technology-base of developed countries (MASTIC, 2003). Taking cognizance of this fact, the Malaysian government has consistently emphasized the importance of the technological progress of the country. Under the 9th Malaysia Plan, a total of RM5.3 billion have been allocated for development in Science, Technology and Innovation for the whole country (Economic Planning Unit, 2006). Besides, the Ministry of Science, Technology and Innovation (MOSTI) have provided various grants which include ScienceFund, Technofund, Innofund and e-Content fund to promote scientific discovery and innovation transformation (Economic Planning Unit, 2006). According to Lee and Lee (2007), majority of the manufacturing firms in Malaysia in their studies regard government support for innovation and technology as important. In line with the government's efforts to promote innovation and given the stiff competition from other emerging countries that are able to offer lower cost, organizations in Malaysia need to transform, by being flexibility in adaption to new ideas, processes, technologies and products in order to be able to produce high-end and value added products and services as well as super (MASTIC, 2003).

Result from the survey conducted by Socio-Economic & Environmental Research Institute in year 2009, showed that Malaysia has fallen significantly behind the three Asian Newly Industrialized Economies (NIE) consisted of Taiwan, Korea and Singapore and in some cases the emerging economies of China and India in the last two decades for innovation-driven economy performance (Socio-Economic and Environmental Research Institute (SERI), September, 2009). Table 1.1 shows four key indicators of innovation among the surveyed countries. The number of publications and patents per million people is used for patent and publication intensity measurements. In particular, to measure inventions which have value as Intellectual

Property (IP) assets that can be taken to market, the number of USPTO Utility Patents (number of patents invented in Asian economies and registered with the US Patents and Trademark Office) is used. Lastly, the Relative Citation Index compares an economy's citation frequency relative to its publications output. Higher values of the index are indicative of relatively higher shares of citations, hence, higher overall quality of publications for the referenced economies. Malaysia, when compared with three ASEAN countries (Thailand, Indonesia and Philippines), demonstrates leading positions in publication/patens per million people and USPTO utility patents but scored the lowest in the relative citation to index. Malaysia's performance on these four indicators is found to be much lower than the Asian NIEs (Singapore, South Korea and Taiwan) and far below the advanced economies countries (Japan and USA). Technological innovation in both process and products are crucial ingredients for economic competitiveness in this era of globalization and rapid technological change. However, this depends heavily on the innovative work behavior of the country's workforce. Based on the current trend, Malaysia would need to catch-up on its innovation pace to achieve its goal to be a developed country by 2020.

of Electrical and Electronic firms were innovative. This implies that further improvement is required to boost innovation in Electrical and electronic firms.

Table 1.2

Top 10 Organizations with Malaysia Patents (1986-2006)

No	Company	Number of patents (1986-2006)
1	Motorola Inc.	130
2	Chartered Semiconductor Manufacturing Ltd.	62
3	Intel Corporation	61
4	Ceram Optec Industries Inc.	47
5	Agilent Technologies Inc.	43
6	Advance Micro Devices Inc.	32
7	National Semiconductor Corporation.	31
8	Sinorita Sendirian Berhad.	28
9	Altera Corporation	23
10	Avago Technologies Ltd	18

Source: Socio-Economic & Environmental Research Institute (SERI). Asia's shift towards innovation and its implications, *Penang Monthly Economic*, September 2009.

“The Malaysia Economic in Brief - December 2009” published by the Department of Statistics Malaysia in January 2010 reported that Malaysia Gross Domestic Product growth rate dropped from 6.2% (2007), 4.6% (2008) to -1.2 % (Quarter 3, 2009). The cumulative Industrial Production Index (IPI) for the period of January-November 2009 declined by 9.0% compared to the same period in 2008. During this period, the manufacturing output growth decreased by 6.2%, specifically, the Electrical and Electronics Products output growth diminished by (5.7%). Likewise, Malaysia's exports for January-November 2009 recorded a decrease of 19.2% to RM498.6 billion compared with RM617.4 billion for the same period in 2008. Although the key root cause of the decrease in the manufacturing sector was the global economic crisis in 2009, it is imperative for Malaysia to be more competitive in international trade by restoring its exports volume. One possible reason for this declining trend may be due to marginal innovative activities among the various

industries in Malaysia including Electrical and Electronic sector which contributed 41.1% (RM 205billion) of Malaysia's exports. Therefore, there is a need to further research on ways of improving the innovative capabilities of manufacturing firms in Malaysia. This is because innovative work behavior will promote more efficient and effective innovations in product and process designs to gain competitive advantages against the stiff competition internationally.

A review of the innovation literature, however, suggests that most existing researches and theoretical developments are at the organizational level. Scant attention has been paid to understanding as to why individuals engage in innovative behavior (West & Farr, 1989). What are the antecedents that affect an employee's decision to introduce new product ideas, execute new work process, apply new methods, and suggest new ways to achieve objectives even though they will need to leave their comfort zone? The study of what motivates an individual to engage in innovative behavior is critical as the innovative human capital is an important asset that enables an organization to constantly adapt to a changing environment and establish competitive advantages in the global market (Ramamoorthy, 2005; Scott & Bruce, 1994). Basically the theoretical and empirical development of the innovative work behavior research can still be considered as underdeveloped especially in Malaysia (Subramaniam, 2007). Therefore, given that the firms' innovation is based on the development and execution of employees' innovative work behavior, examining the determinants of innovative work behavior is important.

1.3 Research Objectives

This study has been conducted with the objective of investigating the selected determinants of innovative work behavior among white-collar employees in the Malaysian electrical and electronic sectors. Specifically, the present study attempts :

1. To examine the relationship between organizational variables (leader-membership exchange, supervisor support, distributive justice, procedural justice and organization climate for innovation) and innovative work behavior.
2. To examine the relationship of job variables (job autonomy, job challenges, job, complexity, time pressure and work overload) and innovative work behavior.
3. To examine the relationship of employee's personality variables (proactive personality, openness to experience and conscientiousness) and innovative work behavior.

1.4 Research Questions

This study attempts to answer the following questions:

1. Is there a relationship between organizational variables (leader-membership exchange, supervisor support, distributive justice, procedural justice and organization climate for innovation), and innovative work behavior?
2. Is there a relationship between job variables (job autonomy, job challenges, job, complexity, time pressure and work overload), and innovative work behavior?

3. Is there a relationship between employee's personality variables (proactive personality, openness to experience and conscientiousness) and innovative work behavior?

1.5 Significance of the Study

Porter (1990) contends that a nation's competitiveness depends on its industry's capacity to innovate and upgrade. He further concluded that every successful company has the same fundamental underlying mode of operation – companies acquire competitive advantage through acts of innovation, including both new technologies and new ways of doing things. For example, Korean companies have successfully competed with their Japanese rivals in production of televisions sets. Competitors will overtake any company that stops improving and innovating eventually and inevitably (Porter, 1990). An organization itself cannot be innovative without people. The foundation of innovation is ideas and it is the individual people in an organization who "develop, carry, react to, and modify ideas" (Van de Ven, 1986; p. 592). Thus, it is critical for an organization to develop their human capital that engage in innovative work behavior to gain competitive advantages.

A number of studies have explored the determinants of Malaysia's firms' innovation at organization levels. To the researcher's knowledge, very few researchers have conducted a thorough investigation of the determinants of innovative work behavior at individual level in Malaysia. In 2007, Subramaniam carried out a research among 76 educators by replicating Scott and Bruce's (1994) model of IWB. In his study, leadership (leader-member exchange and leader role expectation) and individual attributes (demographic variables, systematic problem-solving style and

by understanding the determinants that influence innovative work behavior, organizations can develop better work climates, job design, and better selection and staffing programs that can promote innovative work behavior among its workers. By doing so, firms will be able to sustain their competitive advantages.

1.6 Definition of Study Variables

1.6.1 Innovative Work Behavior

Innovative work behavior in this study is defined as “the intentional creation, introduction and application of new ideas within a work role, group or organization” (Janssen 2000, p 288).

1.6.2 Organizational variables

In this study, the relationship of five organizational variables are examined, specifically, leader-member exchange quality, supervisory support, organizational justice (distributive justice and procedural justice), and organizational climate for innovation. These variables are defined as below.

Leader-member exchange in this study refers to the unique social exchange relationship established between each employee with his or her supervisor. Subsequently, innovative workers depend on their supervisors for the necessary supports and resources to develop, protect, and apply their innovative ideas such as information (data, expertise, political intelligence), resources (materials, space, time), and social-political support (endorsement, legitimacy, backing). This definition was adopted from Janssen and Yperen (2004)

, **Organizational justice** in this study refers to the ways in which employees determine if they have been treated fairly in their jobs. According to Moorman (1991), two sources of organizational justice as follows:

- 1) **Distributive Justice**: refers to the perceived fairness of decision outcomes such as pay, recognition, promotions, performance appraisal, and rewards;
- 2) **Procedural justice**: refers to the fairness of the procedures used to determine the outcomes an employee receives.

Organizational Climate for innovation in this study refers to “the degree to which the organization is perceived to support innovation and the development of new solutions to problems”, adopted from the definition given by Malik & Wilson (1995, p.209)

Supervisory support in this study refers the actions of supervisors that show concern for employees' feelings and needs, encourage them to voice their own concerns, provide positive informational feedback to employees, and facilitate employee skill development following the definition proposed by Oldham & Cummings (1996). Supervisory support therefore is expected to promote employees' feelings of self determination and personal initiative at work.

1.6.3 Job variables

Four job variables, namely job autonomy, job complexity, time pressure and work overload in this study are defined as below:

Job autonomy in this study is defined as “the extent to which followers are given latitude to carry out their tasks without excessive supervision” (Jong & Kemp, 2003; p193).

Job complexity in this study refers to the level of stimulating, difficulties and challenging demands associated with a particular job (Hackman & Oldham, 1980).

Based on Andrews (1996), in this study, **time pressure** refers to the degree to which the employees felt there was limited time to complete tasks.

Work overload in this study can be defined as an acute stressor where an individual perceives he/she has too many tasks to finish in a given time according to Mulki, Lassk, and Jaramillo (2008)

1.6.4 Personality variables

Three personality variables will be investigated in this study with the following definitions:

Proactive Personality is defined by Parker, Williams, and Turner (2006) as an individual's engagement on (1) proactive ideas implementation such as voicing up the ideas and taking charge of an idea for improvement and (2) proactive problem-solving actions that involves an individual's self-starting, future-oriented responses that aim to prevent the reoccurrence of a problem in an unusual or nonstandard way. This definition is adopted in this study.

Openness to Experience in this study refers to traits commonly associated with "being imaginative, cultured, curious, original, broad-minder, intelligent and artistically sensitive" as defined by Barrick and Mount (1991. p.5)

Conscientiousness in this study refers to "socially prescribed impulse control that facilitates task- and goal-directed behavior, such as thinking before acting, delaying gratification, following norms and rules, and planning, organizing, and prioritizing tasks" as defined by John and Srivastava (1999, p.30).

1.7 Organization of Remaining Chapters

A total of five chapters have been developed in this study. The first chapter presents an overview of and background for this research. A discussion of the problem statement, objectives and significance of the study are developed in this section.

Chapter 2 presents related discussions of other researchers. A theoretical framework of this study is developed based on the relevant literature review. Subsequently, several hypotheses are formulated.

Chapter 3 focuses on the research methodology used in the present study. Research design, variables and measurements, data collection methods, and data analysis techniques are discussed in this section.

Chapter 4 outlines the result of statistical analysis.

Finally, chapter 5 discusses the research findings, discussion and implications of the study. Subsequently, limitations of the study and suggestions for future research are presented.

According to Van de Ven (1986), individual innovative work behavior would generate both technical innovations (the introduction and/or application of new technologies, products, and services) and administrative innovations (the introduction and/or application of new procedures and policies). Technical innovations occur in the primary work activity of the organization while administrative innovations take place in the social system of an organization. Porter (1990) mentioned that innovation in its broadest sense, includes both new technologies and new ways of doing things. The “new” ideas, products, processes, and procedures being introduced or implemented do not have to be absolutely new to the field. They only need to be new to the relative unit of adoption. For example, an employee is innovating when he introduces an IT technology (e.g. data mining tools) which has not been used in his organization, although the technology may have been used in the industry for a long time.

Research and practitioners often use the terminology of “creativity” and “innovation” interchangeably (Scott and Bruce, 1994). Though related, these constructs offer some distinct emphases. Mumford and Gustafson (1988) refer to creativity as the generation of novel and useful ideas. On the other hand, Janssen (2000) who views innovation as a more complex process defines innovative work behavior as “the intentional creation, introduction and application of new ideas within a work role, group or organization” (p 288). Similarly, others (Kanter, 1988; West and Farr, 1989; Scott and Bruce, 1994) have emphasized that innovation concerns not only the intentional act of generating new ideas, but also the introduction and application of new ideas with the objective of improving organizational performance. Specifically, Jong and Hartog (2008) have defined innovative work behavior as a multi-dimensional behavior which enables employees to contribute to the process of innovation. John and Hartog (2008) further categorizes innovative work behavior into

four dimensions: (a) opportunity exploration (identifying new opportunities by chance, the discovery of an opportunity, a puzzle that needs to be resolved or a trigger by a problem; (b) idea generation (generating new concepts, products, services or process for the purpose of improvement); (c) championing (selling ideas to potential allies), and (d) application (developing the innovative idea and implementing it into a practical proposition).

In the review of literatures, Carmeli and Weisberg (2006) have provided a more comprehensive definition for innovative work behavior by stating that it is “A multiple-stage process in which an individual recognizes a problem for which she or he generates new (novel or adopted) ideas and solutions, works to promote and build support for them, and produces an applicable prototype or model for the use and benefit of the organization or parts within it” (p.71).

According to Konovsky and Pugh (1994), citizenship behavior (extra role behavior) refers to employee behavior that is above and beyond the call of duty that is not rewarded in the organization’s formal reward structure. In drawing a comparison with organization citizenship behavior, Newton et al. (2008) and Katz (1964) (as cited in Konovsky and Pugh (1994)) classified innovative work behavior as an extra-role behavior based on the citizenship concept. For example, in comparison to the explicit in-role requirements of in-depth technology knowledge and capabilities for IT professionals, the degree of creativity and innovativeness required in their works is somehow implicit thus making it difficult for organizations to monitor and reward the innovative work behavior in an objective manner. (Newton et al, 2008).

Several researchers have examined the determinants of innovative work behavior. A majority of these studies were relatively fragmented and lack a coherent and integrated model (Ramamoorthy et al., 2005; Scott & Bruce, 1994). Some

organizational variables (e.g., leader-member exchange, organizational justice, organizational climate for innovation and supervisory supports) which focused on employer-employee social exchange relationships were identified as being important in fostering innovative work behavior (Amabile, Conti, Coon, Lazenby, & Herron, 1996; Janssen, 2005; Mohamed, 2002; Moon, Kamdar, Mayer, & Takeuchi, 2008; Oldham & Cummings, 1996; Scott & Bruce, 1994; Subramaniam, 2007; Tierney, Farmer, & Graen, 1999). In addition, job variables, specifically job autonomy, job complexity, time pressure and work overload were also investigated independently as important predictors (Amabile et al., 1996; Jong & Kemp, 2003; Fisher, Miller, & Thatcher, 2007; Janssen, 2000; Oldham & Cummings, 1996; Parker, Williams, & Turner, 2006; Pearson, Pearson, & Griffin, 2008; Ramamoorthy et al., 2005; Unsworth, Wall, & Carter, 2005). Likewise, several past researchers (Amabile et al., 1996; Crant, 2000; Feist, 1998; George & Zhou, 2001; Kim, Hon, & Crant, 2009; Moon et al., 2008; Parker et al., 2006; Unsworth et al., 2005; Williams, 2004), also identified personality variables such as proactive behavior, openness to experience and conscientiousness as influencing innovative work behavior.

Among the innovative work behavior literatures, Scott and Bruce's (1994) study was the first attempt to examine the determinants of individual innovative work behavior in a systematic manner. Scott and Bruce (1994) conceptualize individual innovative behaviors as being the result of four interacting systems, including individual, leadership, work group and climate for innovation. It is an important study that integrates a number of antecedents to individual innovation. However, as highlighted in their research, the generalizability of the finding to other type of work organization was limited since their research was only based on research and development (R&D) work group alone. The model developed by Scott and Bruce

(1994) has been replicated by Robben's (1998) study where the sample comprised of engineers in high technologies firms in United States. Subramaniam (2007) on the other hand, replicate Scott and Bruce model to educators in Malaysia.

2.2 Theories Related to Innovative Work Behavior

Most of the researchers and practitioners agree that innovative work behavior can be explained through exchange theories, namely social exchange theory and the economic exchange theory, norm of reciprocation, person-employment fit theory, as well as the five factor theory (e.g., Amabile et al., 1996; Feist, 1998; George & Zhou, 2001; Janssen, 2005; Mohamed, 2002; Oldham & Cummings, 1996; Ramamoorthy et al., 2005; Scott & Bruce, 1994; Subramaniam, 2007). Among the related theories, the researcher of this study views social exchange as the underlying theory that links the predictors of organizational variables (leader-member exchange, supervisory support, organizational justice, organizational climate for innovation), job variables (job autonomy, job complexity, time pressure, and work overload) and personality variables (proactive personality, openness to experience, and conscientiousness) with the dependent variable (innovative work behavior).

2.2.1 Exchange Theory

One of the most prominent theories associated with workplace behavior is the exchange theory (Cropanzano & Mitchell, 2005). Aryee, Budhwar and Chen (2002) state that the employment relationship may be characterized either as a social or economic exchange. According to Stamper and Van Dyne (2001), economic exchange is based on equal exchange transactions such as monetary rewards to

employees for their contribution to employers. Therefore, in economic exchange relationships, job requirements and expectations are clearly stated in contracts, which allow employees to adjust their contributions by assessing their personal costs and benefits associated with the exchange (Stamper & Van Dyne, 2001).

Blau (1964) as cited in Cook and Rice (2003) defines social exchange as a “voluntary action of individual that is motivated by the returns they are expected to bring and typically do in fact bring from others” (p.55). Therefore, in contrast with economic exchange, a social exchange relationship does not specify the details of the exchange in advance, and monitoring inducements and contributions is less relevant (Gouldner, 1960). In this context, social exchange involves a series of interactions that generate obligations that draw on the relationship of trust, not on transactions (Cook & Rice, 2003). This relational trust, subsequently leads individuals to believe that if they exercise initiative and contribute above minimum expectation (organization citizenship behavior), they will receive some form of reciprocity from the organization in future (Konovsky & Pugh, 1994).

Therefore, employees who perceive their relationship with the organization as one of the social rather than economic exchange may be more likely to exhibit innovative work behavior (e.g., Amabile et al., 1996; Janssen, 2000; Jong & Kemp, 2003; Robben, 1998; Newton et al., 2008; Scott & Bruce, 1994; Subramaniam, 2007), meaning that they will exert extra effort and perform non-required behavior like innovative work behavior because they trust that their employer will appreciate their extra-role contributions and reciprocate at some time in future. On the other hand, if employees perceive their relationship with employer to be one of economic exchange, they will only put in the effort to meet the terms of the formal agreement and perform

at the minimum required level (Stamper & Van Dyne, 2001). This may reduce innovative work behavior among employees.

2.2.2 Norm of Reciprocation

Gouldner (1960) states that the norm of reciprocity refers to certain actions and obligations performed as repayments for benefit received, which is the underlying concept of the exchange theory. According to Cropanzano and Mitchell (2005), the norm of reciprocity is based on the interdependent relationship between the different parties involved. It emphasizes contingent interpersonal transactions, whereby an action by one party leads to a response by another. Therefore, when a person supplies a benefit, the receiving party should respond in kind. In other words, the process begins when at least one participant makes a “move,” and if the other reciprocates, new rounds of exchange are initiated. Once the process is in motion, each consequence can create a self-reinforcing cycle (Cropanzano & Mitchell, 2005). Aligned with the norm of reciprocation, being innovative at the workplace, create beliefs among employees that their employer will reciprocate their efforts at a later date. Consequently, this belief may further encourage innovative work behavior among employees.

2.2.3 Person-Environment (P-E) Fit Theory

According to Edwards, Caplan and Harrison (1998), the core premise of P-E fit theory is that “stress arises not from the person or environment separately, but rather by their fit or congruence with one another” (p.28). Kristof (1996) categorized environment fit into four dimensions, namely person-organization (P-O) fit, person-vocation (P-V) fit, person-group (P-G) fit, and person-job (P-J) fit.

Therefore, person-environment fit is achieved when a person is compatible to the environment (organization, vocation, work teams and jobs) according to the demand and supply relationship in the employment agreement (Kristof, 1996). Two types of fits are highlighted by Edwards et al. (1998). The first fit arises between the demands of the environment (e.g., quantitative and qualitative job requirements, role expectations, and group and organizational norms) and the abilities of the person (e.g., work behavior, skills, training, time, and energy). A second type of person-environment fit entails the match between the needs of the person (e.g. needs for fair evaluation or career development opportunities) and the supplies (e.g., supportive supervisor) in the environment that pertain to the person's needs.

According to the person-environment fit theory, an individual will try to improve his/her position to fit to the environment by coping strategies either via adaptation or environmental mastery process (French, Rodgers, & Cobb, 1974). For example, a person experiencing challenging and complex job problems may engage in innovative work behavior that serves as a problem-focused coping strategy to enable him or her fit to the environment (Janssen, 2000). Therefore, small amounts of misfit of individual and the environment may reduce the strain and promote innovative work behavior. This is because a slight excess of workload and complexity in job fulfills the person's desire for challenge. However, extreme misfit may exhaust adaptive resources and discourage innovative work behavior (e.g. excessive time pressure and work overload), whereas perfect fit may result in stagnation and lack of stimulation that would also increase strain (Edwards et al., 1998). Kulka (1979) concluded that the effects of misfit may be curvilinear or linear and symmetric or asymmetric.

2.2.4 The Five Factor Theory

Cattell (1950) as cited in Cloninger (2004, p.225) defines personality as “a prediction to what and a person will do in a given situation”. The Five Factor Model (FFM) theory is rooted in the work of Cattell (1950) (Cloninger, 2004). This five factor structure was later replicated by many researchers and is recognized as Big Five model (Barrick & Mount, 1991; Barrick & Mount, 2005; John & Srivastava, 1999). Costa and McCrae (1992) summarized the five individual factors of personality as follows:

Openness to experience refers to the amenability of a person to new experiences, learning, and insights. The facets include: Fantasy, Aesthetics, Feelings, Actions, Ideas, and Values.

Conscientiousness refers to self-control and dependability. The facets include: Competence, Order, Dutifulness, Achievement, Striving, Self-Discipline, and Deliberation.

Extraversion measures people-orientation. The facets include: Warmth, Gregariousness, Assertiveness, Activity, Excitement-Seeking, and Positive Emotions.

Agreeableness refers to the degree to which a person is oriented toward helping other people, and being sympathetic to the concerns of others. The facets include: Trust, Straightforwardness, Altruism, Compliance, Modesty, and Tender Mindedness.

Neuroticism refers to the dimension assesses a person’s emotional instability and maladjustment. The facets include: Anxiety, Anger-Hostility, Depression, Self-Consciousness, and Impulsiveness.

2.3 Organizational Variables

There are two key parties in an organization, namely, supervisor/employer who acts as the agent of the organization and the subordinate/employee who responds to the demands of the supervisor by performing the required tasks. In this study, the researcher will examine the organizational variables that are based on the application of the social exchange theory between employee and employer. The following subsections will explain four selected organizational variables (leader-member exchange, supportive-supervisory, organizational justice and organizational climate for innovation) that are associated with innovative work behavior.

2.3.1 Leader-Member Exchange (LMX)

Scott and Bruce (1994) hypothesized that leader-member exchange (LMX) does influence innovative behavior. This finding was empirically supported by Robben (1998) and Subramaniam (2007). Janssen and Yperen (2004) defined LMX as the dyadic exchange relationships between supervisors and their respective subordinates. The relationship is based on social exchange and high-quality exchange relationships are characterized by mutual trust, respect, and obligation that improve relationships between an employee and his or her supervisor. Low-quality exchange relationships may be associated with formal, role-defined interactions and predominantly economic exchanges that result in hierarchy-based downward influence and distance (Janssen & Yperen, 2004). According to Robben (1998), a member will commit himself/herself beyond the official job requirements only when he/she perceives that these actions will be exchanged with the rewards of positional