

A STUDY OF INNOVATIVE AND RESEARCH & DEVELOPMENT INITIATIVES IN THE SELECTED INDUSTRIAL ORGANIZATIONS IN PUNE REGION

N.G. Kulkarni¹ and K. Desarda²

¹Savitribai Phule Pune University, Pune

²Bharatiya Jain Sanghatana's Arts, Science and Commerce College, Wagholi

¹nil.kulkarni@gmail.com

ABSTRACT

A research was carried on HR initiatives in impacting Innovative and Research & Development environment in selected multi-national companies from Pune. Main aim of the study was the examination of role of HR initiatives in creating an innovative and Research and Development culture in corporate organizations. 400 employees from MNCs in Pune from Manufacturing, IT, and Service sectors were surveyed for the study. Additionally five experts were interviewed. The average lack of visibility for innovation and R & D initiatives was found to be 75%. Average disagreement for the organizational climate reflecting innovation and R & D was 79% and was found to be statistically significant. Average disagreement for the HR initiatives facilitating innovation and R & D was 72%. Average agreement for the mediating factors was 74%. The HR initiatives (or lack of it) explained 19% of the variability of the organizational climate on innovation and R & D and was found to be statistically significant. On an overall basis it can be concluded that our study provides adequate empirical evidence in support of two important aspects – one is that in the current situation by and large the MNCs organizational culture do not reflect a flair for innovation and R and D. Secondly HR initiatives have a significant role to play in maneuvering and orienting the culture towards innovation and R & D.

Keywords: HR Initiatives, Innovative culture, R and D culture, Corporate from Pune

Introduction

1000's of international companies are working towards innovation. The most innovative companies drive innovation at the individual, team and organizational levels. They enjoy two advantages. 1st, they are more efficacious at generating and executing new ideas. 2nd, their employees are more involved. This means that they are more fruitful and dedicated to the organization. A research was undertaken to examine the role of HR initiatives in impacting the innovation and R & D culture of MNCs. Taking into account the research questions and the research gap following objectives were set for the research:

1. To study the role of HR in building an innovation culture in the organization
2. To study the various Innovative Practices and Research and Development initiatives in the organization
3. To assess the culture of select industrial organizations to find out if it reflects innovation and R&D
4. To find out if there is a correlation between the HR initiatives (or lack of it) with the innovative and R&D culture

5. To ascertain the factors that mediate in influencing HR initiatives in creating an innovative and R&D culture
6. To study the expected contribution from HR in achieving the innovation mandate of the organization

Review of literature

Experts have used various concepts to elucidate the accomplishment and failure of organizations' open innovation approaches. Creating upon the resource-based view of an organization, the study develops a paradigm to elucidate how leadership communicates with absorptive capacity and organizational learning culture to affect open innovation results (Naqshbandi & Tabche, 2018). The study goals to assess the correlation among collaborative culture, information sharing and innovation competences in Chinese organizations. The study outcomes display that information sharing plays an arbitrating role among collaborative culture and two particular types of innovation, viz., product innovation and procedure innovation (Yang et al., 2018). After reporting the results of the methodical literature review, the experts deliberate how a variety of culturally associated determinants syndicate to enable or restrict innovation

performance in their equivalent group. The outcomes highlight the intricate and characteristic association between culture and innovation. Future studies are suggested (Tian et al., 2018). The outcomes can elucidate whenever feasible, some sources of labour productivity and recommend a study and industrial policy of best rates of R&D intensity and tax on corporate benefits directed to assist competitive advantage, technological innovation and wealth formation of countries over time (Coccia, 2018). The study focuses to assess the effect of IC on the association among OL and several dimensions of IP, comprising product, procedure and objective innovation. According to outcomes of 625 survey forms filled by pharmaceutical organizations, OL activities and IC can result in product and procedure innovation. Though, this association was not assisted for the objective innovation. Also, in terms of the regulating role of IC in the association between OL and IP dimensions, the outcomes were important (Ghasemzadeh et al., 2019). The study assesses the varied viewpoints of how transformational leadership can inspire followers' innovative behaviour via belief in the leader and work engagement within the Chinese organizational framework (Li et al., 2019).

Research Gap

Studies on innovative and R & D culture in organizations are widely seen (Ishak 2017; Yun et al., 2020; Dodge et al., 2017). Same is the case with literature on benefits of innovative and R & D culture in organizations (Gürlek & Tuna, 2018; Fartash et al. 2018; Frishammar et al. 2019). However when it comes to studying role of HR in building Innovative and R & D culture in organizations the gap is quite distinctly seen both in conceptual and contextual terms. For example the study by Tajeddini et al. (2020) merely states that significant benefits can be exploited if HR plays a role in improving innovative culture. But how HR can exactly do this is not discussed. Only one study (Krishnan & Prashantham, 2019) dealing with Indian organizations is found on role of HR in building innovative and R & D culture.

Research Methodology

Research Variables, modeling, and relationships to be investigated

Research variables:

- Independent Variable: HR Initiatives
- Dependent Variable: Innovative Culture
- Mediating Variable: Demographic and other factors
- Exploratory Variables: Role in innovative culture building; Constituents of the role; Innovation / R and D initiatives

Resource identification for elements identified above:

Table 1: Resource identification for data collection for research variables

Sr. No.	Area	Primary Data resource
1	Demographic Factors	Responses to the profile section of the questionnaire for employees
2	Innovative practices	Section I of the questionnaire for employees
3	Culture for innovativeness	Section II of the questionnaire for employees
4	HR Initiatives	Section III of the questionnaire for employees
5	Mediating Factors	Section IV of the questionnaire for employees

Secondary Data resources used were agency research, publications by individuals, research publication by institutions, annual reports, etc.

Purpose of research and formulation of hypotheses

The main purpose of the research was to study Innovative and Research & Development

Initiatives in the Selected Industrial Organizations in Pune Region.

Based on the purpose and the scheme of variables following the scheme of hypotheses formulation emerged:

Ho1: The culture of the select industrial organizations reflects innovation and R&D

Ha1: The culture of select industrial

organizations does not reflect innovation & R&D

Ho2: There is no correlation between the HR initiatives (or lack of it) with the innovative and R&D culture

Ha2: There is a correlation between the HR initiatives (or lack of it) with the innovative and R&D culture

Ho3: There are no significant factors that mediate in influencing HR initiatives in creating an innovative and R&D culture

Ha3: There are significant factors that mediate in influencing HR initiatives in creating an innovative and R&D culture

Primary data collection scheme

The primary data collected for each of the research objectives were as under:

1. Data was collected from 400 employees of MNCs and large corporates in Pune region.
2. To study the expected contribution from HR in achieving the innovation mandate of the organization, five expert interviews were conducted

Method set for testing of Hypotheses

Table 2: Questionnaire Details

Sr. No.	Section	Heading	Contents	Responses
1	Profile	Profile information	Demographic questions	Nominal data
2	I	Innovative Practices and R and D initiatives in the organization	12 statements	Likert scales on visibility/ lack of visibility
3	II	Culture for innovativeness	15 statements	Likert scales on agreement/ disagreement
4	III	HR Initiatives	15 statements	Likert scales on agreement/ disagreement
5	IV	Mediating Factors	10 statements	Likert scales on agreement/ disagreement

Population and Sample Population

The number of employees in MNCs and large corporates in Pune is easily very large >10,000 representing population for our study.

Sample Sizes

The sample size using 95% Confidence Level with 5% Confidence Interval is 370.

Figure 1: Sample Size Calculator (Source: Survey Systems, 2019)

This was rounded off to 400.

In case of qualitative methods like interviews with experts, sample size of 5 was fixed. These sample sizes were based on the opinion of

expert researcher Dworkin (2012) who has said “While some experts in qualitative research avoid the topic of “how many” interviews are “enough,” there is indeed variability in what is suggested as a minimum. An extremely large number of articles, book chapters, and books recommend guidance and suggest anywhere from 5 to 50 participants as adequate (p.1319).”

Method of Sampling

The nature of the research being qualitative, the demand for accurate quantitative analysis was not there. The respondents' selection was made based on judgment, where the possibility of getting the responses was relatively higher. Judgmental sampling is a non-probability sampling technique where the researcher selects units to be sampled based on their knowledge and professional judgment. This type of sampling technique is also known as purposive sampling and authoritative sampling. The names of neither the companies nor the respondent were recorded to ensure confidentiality.

Validity and Reliability of the instruments used for the research

Validity of the instruments was confirmed with the help of guide and other experts in the field. Reliability was ascertained by performing the Cronbach’s Alpha tests for sections I, II, III, and IV of the questionnaire for the employees separately as well as in aggregate. For all the questionnaires the responses were sought on Likert scales. The results of the reliability test are given below:

Table 3: Reliability test of the survey instrument(s)

Sr. No.	Section / Name of the instrument	Cronbach’s Alpha
1	Total questionnaire	0.796
2	Section I – Innovative practices	0.907
3	Section II – Organizational Culture	0.858
4	Section III – HR Initiatives	0.825
5	Section IV – Mediating Factors	0.983

Since the Cronbach’s Alpha was found to be more than 0.70, the questionnaire was considered as reliable.

Data analysis and interpretation

Data analysis and interpretation scheme explained

The scheme formulated was as under:

Table 4: Data analysis and interpretation scheme explained

Sr. No.	Data Analysis	Expected Outcome	Interpretation
1	Assessment of Organizational Culture for innovativeness and R and D	Agreement/ Disagreement percentages of the 400 respondents	If the average disagreement percentage is significantly higher than hypothesized mean of 50%, reject the null hypothesis that the culture of the select industrial organizations reflects innovation and R&D.
2	Impact of HR initiatives on Organizational Culture for innovativeness and R and D	R ² between dependent variable organizational culture and independent variable HR initiatives, along with p-value	If p-value is <0.05, reject the null hypothesis that there is no correlation between the HR initiatives (or lack of it) with the innovative and R&D culture
3	Impact of mediating factors on Organizational Culture for innovativeness and R and D	R ² between dependent variable organizational culture and independent variables HR initiatives and mediating variables, along with p-value	If p-value is <0.05, reject the null hypothesis that there is no impact of the HR initiatives (or lack of it) and the mediating variables with the innovative and R&D culture

Summary of data analyses of responses & overall interpretation

The following table summarizes key parameters and the overall interpretation:

Table 5: Summary of data analyses of responses & overall interpretation

Sr. No.	Data Analysis	Expected Outcome	Interpretation
1	Assessment of Organizational Culture for innovativeness and R and D	Disagreement percentages of the 400 respondents 79% with p-value <0.0001	As the average disagreement percentage is significantly higher than hypothesized mean of 50%, rejected the null hypothesis that the culture of the select industrial organizations reflects innovation and R&D.
2	Impact of HR initiatives on Organizational Culture for innovativeness and R and D	R ² between dependent variable organizational culture and independent variable HR initiatives 19%, along with p-value <0.0001	As p-value is <0.05, rejected the null hypothesis that there is no correlation between the HR initiatives (or lack of it) with the innovative and R&D culture
3	Impact of mediating factors on Organizational Culture for innovativeness and R and D	R ² between dependent variable organizational culture and independent variables HR initiatives and mediating variables 33%, along with p-value <0.0001	As the p-value is <0.05, rejected the null hypothesis that there is no impact of the mediating variables on the innovative and R&D culture

Expert interviews

A thematic analysis of the interviews shows that the experts are of a strong opinion that HR has a highly significant role in promoting an innovative and R & D culture in the organization. They have opined that HR has to push people at all levels in the organization to inculcate innovative thinking. The experts have highlighted the role of training to bring about an attitudinal change in the employees. Further they have stated that HR should ensure that efforts for innovation and R & D are duly rewarded.

Findings, Conclusions and Suggestions**Research Findings***a. Findings related to profile*

- i. The distribution of Age was 8 for <30 years group; 125 for 30-40 years group; 131 for 40-50 years group; and 136 for >50 years group.
 - ii. The division of Role was 204 for Executive group; 188 for Manager group; and 8 for Others group.
 - iii. The distribution of Industry type was 127 of Manufacturing group; 132 for IT group; 141 for Services group; and 0 for Others group.
 - iv. The spread of respondents for the question "Who drives innovation in your Organization?" was 194 of HR group; and 206 for Not HR - Other Functions group.
 - v. The distribution of respondents for the question – "When innovation is an organizational priority?" was 175 of HR has a key role to play group; and 225 for HR has to play supporting role group.
 - vi. The division of respondents for the question – "Does your organization have a separate R & D Department?" was 142 for the Yes group; and 258 for No group.
 - vii. The spread of respondents for the question – "If no has your company outsourced R & D?" was 64 for Yes group; and 336 for No group.
 - viii. The distribution of Average approximate annual turnover was 96 of <Rs.100 crores group; 100 for Rs.100-500 crores group; 110 for Rs.500-Rs.1000 crores group; and 94 for >Rs.1000 crores group.
 - ix. The spread of respondents based on their average annual spend on R & D was 195 for <1%, 196 for 1-5%, 7 for 5-10% and 2 for >10%.
- b. *Inferential and finer data analysis*
 - i. The average lack of visibility for the twelve innovation and R & D initiatives (as stated in Section I of the questionnaire) was found to be 75%.
 - ii. Average disagreement for the organizational climate reflecting innovation and R & D based on the 15 statements in Section II of the questionnaire was 79% and was found to be statistically significant.
 - iii. Average disagreement for the HR initiatives facilitating innovation and R & D based on the 15 statements in Section III of the questionnaire was 72%.
 - iv. Average agreement for the mediating factors as assessed through Section IV of the questionnaire was 74%.
 - v. The HR initiatives (or lack of it) explained 19% of the variability of the organizational climate on innovation and R & D and was found to be statistically significant.
 - vi. The mediating factors along with the HR initiatives (or lack of it) explained 33% of the variability of the organizational climate on innovation and R & D and was found to be statistically significant.
 - vii. None of the two demographic variable show any significant association with the organizational climate for innovativeness and R & D.

Conclusions

1. Innovative and R and D practices are not visible in the organizations. This can be concluded from the negative responses to the various statements like - Organization put in place discrete budgets to fund innovation and R&D Projects, and others.
2. The organizational culture does not reflect an innovation and R and D environment. Wide disagreement to statements like - The vision and mission clearly shows commitment to innovation and R & D, and others.
3. There is a strong impact of HR initiatives on the innovation and R and D culture. Organizations that have conducive HR

initiatives like - HR takes lead in promoting innovation and R & D in the organization, and others.

4. The factors Nature of business, Changes in technology, and others does mediate the relationship between HR Initiatives and Innovative and R & D Culture.

On an overall basis it can be concluded that our study provides adequate empirical evidence in support of two important aspects – one is that in the current situation by and large the MNCs organizational culture do not reflect a flair for innovation and R and D. Secondly HR initiatives have a significant role to play in maneuvering and orienting the culture towards innovation and R & D.

Suggestions

1. HR needs to communicate to all levels of organization about the vision statement and lay emphasis on the fact that innovation is essential part of the company's core objectives.
2. Special training on innovation should be arranged at all levels in the organization.
3. HR needs to be part of strategic decision-making process so that it can play a vital role of being a bridge between management and employees.
4. In order to keep the employees motivated HR must take steps to reward innovation efforts. Employees who contribute towards innovation must be adequately rewarded which will ensure employee satisfaction.
5. One of the most crucial things HR can do to achieve innovation is to ensure that there is specific staffing. A separate department or innovation focused staff in the technology/R&D department will ensure that there are dedicated staff to achieve innovation.
6. HR should ensure that top management is serious about innovation and they regularly communicate the same on various occasions

References

1. Coccia, M. (2018). Optimization in R&D intensity and tax on corporate profits for supporting labor productivity of nations. *The Journal of Technology Transfer*, 43(3), 792-814. <https://doi.org/10.1007/s10961-017-9572-1>
2. Dodge, R., Dwyer, J., Witzeman, S., Neylon, S., & Taylor, S. (2017). The Role of Leadership in Innovation: A quantitative analysis of a large data set examines the relationship between organizational culture, leadership behaviors, and innovativeness. *Research-Technology Management*, 60(3), 22-29. <https://doi.org/10.1080/08956308.2017.1301000>
3. Fartash, K., Davoudi, S. M. M., Baklashova, T. A., Svechnikova, N. V., Nikolaeva, Y. V., Grimalskaya, S. A., & Beloborodova, A. V. (2018). The Impact of Technology Acquisition & Exploitation on Organizational Innovation and Organizational Performance in Knowledge-Intensive Organizations. *Eurasia Journal of Mathematics, Science and Technology Education*, 14(4), 1497-1507. <https://doi.org/10.29333/ejmste/84835>
4. Frishammar, J., Richtnér, A., Brattström, A., Magnusson, M., & Björk, J. (2019). Opportunities and challenges in the new innovation landscape: Implications for innovation auditing and innovation management. *European Management Journal*, 37(2), 151-164. <https://doi.org/10.1016/j.emj.2018.05.002>
5. Ghasemzadeh, P., Nazari, J. A., Farzaneh, M., & Mehralian, G. (2019). Moderating role of innovation culture in the relationship between organizational learning and innovation performance. *The Learning Organization*. 26(3), 289-303. <https://doi.org/10.1108/TLO-08-2018-0139>
6. Gürlek, M., & Tuna, M. (2018). Reinforcing competitive advantage through green organizational culture and green innovation. *The service industries journal*, 38(7-8), 467-491. <https://doi.org/10.1080/02642069.2017.1402889>
7. Ishak, W. (2017). Creating an innovation culture. *McKinsey Quarterly*, 4,

- <https://www2.mvcc.edu/shn/pdf/presentations/innovation-culture.pdf>
8. Krishnan, R. T., & Prashantham, S. (2019). Innovation in and from India: The who, where, what, and when. *Global Strategy Journal*, 9(3), 357-377. <https://doi.org/10.1002/gsj.1207>
 9. Li, H., Sajjad, N., Wang, Q., Muhammad Ali, A., Khaqan, Z., & Amina, S. (2019). Influence of transformational leadership on employees' innovative work behavior in sustainable organizations: Test of mediation and moderation processes. *Sustainability*, 11(6), 1594. <https://doi.org/10.3390/su11061594>
 10. Naqshbandi, M. M., & Tabche, I. (2018). The interplay of leadership, absorptive capacity, and organizational learning culture in open innovation: Testing a moderated mediation model. *Technological Forecasting and Social Change*, 133, 156-167. <https://doi.org/10.1016/j.techfore.2018.03.017>
 11. Tajeddini, K., Martin, E., & Altinay, L. (2020). The importance of human-related factors on service innovation and performance. *International Journal of Hospitality Management*, 85, 102431. <https://doi.org/10.1016/j.ijhm.2019.102431>
 12. Tian, M., Deng, P., Zhang, Y., & Salmador, M. P. (2018). How does culture influence innovation? A systematic literature review. *Management Decision*, 56(5), 1088-1107. <https://doi.org/10.1108/MD-05-2017-0462>
 13. Yang, Z., Nguyen, V. T., & Le, P. B. (2018). Knowledge sharing serves as a mediator between collaborative culture and innovation capability: an empirical research. *Journal of Business & Industrial Marketing*, 33(7), 958-969. <https://doi.org/10.1108/JBIM-10-2017-0245>
 14. Yun, JinHyo J.; Zhao, Xiaofei; Jung, KwangHo; Yigitcanlar, Tan. (2020). "The Culture for Open Innovation Dynamics" *Sustainability* 12(12), 5076. <https://doi.org/10.3390/su12125076>