
ORGANIZATIONAL AND INDIVIDUAL'S FACTORS AS A PREDICTORS OF INNOVATIVE WORK BEHAVIOUR AMONG SOFTWARE ENGINEERS

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ABSTRACT

This survey research design study was conducted to explore the organizational (TRF & IC) and individual's factors (PE, OBSE & RIL) as a predictor of innovative work behaviour among Information Technology Experts. A sample of (N=300) software engineers with the age range of 25-45 were selected from various Government Sector Departments. For data collection, MLQ (Bass & Avolio, 1997) CIS (Scott & Bruce, 1994), PES (Spreitzer, 1995b), OBSE (Pierce, Gardner, Cummings & Dunham, 1989), RIS (Walumbwa & Hartnell, 2011) and IWBS (Janssen, 2000), were used. Appropriate statistical analysis (Correlational & multiple regression) were used to assess the psychometric soundness of instrument and hypotheses testing respectively. Results confirmed that the desired pattern of relationship among the variables. However, results also confirmed that control variables (age, work experience and educational level) were not a good predictors of the innovative work behaviour. Furthermore, the findings of the study highlighted that all the organizational and individual's factors significantly predict the IWB. Future implications & suggestions for study have also been discussed.

KEYWORDS

Innovative work behavior, Psychological empowerment, Leadership styles

INTRODUCTION

In the 21st century, organizations long term survival depends upon their ability to bend according to the demands of the business environment i.e., to stay innovative (Baer, 2012). Therefore, employees' innovative work behaviour gained a lot of attention in studies conducted in the field of organizational behaviour e.g., innovative performance & capability (Aslam, Aslam & Ismail, 2017), organizational effectiveness (Tahsildari, Hashim & Wan, 2014), wellbeing (Abbas, Khalily & Riaz, 2016), work-related attitudes and work engagement (Park, Tseng & Kim, 2016; Sameer & Ohly, 2017). These studies highlighted the need for exploring the antecedents of IWB at the individual and organizational levels. Therefore, the present study emphasis predicting the role of individual's factors (PE, OBSE & RIL) & organizational factors (TFL & IC) in the development of IWB among software engineers. The rationale for choosing software engineers was their crucial role as the backbone of every business organization. Text In literature, the term Innovative Work Behaviour (IWB) is viewed as the individual capacity to generate, introduce, promote and implement a new idea at the workplace. So, an individual's innovative work behaviour process involves at least three stages or phases namely idea generation (presentation or finding a unique solution to the problem), idea promotion (getting human and technical support through explaining the vision) and idea realization/implementation (involves the bringing the idea into reality). (Janssen, 2000).

Transformational Leadership style

Leadership studies highlighted that the most effective and proficient leadership styles are transformational leadership style (TRF) because such leaders can direct, inspire and stimulate their subordinates in such a way that increases their confidence, satisfaction, wellbeing, creativity, performance, OCB and commitment (Datche, 2015; Haghighi, & Maleki, 2016; Hatter & Bass, 1988; Piccolo & Colquitt, 2006; Sharifirad, 2013; Zhou, & Pan, 2015). Empirical evidence suggested that leaders with transformational style have a significant positive impact on employees IWB (Abbas & Riaz, 2012; Ahmed, 2016; Contreras, Espinosa, Dornberger & Acosta, 2017).

Innovative Climate (IC)

The term innovative climate is defined as the perception of workers about the working environment that promotes creative and innovative performance (Scott & Bruce, 1994). Researchers claimed that such a work environment build when the organization and staff (leaders & members) synchronize in such a way that can stimulate and guide each other to their work independently (Torokoff; 2015). Moreover, previous studies also highlighted that the innovative climate of an organization strongly predicts the

employees' IWB (Grau, Vallejo, & Tomás, 2004).

Psychological Empowerment (PE)

According to spritzer (1995), psychological empowerment is an intrinsic task motivation construct. Psychologically empowered individuals showed a high level of commitment, sense of confidence, independence & control over choices in initiating and regulating the administrative and strategic outcomes at the workplace (Thomas & Velthouse, 1990). Empirical pieces of evidence also suggested that such individuals do their work in a more innovative way than individuals' who failed to attain this sense of empowerment (Kristof-Brown, Zimmerman, & Johnson, 2005; Redmond, Mumford, & Teach, 1993; Seibert, Wang, & Courtright, 2011; Spreitzer, 1995b; Spreitzer, 2008).


Organizational Based self-esteem (OBSE)

OBSE indicate the individual's views about his or her worth at the workplace (Pierce, Gardner, Cummings, & Dunham, 1989). Researchers pointed out that employees' OBSE influence their job-related attitudes which in turn enable them to involve innovative activities to adjust to organizational change (Ariani, 2012; Rotich, 2016; Staehle-Moody, 1998; Uçar, & Ötken 2013).

Relational Identification with Leader (RIL)

According to Sluss & Asforth(2007) defined the term relational identification is a sense of belongingness in a given role relationship at the workplace. Studies suggested that employees' sense of oneness with leaders bring changes in their behaviour at work setting (Walumbwa and Hartnell, 2011; Wang & Howell, 2012). For example, a study conducted by Lique, Mingjian, Qiang, (2017) confirmed that RIL strongly predicts the creative behaviour of workers.

Conceptual Frame Work of the Study

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|---|--|---|
| <ul style="list-style-type: none"> i. Psychological Empowerment (PE) ii. Organizational based Self-esteem (OBSE) iii. Relational identification with leaders (RIWL) iv. Transformational leadership style (TRF) v. Innovative climate (IC) |  | <p>Innovative work
Behavior (IWB)</p> |
|---|--|---|

RESEARCH OBJECTIVES

1. To investigate the psychometric properties of instruments used in the study.
2. To explore the predicting role organizational factors (TRF & IC)
3. To explore the predicting role of individual's factors (PE, OBSE, RIWL) in IWB.

RESEARCH QUESTION

1. Does organizational and individual's factors predict the innovative work behavior of software engineers?

RESEARCH HYPOTHESES

1. Text Transformational leadership style and its sub-dimensions will positively predict the IWB of software engineers.
2. Innovative climate will positively predict the IWB of software engineers.
3. Psychological empowerment and its all dimensions will positively predict the IWB of software engineers.
4. Organization based self-esteem will positively predict the IWB of software engineers.
5. Relational identification with leader will positively predict the IWB of software engineers.

RESEARCH METHODOLOGY

For the current study a sample of 300 software engineers was selected through purposive sampling from various Government institutes located in twin cities (Rawalpindi and Islamabad) of Pakistan. The participant age ranged was from 25-45 ($M=32.39$, $SD=7.32$) years. For the current study, some controlled variables i.e., age, job tenure and educational level; (Hu & Liden, 2011; Ng & Feldman, 2013).

For the present study, several variables were used as independent variables: Individuals factors (PE, OBSE & RIL) and organizational factors (TRF & IC). For measuring these variables following instruments were used: *PES* (Spreitzer, 1995b); OBSE (Pierce, Gardner, Cummings and Dunham, 1989); RIS (Walumbwa & Hartnell, 2011); Multifactor Leadership Questionnaire (Bass and Avolio, 1997) and climate for innovation (Scott and Bruce; 1994). Empirical studies suggested that all measures were highly valid and reliable. (Avolio, Bass, & Jung, 1999; Siegall & Gardner, 2000; Van Dyne et al., 2000). Furthermore, IWB was taken as DV and the measure used for it was 5- point Likert scale consisted of 9 items and having Cronbach alpha .89 (Janssen; 2000).

Before the data collection, the researcher approached the higher authority of Government institutes for taking permission from them. On the day of data collection, only those participants were contacted who were involved in software development and hold BS (Hons) in software engineering. At the start, a researcher told them about the purpose of the study and took their consent for participation in the study. After building rapport, the researcher gave them a set of questionnaires to fill in. During this time, the researcher continuously tried to encourage or facilitate them for giving honest responses. In the end, participants were thanked for their cooperation and time.

DATA ANALYSIS AND RESULTS

For the current study, SPSS 22 was used to analyze that data. The appropriate statistical analysis of the study is Descriptive, Cronbach's Alpha, Correlational and Multiple regression analyses.

Table 1: *Frequency and Percentage distribution of Demographic features of sample for study (N=300)*

Variables	Classes	F	%
Age	25 -30	90	30
	31-35	75	25
	36-40	85	28.3
	41-45	50	16.6
Education level	Bs (Hons)	110	36.6
	Master	100	33.3
	Ms	90	30
Work Experience	6months-1 year	95	31.6
	2-5 year	105	35
	6-10 year	85	28
	16 and above	15	5
City	Rawalpindi	170	56.6
	Islamabad	130	43.3
Departments/offices	Govt office/ administration section and IT directorate	185	61.6
	Universities	115	38.3

Table1 indicates the distribution of demographic variables terms of frequency and percentages.

Table 2: *Psychometric Properties for Scales of the Present Study (N = 300)*

Variable	M	SD	Items	α	Potential	Actual	Skew
TRF	83.33	14.00	20	.88	1-5	3.29-3.89	-.32
Idealized influence (attributes)	14.24	3.42	4	.80	1-5	3.36-3.90	-.33
Idealized influence (behaviours)	14.60	3.33	4	.72	1-5	3.74-3.96	-.42

Inspirational motivation	15.48	3.06	4	.84	1-5	3.77-4.10	-.54
Intellectual stimulation	14.80	2.92	4	.75	1-5	3.69-4.0	-.37
Individualized consideration	14.20	3.57	4	.76	1-5	3.50-4.26	-.83
IWB	44.42	5.57	9	.88	1-5	3.64-3.96	-.55
PE Scale	48.8	10.56	12	.81	1-5	3.55-4.36	-.26
RIS scale	53.08	9.54	10	.89	1-7	4.49-5.82	-.91
OBSE scale	55.70	10.51	10	.88	1-7	4.95-5.81	-.77
CIS	68.90	8.09	22	.69	1-5	2.38-3.92	-.57

Table 2 show that all instruments of the study were internally reliable and suitable for the current study.

Table 3: *Inter-Scale Correlations of the Variables Study (N = 300)*

Va	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
r															
1	--	.81*	.79*	.78*	.84*	.68*	.40*	.36*	.31	.21*	.35*	.22*	.40*	.11*	.30*
								*	*		*			*	
2	--	--	.65*	.48*	.51*	.43*	.49*	.43*	.06	.21*	.40*	.37*	.50*	.18*	.30*
								*			*			*	
3	--	--	--	.55*	.58*	.31*	.41*	.30*	.23	.18*	.29*	.23*	.32*	.19	.26*
								*	*		*				
4	--	--	--	--	.65*	.39*	.40*	.62*	.35	.31*	.39*	.44*	.64*	.08	.29*
								*	*		*				
5	--	--	--	--	--	.43*	.35*	.65*	.09	.26*	.36*	.56*	.24*	.11*	.18*
								*			*			*	
6	--	--	--	--	--	--	.14*	.35*	.40	.18	.29*	.20*	.43*	.02	.10*
								*	*		*				
7	--	--	--	--	--	--	--	.65*	.42	.38*	.46*	.69*	.58*	.21*	.60*
								*	*		*			*	
8	--	--	--	--	--	--	--	--	.79	.78*	.84*	.69*	.57*	.13	.26*
									*		*				
9	--	--	--	--	--	--	--	--	--	.57*	.56*	.09	.07	.16	.24*
											*				
10	--	--	--	--	--	--	--	--	--	--	.69*	.27*	.34*	.13	.25*
											*				
11												.44*	.42*	.34	.22*
12													.52*	.40	.28*

IM	.18*
IS	.39**
IC	.15*

* $p < .05$

Table 5 explained the findings of multiple regression analysis of Independent variable (TRF) and its sub dimensions in Predicting outcome (IWB). Overall tables findings indicates the 33% of the variance in IWB is labeled to TRF constructs ($R^2 = .33$). Overall the model is proved significant $\{F(5, 395) = 39.66, p < .001\}$ and its dimensions.

Table 6: *Multiple Regression Analysis of Psychological empowerment sub-constructs in Predicting IWB (N = 300)*

Models	Iwb	
Predictor Variable	B	ΔR^2
PE (M)	.16*	.44
PE (C)	.29***	
PE (SD)	.25***	
PE(IM)	.13***	

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 6 proved that psychological empowerment and its dimensions are significant predictors of IWB. The overall model suggested the 44% of change on the part of PE $\{F(5, 395) = 39.66, p < .001\}$ PE ($\beta = .31, t = 7.03, p < .001$) and its dimensions in predicting IWB.

CONCLUSIONS

In today business world, organizational survival depends on its ability to stay competitive and innovative. Therefore, the topic of innovation and innovative work behaviour always remains a center of attention. This present study aimed to expose those antecedents that predict the employees' innovative tendencies or behaviours at the workplace. In the light of previous findings, the current study provides an insight into the importance of some organizational and individual factors as predictors of IWB. The findings of the study suggested that all the hypotheses of the study were confirmed in desirable directions.

DISCUSSION

The current was conducted on the sample of 300 software engineers taken from the twins' cities of Pakistan i.e., Rawalpindi and Islamabad. The study aimed to identify the individual and organization factors as predictors of IWB among Software engineers. For this purpose, correlational and multiple regression analyses were carried

out. To assess the sample, a frequency distribution table showing the frequency and percentages of the sample was made (see, Table-1). Similarly, table 2 show the psychometric properties of the study variables. Overall, values of means, SD, skewness kurtosis and alpha reliability showed that the sample was normally distributed and scales of all variables were internally consistent (ranged from .68 to .88) and suitable for the current study (see table 2).

Table 3 showed the interscales correlation analysis which revealed that all scales and their subscales are related with the outcome variable (IWB) in desirable directions i.e., positive. (see also. Burns,2003; Oke, Munshi, & Walumbwa, 2009). Multiple regression analysis also highlighted that all the individual factors (PE, RIL & OBSE) and organizational factors (TRF & IC) variables are good predictors of innovative work behaviour among software engineers (see table 4). The software engineers are highly professional and skilful persons. They need a highly stimulating and regulating environment (innovative climate) in which they can exhibit all traits of transformational leaders (visionary, inspirational, goal-oriented, highly motivated and charismatic) (see Ivancevich, Konopaske, & Mattteson, 2008; Pilli, 2012; Shamir, House, & Arthur, 1993). Therefore, they have a lot of capacity to take initiative and work independently (psychological empowered) (see Thomas & Velthouse, 1990; Choi, Goh, Adam & Tan, 2016; Lan a, Chong, 2015). As a result, they developed a sense of being worth in them which later on, encourage them to trust their abilities or skills rather than external factors (see, Howell & Higgins, 1990; Pierce et al., 1993). In addition to this, research findings revealed that employees' sense of belongingness (with their leaders as a role model) also play a significant role in directing and guiding them to do work innovatively. (See also, Yukl, 2010). Additionally, Shin & Zhou, (2003) stated that the leader as a mentor enhance this relationship of leader-followers in provoking the RIL.

RECOMMENDATIONS

In the light of current study findings, possible practical implications are as follow:

This study highlights the importance of personal or individual factors in making an organization competitive.

The role of leaders and their styles in facilitating employees for delivering their best.

Impact of organizational role in developing of working environment that encourages both leaders and followers.

This study also directs the high authority to appoint those leaders who are psychologically empowered and are charismatic or inspirational. Moreover, they also try their recruit those employees who have a sense of being worth and psychological empowered too.

As the IT sector is the backbone of any organization, therefore, every organization should an effort to provide a plate form where experts/leaders of various fields can

directly interact or work with employees. This will increase the worker identification with their leaders.

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