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EXPLORING THE FIRM'S INFLUENTIAL DETERMINANTS PERTINENT TO WORKPLACE INNOVATION

Abstract

Significant changes in organizations with good human resources (HR) practices can transform the workplace to a great extent. Although there is a fair amount of research on workplace innovation, most firms even now act as barriers to personnel growth and workplace innovation. This study proposed to explore various influential factors of firms from a holistic perspective that affect workplace innovation by adopting the principal component analysis (PCA) method to reduce the dimensionalities and better emphasize firms' development. The useful data were collected using a survey questionnaire from one hundred and ninety-five (195) respondents from different Indian organizations. Totally forty-six sub-factors were identified and developed into nine significant organizational factors influencing workplace improvement viz., organization culture and environment, innovation process, resources, organization structure, corporate strategy, employee, knowledge management, technology and management, and leadership. The study suggested that any firm must emphasize these core determinants at the workplace to motivate the employees towards innovation and organizations to be competitive in the industry. The study invites firm policymakers, HR managers, and top management to formulate the best organizational strategies to encourage an innovative culture in firms.

Keywords

organizational factors, employees, human resource management, principal component analysis, India

JEL Classification

O15, M50, M53, M54

INTRODUCTION

Previous researches on HR management extensively stressed on employee innovation susceptibility, employee and operational competencies, managing organizational innovation and their related aspects, theories and models of work-life, socio-cultural issues as key determinants for organization success. On the other hand, exploring the holistic view of organizational factors concerning employee innovation was confined, which needs more attention in the emerging scientific arena of HR. Innovation has a very broad sense. But this study refers to workplace innovation. In many past studies, employee creativity and innovativeness were used interchangeably. The main difference is that creativity denotes the idea generation and innovation as an application of those ideas in advancement with the process of assessment and implementation. Hence, creative behavior is a prerequisite for innovation. For the research purpose, Woodman's (1993) definition is considered as the generation of a novel idea in a particular field. On the other hand, Mumford et al. (2002) defined innovation as a series of processes right from problem identification, creating new ideas, evaluation, and implementing them.

Many researchers stressed that the organization must flourish in innovation to endure heavy competition (Roberts, 1998; Lengnick-Hall,



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1992, Porter, 1990). Though there exists some systematic literature from an organization perspective like Marisa Smith et al. (2008), Anthony Read (2000) lacked to explain the statistical dimensionalities of various identified factors. While few studies missed addressing organizational factors from an employee perspective, other studies failed to consider a holistic view. Therefore, there is a research gap from an organizational viewpoint to emphasize developments from various aspects and the most important ones. Therefore, this study attempted to identify organizational factors holistically and statically to reduce the dimensionalities supporting the organizations.

Despite understanding the significance of the organization in stimulating the creative nature, empirical studies on factors affecting workplace innovation were very limited in India and also scattered. Considering the organizational factors as interrelated to each other, it is recommended to consider innovation in a holistic view also by including few contingent factors. Therefore, this study intended to tailor the gap by exploring the possible number of organizational dimensions using the PCA method. The study is organized into six sections. Firstly, it presents the background of the topic. Secondly, it provides a retrospective literature review. The next research method and data analysis were presented followed by a conclusion and managerial implications, further research direction, and limitations of the study.

1. LITERATURE REVIEW

Andriopoulos (2001) explored five factors, namely organizational culture and work environment, leadership style, skills and resources, organization structure and system that will encourage workplace creativity. Similarly, Dul and Ceylan (2011) explained twenty-one components that improve creativity and innovation, but listed the most important ones: challenges in job, teamwork, job rotation, self-sufficiency in the job, supervisor mentoring, time for thinking, creative objectives, recognition of creative ideas, incentives. Jiang et al. (2012) stated that employee creativity and organizational innovation were greatly influenced by good HR practices. The components in HR practices positively affecting workplace creativity are recruitment process, rewards, work delegation and cooperation, but not training and performance evaluation. Anthony Read (2000) identified twelve factors for an effective organizational innovation, namely: management support, customer focus, internal and external communication, HR strategies, teamwork, leadership, knowledge management, creative advancements, strategic posture, flexible structures, constant improvement, technology implementation. The author states these twelve factors cover the macro level of an organization and management support is found to be the most important determinant as it plays a vital role in inculcating innovative culture, implement new structures and processes and embrace creativity as a tactical requisite. Rohman A. et al. (2020) conducted a research study to understand the relationship between various indi-

vidual and organizational factors and their effect on knowledge sharing behavior. Some of the variables used in the study were management support, leadership, organization's incentives and reward system, organizational culture, and it was found that these dimensions had a high significant relationship with knowledge sharing and also mediated such behavior in organization.

Marisa Smith et al., (2008) conducted a systematic and structured literature review of 102 research papers, identified 31 sub-factors and transformed them into 9 generic factors for managing organizational innovation, and developed a conceptual model. The authors have taken care to eliminate irrelevant, iterating factors and even those that fall under common themes with different headings. Therefore, this study considered major factors from Marisa Smith et al. (2008) to gather a possible number of relevant factors. However, their study lacks an empirical evaluation of the identified factors and failed to consider contingency factors. Another study by Fariborz (1996) considered fourteen contingency factors to understand the connection between structural complexity and organization size with organizational innovation. The findings showed structural complexity depends on the complexity of operations, environmental unpredictability, utilization of service and manufacturing firms, consideration on technical, product and implementation of innovation. Whereas organization size is dependent on operational size, environmental uncertainty, service and profits of organization, technical and product emphasize innovations.

Another recent study by Sania Khan and Mohiya (2020) considered essential organizational factors of Saudi firms, which affect employees. Those organizational factors are reflective of employees' responses. Hence some of these factors were considered as sub-factors under main headings in this study. However, this study conducted exploratory factor analysis (EFA), but could not consider holistic dimensions. The findings demonstrated that training and brainstorming sessions, employee recognition and rewards, resources and fund allocation, employee competencies, work environment and management support had a substantial effect on workplace innovation. Sania Khan and Mohiya (2020) also stressed that management support is predominant for organization success only if it supports providing proper training on technology and work-related, mobilizes the workforce, implements appropriate business models, and formulates new policies and strategies. Unfortunately, the least coefficient value explained organizations give the least preference to support their employees' innovation due to the prevailing dominating culture of individuals in higher job positions. Atuahene-Gima (1996), Balbontin et al. (1999), and Keogh (1999) emphasized HR strategies and found the HR department played a significant role in spreading information and relevant knowledge about innovation. Sirilli and Evangelista (1998) add that technological innovation is vital for manufacturing and service industries, for which the employees need to be trained on new technologies.

Management support is a great influencer in boosting the employees' innovative behavior by stimulating the spawn of creative ideas and applying them in daily work life (Atuahene-Gima, 1996; Balbontin et al., 1999; Spivey et al., 1997; Tang 1999; Zhuang et al., 1999; Hurley & Hult (1998). De Jong and Den Hartog (2007), Balbontin et al. (1999), and Tang (1999) study managers' leadership behavior and reveal that they are accountable to establish pioneering strategies that reinforce employees' innovation. Similarly, another study by Rosing et al. (2011) used the ambidexterity theory of leadership to understand the inconsistent relationship between leadership and innovation receptiveness of employees. Two sets of leadership behaviors were used and named as mirrors symmetry leadership as the leaders can toggle between opening and closing behaviors. It was found that the development of rich ties among employees during the formal and informal interactions transferred the knowledge

and innovative behavior among the peer even when the power of the team was controlled. De Clercq and Dimov (2016) explored the relationship between employee innovative susceptibility and unfavorable working conditions. They explained more workload assigned by leaders may adverse workplace innovation. Therefore, leaders must act very sensitively in developing relational conduits to solve employee stress related to work. The identified factors from the literature were presented in Table 1.

Table 1. Factors and sub-factors identified from the literature review

S. No.	Factor	Sub-factors
1	Organizational structure	Organizational differentiation (QS1)
		Centralization (QS2)
		Formality (QS3)
		Size of an organization (QS4)
2	Organizational culture and environment	Open communication (QCE1)
		Collaboration (QCE2)
		Risk and environment uncertainty (QCE3)
		Attitude to innovation (QCE4)
		Autonomy (QCE5)
		Dynamic work culture (QCE6)
3	Corporate strategy	Team spirit (QCE7)
		Organizational strategy (CS1)
		Innovation strategy (CS2)
4	Innovation process	Vision and mission (CS3)
		Idea generation (IP1)
		Selection and evaluation techniques (IP2)
		Implementation mechanism (IP3)
5	Employee	Stage in innovation adoption (IP4)
		Competencies (E1)
		Self-development plans (E2)
		Think out of the box (E3)
		Motivation to learn (E4)
		Employee personalities (E5)
		Training and brainstorming (E6)
		Performance appraisal (E7)
		Recognition and reward (E8)
6	Technology	Technology utilization (T1)
		Technical skills and education (T2)
		Deployment of new technology (T3)
7	Resources	Mobilize talent (R1)
		Simplify & streamlining business process (R2)
		Utilization of slack resources (R3)
		Planning and management of resource (R4)
		Knowledge resources (R5)
		Technology resources (R6)
		Financial resources (R7)
8	Knowledge management	Knowledge sharing (KM1)
		Organizational learning (KM2)
		Knowledge of internal and external environment (KM3)
		Utilization of knowledge repositories (KM4)
9	Management and leadership	Employee empowerment and trust (ML1)
		Business opportunity (ML2)
		Deploy diversified talents (ML3)
		Good HR practices (ML4)
		Management personalities (ML5)
		Management style (ML6)

2. METHODOLOGY

The study conducted through a systematic research process in four folds. Firstly, it identifies factors and sub-factors from the relevant literature, then designing the questionnaire and data collection lastly followed by data analysis. Based on the identified factors from the literature, a well-designed questionnaire was developed on a 5-point Likert scale. The study adopted a quantitative research method by using closed-ended questions to collect appropriate information from two hundred and fifteen (215) respondents from various Indian companies, which were administered among managerial levels involved in organizational and employee development. However, the useful data resulted in one hundred and ninety-five (195) respondents only. SPSS (software package for social services) version 23 was used to analyze the data. Table 1 shows the coding of all the sub-factors of an organization towards workplace innovation.

3. RESULTS

The demographic data of the respondents such as age, academic qualification, job position and experience were tabulated in Table 2. As shown in Table 2, the age group of respondents is from 21 to 60 years, and the majority of them fall under the age group of 31-40 years (34.871%) between 6 to 10 years (31.282%) of job experience. Most

of them hold master's degrees, 112 (57.435%) and 126 (64.615%) of them working in top level managerial positions, with the majority of them 92 (47.179%) in medium-sized organizations. The least, 22 people (11.282%), are within the age group of 21-30 years, and very few, 31 (15.897%), have a doctorate. The smallest number of respondents are from large organizations – 27 (13.846%), the middle-level respondents are 69 (35.384 %), and 34 (17.435%) have work experience of 5 years or less.

The study used principal component analysis method to analyze the organizational factors. All the items were developed to find the relevance of measurement scale to their respective construct, the exploratory factor analysis was conducted in this study to establish organizational factors (constructs), reliability and validity. To examine the factorability condition, a measure of sampling adequacy is used by checking the Kaiser-Meyer-Olkin (KMO) value and Bartlett's test of sphericity of organizational factors data. As recommended by Kaiser (1970), the KMO value below 0.5 does not do factor analysis. While Bartlett's test of sphericity tests the hypothesis that the correlation matrix is an identity matrix. Values of 0.05 or less must be good and essentially significant at $p < 0.001$. In this study, the KMO is 0.857, and Bartlett's test value was significant at $p = 0.000$ demonstrating a fair factorability condition.

Table 2. Demographic data of respondents

Source: Primary Data Analysis.

Variable	Category	Frequency	%
Age	21-30 years	22	11.282
	31-40 years	68	34.871
	41-50 years	56	28.717
	51-60 years	49	25.128
Education	Bachelors	52	26.666
	Masters	112	57.435
	Doctorate	31	15.897
Organization size	< 500 employees	76	38.974
	> 500 but < 1000	92	47.179
	> 1000	27	13.846
Designation	Top Level	126	64.615
	Middle Level	69	35.384
Experience	1-5 years	34	17.435
	6-10 years	61	31.282
	11-15 years	53	27.179
	16 and above	47	24.102

Table 3. Rotated factor matrix

Source: Primary Data Analysis.

Item	1	2	3	4	5	6	7	8	9
OS1						0.943			
OS2						0.923			
OS3						0.911			
OS4						0.894			
OCE1		0.874							
OCE2		0.889							
OCE3		0.878							
OCE4		0.904							
OCE5		0.854							
OCE6		0.886							
OCE7		0.871							
CS1					0.947				
CS2					0.951				
CS3					0.954				
IP1			0.911						
IP2			0.865						
IP3			0.895						
IP4			0.923						
E1	0.865								
E2	0.869								
E3	0.888								
E4	0.843								
E5	0.867								
E6	0.946								
E7	0.876								
E8	0.849								
T1							0.799		
T2							0.804		
T3							0.821		
R1				0.908					
R2				0.981					
R3				0.899					
R4				0.831					
R5				0.855					
R6				0.932					
R7				0.911					
KM1									0.875
KM2									0.792
KM3									0.902
KM4									0.816
ML1								0.922	
ML2								0.942	
ML3								0.898	
ML4								0.894	
ML5								0.915	
ML6								0.946	
Initial Eigen Value	3.302	2.824	2.481	2.246	1.952	1.847	1.458	1.381	1.231
% Variance	20.428	18.724	11.842	9.542	5.151	4.438	2.346	1.241	1.125
Cumulative %	20.428	39.152	50.994	60.536	65.687	70.125	72.471	73.712	74.837

Table 3 explains the summary of the rotated factor matrix of organizational factors using PCA with Varimax rotation under Kaiser Normalization (Kaiser, 1958). The PCA method and rotation converged into eight iterations. All the forty-six sub-factors were extracted into nine factors and accounted for 74.83 % of the total variance. Only factor loadings above 0.50 were considered significant (Hair et al., 2006).

4. DISCUSSION

Organization structure with four sub-items ranging its component matrix value from 0.894 to 0.943, accounted for 4.438% of the variance. This illustrates the organizational structure with different size followed in various firms is centralized and formalized, which will define the corporate structure and its innovation capacity. The results also validate the findings of Marisa Smith et al. (2008) and Lewis and Moultrie (2005) stating the structure of a firm is conducive to actual innovation management and also directs the job nature to its employees. Organizational culture and environment with seven sub-items ranging from 0.854 to 0.904 accounted for 18.724% of variance. This shows the culture and environment will affect the employees learning through open communication and peers being collaborative at work. However, a dynamic work culture and team spirit may empower employees. Many past studies also confirmed this finding that risk-taking, open communication, innovative attitudes give employees the privilege of new ideas and work-related information flow (Giambatista et al., 2010; Marisa et al., 2008). The findings of this study were also consistent with the findings of Rohman et al. (2020) about organization culture on knowledge sharing among employees. Corporate strategy constitutes three sub-items ranging its value from 0.947 to 0.954 with 5.151% of variance. This demonstrates organizational strategy can slowly drive the culture and formalize the innovation strategy propagating the firms' vision and mission. The finding is in line with Jager et al. (2004) and Cottam et al. (2001) who state the firm's strategy reflects its culture and disseminates a common vision and objectives of the organization and institutionalizes to their employees. The innovation process with three sub-items ranging from 0.865 to 0.923 accounted for 11.842% of the variance. In the innovation process, management support is vital in

selecting and evaluating techniques and identifying the implementation mechanism. These factors were identified by Marisa et al. (2008), and this study was validated by other studies (Loewe & Dominiquini, 2006; Aranda & Molina, 2002). Gopala Krishnan and Damanpour (1997) also affirmed that idea generation and adoption of innovation will provide various solutions between the process and product development, incremental versus radical, and administrative versus technical aspects. The employee variable consists of eight sub-items ranging from 0.843 to 0.946 and accounting for 20.428% of variance. Employees act as a channel between organizational factors and the innovation process as they were found as a potential source to reinforce innovation by providing training and empowerment programs. This factor was previously undertaken by many past studies (Pohlmann et al., 2005; Shipton et al., 2006). This finding is also supported by Khan and Mohiya (2020), who confirmed that training and brainstorming, the ability of an employee to think out of the box, employee competencies and recognition and reward for innovative employees have a positive correlation with innovation. Technology consists of three sub-items ranging from 0.799 to 0.821 and accounted for 2.346% of the variance. Technology utilization can expedite the work process and employee performance provided employees possess technical skills and educated at work. Therefore, the organization must deploy new technology to manage the innovation process. This statement is also supported by (Loewe and Dominiquini, 2006; Pissarra and Jesuino, 2005) who affirmed that the use of technology at work helps generate new ideas improving the various stages of the innovation process. The resources variable consists of seven items ranging its values from 0.831 to 0.981 and accounts for 9.542% of the variance. Resources include all the essential inputs of an organization such as manpower, knowledge, finance, technology, etc. The study identified such relevant resources and argues mobilizing talents is vital to make availability of skilled labor at all levels and create opportunities for an individual's growth. In fact, knowledge resources and technology resources play a significant role and help in fast developments. Therefore, the management must focus on the best utilization of slack resources and provide financial resources along with simplifying and streamlining business processes. These findings were also consistent with various studies (Loewe & Dominiquini, 2006; Pissarra & Jesuino, 2005; Khan

& Mohiya, 2020). Knowledge management consists of four items with values ranging from 0.792 to 0.902, accounting for 1.125% of the variance. Employees' innovation comes from organizational learning, which in turn comes from gaining knowledge from the internal and external environment. Khan and Mohiya (2020) found the employees who learn from their peers through knowledge sharing and utilizing the knowledge repositories available in the organization will flourish soon. The findings of this study were also consistent with those of Rohman et al. (2020) that knowledge sharing among employees will improve the knowledge management in an organization. Management support has got six items ranging

from 0.894 to 0.946, accounting for 1.241% of the variance. Fiol (1996) mentioned the innovative output and growth of an organization are powered by the knowledge management of a firm and will empower their employees' trust. Therefore, the management must deploy diversified talents with good HR practices creating new business opportunities, but it is possible by possessing good management personalities and a fair management style. The findings of this study were also consistent with those of Rohman et al. (2020) that there must be strong support from management and leadership to promote knowledge sharing among employees, which will, in turn help, in overall success of organization.

CONCLUSION

Organizational factors affect workplace innovation and, in the long run, determine the organization's success. This study focuses on organizational aspects that help improve a workplace innovation environment. Therefore, it pays attention to a better understanding of various organizational factors in general. the study not only identified and validated the determinants, but contributed both to theoretical explanations of organizational factors and to the categorization of huge factors into reduced dimensionalities. The study concludes that the dimensionalities are reduced to nine (9) important organizational factors based on the relativeness of the sub-items to its main construct. They are Organizational Structure, Organizational Culture and Environment, Corporate Strategy, Innovation Process, Employees, Technology, Resources, Knowledge Management, and Management and Leadership. This factor reduction method will help organizational development authorities and innovation managers to focus more easily on various aspects. These dimensions are almost common for any industry, so managers must efficiently focus on them regardless of the industry. Sometimes the work and organization culture differ between firms from different regions. Therefore, further researchers may conduct similar studies in different nations and continents, using these factors with more sample size, and compare the results for further growth and development of organizations.

While this study does not demonstrate methods to develop on organizational innovation, it helps focus on various organizational factors using statistically reduced dimensionalities. The study focused on general holistic organizational factors, but may not consider specific industries. In addition, since employees are key stakeholders of an organization, qualitative employee responses were not considered. Any further research may consider a qualitative approach to gathering employee viewpoints using thematic analysis, Delphi study, or focused group to list more appropriate organizational factors specific to the industry.

AUTHOR CONTRIBUTIONS

Conceptualization: Sania Khan.

Formal analysis: Sania Khan.

Investigation: Sania Khan.

Methodology: Sania Khan.

Resources: Sania Khan.

Validation: Sania Khan.

Writing – original draft: Sania Khan.

Writing – review & editing: Sania Khan.

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