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**The Relationship between innovative work behavior on
work role performance: An empirical study**

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Abstract

The purpose of this study is to examine how employees use innovative work behaviour to achieve performance. We have combined role theory and social cognitive theory with insights from the innovative work behaviour and work role performance literature to study employees in a Malaysian automotive organization. The study finds support for a one-factor innovative work behavior and a two-factor work role performance. The results show lack of differences in innovative work behaviour and work role performance based on gender and education. However, the analysis revealed that employees, who were employed in a cross functional capacity and deal with market or customer related environment, tend to demonstrate high inclination of work role performance compared to divisions strictly related to research and development.

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Keywords: Innovative work behaviour; work role performance; change management

1. Introduction

In wake of the global economic downturn and poor financial performance, organizations tend to resort to cutting cost to balance the accounting books (The Straits Times, January 2013). While cost cutting particularly reduction of employees, might bring short term financial benefits, organizations need to be mindful of its damaging long term effects. Without making necessary changes to the way it operates, the

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existing employees could be overwhelmed with the stress and work overload which could eventually lead to more resignations, absenteeism, negative well-being and worsen customer service levels (Subramony and Holtom, 2012). Organizations need to inculcate an innovative mindset among its employees to deliver more value creation in order to sustain its longer term survival and success (Prahalad and Ramaswamy, 2012).

Previous studies suggest that innovative work behaviour positive relates to their task performance (Dörner, Gassmann and Morhart, 2012). However, task performance is traditionally scoped within employees' job description and it doesn't consider the various employees' non-explicit contribution to the organization. Another study suggest that employees working in positions in which innovativeness is not required, may be less motivated to apply new ideas for the reason that they do not consider news ideas or processes as helpful to their work. The article proposes to study innovative work behaviour (IWB) across the different levels in the organisation. To achieve this objective, the study propose to examine IWB and work role performance (WRP) in more detail, particularly in areas where innovation and work role performance differ. Mumford et al. (2012) suggest IWB and everyday work performance of all employees may not be the same with those in innovation-oriented jobs. This proposition supports the empirical evidence showing that many workers possess innovative behaviour within themselves (West, 1989). It is also in line with the proposition that individuals' continuous engagement with learning inside and outside the organisation could encourage a flow of knowledge to stimulate personal insights and synergetic discovery leading to new value (Sessa, Finley & Gullu, 2011). Although common sense suggests that IWB is beneficial, research on the benefits of IWB is limited (Janssen, van de Vliert and West, 2004). The study begins by defining IWB and WRP and then elaborates on its proposed dimensions. After the introduction, the hypotheses are developed and validation would be carried out to support the relationship. Finally, we would discuss our findings and make suggestions for future research.

2. Literature review

2.1. Defining innovative work behaviour

IWB is generally framed in the context of how individuals could facilitate the achievement of initiation and intentional introduction of new and useful ideas, processes, products or procedures (Farr and Ford, 1990). The introduction of new and useful perspectives does not generally run on a linear relationship and hence, IWB is construed as an acceptable multi-stage process involving idea generation, coalition building and implementation (Scott and Bruce, 1994). The perspective provides an updated view of innovative work behaviour that was previously developed on a one-dimension model (Janssen, 2000), two-dimension model proposed by Krause (2004) and Dorenbosch et al. (2005) and a three-dimensional model proposed by Reuvers et al. (2008).

Recent studies have examined IWB from four interrelated sets of behavioural activities namely (1) problem recognition, (2) idea generation, (3) idea promotion, (4) idea realization, could enhance the employees' ability to innovate (de Jong and Hartog, 2010). The first two activities comprising of problem recognition and idea generation phase, represents the creativity orientated work behaviour phase. The last 2 activities are referred to as implementation-oriented work behaviour wherein individuals try to promote a novel idea to potential colleagues and managers and to realise actual ideas that are ultimately applied within the work role, group or total organisation. Studies suggest that individuals, who are willing and able to innovate, extend their contribution beyond the scope of their job requirements and at the same time, realise a continuous flow of innovations (Parker, Williams and Turner, 2006).

2.2. *Defining work role performance*

From its traditional perspective, employees are required to perform a specific role in contributing to the organisation's overall performance. The need for the organisation to remain fluid and relevant depends highly on the various challenges and uncertainties faced in business. Hence, the chaotic nature of operating conditions could affect movement in human resource, changes to job description, product and services. In the same manner, work roles too must change dynamically in response to these changing conditions and demands (Katz & Kahn, 1978; Sonnentag and Frese, 2009). Griffin et al. (2007) suggested that the diverse nature of WRP should be viewed from the cross-classification of contribution of the three type of individuals' behaviour (proficiency, adaptivity, and proactivity) at three levels towards effectiveness of individual, team, and organisation.

It was posit that these different forms of role behaviour are pre-requisites to performance in different situations particularly in environments having elements of complexity or change. "Proficiency" represents the traditional view to which an individual meets the formal requirements of his or her role. "Adaptivity" describes the extent to which an individual adapts to changes in work systems or roles. "Proactivity" refers to the extent of individual initiating self-directed action to anticipate or initiate change in work systems or roles. Adaptivity and proactivity are considered crucial behaviour to address to uncertainty in inputs, processes or outputs. Because it is often difficult to formalize the requirements of work roles under these circumstances, most occupations require a mixture of proficiency, adaptivity, and proactivity to strike a balance approach. In addition, the extent of changing environment or expectations also dictates the necessity of individual to perform within and outside of their job roles.

Individual task proficiency involves meeting the requirements of individual meeting their job roles as an employee. On top of the individual job role, individuals contribute towards to team and organisational proficiency by meeting the requirements of one's role as a member of a team or organisation. Team requirements means assisting team members or coordinating their activities to meet the prerequisites expected. Organisational requirements refer to representation of organisation citizenship by the employee to the various stakeholders. Individual task adaptivity refers to the individuals' ability to make changes to their role, whereas team and organisational adaptivity involve adapting to changes that affect one's role as a member of a team or organisation. Individual task proactivity involves initiating changes within one's role, whereas team and organisational proactivity involve initiating changes in the team or organisation.

2.3. *Theory in support of innovative work behaviour and work role performance*

In this section, we shall integrate role theory and social cognitive theory (Katz & Kahn, 1978) to derive the hypotheses between the relationships between the 17-item IWB and 30-item WRP. According to role theory, each individual acts out socially defined categories of work such as a mother, cleaner, factory worker, scientist, etc in a predictable manner based on expectations and social norms. In performance of these roles, role behaviour i.e. guided by the norms (determining a social situation), internal and external expectations are connected to the social role and social sanctions and rewards. However, if the social norms do not exist or if there is a social differentiation between the expectations from a vertical and horizontal perspective, the individuals could be guided to develop new roles in place of old roles.

The social cognitive theory is a learning theory based on the ideas the individuals learnt by watching what others do and don't do (Bandura, 1986). Hence, the two expectations that individuals hold covers their ability to perform a particular behaviour and the expected outcome to be derived from that behaviour. Social cognitive theory suggests portions of the individual knowledge acquisition are dependent on the individuals' observation of others within social interactions, experiences or media

influences. In the workplace, social cognitive theory can be viewed from learning on the job by the act of imitation of the behaviour from the action to the results of those actions. Through this application, individuals learn on their own even where there are no external influences telling them they should.

This ability could be demonstrated through self-efficacy or the belief's regarding one's capabilities of successfully completing tasks or goals. Studies describe an individual as an agent for change, development and adaption in a continuous manner towards achieving self organizing, proactive, self-regulating, and self reflecting (Bandura, 2005). This study links employees' IWB to performance from an employee's perspective in an automotive organisation based on a few reasons. First, although innovation has been recognised as important ingredient to the organisations' success and long term survival, few studies has examine the relationship from an individual perspective. Second, studies on WRP and IWB tend focus on validation of its constructs (Neal et al., 2012).

Third, few studies has examined the relationship between innovative behaviour with performance from an empirical perspective (Dörner, Gassmann and Morhart, 2012). Studies suggest that since human behaviour could be determined by the expected outcomes of the behaviour, IWB could be also determined by the outcomes expectations such as performance (Yuan and Woodman, 2010). Although little research has examined the effect of innovative self-efficacy on outcome expectation, it is reasonable to assume that individuals demonstrating innovative work behaviour could affect the task performance as well as performance relating to group and organisation. Thus the following is hypothesized:

Hypothesis 1: There are differences in levels of IWB, Individual Role Performance and Organization Role Performance based on demographics.

Hypothesis 2. Employees' innovative work behaviour is positively related to employee's performance.

Hypothesis 3. WRP could be determined by IWB and the demographics.

3. Methods

The sample chosen for this study consists of 300 employees in an integrated automotive organisation based in Malaysia involved in designing to manufacturing to the sale of its cars.

3.1. Measures

All variables were assessed based on previously scales developed in English. The survey were circulated by hand to the respondents and their responses were subsequently collected by hand.

3.2. Measures

IWB was assessed using the 17-item IWB scale drawn from Janssen (2000), Kleysen and Street (2001) and Scott and Bruce (1994). The scale measures four facets of innovative work behaviour: idea exploration, generation, championing, and implementation. Items are assessed by direct supervisors on a 5-point scale (0=Never to 5=Always).

3.3. IWB scale

Supervisor ratings of the 30-item performance dimensions were measured with Griffin et al.'s (2007) WRP measure. Supervisors rated the frequency that the given staff member demonstrated each indicator of performance over the past 6 months on a scale ranging from 1 (very little) to 5 (a great deal).

4. Results

The results obtained from 300 respondents have been thoroughly analysed and the outputs of the results are explained in this section. Applying SPSS 21, principal component analysis (PCA) was carried out to explore the underlying factors in 17 items of the IWB Scale and 30 items of the Multi-level Performance Inventory Scale. Since Kaiser-Meyer-Olkin measure of sampling adequacy values for both scales exceeded 0.6 and the Bartlett's Test of Sphericity values were smaller than 0.5, data suitability for factor analysis was met. For IWB scale, Catell's (1966) scree test supported the retention of two factors but only one factor was retained for further investigation based on Parallel Analysis and the clear break in the scree plot after the first factor.

Oblimin rotation was performed and the Component Matrix revealed the presence of simple structure with all items in the one factor showing strong loadings. Since Communalities score for item no. 1 ("pay attention to issues that are not part of daily work?") of 2.77 was slightly below 0.3, the item was deleted. In the final case, one factor accounted for 61.7% of the total variance and the loadings per dimension range from medium to high (between 0.692 to 0.859). For WRP scale, although PCA revealed the presence of three factors and the scree plot revealed a clear break after the second factor, the Parallel Analysis support the decision to retain only two factors for further investigation. The two factor solution explained 56.3 % and 7.4% respectively i.e a total of 63.7% of the variance.

Oblimin rotation was performed and the Pattern Matrix revealed the presence of simple structure with all two factors showing strong loadings with the exception of item 1 ("present a positive image of the organisation to other people"), item 2 ("defended the organisation if others criticised it") and item 3 ("communicate effectively with co-workers") loaded below 0.5. These items were deleted from the final case. None of the Communalities score were recorded above 0.3. The two factor solution explained a total of 65.0% of the variance with Factor 1 (Individual Role Performance (IRP)) contributing 57.1%, and Factor 2 (Organisation Role Performance (ORP)) contributing 7.9%. Strong loadings (between 0.525 to 0.939) were reported. Overall, the values of Cronbach alpha for all variables range between 0.896 to 0.958 thus indicating a good reliability.

The test reported skewness values between -0.453 to 0.003 and kurtosis values between -0.413 to 0.476 supporting the normal distribution of the all variables (George and Mallery, 2005). An independent sample t-test was calculated to assess whether the scores obtained by the scales varied according to males and females. Hypothesis 1 proposed that there are differences in dimension and levels of IWB, IRP and ORP based on gender. For all three variables, there was no significant difference in scores for males and females for IWB ($t(298) = 1.767, p = 0.08$, two-tailed), IRP ($t(298) = 1.624, p = 0.1$, two-tailed) and ORP ($t(298) = 0.526, p = 0.6$, two-tailed). One-way between groups analysis of variance was conducted to explore the impact of age, education, years of experience and division on IWB, IRP and ORP. For age variable, the assumption of homogeneity of variances was not violated and there was statistical significant difference at the $p < .05$ level for IWB ($F(5,294) = 2.659, p = 0.023$) and IRP ($F(5,294) = 3.282, p = 0.007$). The testing using Tukey procedure revealed 2 significant difference for IWB (respondents under 25 years ($M = 3.4303, SD = 0.66756$) and respondents from 31-35 years ($M = 3.8322, SD = 0.68359$) and IRP (respondents from 26-30 years ($M = 3.8590, SD = 0.67948$) and 36-40 years ($M = 4.2112, SD = 0.56863$)).

For education variable, the assumption of homogeneity of variances was not violated and there was no statistical significant difference at the $p < .05$ level. For division variable, the assumption of homogeneity of variances was not violated and there was statistical significance difference at the $p < .05$ level for IWB ($F(8,291) = 2.702, p = 0.007$). The testing using Tukey procedure revealed 2 greatest significant difference i.e IWB (respondents from Product Planning & Development division ($M = 4.3375, SD = 0.38679$) compared to Human Resource division ($M = 3.2052, SD = 0.56610$) and ORP (respondents from Product Planning & Development division ($M = 4.5000, SD = 0.50000$) compared to respondents from Group

Technical Procurement (M=3.3590, SD=0.44538)). For years of experience variable, the assumption of homogeneity of variances was not violated and there was statistical significance difference at the p<.05 level for IWB (F(5,294)=1.948, p=0.086).

The testing using Tukey procedure revealed the greatest significant differences of IWB (respondents with less than 3 years of experience (M=3.4756, SD=0.68168), and From 4 to 5 years of experience (M=3.4415, SD=0.70032) compared to respondents from 11 to 15 years of experience (M=3.9693, SD=0.0.72845)). For marital status variable, since only one respondent each were classified under Group 3 and 4, the means were re-calculated based on the revised sample size (n=298) using independent sample t test. For IWB, IRP and ORP, there was significant difference in scores for single and married for IWB (t (296) =-4.134, p =0.000, two-tailed), IRP (t (296) =-3.212, p =0.001, two-tailed) and ORP (t (296) =-2.279, p =0.023, two-tailed). Hypothesis 2 proposed that there is a positive correlation between IWB and WRP. Based on Pearson correlation coefficient in Table 7, IWB was largely positively correlated with IRP (rs (300)=0.759, p<0.01) and ORP (rs (300)=0.678, p<0.01). Hence Hypothesis 2 was supported. Lastly, Hypothesis 3 proposed that WRP could be determined by IWB and the demographics. The result of the multiple regression analysis is shown in Table 1.

Table 1: Model Summary of multiple regression analysis

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig. F Change
1	.194 ^a	.038	.021	.59741	.038	2.299	5	294	.045
2	.788 ^b	.621	.613	.37543	.584	451.469	1	293	.000

a. Predictors: (Constant), education, age, division, gender, years of experience?

b. Predictors: (Constant), education, age, division, gender, years of experience?, IWB

c. Dependent Variable: WRP

Table 2: ANOVA results of multiple regression analysis

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4.102	5	.820	2.299	.045 ^b
	Residual	104.929	294	.357		
	Total	109.030	299			
2	Regression	67.734	6	11.289	80.095	.000 ^c
	Residual	41.297	293	.141		
	Total	109.030	299			

a. Dependent Variable: Performance

b. Predictors: (Constant), education, age, division, gender, years of experience?

c. Predictors: (Constant), education, age, division, gender, years of experience ?, IWB

Gender, age, education, years of experience and division was entered as Step 1 and explained 3.8% of the variance in WRP. After the entry of IWB at Step 2, the total variance explained by the model as a whole was 58.4%, F(6, 293)=80.095, as shown in Table 2. Hence, Hypothesis 3 was supported. The formula to predict WRP is as follows:

$$WRP = 1.123 - 0.039(\text{gender}) - 0.033(\text{age}) + 0.012(\text{years of experience}) + 0.003(\text{division}) + 0.045(\text{education}) + 0.740(\text{IWB})$$

5. Discussion and implications

The pace of global innovation has forced many organisations to review the employees' contribution to innovation. This study aims to contribute to the understanding of IWB and its implications toward WRP. Although the study initially utilised four factor IWB, the factor analysis shows strong loadings for a single dimension construct of IWB which mirrors the findings from Janseen's (2000) earlier findings. The findings show a lack of differences in levels of IWB, IRP and ORP based on gender. Studies by Dezsö and Ross (2012) suggests women representation in top management was considered secondary to the primary need for the organization strategy to focus on innovation. Hence, organisations need to possess definite and clear strategy of innovation for their entire value chain if they are to realise individuals' contribution to company-wide innovation.

There was also a lack of significant different levels in IWB, IRP and ORP based on education. Out of 247 respondents who have less than a degree, about 196 respondents were from manufacturing division. About 187 respondents from manufacturing division had less than STPM/A-levels/diploma/certificate and the balance, 9 respondents had STPM/A-levels/diploma/certificate. Nonetheless, education has a role in predicting WPR and it is possible that on-the-job-training may have an impact on employees having less than a degree, to provide knowledge about the process of innovation development and address strategies for generating, promoting, and realizing ideas (Meßmann, 2012). Studies on innovative practices in the organisation related Kaizen, Innovative and Creative Circles and Quality circles initiated, has been shown to improve overall performance in manufacturing and quality settings (Imai, 2012).

The findings also supported the contribution of longer length of service towards higher IWB. This is consistent with the study by Pfeffer (1983) that supported the role of length of service in the workforce in explaining innovation effects. In terms of division, the findings support the practice of IWB across the various divisions particularly in Product Planning and Development compared to strictly research and development division. The higher achievement of integration may be a facilitator to the outcome of innovative strategies. Studies suggest that integrative functions could benefit design flexibility and development lead times as it may effect the overall cost and launch timing of product or services (Turkulainen and Ketokivi, 2012). Although there were differences in the levels of IWB, IRP and ORP based on marital status, marital status was deemed not part of the prediction of WRP.

Studies by Weer, Greenhaus and Linnehan (2010) suggested that psychological commitment of non-work roles was more likely to interfere with job performance than enhance job performance. However, research in this area is still mixed and more research is required in the future (Fuegen *et al.*, 2004). The diversity of culture and race in the various countries may offer some differing conclusions since mindset is crucial towards generating ideas. Comparative benchmarking could be carried out to expand the analysis to Malaysian organizations in different industrial sectors such as family-operated industry organizations or to smaller sized organizations that deploy more knowledge-based workers. Researchers could extend their research by investigating the manner how human resource strategies such as job design and cross-functional collaboration inter-divisions could impact performance. The results provide further insight into how innovative behaviour roles could hasten the individual's mindset and in turn enhance organizational performance.

References

- Bandura, A. (1986). *Social foundations of thought and action: A social-cognitive view*. Englewood Cliffs, NJ: Prentice-Hall.
- Bandura, A. (2005). The primacy of self-regulation in health promotion. *Applied Psychology: An International Review*, 54(2): 245-254.

Cattell, R. B. (1966). *The scree test for the number of factors*. *Multivariate behavioral research*, 1(2), 245-276.

De Jong, J., & Den Hartog, D. (2010). Measuring innovative work behaviour. *Creativity and Innovation Management*, 19(1), 23-36.

Dezsö, C. L. and Ross, D. G. (2012). Does female representation in top management improve firm performance? A panel data investigation. *Strat. Mgmt. J.*, 33: 1072–1089. doi: 10.1002/smj.1955

Dörner, N., Gassmann, O., & Morhart, F. (2012). innovative work behavior: the roles of employee expectations and effects on job performance (Doctoral dissertation).

Dorenbosch, L., Engen, M. L. V., & Verhagen, M. (2005). on - the - job innovation: the impact of job design and human resource management through production ownership. *Creativity and innovation management*, 14(2), 129-141

Fuegen, K., Biernat, M., Haines, E., & Deaux, K. (2004). 'Mothers and fathers in the workplace: how gender and parental status influence judgments of job - related competence. *Journal of Social Issues*, 60(4), 737-754.

George, D. & Mallery, P. (2005) *SPSS for Windows step by step: A simple guide and reference 12.0 update* (5th ed.). Boston, MA: Pearson Education.

Griffin, M. A., Neal, A., & Parker, S. K. (2007). A new model of work role performance: positive behaviour in uncertain and interdependent contexts. *Academy of Management Journal*, 50(2), 327-347.

Janssen, O. (2000). Job demands, perceptions of effort-reward fairness and innovative behaviour. *Journal of Occupational and Organisational Psychology*, 73,287-302.

Janssen, O., Van de Vliert, E., and West, M. (2004). The bright and dark sides of individual and group innovation: A special issue introduction. *Journal of Organisational Behavior*, 25, 129–145.

Katz, D., & Kahn, R. L. (1978). *The social psychology of organisations*.

Krause, D. E. (2004). Influence-based leadership as a determinant of the inclination to innovate and of innovation-related behaviors: An empirical investigation. *The Leadership Quarterly*, 15(1), 79-102.

Mumford MD, Scott GM, Gaddis B and Strange JM (2002). Leading creative people: orchestrating expertise and relationships. *Leadership*. 13: 705–750

Neal, A., Yeo, G., Koy, A., Xiao, T. (2012). Predicting the form and direction of work role performance from the Big 5 model of personality traits. *Journal of Organisational Behavior*, 33(2), 175-192.

Parker, S. K., Williams, H. M., & Turner, N. (2006). Modeling the antecedents of proactive behavior at work. *Journal of Applied Psychology*, 91(3), 636-652.

Pfeffer, J., (1983) *Organisational demography* in: Staw, B., Cummings, L. (Eds.), *Research in Organisational Behavior*, vol. 5. JAI Press, Greenwich, CT, pp. 299–357

- Prahalad, C. K., & Ramaswamy, V. (2012). The new frontier of experience innovation. *Image*.
- Reuvers, M., Van Engen, M. L., Vinkenburg, C. J., & Wilson-Evered, E. (2008). Transformational leadership and innovative work behaviour: exploring the relevance of gender differences. *Creativity and Innovation Management*, 17(3), 227-244.
- Scott S.G and Bruce R.A. (1994).Determinants of innovative behaviour : a path model of individual innovation in the workplace. *Academy of Management Journal*, 37 (3), 580-607
- Sessa, V. I., Finley, A., & Gullu, B. (2011). 15 *Learning linkages and flows between individuals, groups, and the organisation: creating programs to foster student engagement in learning*. The Oxford Handbook of Lifelong Learning, 209.
- Subramony, M., & Holtom, B. C. (2012). The long-term influence of service employee attrition on customer outcomes and profits. *Journal of Service Research*, 15(4), 460-473.
- Turkulainen, V., & Ketokivi, M. (2012). Cross-functional integration and performance: what are the real benefits?. *International Journal of Operations & Production Management*, 32(4), 447-467.
- West. MA. (1989).Innovation amongst health care professional., *Social Behaviour*, 4,173-184.
- Weer, C. H., Greenhaus, J. H., & Linnehan, F. (2010). Commitment to nonwork roles and job performance: Enrichment and conflict perspectives. *Journal of Vocational Behavior*, 76(2), 306–316.
- White, L. and Slater, S. (24 January 2013). Barclays CEO wants to keep large investment bank.
- Yuan, F., & Woodman, R. W. (2010). Innovative behaviour in the workplace: the role of performance and image outcome expectations. *Academy of Management Journal*, 53(2), 323-342.