Exploring the Effects of Knowledge Characteristic and Self-Efficacy on Employees' Innovative Behaviors: The Moderating Effect of Environmental Uncertainty

Huei-Mei Liang [1], Rui-Hsin Kao[2], Yu-Shan Hung [1], Pei-Yu Chien[1]
[1]Department of Business Management, National Sun Yat-sen University, Taiwan
[2]Department of Ocean and Border Governance, National Quemoy University, Taiwan

Abstract--**Along with global marketing competition and shortened product life cycle, many firms attempt to engage in product innovation in order to create new products for sustaining their competitive advantage. Prior studies have indicated that firms' successful product innovation are intimately linked with employees' innovative behavior. Furthermore, some previous studies also indicate that knowledge characteristic and self efficacy are important factors to improve organizational development; however, few studies investigate the relationship among knowledge characteristic, self-efficacy, and employees' innovation behavior. Therefore, we attempt to explore these relationships in this study. On the other hand, environmental uncertainty is a key influencing factor in the competitive environment, especially for knowledge intensive manufacturing industry. However, few studies explore the moderating effect of environmental uncertainty among knowledge characteristic, self-efficacy, and employees' innovation behavior in manufacturing industry. Therefore, we address the research gap by investigating sales and R&D employees in manufacturing industry. Our results show that knowledge characteristic has positive effect on employees' innovative behavior for the R&D employees. Furthermore, self-efficacy has positive effect on employees' innovative behavior for both sales and R&D employees. Finally, environmental uncertainty has positive moderate effect on the relationship among knowledge characteristic, self-efficacy, and employees' innovation behavior.**

I. INTRODUCTION

With the rapid pace of environmental change, firms need to engage in product innovation constantly in order to sustain competitive advantage [19],[38],[12] and corporate renewal [13][11]. Furthermore, some studies have indicated that product innovation has positive impact on firm performance [27], firm survival [15][36]. For instance, cell phone industries have no choice but to launch new product constantly in order to dominate the market and maintain industry position, as the product life cycle in the industry shorten. Therefore, the determinants of product innovation has increasing attracted the attention for both researchers and practitioners. Then, many studies have found some successful determinants of product innovation.

The determinants of product innovation could divide into three levels: individual (such as educational level, working hour, and ability) organization (such as internal know-how, financial input, cooperation between departments, firm size, R&D intensity and firm age) and external factors (such as intense external networking) [22],[20],[8],[18],[7],[12]. Furthermore, an organization is composed of employees primarily. Therefore, the effect of employees on product innovation may stronger than organizational and external factors. Then, employees' innovative behavior may have great impact on product innovation. However, few studies have investigated the determinants of employees' innovative behavior.

Some studies have found that job autonomy has a significant impact on employees' creativity [1]. Furthermore, employees' possess high level of knowledge characteristic; then, they could solve the challenging problem, and generate novel ideas which may be beneficial to employees' job outcome [24]. Based on the above-mentioned, we could infer that knowledge characteristic may have impact on employees' innovative behavior. On the other hand, self efficacy may have mediating effect on the relationship between knowledge characteristic and employees' job performance [19][35]. Moreover, self efficacy is likely to influence on employees' behavior [39]. In doing so, we also infer that self efficacy may have great impact on employees' innovative behavior. However, few studies have explored the relationship among knowledge characteristic, self efficacy, and employees' innovative behavior. Therefore, we attempt to address the research gap by investigating sales and R&D employees in Taiwan manufacturing industry.

Sales and R&D employees play an important role in innovative activities. Sales employees are the first line employees who possess the well environmental forecasting and problem-solving ability. Moreover, they could acquire consumers' comments and requirements directly. Then, sales employees report back the information which they acquire from consumers or market to organization in order to facilitate the successful innovative activities. Therefore, the ability of collecting and forecasting innovative information is important for sales employees. On the other hand, R&D employees involve in new product design. Therefore, innovative ability is crucial for them. In doing so, we attempt to investigate the relationship among knowledge characteristic, self efficacy, and employees' innovative behavior in sales and R&D employees.

II. THEORY FRAMEWORK AND HYPOTHESIS

A. Knowledge characteristic and self efficacy

Knowledge characteristic refers to the knowledge, skills, or competence which is required by an individual to implement the task [21]. In other words, knowledge characteristic means an important factor to determinant whether individual has ability to complete a task in a highly specialized and knowledge-intense environment [9][10].

Knowledge characteristic could divide into five important assessment indexes: job complexity, information processing, problem solving, skill variety, and specialization [30].

Self efficacy means individual's mental state or belief which is an individual perceptual phenomenon e.g. purpose of work, and sense of responsibility. Knowledge characteristic is closely related to individuals' feeling and belief [6][10]. Furthermore, [19] indicate that knowledge characteristic is likely to influence on individual's mental state (such as self efficacy). This argument leads to the following hypothesis:

Hypothesis 1a: knowledge characteristic has significantly positive impact on self efficacy for sales employees.

Hypothesis 1b: knowledge characteristic has significantly positive impact on self efficacy for R&D employees.

B. Knowledge characteristic and employees' innovative behavior

Individuals with high level of knowledge characteristic may possess well knowledge, skills, or competence to implement the task [21]. Therefore, they are more likely to have great task performance. Knowledge characteristic has significantly positive impact on employees' innovation willingness [16][34]. Furthermore, individuals with high level of knowledge characteristic have better innovative performance or behavior. Accordingly, this study proposes that knowledge characteristic has significantly positive impact on employees' innovative behavior.

Hypothesis 2a: knowledge characteristic has significantly positive impact on employees' innovative behavior for sales employees.

Hypothesis 2b: knowledge characteristic has significantly positive impact on employees' innovative behavior for R&D employees.

C. Self efficacy and employees' innovative behavior

Self efficacy refers to individual's mental state or belief which is an individual perceptual phenomenon e.g. purpose of work, and sense of responsibility [6]. Therefore, individual has high level of self efficacy, and he or she will have stronger confidence and endurance [5] to implement their task. In addition, employees' self efficacy will enhance their willingness of engaging in performance, and thereby to improve organizational effectiveness or individual performance [4],[37],[21]. For this reason, individual has high level of self efficacy could overcome some uncertain factors, when he or she implement innovative activities, and thereby to improve his or her innovative behavior. This argument leads to the following hypothesis:

Hypothesis 3a: self efficacy has significantly positive impact on employees' innovative behavior for sales employees.

Hypothesis 3b: self efficacy has significantly positive impact on employees' innovative behavior for R&D employees.

D. Moderating effect of environmental uncertainty

With the rapid pace of environmental change, environmental uncertainty has become an influential variable to explain organization performance and development [33]. Environmental uncertainty refers to the speed of environmental change and instability of the technological and market environment [25][3]. Therefore, environmental uncertainty will result in individual who is unable to accurately predict and understand some aspect of technological or market conditions [29][14], and thereby to generate investment or decision risk. In other words, under the condition of environmental uncertainty, it is likely to result in wrong decision, and thereby to influence organizational development or individual performance.

Environmental uncertainty is likely to influence individual development or performance, but knowledge characteristic and self efficacy could diminish the effect of environmental uncertainty on individual. Employees have high level of knowledge characteristic, and they have sufficient problem-solving and information processing ability [30] which may diminish the effect of environmental uncertainty, and thereby to improve employees' innovative behavior.

Hypothesis 4a: environmental uncertainty has significantly positive moderating effect on the relationship between knowledge characteristic and employees' innovative behavior for sales employees.

Hypothesis 4b: environmental uncertainty has significantly positive moderating effect on the relationship between knowledge characteristic and employees' innovative behavior for R&D employees

Furthermore, self efficacy will enhance individuals' confidence [5]. Individuals' mental state or belief is likely to assist them to overcome the problem, and thereby to implement their task successfully. Therefore, under the condition of environmental uncertainty, individual's belief may diminish the effect of environmental uncertainty on employees' innovative behavior. This argument leads to the following hypothesis:

Hypothesis 5a: environmental uncertainty has significantly positive moderating effect on the relationship between self efficacy and employees' innovative behavior for sales employees.

Hypothesis 5b: environmental uncertainty has significantly positive moderating effect on the relationship between self efficacy and employees' innovative behavior for R&D employees

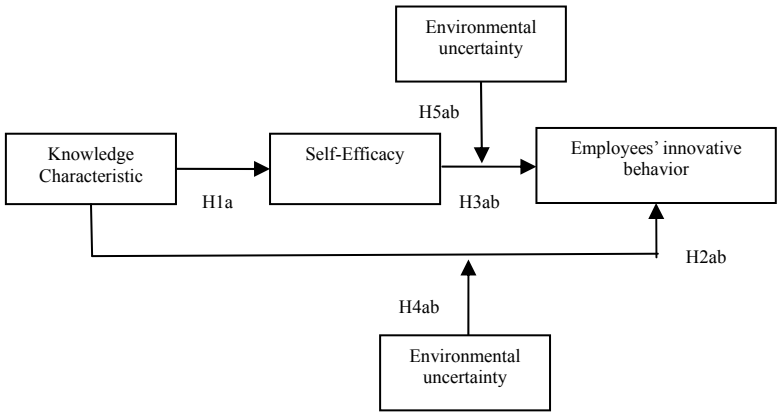

Figure 1 Research Framework

III. METHODOLOGY

A. Sample and Data Collection

In this study, Taiwan manufacturing firms' employees are selected as the sample for this study; furthermore, the respondents work in sales (including marketing and business department) or R&D department which need highly specialized, and professional knowledge and technology.

We adopt convenience sampling for collecting data. The data are collect by two methods. One is mail survey. We send the questionnaires to 130 manufacturing firms' employees who work in either sales department or R&D department. Finally, we obtain 112 usable responses, yielding a response rate of 86.15%. Another is online survey, and we obtain 64 valid questionnaires. Totally, we acquire 174 valid questionnaires in the study.

B. Measures

The variables are divided into two types in this study, which are research variables and control variables. In order to ensuring the conceptual equivalence of both the Chinese and English questionnaire versions, we conduct back-translation by bilingual speaker of the both languages. Participants rate questionnaire items on the five-point Likert scale ranging from strongly disagree to strongly agree.

Research variables

Knowledge characteristic. Knowledge characteristic refers to the knowledge, skills and competence that are required by an individual to complete the job. More specifically, knowledge characteristic is an important factor to determinant whether an individual could complete a task in a highly professional, and knowledge intense environment [9]. To assess knowledge characteristic, we adopt the dimension of knowledge characteristic from the Work Design Questionnaire (WDQ) developed by [30]. Then, we assess knowledge characteristic with 20 items.

Self efficacy. Self efficacy means individual's mental state or belief which is an individual perceptual phenomenon [6]. To assess self efficacy, we adopt the dimension of self efficacy from Personal Efficacy Belief scale which developed by [32]. We assess self efficacy with 10 items, such as "I am very proud of my job skills and abilities".

Employees' innovative behavior. Employees' innovative behavior is measured using 20 items from Innovativeness Scale (IS) which is developed by [17]. A sample item being: " I frequently improvise methods for solving a problem when an answer is not apparent".

Environmental uncertainty. Environmental uncertainty could be divided into two parts. One is technological uncertainty; another is market uncertainty. Then, it is measured by the scale which is developed by [2][26].

Control variables.

In this study, three variables are controlled for when testing the research hypotheses. Previous studies indicated that the time of an employee join the group is likely to affect personal interaction, and thereby affecting individual innovative behavior [21]. Therefore, we control for employees' tenure in the present study. Furthermore, employees' age and education level are also likely to influence data analysis outcome [31],[23],[21]. In doing so, we also control for employees' age and education level in this study.

IV. DATA ANALYSIS AND RESULTS

Table 1 shows the means, standard deviations, and correlations for all study variables. Based on a hierarchical regression estimation strategy, Table 2 and Table 3 show the empirical results. Hypothesis 1a investigates the effect of knowledge characteristic on self efficacy for employees who work in sales department. The empirical estimation is not significant (Model 2 of Table 2). The result indicates that knowledge characteristic is not likely to influence self efficacy for employee in sales department. Thus, Hypothesis 1a is not supported. Hypothesis 1b investigates the effect of knowledge characteristic on self efficacy for employees who work in R&D department. The empirical estimation is also not significant (Model 4 of Table 2). Thus, Hypothesis 1b is

not supported. Then, hypothesis 2a investigates the effect of knowledge characteristic on employees' innovative behavior for employees who work in sales department. As show in Model 6 of Table 2, the coefficient for the relationship between knowledge characteristic and employees' innovative behavior is not significant, and thus do not provide support for Hypothesis 2a. Hypothesis 2b investigates the effect of knowledge characteristic on employees' innovative behavior for employees who work in R&D department. As show in Model 8 of Table 2, the coefficient for the relationship between knowledge characteristic and employees' innovative behavior is significant and positive ($\beta = 0.56$, $p < 0.001$), and thus provide support for Hypothesis 2b.

Furthermore, H3a and H3b examine the effect of self efficacy on employees' innovative behavior for the employees who work in either sales or R&D department. As show in Model 10 and Model 12, the coefficient is significant and positive ($\beta = 0.32$, $p < 0.05$; $\beta = 0.68$, $p < 0.001$). Therefore, H3a and H3b are supported in this study.

H4a and H4b investigate the moderating effect of environmental uncertainty on the relationship between knowledge characteristic and employees' innovative behavior for the employees who work in either sales or R&D department. As shown in Model 3 and Model 6 in Table 3, the results indicates that there is positive interaction effect between knowledge characteristic and employees' innovative behavior for both sales and R&D department's employees ($\beta = 0.50$, $p < 0.05$; $\beta = 0.49$; $p < 0.05$). Therefore, H4a and H4b are supported. Moreover, this study also tested the moderating effect of environmental uncertainty on the relationship between self efficacy and employees' innovative behavior for the employees who work in either sales or R&D department. As show in Model 9 and Model 12, the coefficient is significant and positive ($\beta = 0.39$, $p < 0.05$; $\beta = 0.44$, $p < 0.01$). Therefore, H5a and H5b are supported in this study.

TABLE 1. CORRELATION MATRIX (N=174)

	Variables	Mean	S.D.	1	2	3	4	5	6	7
1.	Employees' age	36.5	7.00	1						
2.	Employees' education level	3.26	0.88	-0.19*	1					
3.	Employees' tenure	9.08	6.98	0.83**	-0.34*	1				
4.	Knowledge characteristic	3.70	0.63	-0.03	0.36*	-0.04	1			
5.	Self efficacy	3.46	0.48	0.20**	0.05	-0.19*	0.16*	1		
6.	Environmental uncertainty	3.63	0.74	0.03	0.22*	-0.05	0.47*	0.05	1	
7.	Employees' innovative behavior	3.51	0.41	0.08	0.23*	-0.08	0.35*	0.58*	0.34*	1

Note: *$p < 0.1$; **$p < 0.05$

TABLE 2. REGRESSION ANALYSIS RESULT OF MAIN EFFECT (N=174)

Dependent variable	**Self efficacy**				**Employees' innovative behavior**							
Hypotheses	Sales (H1a)		R&D (H1b)		Sales(H2a)		R&D(H2b)		Sales(H3a)		R&D(H3b)	
	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8	Model9	Model10	Model11	Model12
Control variables												
Employees' age	-0.02	-0.02	0.09	0.06	-0.12	-0.12	-0.08	-0.14	-0.12	-0.12	-0.08	-0.14
Employees' education level	0.25	0.28	-0.01	-0.11	0.35*	0.35	0.07	-0.15	0.35*	0.26	0.07	0.07
Employees' tenure	-0.01	-0.01	0.28	0.33	0.03	0.03	0.20	0.32	0.03	0.03	0.20	0.01
Independent variables												
Knowledge characteristic		-0.08		0.26		-0.01		0.56***				
Self efficacy										0.32*		0.68***
F-value	0.84		2.44		1.64		4.03**		3.17*		8.53***	
Adj R^2	-0.01		0.10		0.05		0.20		0.16		0.38	

Note: *$p < 0.1$; **$p < 0.01$;***$p < 0.001$

TABLE 3. REGRESSION ANALYSIS RESULT OF INTERACTION EFFECT (N=174)

	Employees' innovative behavior											
	Sales (H4a)				R&D (H4b)		Sales(H5a)				R&D(H5b)	
	Model1	Model2	Model3	Model4	Model5	Model6	Model7	Model8	Model9	Model10	Model11	Model12
Control variables												
Employees' age	-0.12	-0.12	-0.05	-0.08	-014	-0.25	-0.12	-0.17	-0.01	-0.08	-0.14	-0.27
Employees' education level	0.35*	0.35	0.23	0.07	0.15	-0.09	0.35*	0.26	0.16	0.07	0.07	0.07
Employees' tenure	0.03	0.03	-0.06	0.20	0.31	0.42	0.03	0.03	-0.07	0.20	0.01	0.18
Independent variables												
Knowledge characteristic		-0.01	-0.33		0.56***	0.16						
Self efficacy								0.32*	0.13		0.68***	0.38*
Interaction effect												
Knowledge characteristic* environmental uncertainty			0.50*			0.49*						
Self efficacy*environmental uncertainty									0.39*			0.44**
F-value	2.63*				4.61***		3.97***				10.00***	
Adj R^2	0.15				0.27		0.24				0.47	

Note: *$p < 0.1$; **$p < 0.01$;***$p < 0.001$

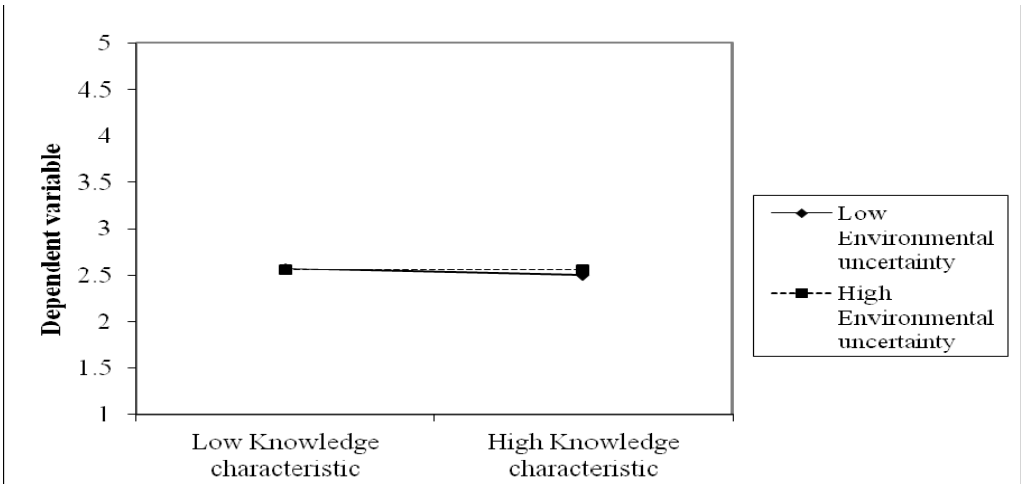

Figure 2 The Interaction effect between knowledge characteristic and environmental uncertainty in Sales department

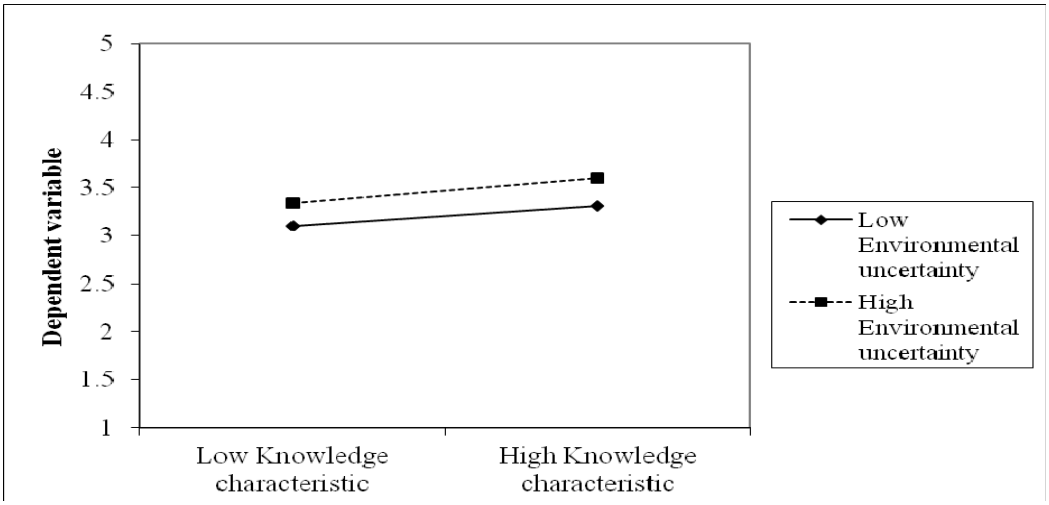

Figure 3 The Interaction effect between self-efficacy and environmental uncertainty in Sales department

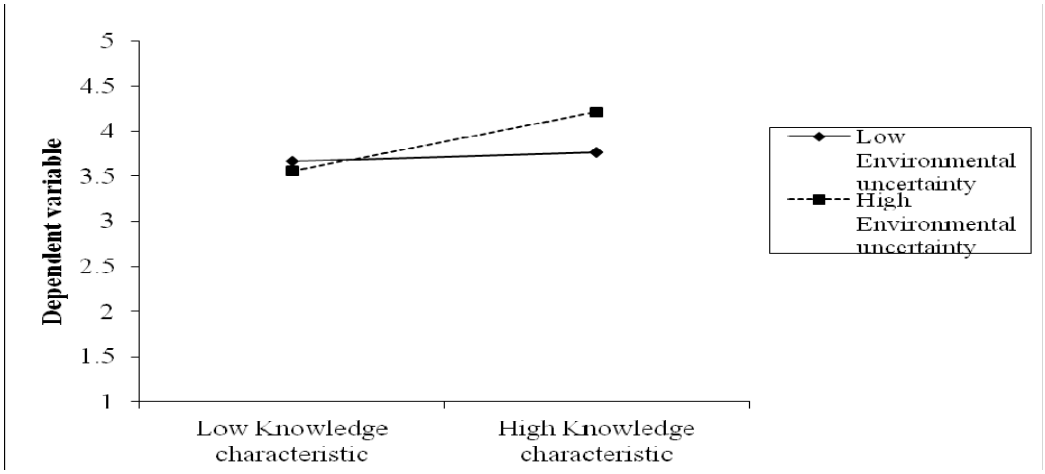

Figure 4 The Interaction effect between knowledge characteristic and environmental uncertainty in R&D department

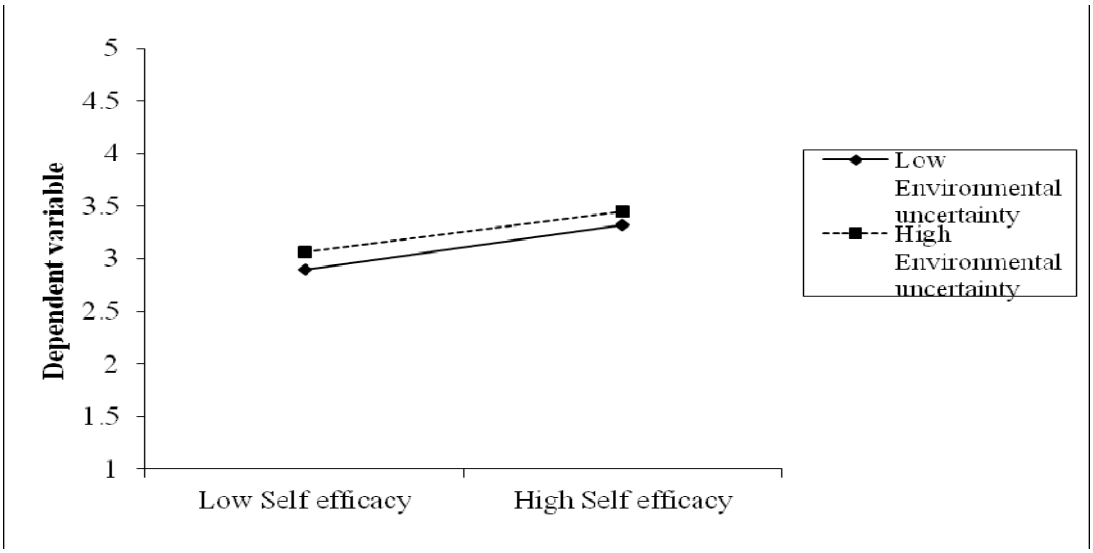

Figure 5 The Interaction effect between self-efficacy and environmental uncertainty in R&D department

V. DISCUSSION AND CONCLUSION

Production innovation is important for firms to sustain competitive advantage in a constantly rapid changing environment; then, employees' innovative behavior is a crucial determinant for organizational development and product innovation. Previous studies have indicated that knowledge characteristic and self efficacy are the important factors which are likely to influence individual or organizational performance [21]. However, fewer studies have further explored how knowledge characteristic and self efficacy influence on employees' innovative behavior, and how knowledge characteristic influence on self efficacy. Therefore, we investigate the relationship among knowledge characteristic, self efficacy, and employees' innovative behavior in this study. Furthermore, we also add environmental uncertainty as the moderating effect to explore. In addition, employees in sales and R&D department have different task requirement and content. Thus, we explore whether employees in sales and R&D department have different outcome among knowledge characteristic, self efficacy, and employees' innovative behavior.

The primary findings suggest that (a) knowledge characteristic do not have significant impact on self efficacy for employees in both sales and R&D department, (b) knowledge characteristic do not have significant impact on employees' innovative behavior for employees in sales department, but it has significant impact on employees' innovative behavior for employees in R&D department, (c) self efficacy have significant impact on employees' innovative behavior for employees in both sales and R&D department, and (d) environmental uncertainty has moderating effect in this study.

For employees in sales department, knowledge characteristic do not have significant impact on self efficacy and employees' innovative behavior. The possible explanation is that sales employees' work content is about dealing with consumer requirements, and contacting with consumers, which may not need professional and specified knowledge and technology. Therefore, knowledge characteristic do not lead to improve self efficacy and employees' innovative behavior.

For employees in R&D department, knowledge characteristic do not have significant impact on self efficacy, but it could lead to improve employees' innovative behavior. The finding indicates that employee's mental state or belief is more likely to improve employees' innovative behavior rather than knowledge characteristic.

Furthermore, we find that environmental uncertainty has significant moderating effect in this study. In high level of environmental uncertainty, it is likely to increase many unpredictable factors and diminish employees' confidence [28][2], and thereby, it may result in failure innovation and investment. Our findings indicate that knowledge characteristic and self efficacy could improve employees' innovative behavior in high level of environmental uncertainty. Therefore, managers should pay more attention on how to improve employees' knowledge characteristic and self efficacy in order to increase employees' innovative behavior in high level of environmental uncertainty.

REFERENCES

[1] Amabile, T. M., Conti, R., Coon, H., Lazenby, J., & Herron, M. (1996). Assessing the work environment for creativity. Academy of management journal, 39(5), 1154-1184.

[2] Atuahene - Gima, K., Slater, S. F., & Olson, E. M. (2005). The Contingent Value of Responsive and Proactive Market Orientations for New Product Program Performance. Journal of product innovation management, 22(6), 464-482.

[3] Atuahene-Gima, K., & Murray, J. Y. (2004). Antecedents and outcomes of marketing strategy comprehensiveness. Journal of Marketing, 33-46.

[4] Aremu, A. O. (2005). A confluence of credentialing, career experience, self-efficacy, emotional intelligence, and motivation on the career

commitment of young police in Ibadan, Nigeria. Policing: An International Journal of Police Strategies & Management, 28(4), 609-618.
[5] Bandura, A. (1997). Self-efficacy: The exercise of control. Macmillan.
[6] Bandura, A. (1986). Social foundations of thought and action. Englewood Cliffs, NJ.
[7] Bougrain, F., & Haudeville, B. (2002). Innovation, collaboration and SMEs internal research capacities. Research Policy, 31(5), 735-747.
[8] Brouwer, E., & Kleinknecht, A. (1996). Firm size, small business presence and sales of innovative products: A micro-econometric analysis. Small Business Economics, 8(3), 189-201.
[9] Campion, M. A., & McClelland, C. L. (1993). Follow-up and extension of the interdisciplinary costs and benefits of enlarged jobs. Journal of Applied Psychology, 78(3), 339.
[10] Chen, C. H. V., & Kao, R. H. (2011). A multilevel study on the relationships between work characteristics, self-efficacy, collective efficacy, and organizational citizenship behavior: the case of Taiwanese police duty-executing organizations. The Journal of psychology, 145(4), 361-390.
[11] Danneels, E. (2002). The dynamics of product innovation and firm competences. Strategic management journal, 23(12), 1095-1121.
[12] De Jong, J. P., & Vermeulen, P. A. (2006). Determinants of Product Innovation in Small Firms A Comparison Across Industries. International Small Business Journal, 24(6), 587-609.
[13] Dougherty, D. (1992). A practice-centered model of organizational renewal through product innovation. Strategic Management Journal, 13(S1), 77-92.
[14] Duncan, R. B. (1972). Characteristics of organizational environments and perceived environmental uncertainty. Administrative science quarterly, 313-327.
[15] Foster, R. N. (1986). Innovation: The attacker's advantage (pp. 87-112). New York: Summit Books.
[16] Ford, C. M. (1996). A theory of individual creative action in multiple social domains. Academy of Management review, 21(4), 1112-1142.
[17] Goldsmith, R. E. (2011). The validity of a scale to measure global innovativeness. Journal of Applied Business Research (JABR), 7(2), 89-97.
[18] Hadjimanolis, A. (2000). An investigation of innovation antecedents in small firms in the context of a small developing country. R&D Management, 30(3), 235-246.
[19] Hackman, J. R., & Oldham, G. R. (1980). Work redesign.
[20] Hoffman, K., Parejo, M., Bessant, J., & Perren, L. (1998). Small firms, R&D, technology and innovation in the UK: a literature review. Technovation, 18(1), 39-55.
[21] Hsieh, W. C., Chen, C. H. V., Lee, C. C., & Kao, R. H. (2012). Work characteristics and police officers' performance: Exploring the moderating effect of social work characteristics and collective efficacy in multilevel analysis.Policing: An International Journal of Police Strategies & Management, 35(3), 615-641.
[22] Hyvärinen, L. (1990). Innovativeness and its indicators in small-and medium-sized industrial enterprises. International Small Business Journal, 9(1), 64-79.
[23] Ilgen, D. R., Hollenbeck, J. R., Johnson, M., & Jundt, D. (2005). Teams in organizations: From input-process-output models to IMOI models. Annu. Rev. Psychol., 56, 517-543.
[24] Jackson, P. R., Wall, T. D., Martin, R., & Davids, K. (1993). New measures of job control, cognitive demand, and production responsibility. Journal of applied psychology, 78(5), 753.
[25] Jaworski, B. J., & Kohli, A. K. (1993). Market orientation: antecedents and consequences. The Journal of marketing, 53-70.
[26] Kohli, A. K., & Jaworski, B. J. (1990). Market orientation: the construct, research propositions, and managerial implications. The Journal of Marketing, 1-18.
[27] Kotabe, M. (1990). Corporate product policy and innovative behavior of European and Japanese multinationals: an empirical investigation. The Journal of Marketing, 19-33.
[28] Miller, K. D. (1993). Industry and country effects on managers' perceptions of environmental uncertainties. Journal of International Business Studies, 693-714.
[29] Milliken, F. J. (1987). Three types of perceived uncertainty about the environment: State, effect, and response uncertainty. Academy of Management review, 12(1), 133-143.
[30] Morgeson, F. P., & Humphrey, S. E. (2006). The Work Design Questionnaire (WDQ): developing and validating a comprehensive measure for assessing job design and the nature of work. Journal of applied psychology, 91(6), 1321.
[31] Pell, L. H., Eisenhardt, K. M., & Xin, K. R. (1999). Exploring the black box: An analysis of work group diversity, conflict and performance. Administrative science quarterly, 44(1), 1-28.
[32] Riggs, M. L., Warka, J., Babasa, B., Betancourt, R., & Hooker, S. (1994). Development and validation of self-efficacy and outcome expectancy scales for job-related applications. Educational and Psychological Measurement, 54(3), 793-802.
[33] Thompson, J. (1967). Organizations in action. 1967. SHAFRITZ, Jay M.; OTT, J. Steven. Classics of organization theory, 4.
[34] Tierney, P., & Farmer, S. M. (2002). Creative self-efficacy: Its potential antecedents and relationship to creative performance. Academy of Management Journal, 45(6), 1137-1148.
[35] Torraco, R. J. (2005). Work design theory: A review and critique with implications for human resource development. Human Resource Development Quarterly, 16(1), 85-109.
[36] Tushman, M. L., & Anderson, P. (1986). Technological discontinuities and organizational environments. Administrative science quarterly, 439-465.
[37] Usher, E. L. (2009). Sources of middle school students' self-efficacy in mathematics: A qualitative investigation. American Educational Research Journal, 46(1), 275-314.
[38] Wind, J., & Mahajan, V. (1997). Editorial: issues and opportunities in new product development: an introduction to the special issue. Journal of Marketing Research, 34(1), 1-12.
[39] Wood, R., & Bandura, A. (1989). Social cognitive theory of organizational management. Academy of management Review, 14(3), 361-384.