



The Relationship between Organizational Performance and Information Technology with Balanced Scorecard Approach (Case Study: Central Bank of the Islamic Republic of Iran)

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Abstract

With the growth of technology on the one hand and the organizational processes' getting out of static mode on the other hand, organizations need to reconsider their performance towards creating a favorable environment to achieve enough growth and dynamicity so that they can adapt themselves with the changes of the technology and environment. This article aims to examine the relationship between organizational performance and information technology in the Monetary Credits Unit of the Central Bank of the Islamic Republic of Iran. We have used the Balanced Scorecard Model in this research in order to identify the organizational performance measurement indices models and we have evaluated the organizational performance from the perspective of managers, customers, internal business processes and organizational learning. The aim of the research has been pursued by identifying the status of the performance indicators before and after the application of information technology through questionnaires distributed among the Monetary Credits Unit of the Central Bank of the Islamic Republic of Iran. The results show that there is a difference between the average status of the performance indices before and after the application of information technology in all of the four dimensions, and the greater averages obtained for the status after the use of information technology than those before the use of IT shows a significant positive correlation between the two variables information technology and organizational performance. In addition, the research findings reveal that the application of information technology has been almost equally effective in improving the four dimensions of organizational performance.

Keywords: information technology, organizational performance, balanced score card, the Central Bank of the Islamic Republic of Iran

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1. Introduction

All public and private organizations require a kind of performance evaluation and improvement system so as to develop their growth and sustainability in today's competitive arena and thus improve their organizational effectiveness and efficiency. Efficient organizations never suffice with the collection and analysis of data; rather they make use of the data in order to improve themselves and achieve their missions and strategies. In other words, they manage rather than evaluate performance (1-5).

Organizational performance shows the level at which people have achieved the objectives of the financial market. Organizational performance includes the performance of administrative departments in the form of words such as efficiency, effectiveness, empowerment and accountability within the framework of the scientific principles and concepts management to achieve the organizational goals and in the form of executable programs (6-11).

Information Technology is among the most important axes of development in the world so that many countries have considered the development of information technology as one of

the most basic infrastructures of their own development. This technology has become one of the main parts of modern societies in a short time and many countries currently seek to identify information technology and get access to the basic skills of IT. Experts believe as the invention of the steam engine and the Industrial Revolution gave rise to great changes in people's business and personal life, the communications revolution has similarly been associated with changes in human life (12-18).

Information technology can be seen as an organizational capacity through which an organization achieves productivity. Information technology can be used as a tool to collect and set the data in the organization. The use of information technology can equip a company with the information system and thus enable them to respond faster to customer needs. A flexible information technology can enable a company to introduce new products and services at a lower cost (19-24).

Therefore, information technology can be used as a factor to improve the generic performance of an organization. This study investigates the impact of information technology on the performance of the Central Bank of the Islamic Republic of Iran using the Balanced Scorecard model.

2. Literature review

2.1 Organizational performance

Organizational performance is a general term used to guide the activities of an organization over a period of time, often evaluated with regard to the past or anticipated costs, efficiency, responsibility or accountability of management (25-31).

Performance and its evaluation can be regarded as a regulatory structure to achieve the goals of the organization. To grow and develop in competitive arenas, organizations and companies need a system to assess the performance, efficiency and effectiveness of the activities done by their employees. Due to the growing conditions of the current markets, organizations must be able to identify all of their own operational and non-operational capabilities and capacities in order to be successful in their own performance (32-35).

Performance management makes it possible for organizations to identify their position along the excellence path, measure their performance, improve their status based on the findings and make all their employees involved in the continuous improvement process (Nandakumar, 2011).

According to Eric Kohler, performance is a general term used to guide the activities of an organization over a period of time, often evaluated with regard to the past or anticipated costs, efficiency, responsibility or accountability of management.

According to Robert Albanese, the word "performance" is used for efforts made to achieve the goals efficiently (33-36).

Performance improvement involves the use of appropriate mechanisms for performance management and the monitoring of this process in organizations. The orientation of employee performance requires that all processes, personnel and intellectual, emotional, physical and social capabilities be placed in an integrated system so that their integration and interaction creates organizational energy with a constructive and effective nature. Performance management requires the use of specific mechanisms to improve organizational performance (37-41).

According to Byers, employee performance in a situation can be regarded as a result of interaction between: a) efforts, b) abilities and c) perceptions of role. "Effort", which arises from excitement, refers to the level of (physical or mental) energy that an individual uses while doing his/her duty. "Abilities" are the personal characteristics used in performing a job, and 'perceptions of role' refer to the paths that people believe they should guide their efforts in order to do their jobs (42-48).

Considering the above definitions, organizational performance can be regarded as an approach that creates an environment for the optimal use of all facilities and resources and thus achievement of the organizational goals by using two-way communication between supervisors to understand the demands and expectations of the organization and employees on the one hand, and to convey the demands and aspirations of employees to supervisors and management of the organization on the other. Performance management allows supervisors to easily identify employees' poor performance and to take measures to improve it. On the other hand, they can encourage favorable performance by giving appropriate rewards for employees' good performance. Performance management is a process that involves both performance evaluation and systems and policies of dealing with complaints as a management tool (24-25).

Organizational performance is an index that measures the way the objectives of an organization or institution are achieved. The survival and continuity of the activities of organizations and institutions will depend on their employees' performance. The workforce plays an important in all spheres of activity in any organization. Therefore, the workforce is the main component of the work and activities of people who make decisions, then work their decisions and predict their future activities on the basis of those decisions. We can say that costs are considered to play a central role in performance; moreover, performance also includes almost every

competitive purpose and non-material excellence such as reliability, flexibility, quality and speed (42-46).

As organizations have risen at different periods of time, different patterns and models have been used by them for performance evaluation. Depending on their needs, organizations first use only limited criteria and indicators for performance evaluation. The expanded scope of activities and organizational performance, the dynamic environment and the emergence of modern management topics and issues such as customer satisfaction, social responsibility and so on have made organizations not suffice with limited indicators. Therefore, there emerged and evolved comprehensive and multi-criteria models for organization evaluation. These patterns evaluate

organization from different aspects; and considering multiple parameters, they provide an appropriate tool to evaluate the performance of new organizations (47-50).

One of the issues that many organizations have encountered while implementing the performance evaluation systems is the problem of adapting their organizational structure with evaluation methods, which has brought about problems in the implementation of performance evaluation (Rad and Rahimi, 2013).

Therefore, the most important question to be answered in this section is which of performance evaluation models is more appropriate to evaluate the Central Bank? According to the investigations

on various models of performance evaluation and the nature of the organizational structure of the Central Bank, the answer to this question led to the selection of the Balanced Scorecard model. We now describe this model in the following.

2.2 The Balanced Scorecard model

The Balanced Scorecard model was introduced over 20 years ago and it has been used ever since not only as an academic model, but also as an important tool for performance measurement (Madsen and Stenheim, 2014).

The Balanced Scorecard Model was introduced in 1992 in the journal "Harvard Business Review" by Robert Kaplan and David Norton. This model seeks to control the organization short-term operations using long-term strategies via four dimensions including the financial dimension, the internal processes dimension, customer dimension, and the learning and growth dimension. Thus, organizations focus their attention on the relation of performance to goals. The main dimensions of this model include:

- **Financial** dimension
- **Internal** processes dimension
- Customer dimension
- Growth and learning dimension (Avadoallah and Allam, 2015).

The BSC model and its four dimensions can be seen in the following figure:

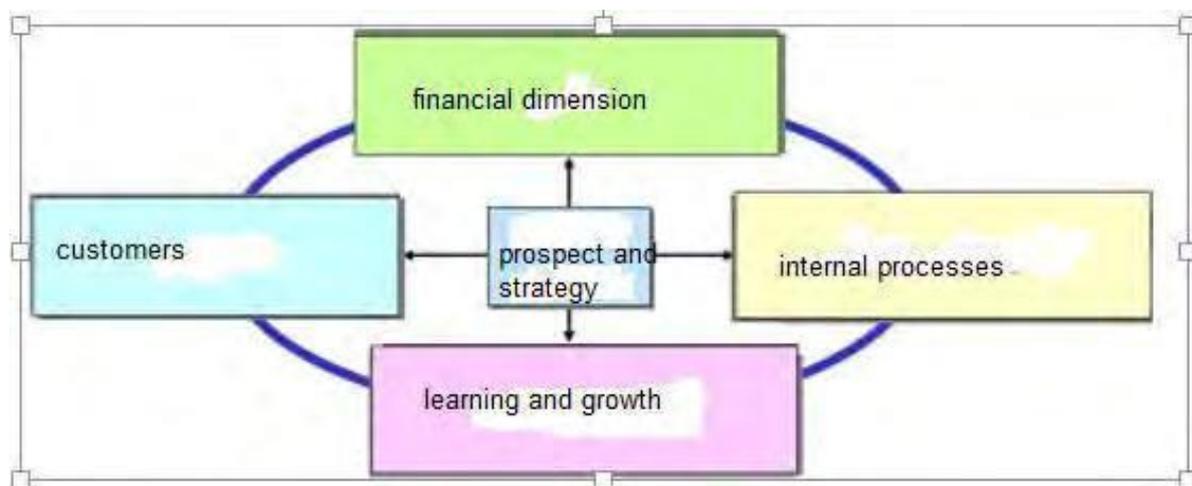


Figure 1: The Balanced Scorecard Model (Kaplan and Norton, 1992)

Balanced Scorecard focuses on three time dimensions in evaluations: past, present and future, because the past performance may lead to a result in today or tomorrow, and today's performance may lead to a result in today or tomorrow. This model tries to relate organizational strategies to organization

operations by identifying the critical factors of success and create a link between them (33-29).

2.3 Information technology

The use of computers and other advanced technologies have increasingly been institutionalized in many organizations in recent

years. Information and communication technologies have actually brought about significant changes in organization units and organizational performance and we must acknowledge that the computer systems have improved the capabilities of different parts of the organization (Taiwo, & Agwu, 2016). Oxford English Dictionary has defined information technology as a branch of technology concerned with the "information storage process". IT refers to an interlocking set of methods, hardware, software, and communications equipment that collect, store, retrieve, process, transfer and supply information in various forms (audio, video and text) (Deihim et al., 2016).

Today, with the advent of the era of media and the formation of information society, the use of information and communication technologies is considered a key to the survival and progress of organizations. Information and communication tools and technologies have been able to create an outstanding transformation in the relationship between different aspects of the community. The political, economic, social and cultural encounters have been able to bring about profound changes and effects and have given rise to and controlled many of the developments and trends in the world. Among these changes, the most dramatic phenomenon that has a found double value and importance for human is the increasing use of information and communications technology (Souraki and Salahi, 2015).

3. A review of previous studies

Theodosiou et al. dealt with this issue in a paper called "Strategic orientations, marketing capabilities and firm performance: An empirical investigation in the context of frontline managers in service organizations". In that study, which is the source for the model of the present study, the strategic orientations "customer orientation, competition orientation, innovation orientation and cost orientation" have been considered as comprehensive orientations and their impact on marketing capabilities has been measured. It has been followed by evaluating and analyzing the impact of marketing capabilities on organizational performance. All of the analyses have been made using structural equation modeling. All of the hypotheses but two were confirmed in that research, which were about the positive effect of customer orientation and innovation orientation on marketing capabilities, and the positive effect of marketing capabilities on organizational performance. In addition, the effect of competition orientation and cost orientation on marketing capabilities was not shown to be significant. It was finally suggested that employee training and

empowerment can be used to improve customer orientation and innovation orientation.

In 2015, Armah studied the impact of ICT on the performance of the officials in the offices of the Ghana Ports. In this study, in which a descriptive-survey method had been used, a sample including 100 professional receptionists was investigated. A questionnaire including both open and closed questions was used in this study for data collection. The result of this study showed that all officials have acknowledged that the basic knowledge of information technology guarantees their efficiency and facilitates their work in many aspects. They also strongly agree that training about how to use ICT technologies will improve the level of their performance in offices.

Hemmati et al. investigated this issue in 2013 in an article entitled "Strategic orientation and marketing capabilities and its effect on organizational performance in public banks branches: A Case Study: Ilam Province". In their model, strategic orientation had been divided into customer orientation, competition orientation, innovation orientation and cost orientation, as it had in the study conducted by Theodosiou et al., but with the difference that Hemmati et al. argued that strategic orientation directly affects the performance of the organization, and marketing capacities affect performance separately and independently. They also did their analysis using structural equation modeling. At the end, all of the research hypotheses were confirmed.

Nandakumar et al. wrote a paper in 2011 entitled "Generic strategies and performance – evidence from manufacturing firms", in which they studied the relationship between the generic strategies and performance through the evidence they obtained from manufacturing firms. They used in that paper the generic strategies presented by Michael Porter's as the generic strategies of the companies under study. The results of this study showed that companies which had adopted either cost leadership or differentiation strategies acted better than companies that did not have a dominant strategic orientation.

4. Research method

Since this paper concerns a study of what is among the members of the sample, i.e. the employees of the Monetary Credits Unit of the Central Bank of the Islamic Republic of Iran, the research method appropriate for this study is the descriptive-survey research method; and since the research has been conducted in a real, objective and living organization and its results can be used scientifically, this research is an applied research in terms of purpose.

The study population includes all employees of the Central Bank of the Islamic Republic of Iran,

geographically dispersed in the city of Tehran and some townships. The Monetary Credits Unit of the Central Bank of the Islamic Republic of Iran has been selected as the sample size after consultation with the IT department and the Department of Organization and Methods at the Central Bank. Therefore, the research sample includes the staff and managers of the Monetary Credits Unit of the Central Bank of the Islamic Republic of Iran, including all of the employees of the Credits and Banking information Department under the auspices of the Director General of the Credits. We have used library resources and scientific documents together with a closed questionnaire in this research in order to collect the field data of the research. The main tool used for data collection in this study has actually been a closed questionnaire with Likert 5-point scale.

The questionnaire has three parts: the first part includes demographic data, including gender, work experience, educational level, field of education, positions and work experience in the current position. The second part, containing 11 questions, has been designed to identify the type and amount of the existing information systems in the unit under study in the Central Bank, and the third part of the questionnaire contains 33 questions about the performance indicators of the Credits Unit.

The validity of questionnaire has been confirmed using the face validity method (by university professors, those involved in managing the organization and a number of specialists in the Credits and Banking Information Offices in the Central Bank of the Islamic Republic of Iran).

The reliability of the questionnaire has also been confirmed using the Cronbach's alpha method and SPSS software. The Cronbach's alpha coefficients for the questionnaire items were 0.959 and 0.943 before and after the application of information technology respectively, which indicates high reliability and validity of the questionnaire.

We have also used Kolmogorov-Smirnov Test in this study to test the normality of the variables and used the parametric test of paired comparisons (using SPSS software) to test the hypotheses. We have also used the Excel software to calculate descriptive indices.

5. Findings

The descriptive statistics of the collected field data showed that the majority of the respondents to the questionnaire (about 60 percent) have more than 15 years of work experience. Moreover, 60% of the participants were males and 40% were females. About 78 percent of the participants had a bachelor's degree, which had the highest frequency in this respect. About 62 percent of the population were employees, with the highest frequency.

The research hypotheses (including one main hypothesis and four sub-hypotheses) were examined in the inferential statistics part, which confirmed all of the hypotheses. The results of the test with a confidence level of 95% (level of significance lower than 0.05) are shown in the following table:

Table 1: Results of the inferential statistics

hypothesis	Level of significance	description	result
Sub-hypothesis 1	0.000	There is a significant relationship between the financial performance of the organization (managers' satisfaction) and the application of IT.	confirmed
Sub-hypothesis 2	0.000	There is a significant relationship between customer satisfaction and the application of IT.	confirmed
sub-hypothesis 3	0.000	There is a significant relationship between the improvement of the internal processes of the organization (and the application of IT.	confirmed
sub-hypothesis 4	0.000	There is a significant relationship between the organization learning and the application of IT.	confirmed
Main hypothesis	0.000	There is a significant relationship between organizational performance and the application of IT.	confirmed

After testing the main hypothesis and the sub-hypotheses, the priority of the relationship between the four dimensions of organizational performance with information technology was examined using the Friedman test. The significant coefficient obtained showed that the respondents gave the same priority to all four dimensions of organizational performance in terms of relation to IT.

6. Discussion and conclusion

Based on the results of the testing the main hypothesis, we can conclude that there is a significant relationship between performance of the organization and the use of information technology. This relationship which has a positive direction shows that the use of information technology has improved organizational

performance. This is because the average performance indices were 2.7146 and 3.8862 before and after the use of IT respectively.

Based on the results of the testing the first sub-hypothesis, we can conclude that there is a significant relationship between the financial performance of the organization (managers' satisfaction) and the use of information technology. This is because the average performance indicators related to this sub-hypothesis were 2.7351 and 3.8574 before and after the use of information technology respectively. The difference between the above values indicates a strong correlation between financial performance improvement (satisfaction managers) and the use of information technology.

In addition, testing the second sub-hypothesis shows that there is a significant relationship between customer satisfaction and the use of information technology. This relationship which has a positive direction shows that the use of information technology has improved organizational performance. The average performance indices which were 2.8185 and 3.9481 before and after the use of IT respectively show that the use of IT improves customer satisfaction.

Testing the third sub-hypothesis also shows that there is a significant relationship between the performance of the internal processes of business and the use of information technology. The positive direction of this relationship shows that the use of information technology has improved the internal processes of business. This is because the average performance indices related to this sub-hypothesis were 2.7283 and 3.8318 before and after the use of IT respectively.

Finally, testing the fourth sub-hypothesis shows that there is a significant relationship between organizational learning and the use of information technology. The positive direction of this relationship shows that the use of information technology has improved organizational learning. This is because the average performance indices related to this sub-hypothesis were 2.5764 and 3.9075 before and after the use of IT respectively. Considering the above conclusions, the following suggestions are made:

Considering the current status of IT in the organization and the significant impact of the use of these tools on organizational performance, it is recommended not only to make better use of the facilities of the existing systems, but also to make use of the new applications of information technology in higher levels such as in decision support systems, or in the support system of senior (Executive) managers.

Making policies and developing a long-term program (e.g. a 5-year program) on the application

of information technology in organizations in the form of three major axes of the use of IT including people, infrastructure and applications, in order to coordinate and align the various programs of implementing the information systems in the bank.

3. Providing the cultural background for attention to the role of information technology for access to the strategies of the organization and support of the programs of IT implementation in the organization.

4. Training people to enhance their skills in the use of existing systems and new technologies, as this increases the efficiency of IT tools and the effectiveness of the investments on the one hand, and increases their motivation for the use of this technology on the other.

7. Limitations

The researchers faced the following limitations while performing this research.

The inherent limitations of the questionnaire: As the questionnaire measures people's perception of the reality, we should consider the possibility that the perception does not conform to the reality.

In general, studies that use statistical methods to respond questions are likely to have error. This possibility, however small, can raise doubts on the veracity of the conclusions of the research. Attempts have been made in this study minimize the error rate, although we cannot deny its probability.

Space limitations: Analyzing the data in a wider range of locations (other units of the bank, different organizations, etc.) could possibly prove more useful, although this requires more money, time and energy.

Difficulty of access and lack of cooperation of some members of the study population to reply the questionnaires, which would make the research more time-consuming.

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