The Impact of Organizational Innovation as a Reinforcing Factor on Technological Capabilities with the Mediating Effect of Learning (Case Study: Islamic Republic of Iran Broadcasting IRIB)

Elham Ramezani¹,*, Ghanbar Abbaspour Esfeden²

¹ Industrial Management graduate student of Islamic Azad University, Tehran South, Iran
² faculty members of Islamic Azad University, Tehran South, Iran

ABSTRACT

Innovation is a key concept which is considered to be the basis of commercial achievements in the 21st century. Whether large or small, all organizations have re-evaluated their products, services, and operations in order to cultivate innovation. As the most important and effective media in the country, IRIB should develop a keen view on innovation and creativity and their relationship with technical and technological capabilities, so that it can proceed with its mission in a better and more effective manner. The statistical population of the present research consists of experts (managers and assistant-managers) on the subject of the study in Islamic Republic of Iran Broadcasting. The distributed questionnaires have been explained to managers and experts, and the filled-out questionnaires have been collected. After verification of validity and reliability of measured indices, in order to determine whether the measurement indices (manifest variables) are fit to evaluate latent variables, all manifest variables related to latent variables should first be examined separately. General fit indices for measurement models are obtained by confirmatory factor analysis (CFA) and with the use of AMOS18 software. The present study explores 9 manifest variables i.e. innovation in product and service, innovation in process, exploitative innovation, exploratory innovation, learning strategy, learning culture, learning and acquisition of technology, use of technology, and technology protection, and 3 latent variables i.e. organizational innovation, technological capabilities, and organizational learning. The results of the study suggest that organizational innovation directly affects technological capabilities by 79%; and this relationship is moderated by organizational learning.

KEYWORD

innovation, technological capabilities, organizational learning, IRIB

INTRODUCTION

Innovation is a key concept which is considered to be the basis of commercial achievements in the 21st century. Whether large or small, all organizations have re-evaluated their products, services, and operations in order to cultivate innovation. This re-evaluation of organizational objectives is due to the fact that cultivation of innovation inside an organization guaranties its survival in fast-growing markets. Development of innovation culture is also the best guaranty of long-term survival and sustainability in today's knowledge-driven economy [Akhavan et al. 2011].

Based on existing definitions regarding “creativity and innovation”, creativity can be defined as the ability to see things in a new and unconventional way; it is to see problems that no one ever knew existed, and to provide new, unconventional, and effective solutions.

STATEMENT OF PROBLEM AND RESEARCH GOALS

What today’s organizations need, the new wave argues, is a smaller and denser form of organization which is more creative, flexible, and reliant on technological capabilities. Such an organization must rely on employees’ attachment and commitment to common values. Therefor, reliance on rules and regulations is not the basic norm anymore, and a dynamic and IT-based network governs the organization instead of a rigid hierarchy.

Various inventions and innovations have taken place recently the most important of which in terms of effectiveness are information and communication technologies.

*Corresponding Author: Elham Ramezani
E-mail r: elham_ramezani84@yahoo.com
Telephone Number r: Fax. Number r:
Large organizations used to rely on hierarchical management in different levels to coordinate monitor operations. However, nowadays this coordination and monitoring is carried out in a network of technological communications. Today, the old hierarchy of coordination and monitoring is eliminated, which is in itself a great revolution in management of organizations.

For that purpose, IRIB as the most important and effective media in the country should develop a keen view on innovation and creativity and their relationship with technical and technological capabilities, so that it can proceed with its mission in a better and stronger manner.

The present study seeks the following purposes and objectives:

**The primary purpose:**
- To identify the impact of organizational innovation on technological capabilities with the mediating effect of organizational learning

**The secondary purposes:**
- Designing a framework for organizational innovation and technological capabilities in IRIB
- Study the effect of organizational innovation on technological capabilities
- Study the effect of organizational innovation on organizational learning
- Study the effect of organizational learning on technological capabilities

**RESEARCH QUESTIONS AND HYPOTHESES**

The present research aims to study the impact of organizational innovation as a reinforcing factor on technological capabilities. Islamic Republic of Iran Broadcasting IRIB is selected as the case study. The hypotheses of the present study are as follows:

**The first hypothesis:** organizational innovation has a significant effect on reinforcement of technological capabilities in IRIB.

**The second hypothesis:** organizational innovation has a significant effect on organizational learning in IRIB.

**The third hypothesis:** organizational learning has a significant effect on reinforcement of technological capabilities in IRIB.

**The fourth hypothesis:** organizational learning moderates the impact of organizational innovation on technological capabilities in IRIB.

Since technological capabilities have been overlooked in IRIB, the present paper seeks to study this lost link in the organization. It also studies organizational learning and its relationship with organizational learning. The time period of this study is from February 20th 2015 to July 23rd 2015.

**RESEARCH LITERATURE**

Lopez-Nicolas & Merono (2011) study the different aspects of innovation. Some parts of their study are mentioned below.

Organizational performance has different aspects and dimensions. Not only does comprehensive view of organizational performance include financial approaches, it also covers all approaches that can assess value creation in the organization. Organizational innovation is the most important standpoint in this approach.

Gandhi et al. (2011) study the current state of innovation. According to them, innovative performance is a combination of organizational success and efforts to renew, improve, and employ different aspects of innovation in the organization. The organization tries to remain in competition by constant efforts aimed to improve, renew, explore, learn from mistakes, and adapt to rapidly changing competitive environment.

The table below summarizes the opinion of some of the experts in different types of innovation process.

**Tab. 1. different process of innovation**

<table>
<thead>
<tr>
<th>Row</th>
<th>Researcher</th>
<th>Year</th>
<th>Types of innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>March</td>
<td>1991</td>
<td>Exploitative, Exploratory</td>
</tr>
<tr>
<td>2</td>
<td>Kang Yin &amp; Zaskovich</td>
<td>1998</td>
<td>Product, Process</td>
</tr>
<tr>
<td>3</td>
<td>Li et al.</td>
<td>2010</td>
<td>Exploitative, Exploratory</td>
</tr>
<tr>
<td>4</td>
<td>Johansen &amp; Olson</td>
<td>2011</td>
<td>Architectural, fundamental, excessive, contractual</td>
</tr>
</tbody>
</table>

Benner & Tushman (2009) argue that comprehensive quality management is not a barrier against emergence of innovation. Their research has been presented in Berlin New Ideas Conference.

Zarghami H. (2013) carries out a study titled “The study of relationship between creativity and motivation for innovation in research organizations (case study: Research center of Intelligent Signal Processing (RCISP)”. A part of the conclusion in his study is presented below: Results show that creativity has a significant and positive relationship with the motivation for innovation in researchers’ job. Therefore, the individuals are capable of creativity, the more will their motivation for innovation be. The results of previous studies suggest that creativity is an acquired skill. Therefore it is possible to improve individuals’ creative skills through training and education on techniques and instruments of creativity.

In the study of the integration of total quality management and technology management in determining quality and innovation performance, Benner & Tushman (2003) concluded that total quality management is a strong predictor of organization’s qualitative performance; however, it has no definite and considerable relationship with innovation.

**METHODOLOGY AND STATISTICAL POPULATION**

In this survey research, library and internet resources have also been used for data collection. The questionnaires have been distributed personally or via e-mail.

By purpose, the present research is a developmental applied study, and in terms of method and nature it is a descriptive-survey research. In the process of this research, first the literature on the subject has been reviewed via library study,
and then the variables of the study have been measured using a five-point Likert-scale questionnaire.

Of all the 2000 managers in different sections of IRIB i.e. assistant managers in national and provincial networks, managers of international sections, and etc. the present research has been carried out in educational department, media research and technology department, and IRIB center of Islamic research. The number of managers in these three sections i.e. statistical population equals 140 individuals. In order to determine the sample size Cochran’s formula has been used in which the accepted margin of error (d) equals 0.01, Z value equals 1.96, and maximum variance between research variables (p, q) equals 0.5. (P is the estimated proportion of an attribute that is present in the population).

The estimated sample size equals 70. The questionnaire has been distributed to 50 individuals in top and middle management and their responses have been analyzed. The questionnaire’s reliability has been assessed using Cronbach’s Alpha the results of which are presented in the next section.

In order to analyze the data, with the use of SPSS and AMOS software programs, descriptive and inferential statistics have been presented. Considering the issues discussed and the research hypotheses, the research concept model is designed as below:

![Fig.1. research concept model](image)

The present model takes into account 9 manifest variables i.e. innovation in product and service, innovation in process, exploitative innovation, exploratory innovation, learning strategy, learning culture, learning and acquisition of technology, use of technology, and technology protection, and 3 latent variables i.e. organizational innovation, technological capabilities, and organizational learning.

**RESEARCH FINDINGS**

The results of Cronbach’s Alpha are presented in table 2. As the table demonstrates, Cronbach’s Alpha indicates the desirable reliability of the research questionnaire.

<table>
<thead>
<tr>
<th>Questionnaire</th>
<th>Cronbach’s Alpha</th>
<th>Variable</th>
<th>Cronbach’s Alpha coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>0.954</td>
<td>Organizational innovation</td>
<td>0.950</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Organizational learning</td>
<td>0.846</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Technological capabilities</td>
<td>0.820</td>
</tr>
</tbody>
</table>

After verification of validity and reliability of extracted indices and indicators, in order to determine to what extent the measurement indices (manifest variables) are fit to evaluate latent variables, all manifest variables related to latent variables should first be examined separately. With the use of AMOS18 software, general fit indices for measurement models are obtained by confirmatory factor analysis (CFA) and presented in table 3.
Tab.3. model’s fit indices

<table>
<thead>
<tr>
<th>Acronym</th>
<th>CMIN/df</th>
<th>Significance level</th>
<th>GFI</th>
<th>AGFI</th>
<th>NFI</th>
<th>Normed Fit Index</th>
<th>Root-mean-square error</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acceptable value</td>
<td>Between 1 and 3</td>
<td>Less than 0.05</td>
<td>&gt;90%</td>
<td>&gt;90%</td>
<td>&gt;90%</td>
<td>&lt;10%</td>
<td></td>
</tr>
<tr>
<td>Innovation in product and service</td>
<td>1.31</td>
<td>0.00573</td>
<td>0.901</td>
<td>0.900</td>
<td>0.983</td>
<td>0.001</td>
<td></td>
</tr>
<tr>
<td>Innovation in process</td>
<td>2.45</td>
<td>0.00703</td>
<td>0.945</td>
<td>0.921</td>
<td>0.932</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>Exploitative innovation</td>
<td>2.05</td>
<td>0.00625</td>
<td>0.918</td>
<td>0.951</td>
<td>0.934</td>
<td>0.003</td>
<td></td>
</tr>
<tr>
<td>Exploratory innovation</td>
<td>1.44</td>
<td>0.00732</td>
<td>0.908</td>
<td>0.932</td>
<td>0.958</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Learning culture</td>
<td>2.45</td>
<td>0.00821</td>
<td>0.912</td>
<td>0.906</td>
<td>0.942</td>
<td>0.004</td>
<td></td>
</tr>
<tr>
<td>Learning strategy</td>
<td>2.01</td>
<td>0.00886</td>
<td>0.909</td>
<td>0.971</td>
<td>0.951</td>
<td>0.000</td>
<td></td>
</tr>
<tr>
<td>Technology acquisition and learning</td>
<td>1.49</td>
<td>0.00509</td>
<td>0.927</td>
<td>0.915</td>
<td>0.936</td>
<td>0.006</td>
<td></td>
</tr>
<tr>
<td>Use of technology</td>
<td>2.08</td>
<td>0.00870</td>
<td>0.941</td>
<td>0.901</td>
<td>0.911</td>
<td>0.002</td>
<td></td>
</tr>
<tr>
<td>Technology protection</td>
<td>2.71</td>
<td>0.00594</td>
<td>0.924</td>
<td>0.915</td>
<td>0.971</td>
<td>0.000</td>
<td></td>
</tr>
</tbody>
</table>

Considering the results presented in table 3, the values of all the fit indices are in the acceptable range. This means that measurement factors (manifest variables) are well capable of measuring latent variables.

Fig 2 displays the software programs output model, and table 4 demonstrates fit indices.

![Fig.2. software’s output model](image-url)
Considering the information provided above, it is concluded that the model is highly fit. After examination and confirmation of the model, in order to examine the significance of the hypotheses, the two indices of critical value CR and P are used. The critical value should be greater than 1.96 at the 0.05 significance level. Lower values of the parameter in this model is not important; also p-values less than 0.05 indicate significant difference of obtained regression weights with zero at 0.95 confidence. With regard to model analysis, the results of hypothesis examination are presented in table 5.

### Tab.4. fit indices

<table>
<thead>
<tr>
<th>RMSE</th>
<th>NFI</th>
<th>GFI</th>
<th>P</th>
<th>CIMN/DF</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.003</td>
<td>0.92</td>
<td>0.94</td>
<td>0.009</td>
<td>2.35</td>
</tr>
</tbody>
</table>

### Tab.5. results of model analysis

<table>
<thead>
<tr>
<th>Hypotheses</th>
<th>Regression coefficient</th>
<th>Critical value</th>
<th>P</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organizational innovation has a significant effect on reinforcement of technological capabilities in IRIB.</td>
<td>0.79</td>
<td>2.08</td>
<td>0.006</td>
<td>confirmed</td>
</tr>
<tr>
<td>Organizational innovation has a significant effect on organizational learning capabilities in IRIB.</td>
<td>0.82</td>
<td>2.65</td>
<td>0.004</td>
<td>confirmed</td>
</tr>
<tr>
<td>Organizational learning has a significant effect on technological capabilities in IRIB.</td>
<td>0.87</td>
<td>2.12</td>
<td>0.009</td>
<td>confirmed</td>
</tr>
<tr>
<td>Organizational learning moderates the impact of organizational innovation on technological capabilities in IRIB.</td>
<td>0.67</td>
<td>2.58</td>
<td>0.001</td>
<td>confirmed</td>
</tr>
</tbody>
</table>

### CONCLUSION

Considering the findings mentioned above, the following can be concluded:

The first latent variable i.e. organizational innovation has correlational pathways with 4 manifest variables related to innovation. Among those variables, its pathway to exploratory innovation is the most significant, while innovation in product and service, exploitative innovation, and innovation in process rank second to fourth respectively. The second latent variable i.e. technological capability has correlational pathways with 3 manifest variables related to technology. Among those variables, its pathway to the use of technology is the most significant, while technology acquisition and learning, and technology protection rank second and third respectively.

Concerning the third latent variable i.e. organizational learning which is defined as mediating variable, it can be concluded that learning strategy is deemed more important that learning culture.

The results of this study suggest that organizational innovation directly affects technological capabilities by 79%; and this relationship is moderated by organizational learning. The results yielded by the present research confirm the previous findings which suggest that effective learning positively impacts innovative organizational performance and technological capabilities. The present study also reveals that organizations which successfully implement learning activities would have better innovative performances.

All in all, the present paper practically and empirically justifies the value and importance of attention to technological capabilities in IRIB. Considering the content of the Media Horizons plan, worldwide developments, and presence of new competitors, IRIB is faced with a necessity to change and transform. However, due to lack of structural changes, IRIB has yet made no considerable transformation to maintain its position in Iran and other parts of the world. It can be said that still no strategic changes have been made in this organization.

### REFERENCES

[6] Aghdasi M, Khaste N, Davarzahi H, Ghanbar Tehrani N, 2014, the effect of implementation of quality activities on technology management via increasing learning capability and organizational innovation, 11th conference of mining and industry research and development centers
[7] Allahi S, Rastegar A, Shafiei M, 2014, the impact of procedural capabilities of knowledge management on...
innovative performance with mediating effect of innovation process in organizations with advanced technology, technology development management periodical, Vo.1, No.4, Spring 2015.


[16] Ghanbar Tehrani N, 2007, the bi-directional relationship between quality management and knowledge management, reports of research findings, Doctoral Course of industrial engineering, Tehran Tarbiat Modares University.


Foreign references:


