

Impact of Organizational Culture on Innovation: A Study of Demographic of Software Professionals

Ruchi Khanna¹(Research Scholar), Dr. Vandana Bharti² (Associate Professor),

¹ITM University, School of Business,
361/16,19 Saadatgunj, Lucknow
khannaruchi8080@gmail.com

²School of Business, ITM University,
Turari Campus, Gwalior
vandana.bharti@itmuniversity.ac.in

Abstract: The purpose of this study was to find out the significant difference of Organizational Culture and Innovation amongst different position and level of working experience in software industries. The survey method through the technique of questionnaire had been adopted to collect the relevant data for this study. The organizational culture questionnaire, which is adopted from Martins (1989, 1997). The original questionnaire consists of 89 items, but 40 items that were common to all the companies were included in the study. These 40 items are representative of the five determinants of the Organizational Culture. The innovation questionnaire is adopted from Abdul Razak Ibrahim, Ali Hussein Saleh Zolait, Sivadasan Subramanian and Ahmad Vazehi Ashtiani (2009). The original questionnaire consists of 48 items, but 20 items that were common to all the companies were included in the study. A Likert-type scale is used both the organizational culture and innovation. It is evident that the result of ANOVA shows that Organizational Culture and Innovation are significantly different amongst different positions in software industries. Similarly Organizational Culture and Innovation are significantly different amongst different level of working experience in software industries.

Keywords: Keywords: Organizational Culture, Innovation, Demographic Variables

1. Introduction

Compared to 1980s and 1990s, we see that “today’s organisations face a new challenge- the requirement to innovate. It demands the organization to look new ways for being creative and innovative. There is need that organization must paying attention to the important source that can create and support environment in which innovation can flourish that is organizational culture. The organization has seen a lot of changes from the 1990s because continuous acquisition of knowledge. If the organization wants to succeed today, there is need that organization infused such kind of culture that will not only ensure survival but eminence in the global market. In order to create continuous and sustained value creation firms, must devise and implement an innovation culture which allows them to build the capabilities necessary to compete successfully both now and in the future (Voelpel et al. 2005). Innovation being an element of organizational culture does help steer the organization to maintain competitive advantage.

It has been also observed that through various literature organizational cultures is an important factor affecting organizational innovation and it plays an important role to create an innovative environment within organizations [Khazanchi et al (2007)]. According to Jassawalla and Sashittal (2002) "an innovation-supportive culture is defined as a firm’s social and cognitive environment, the shared view of reality, and the collective belief and value systems reflected in a consistent pattern of behaviours among participants" (p 43). McGourty and his colleagues (1996) found that an organizational culture may be modified by specific management practices through strategic direction, employee selection, rewards and recognition, employee deployment, support of idea generation, and multifunctional teaming to encourage innovative behaviour.

1.1. Organizational Culture:

There seems to be no agreed upon definition of culture in the literature (Abu-Jarad *et al.*, 2010). It is defined from different perspectives. Organizational culture is defined as “the shared, basic assumptions that an organization learns while coping with the environment and solving problems of external adaptation and internal integration that are taught to new members as the correct way to solve those problems” (Park *et al.*, 2004). Schein (1990:111) defined organizational culture as “a pattern of basic assumptions that a group has invented, discovered or developed in learning to cope with its problems of external adaptation and internal integration, and that have worked well enough to be considered valid, and therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems”. Ball and Quinn (2001) defined organizational culture as “an organization’s values, beliefs, practices, rites, rituals, and stories—all of which combine to make an organization unique”. Abu-Jarad *et al.*, (2010:34) provide a definition that most authors would agree. According to these researchers, organisational culture refers to “something that is holistic, historically determined (by founders or leaders), related to things anthropologists study (like rituals and symbols), socially constructed (created and preserved by the group of people who together form the organization), soft, and difficult to change”.

1.2. Innovation:

Schumpeter (1934) described innovation clearly in his preceding works as the carrying out of new combination of production means which include the introduction of new goods, new methods and new market. Zaltman *et al.* (1973) defined innovation as the perception of a social unit that decides its newness. According to Drucker (1974), innovation can be generally defined as the process of equipping in new improved capabilities or increased utility (i.e. innovation is not a science or technology but a value). Rogers and Kim (1985)

describe innovation as anything perceived to be new by the people doing it. For Ahmed (1998), innovation is the process of commercializing one or more ideas that they can be exchanged for something of economic or competitive value. If we summarized all the above definitions we conclude that all above definitions have same meaning, purpose and intentions in the situations in which they describe on one of the following aspects: usefulness, newness, novelty, creativity, products/processes, and commercialization. Creating and implementing of a new idea with the objective of delivering commercial benefits in a social environment is Innovation.

1.3. Organizational Culture and Innovation:

Organisational culture also affects organisational innovation capability and innovation. Edwards *et al.*, (2002) reflected that the organisation culture with values, norms and beliefs is an important enabler of innovation.

Martins and Terblanche (2003) argued that organisational culture appears to have an influence on the degree to which creativity and innovation are stimulated in an organisation. Values, beliefs and norm affect innovation positively or negatively depending on how they affect employees and groups in organisations.

Vincent *et al.*, (2004) argued that role of environmental, organizational capabilities, organizational demographics, and organizational structure variables affect innovation in organisations. In particular, organizational capabilities and structure account for the greatest level of unique variance on innovation.

Martins and Martins (2002) argued that many researchers agree that organisational culture is a contributing factor to the degree to which creative and innovative behaviour is found among employees in an organisation.

Ahmed (1998) argued that culture is a primary determinant of innovation and possession of positive cultural characteristics provides the organisation with necessary ingredients to innovate.

Several characteristics of culture can serve to enhance or inhibit the tendency to innovate in organisations (Ahmed 1998; McLean, 2005). McLean (2005) discussed that characteristics of organizational culture and dimension of organizational climate are related to the supports of or impediments to creativity and innovation. While, organizational encouragement, supervisory encouragement, work group encouragement, freedom/autonomy, and resources support the ability to innovate, the control reduces creative and innovative ability of the organisations. The way different dimension of culture and related characteristics affect innovation capability and innovation in the firms seem to be inconclusive.

March-Chorda and Moser (2008) noted that there is no agreement regarding what type of organisational culture foster innovations. They found that the characteristics which required for innovation or for innovating firms such as open-minded thinking and a relaxed, open and rule-free environment were not present in their study. Instead, they found that characteristics which they feel negatively affect innovation were found to be present in innovating organisations. Several organisational characteristics associated with different dimensions of organisational culture affected innovation. Supporting this, Ahmed (1998) argued that identifying and proposing one type of culture for innovation in organisations can be misleading. A conclusion from these studies is that

proposing certain organisational cultural dimensions and characteristics as panacea for innovation can not reflect the reality experienced with the organisations. Rather all the characteristics related to different dimensions of organisational culture with varying degrees may affect innovation capability of the firms.

Salih Yeşil and Ahmet Kaya(2012) noted that there is no agreement regarding what type of organisational culture foster innovations In their study they found that adhocracy culture dimension positively affects innovation capability of the firms. But the other dimension clan and hierarchy were not related to innovation capability of the firms and the market culture was rejected. The study indicates that some characteristics related to OC has more effect on innovation

Ng Yu Seen, Sharan Kaur Garib Singh, and Sharmila Jayasingam (2012) noted that only two variables were related to innovation – creating change, and organizational learning. Hence statistical results provided a partial support for the relationship between organizational culture and innovation of Malaysian employees in this study. The weak correlation between organizational culture and innovation was unexpected. There are no significant relationships between empowerment, team orientation, customer focus, capability development, with innovation, respectively. Thus, these results did not support earlier studies, which found organizational culture to be positively associated with innovation (Ashley and Bryan, 2009).

The various studies show the relationship between organizational culture and innovation in various areas, like education industry, postal sector etc. Most of the reported research focused on role of organizational culture on innovation and also found the relationship between organization culture and innovation considering characteristics, dimensions, types, components etc. Most of the studies were conducted in different countries in different sectors. If we go through the various studies we found that these researchers have not identified the Impact of Organizational Culture on Innovation on demographic variables of software professionals in Mumbai and its nearest.

So the main objective of this study is to identify the impact of organizational culture on innovation on demographic variables of software professionals.

2. Methodology:

The study area setting for this research is MNCs or Foreign Managed software industries in Mumbai and its nearest area. Prior research has explored them in various areas like service industries, education industries. This study is concerned basically software industries operating in Mumbai and it's nearest. Therefore the size of the population is used here for survey is limited software industries operating in Mumbai and it's nearest. But the research population was comprised of in this study was 5 MNCs software industries and the total sample size was 150. Convenient sampling was used in this study.

2.1. Data Collection Method:

The data collected through questionnaire. The questionnaire consists of three separate parts. The first part included some questions about the demographic profile of the respondents as control variable. The second part included some questions about the quality or perceptions of employees regarding organizational culture as independent variable. The third part

included the questions about the level of organizational innovation as dependent variable

2.2. Identification of variables under study:

Independent Variable: Organization Culture (OC),

Dependent Variable: Innovation

Control Variables

The following demographic variables are considered as control variables for study:-

- a. Current Job Position: (Project Manager or Senior Manager, Project Leader or Team Leader, Associate Consultant)
- b. Years in the current organization: Less than 2, 2-5, 6-10, Over 10

On the basis of demographic profile four hypothesis relationships were tested. They are

HA1: There is a significant difference in Organizational Culture amongst different position in software industries.

HA1a: There is a significant difference in Innovation amongst different position in software industries.

HB1: There is a significant difference in Organizational Culture amongst different level of working experience in software industries.

HB1a: There is a significant difference in Innovation amongst different level of working experience in software industries.

In this study determinant of organizational culture including strategy, structure, behavior that encourages innovation, support mechanism and communication are independent variables.

2.3. Statistical Tools

All statistical processes were conducted using SPSS version 16.

3. Demographic Variable of Foreign Managed or MNC Software Industries

Job Position, Level of Working Experience

3.1. Current Job Position

HA1: There is a significant difference in Organizational Culture amongst different position in software industries.

HA1a: There is a significant difference in Innovation amongst different position in software industries.

The descriptive analysis and ANOVA of current job position of MNC Software Industries was analyzed and the results are presented in Tables

HA1: There is a significant difference in Organizational Culture amongst different position in software industries

In the Descriptive Statistics Box, the mean for the Senior Manager or Project Manager is 4.74. The mean for the Project Leader or Team Leader is 3.50 and the mean for the Associate Consultant is 3.37. The standard deviation for the Senior Manager or Project Manager is .072. The standard deviation for the Project Leader or Team Leader is .326 and the standard deviation for the Associate Consultant is .781.

Tables

Mean_OC

Table3 Descriptive Statistics for Job Position

	N	Mean	Std. Dev	Std. Err	95% Confidence Interval for mean		Min	Max
					Lower Bound	Upper Bound		
Senior Manager	34	4.74	.072	.012	4.71	4.76	5	5
Project Leader	40	3.50	.326	.052	3.39	3.60	3	4
Associate Consultant	76	3.37	.781	.090	3.19	3.55	2	5
Total	150	3.71	.805	.066	3.58	3.84	2	5

Table 3.1. ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	46.422	2	23.211	68.176	.000
Within Groups	50.047	147	.340		
Total	96.468	149			

ANOVA was used to determine if the means are significantly different. The significant value is .000. This value is less than .05. Because of this we can conclude that **There is a significant difference in Organization Culture amongst different position in Software Industries.**

There was a significant difference between groups as determined by one way ANOVA (F 2, 147) = 68.176, p = .000. We can see from the table 3.2 that LSD post hoc test revealed that Senior Manager or Project Manager and Project Leader or Team Leader are significantly different in terms of Organizational Culture (p = .000), similarly Associate Consultant and Senior Manager or Project Manager are significantly different in terms of Organizational Culture (p = .000), but Project Leader or Team Leader and Associate Consultant were not statistically significant different in term of Organizational Culture (p = .265).

Mean_OC LSD

Table 3.2. Summary of Multiple Comparisons

					95% confidence interval	
I Positions	J Positions	I-J	Std. Err	Sig	Lower Bound	Upper Bound
Sr Mgr	Project Leader	1.239*	.136	.000	.97	1.51
	Associate Consultant	1.367*	.120	.000	1.13	1.60
Project Leader	Senior Manager	-.127	.136	.000	-1.51	-.97
	Associate Consultant	.127	.114	.265	-.10	.35
Associate Consultant	Senior Manager	-.127	.120	.000	-1.60	-1.13
	Project Leader	.127	.114	.265	-.35	.10

*. The mean difference is significant at the 0.05 level.

HA1a: There is a significant difference in Innovation amongst different position in software industries.

Mean_Innovation

Table 3.3. Descriptive Statistics of Job Position

					95% Confidence Interval for mean			
	N	Mean	Std. Dev	Std. Err	Lower Bound	Upper Bound	Min	Max
Senior Mgr	34	4.70	.051	.009	4.68	4.71	5	5
Project Leader	40	4.07	.520	.082	3.90	4.24	3	4
Associate Consultant	76	3.59	.555	.064	3.46	3.71	3	4
Total	150	3.97	.651	.053	3.86	4.07	3	5

From the Table 3.3, In the Descriptive Statistics Box, the mean for the Senior Manager or Project Manager is 4.70. The mean for the Project Leader or Team Leader is 4.07 and the mean for the Associate Consultant is 3.59. The standard deviation for the Senior Manager or Project Manager is .051. The standard deviation for the Project Leader or Team Leader is .520 and the standard deviation for the Associate Consultant is .555.

Mean_Innovation

Table 3.4. ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	29.491	2	14.746	64.246	.000
Within Groups	33.739	147	.230		
Total	63.231	149			

ANOVA was used to determine if the means are significantly different. The significant value of Innovation is .000. This value is less than .05. Because of this we can conclude that **There is a significant difference in Innovation amongst different position in Software Industries.**

From the table 3.4, There was a significant difference between groups as determined by one way ANOVA (F 2, 147) = 64.246, p= .000. We can see from the table 3.5 that LSD post hoc test revealed Senior Manager or Project Manager and Project Leader or Team Leader are significantly different in term of Innovation (p = .000), similarly Project Leader or Team Leader and Associate Consultant are significantly different in terms of Innovation (p = .000), and there is also significant difference between Associate Consultant and Project Manager or Senior Manager in terms of Innovation (p = .000).

Table 3.5. Summary of Multiple Comparisons

					95% confidence interval	
I Positions	J Positions	I-J	Std. Err	Sig	Lower Bound	Upper Bound
Senior Manager	Project Leader	.627*	.112	.000	.41	.85
	Associate Consultant	1.110*	.099	.000	.91	1.30
Project Leader	Senior Manager	-.627*	.112	.000	-.85	-.41
	Associate Consultant	.483*	.094	.000	.30	.67
Associate Consultant	Senior Manager	-1.110*	.099	.000	-1.30	-.91
	Project Leader	-.483*	.094	.000	-.67	-.30

Table 3.6. Descriptive Statistics of Working Experience

					95% Confidence Interval for mean		Min	Max
	N	Mean	Std. Dev	Std. Err	Lower Bound	Upper Bound		
Less than 2	15	3.19	.000	.000	3.19	3.19	3	3
2 to 5	78	3.46	.796	.090	3.28	3.64	2	5
6 to 10	39	3.97	.720	.115	3.74	4.20	3	5
more than 10	18	4.67	.000	.000	4.67	4.67	5	5
Total	150	3.71	.805	.066	3.58	3.84	2	5

MEAN_OC

3.2. Working Experience or level of Working Experience

HB1: There is a significant difference in Organizational Culture amongst different level of working experience in software industries.

HB1a: There is a significant difference in Innovation amongst different level of working experience in software industries.

HB1: There is a significant difference in Organizational Culture amongst different level of working experience in software industries.

In the Descriptive Statistics Box, the mean for less than two years is 3.19. The mean for the two to five years is 3.46; the mean for six to ten years is 3.97 and the mean for the more than ten years is 4.67. The standard deviation for less than two years is .000. The standard deviation for two to five years is .796. The standard deviation for six to ten years is .720 and the standard deviation for more than ten years is .000.

Table 3.7. ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	27.945	3	9.315	19.847	.000
Within Groups	68.523	146	.469		
Total	96.468	149			

ANOVA was used to determine if the means are significantly different. The significant value of Innovation is .000. This value is less than .05. Because of this we can conclude that **There is a significant difference in Organizational Culture**

amongst different Level of Working Experience in Software Industries.

Mean_Innovation LSD

Table 3.8. Summary of Multiple Comparisons

					95% confidence interval	
I Positions	J Positions	I-J	Std. Err	Sig	Lower Bound	Upper Bound
Less than 2	2 to 5	-.271	.193	.163	-.65	.11
	6 to 10	-.777*	.208	.000	-1.19	-.37
	more than 10	1.476*	.240	.000	-1.95	-1.00
2 to 5	Less than 2	.271	.193	.163	-.11	.65
	6 to 10	-.507*	.134	.000	-.77	-.24
	more than 10	1.206*	.179	.000	-1.56	-.85
6 to 10	Less than 2	.777*	.208	.000	.37	1.19
	2 to 5	.507*	.134	.000	.24	.77
	more than 10	-.699*	.195	.000	-1.08	-.31
more than 10	Less than 2	1.476*	.240	.000	1.00	1.95
	2 to 5	1.206*	.179	.000	.85	1.56
	6 to 10	.699*	.195	.000	.31	1.08

There was a significant difference between groups as determined by one way ANOVA ($F(3, 146) = 19.847, p = .000$). We can see from the table 3.8 that LSD post hoc test revealed that two to five years and six to ten years of working experience of employees are significantly different ($p = .000$) in terms of Organizational Culture, six to ten years and more than ten years of working experience of employees are significantly different ($p = .000$) in terms of Organizational Culture, and more than ten years and less than two years of working experience of employees are significantly different ($p = .000$) in terms of Organizational Culture, but the difference between less than two and two to five years of working experience of employees were not significant ($p = .163$) in terms of Organizational Culture.

HB1a: There is a significant difference in Innovation amongst different level of working experience in software industries.

MEAN_INNOVATION

Table 3.9. Descriptive Statistics of Working Experience

					95% Confidence Interval for mean			
	N	Mean	Std. Dev	Std. Err	Lower Bound	Upper Bound	Min	Max
Less than 2	15	3.85	.000	.000	3.85	3.85	4	4
2 to 5	78	3.61	.623	.070	3.47	3.75	3	4
6 to 10	39	4.42	.428	.068	4.28	4.55	3	5
more than 10	18	4.65	.000	.000	4.65	4.65	5	5
Total	150	3.97	.651	.053	3.86	4.07	3	5

In the Descriptive Statistics Box, the mean for less than two years is 3.85. The mean for the two to five years is 3.61, the mean for six to ten years is 4.42 and the mean for the more than ten years is 4.65. The standard deviation for less than two years is .000. The standard deviation for two to five years is .623. The standard deviation for six to ten years is .428 and the standard deviation for more than ten years is .651.

Table 3.10. ANOVA

	Sum of Squares	Df	Mean Square	F	Sig.
Between Groups	26.441	3	8.814	34.978	.000
Within Groups	36.789	146	.252		
Total	63.231	149			

ANOVA was used to determine if the means are significantly different. From the Table 3.10 the significant value of Innovation is .000. This value is less than .05. Because of this we can conclude that ***There is a significant difference in Innovation amongst different Level of Working Experience in Software Industries.***

There was a significant difference between groups as determined by one way ANOVA ($F_{3, 146} = 34.978, p = .000$). We can see from the table 3.11 that LSD post hoc test revealed that two to five years and six to ten years of working experience of employees are significantly different ($p = .000$) in terms of Innovation, more than ten years and less than two years of working experience of employees are significantly different ($p = .000$) in terms of Innovation, but the difference between six to ten and more than ten years of working experience of employees were not significant ($p = .103$) in terms of Innovation and the difference between less than two and two to five years of working experience of employees were not significant ($p = .091$) in terms of Innovation.

MEAN_INNOVATION LSD Table 3.11. Summary of

					95% confidence interval	
I Positions	J Positions	I-J	Std. Err	Sig	Lower Bound	Upper Bound
Less than 2	2 to 5	.241	.142	.091	-.04	.52
	6 to 10	-.565*	.153	.000	-.87	-.26
	more than 10	-.800*	.175	.000	-1.15	-.45
2 to 5	Less than 2	-.241	.142	.091	-.52	.04
	6 to 10	-.806*	.098	.000	-1.00	-.61
	more than 10	-1.041*	.131	.000	-1.30	-.78
6 to 10	Less than 2	.565*	.153	.000	.26	.87
	2 to 5	.806*	.098	.000	.61	1.00
	more than 10	-.235	.143	.103	-.52	.05
more than 10	Less than 2	.800*	.175	.000	.45	1.15
	2 to 5	1.041*	.131	.000	.78	1.30
	6 to 10	.235	.143	.103	-.05	.52

Multiple Comparisons

*. The mean difference is significant at the 0.05 level.

Conclusions:

- To conclude, it is evident that the results of ANOVA amongst different position with regards to the Organizational Culture were found to be statistically significant at five percent level as determined by one way ANOVA ($F_{2, 147} = 68.176, p = .000$).
- To conclude, it is evident that the results of ANOVA amongst different position with regards to the Innovation were found to be statistically significant at five percent level as determined by one way ANOVA ($F_{2, 147} = 64.246, p = .000$).
- To conclude, it is evident that the results of ANOVA amongst different level of working experience with regards to the Organizational Culture were found to be statistically significant at five percent level as determined by one way ANOVA ($F_{3, 146} = 19.847, p = .000$).
- To conclude, it is evident that the results of ANOVA amongst different level of working experience with regards to the Innovation were found to be statistically significant at five percent level as determined by one way ANOVA ($F_{3, 146} = 34.978, p = .000$).

References:

- Arad, S., Hanson, M.A. and Schneider, R.J. (1997), "A framework for the study of relationships between organizational characteristics and organizational innovation", *The Journal of Creative Behavior*, Vol. 31 No. 1, pp. 42-58.
- Ahmed, P.K. (1998), "Benchmarking innovation best practice", *Benchmarking for Quality Management & Technology*, Vol. 5 No. 1, pp. 45-58.
- Drucker, P.F. (1974), "Management: Tasks, Responsibility, Practices", New York: Harper & Row Beverley Hills: Sage
- Edwards, R.W., Kumar, P., and Ranjan, (2002). "Understanding Organisation Culture and Innovation: A Case Study Approach", Sixth International Research Conference on Quality, Innovation and Knowledge Management held in Malaysia in February.
- Ng Yu Seen, Sharan Kaur Garib Singh and Sharmila Jayasingam, (2012), "Organizational Culture and

Innovation among Malaysian Employees", *The Journal of Human Resource and Adult Learning*, Vol. 8, Num. 2.

- Martins, E., Martins, N. (2002). "An Organizational Culture Model To Promote Creativity and Innovation" *Journal of Industrial Psychology*, 28(4): 58-65
- Martins, E.C., Terblanche, F. (2003). "Building organizational culture that stimulates creativity and innovation", *European Journal of Innovation Management*, 6 (1): 64 -74.
- March-Chorda, I., and Moser, J. (2008). "How Organizational Culture Affects Innovation in Large Sized ICT Firms: A Pilot Study". <http://www2.hull.ac.uk/hubs/pdf/ID%20268%20March-Chorda%20I,%20Moser%20J.pdf>
- Park, H., Ribeire, V. and Schulte, W. (2004). Critical attributes of organizational culture that promote knowledge management implementation success. *Journal of Knowledge Management*. 7(5): 55-66.
- Rogers, E. M., and J. I. Kim. (1985). Diffusion of Innovations in Public Organizations. in *Innovation in the Public Sector*, ed. Richard L. Merritt and Anna J. Merritt, 85-108.
- Schumpeter, J. A. (1934). *The Theory of Economic Development* Cambridge: Harvard University Press.
- Schein, E. H. (1990) *Organizational Culture*. *American Psychologist*. 45 (2), 109-19.
- Salih Yeşil ,& Ahmet Kaya, (2012), "The Role of Organizational Culture on Innovation Capability: An Empirical Study", *International Journal of Information Technology and Business Management*, Vol.6 No.1, www.jitbm.com
- Vincent L.H., Bharadwaj, S.G., and Challagalla, G.N. (2004). "Does Innovation Mediate Firm Performance? A Meta-Analysis of Determinants and Consequences of Organizational Innovation". <http://smartech.gatech.edu/handle/1853/10731>