

Towards the Analysis of Information Technology Governance and Productivity Based on COBIT Framework: An Empirical Study in E-Banking

Hossein SHOAEE, Jafar BAGHERINEJAD*, Jalal REZAAE NOUR

Abstract: The present study tends to evaluate information technology governance based on COBIT framework in the electronic banking system to increase productivity of banks in an empirical study. This study is an exploratory mixed research. In the qualitative section, the theoretical foundations and related models are reviewed in order to identify the components of IT governance based on COBIT framework and productivity in the electronic banking system. In the quantitative section, 258 people were randomly selected as sample. Cronbach's alpha for IT governance and productivity was 79.7% and 82.3%, respectively, which indicates the reliability of this questionnaire. Qualitative results indicate that COBIT based IT governance includes four parameters (IT planning and organization, IT acquisition and implementation, IT delivery and support and IT monitoring and evaluation) and productivity includes four parameters (effectiveness, efficiency, improved performance and customer satisfaction). Quantitative results showed that the effect of COBIT based IT governance is positive on increased productivity (0.45). Moreover, the findings showed that the effect of COBIT based IT governance is significant on improved performance, efficiency and effectiveness ($P < 0.01$). According to the results, IT governance based on COBIT framework in the electronic banking system leads to increased productivity, efficiency, effectiveness and improved performance. Therefore, it can be concluded that deploying COBIT framework IT governance leads to a competitive advantage for electronic banking system.

Keywords: COBIT framework; electronic banking; IT governance; productivity

1 INTRODUCTION

In the digital age, the advent of new technologies has completely changed traditional business beliefs. Organizations have only one way forward, and that is to keep up with change. Otherwise, they have no place in the competition and will be completely removed from the scene. In transformational organizations with the aim of taking advantage of endless innovations and laying the groundwork for internal dynamism, the freedom of action of units and individuals is recognized at the highest level. In order to create coordination between different organizational elements and structures, common strategies and criteria of organizational commitment are determined as the foundation of activities and are explained and institutionalized in the organization on a large scale. Convergent freedom of action empowers employees with decision making, creativity and self-direction, and enables them to achieve fluid and progressive goals. Transformational organizations, from a transcendental worldview, tend to build the future with their current actions. They do not stand still and constantly seek to spread effectiveness in their surroundings. These characteristics enable the transformational organizations to influence the environment and provide efficient alternative solutions to existing routines and present them as active actors in their business. Any transformational orientation is better and more beautiful as a result of accurate understanding of existing realities and innovative processing of leading paths and adopting a practical and achievable approach to build different futures. Transformational orientation, more than other stages, requires the acquisition and operation of data management systems, information management and knowledge management. The level of services that each component of the knowledge system provides to the elements involved in transformational orientation is fundamentally different from the routine and usual services that are generally defined [1]. IT governance provides tools and frameworks that ensure IT support for business objectives and

maximize the efficiency of IT investment. Studies have shown that effective IT governance is the most important prerequisite for obtaining organizational value from information technology and investment in this field [2].

Technology governance currently affects various aspects of banking. These effects are evident not only on executive processes but also on business models and revenue models [3]. Therefore, it is necessary to restructure banking business models and use modern, creative technologies resulting from technology governance approaches. In various industries, companies have also taken innovative steps to discover new technologies and exploit them. This innovation includes changes in banking operations as well as changes in products, processes, organizational structures and management. Banks and financial institutions must use modern management methods to manage these complex developments [4].

According to Weill and Ross [5], IT governance refers to a framework for decision-making and accountability to encourage appropriate behaviour in using information technology. Thus, IT governance consists of two parts, the first part is decision-making structures that determine who has the right to decide on different information technology applications and who has decision inputs, and the second part is decision-making mechanisms that determine the role of different groups (such as senior managers, business managers and IT managers) in implementation of IT decisions and how these groups respond to their roles. Based on related literature, information technology has the most correlation with success or failure of the resource planning system of organizations. The subject of strategic alignment has been highlighted in the strategic management literature over the past decade, and many studies have pointed out the importance of strategic alignment for managers [6].

One of the necessities of entering global markets and membership in organizations such as the World Trade Organization is to have an efficient banking system that could enter these markets accurately, quickly and with the same technology level as the world's advanced banks and

provide an efficient business environment for domestic producers and suppliers [7]. The tremendous spread of information and communication technology and its wide penetration into monetary and banking systems in the form of electronic banking not only has facilitated customer affairs, but also has changed the current methods of banking [8].

Information technology is a major player in banking e-commerce and plays a key role in efficiency and effectiveness of banks. In addition, IT governance is a framework for implementing policies, business processes, and internal controls to effectively support all the services provided by IT groups. Banking managers must ensure that information technology develops and directs organizational strategies and goals toward banking achievements. Therefore, IT governance is considered as an integral part of organizational management especially for banking system. Managers, on the other hand, need a framework to better manage IT and take advantage of its potential benefits. COBIT is a basic framework for IT governance in organizations [9]. COBIT framework means controlling goals and information related to relevant technologies. All IT-based processes and projects for accurate and measurable management must be continuously placed in a four-phase COBIT cycle [10].

Competition between banks and financial institutions, the emergence of digital technologies, the problems caused by banking sanctions, the ever-changing demands of customers and the needs of society have made implementing IT governance based on COBIT framework as an undeniable necessity for banks. Digital technologies including social media, mobile, cloud computing, IoT, provide great opportunities for organizations to offer valuable new offerings, particularly by combining their existing capabilities with modern digital capabilities. Communication methods between organizations and customers have changed in recent years with the advent of evolving technologies, and digital trends in society have allowed people to access large amounts of information around the world, regardless of time and place, and to perform multiple transactions at a time. In the digital age, the advent of new technologies has completely changed traditional business beliefs [11]. In order to better cope with the information society and make optimal use of new technology, modern societies and organizations need to analyze the situation and evaluate their status quo in relation to ICT and use this analysis as a basis for planning to achieve the desired situation [12]. Concerns about digital developments as potential opportunities and threats have provided the scope for discussion at global economics conferences and associations, governments, academia, administrators, and research institutes on the impact of digital innovation. In recent years, the major trends in the digital world have focused on micro marketing, user experience, branding, targeted advertising, native advertising, smart content, increasing word-of-mouth and video marketing, new ways of professional connection and communication, living with B2B, digital connectivity with offline experience, digital life with event management, etc.; all industries need to identify and understand current trends and future innovations to keep up with digital transformation [13].

Senior banking executives have increasingly recognized the importance of information technology in the success of banks in effective planning and integration of information systems with business process. Banking managers are aware of the knowledge required for IT governance in order to meet goals such as communicating with IT governance requirements based on COBIT framework, IT in the e-banking system, using a specific model, identifying key sources and defining managerial control goals and so on. Therefore, the basic need of Iranian banking systems executives is to increase the management and supervision of information technology.

So far, no study has been conducted on evaluation of IT governance based on COBIT framework in the electronic banking system in order to increase productivity in any of the Iranian public and private banks. Therefore, the main purpose of this study is to develop a model for evaluating IT governance based on COBIT framework in the electronic banking system of an Iranian bank, in order to increase productivity. Productivity is the optimal use of banking facilities to achieve the desired mechanisms and situation. In other words, productivity means achieving banking goals with the least number of human resources and minimum use of other resources (in fact, with the least cost and prevention of waste and adverse consequences) with the help of information technology governance. This study shows that COBIT framework leads to correct use of IT facilities to increase productivity in the electronic banking sector. The results of this study will assist the managers and authorities of Iranian banks in evaluating IT governance based on COBIT framework in the e-banking system in order to increase productivity. Banking managers can adapt their e-banking policies to IT strategies based on COBIT framework and take important steps to address the barriers and problems of e-banking in order to achieve a degree of optimality so that bank customers are acceptably satisfied with e-banking services. As a result, the banking system owns the necessary and sufficient arrangements to compete with competitors and could achieve customer satisfaction and improve e-banking services, then increase its productivity. By COBIT implementation model, three factors including business requirement, information technology resources, and information technology processes are examined. Further, by understanding the importance of productivity in electronic banking, this study concentrates on important factors in this field and analyzes the relationship between them.

1.1 Theoretical Framework

The transition from the industrial age to the age of information and knowledge has taken place much faster than the developments leading up to the industrial age. Characteristics of global change show that the convergence between industries, businesses and citizen lifestyles have also undergone a transformational trend following the developments around the information and knowledge age. In the field of industry, the fourth revolution occurred with the focus on intelligent factors; in the field of society, the millennial generation and cosmopolitan citizens entered the society with completely different characteristics; in the field of technology, high-tech and inter-disciplinary

technologies are emerging and evolving. In the business field, start-up knowledge-based companies are imposing themselves on their traditional competitors based on innovation network. All these developments in different fields have one thing in common in one dimension, and that is digitalization. New businesses, state-of-the-art high-tech technologies, current social and organizational communications, have all enjoyed the benefits of digitalization. Digitalization of affairs, infrastructures and relations, has brought the closeness between abstraction and objectivity [14].

Due to digitalization and revolution in information technology applications, IT governance has been recognized as an important factor in achieving organizational goals [15]. Through IT governance, banks achieve three key goals: compliance with rules and regulations, operational superiority, and optimal risk management. They also get help in ensuring goal support, improving the investment and managing IT-related risks and opportunities [16, 17]. IT governance in banking systems is a paradigm in which efforts are made to align all the activities and mechanisms of the bank regarding the planning, organizing, implementing and controlling of information technology. Therefore, IT governance in banks prevents the failure of information technology projects and promotes the productivity of banks in the use of banking infrastructures and resources.

COBIT is a framework designed to control the performance of information technology. This framework was first developed by the Information Systems Audit and Control Association Accountants (ISACA) in 1996, but later became an independent entity. The basic concept of the COBIT Framework is to be able to support information business goals or requirements based on information technology control [10]. The processes that are controlled and guided by COBIT framework include the following four main steps [18]:

- Design and organization of information technology processes.
- Development and implementation of processes.
- Delivery and support of processes.
- Continuous monitoring and review of information technology processes.

The main purpose of the COBIT Framework is to develop clear policies, proper models for IT security and control for global approval by specialist, governmental and commercial organizations. COBIT framework is presented in COBIT 1 (1996), COBIT 2 (1998), COBIT 3 (2000), COBIT 4.1 (2007) and COBIT 5 (2012) versions.

In the COBIT framework, organizational processes of information technology are divided into two main parts, governance processes and management processes [19]. There are five technology governance processes, each of which includes process, evaluation, methods, and monitoring. Management processes also include four domains: planning, construction and implementation, support and monitoring of information technology, which cover all areas of information technology [20].

Each area includes a number of management processes that perform quality management, configuration management, and operations management. According to literature, various organizations have used the COBIT framework for efficiency. COBIT 4.1 framework consists

of three levels: a) lower level: activities. B) intermediate level: processes and c) upper level: domains.

COBIT framework can conceptually include three dimensions, business requirements, IT resources, and IT processes [21].

In COBIT 5 framework, IT organizational processes are divided into two main parts, governance processes and management processes [19]. There are five governance processes, each of which includes process, evaluation, methods, and monitoring. Management processes also include four domains: planning, construction and implementation, support and monitoring of information technology, which cover all areas of information technology [20]. Each domain includes a number of management processes that perform quality management, configuration management, and operations management.

Any preparation for IT governance based on COBIT framework in the e-banking system would be far-fetched and disappointing without practical action. Long-term and medium-term preparations will pass the test in the field of operations and their effectiveness will be determined when they are tested in the form of practical measures. A transformational action is an action that compels the organization, in addition to executive operations, to continuously assess its situation. In transformational action, each part of the program is a platform to test the status quo and improve it to the next stage. In transformational action, the optimal point is not static.

The optimal point is defined as fluid based on realities, demands and developments, and arrangement of forces, facilities, programs and preparation of infrastructures is done continuously based on the distance from a fluid point [22].

Transformational readiness involves providing transformational infrastructures in the organization, including approaches, attitudes, infrastructures, informed awareness, policies, and programs that provide the flight context for the organization. Transformation of an organization from raw to mature requires change from a state to a completely forward-looking, growth-based situation.

Contrary to popular perceptions of readiness infrastructure, which emphasizes mainly technical and instrumental, the most important and influential part of transformation is to transform perspectives and circle of awareness, welcome change and create a platform for change in various organizational elements. The more awareness-based and reasoned the preparation is by the organizational elements, the higher its success rate will be. The role of knowledge systems in creating the transformation context in the organization is very crucial [23].

2 RESEARCH METHODOLOGY

According to objective, as the present study evaluates IT governance based on COBIT framework in the electronic banking system in order to increase productivity, it is classified as applied research. The present study is also in the group of "exploratory mixed research" in terms of data collection. One of the important advantages of mixed research projects is that they provide a more

comprehensive and better picture of the problem than any of the projects (quantitative or qualitative).

For this purpose, first qualitative data is collected that leads to identification of various aspects of the research subject and allows the development of a conceptual model. Based on findings of the qualitative data, instruments are made. Then, based on quantitative data collected by using questionnaire survey, the generalizability of the findings is being possible. In general, the reasons for choosing the mixed research method for the present study are: 1) obtaining more evidence for IT governance based on COBIT framework in the electronic banking system, 2) the lack of a suitable model for IT governance based on COBIT framework in the electronic banking system and 3) the need to use the models presented in this field.

The qualitative section explained the theoretical foundations and the related literature. Here, the output was qualitative data collected to lead to a conceptual model which present IT governance based on COBIT framework in the electronic banking system and its impacts on productivity. In this section thematic analysis has been used. Thematic analysis is the process by which data is parsed, conceptualized, and freshly put together. This is the main process by which a theory is formulated based on data. The coding steps used in this study are:

- Initial coding.
- Theme search and identification.
- Thematic analysis.
- Compilation of reports.

In the qualitative section, literature is reviewed and the existing models presented are described in order to identify the influential factors on IT governance based on the COBIT framework in the electronic banking system and its relation to productivity. The statistical population in the quantitative section includes 755 employees of an Iranian bank which are being used by stratified random sampling from each group (managers, employees and experts of the bank familiar with the COBIT standards). Then, according to Morgan table, 258 people were randomly selected as sample.

Thematic analysis was used in the analytic process of data collected related to the theoretical foundations and research background. Here, questionnaire was also used to collect data related to the quantitative section. In this study, two types of questionnaires were used. The questionnaires are standardized and used on a five-point Likert scale (very high = 5, high = 4, moderate = 3, low = 2 and very low = 1). The first questionnaire is COBIT standard questionnaire which has four parameters (IT planning and organizing, IT acquisition and implementation, IT delivery and support, and IT monitoring and evaluation) and has 34 questions related to IT governance evaluation. The second questionnaire is the standard Hershey-Goldsmith questionnaire which measures productivity with 34 questions and four parameters (effectiveness, efficiency, improved performance and customer satisfaction). The questionnaires were distributed in person and in the field among members of the statistical sample. In order to use the questionnaire purposefully and efficiently, content validity was used. For this purpose, opinions of experts and theorists were used in the field of information technology.

Confirmatory factor analysis of Smart PLS software was used to ensure validity of the measuring instruments

[33, 34]. Using confirmatory factor analysis, it is possible to determine which variables are correlated with which factors and which factors are correlated with which factors. In fact, this test will determine whether each of the observed variables has a significant factor load on its underlying construct.

3 RESULTS

Thematic analysis was used to analyze the data. In this study, data collection and analysis were performed simultaneously. According to this method, once each text was reviewed, the same texts were recorded on sheets and coded. In the first step of data analysis, which is initial coding, the data was first read line by line and the initial codes (which are the words of the participants themselves) were extracted. The codes that had a conceptual commonality were then placed under one category, and thus several categories were formed. In other words, to gain the categories, the first concepts were coded and formatted based on the expressions derived from statements of the participants. In the next step, more abstract concepts were obtained by extending the concepts obtained from the first step and combining them. Then, the initial categories were formed based on the concepts obtained in this step.

Using the thematic analysis technique, the researcher focused on the markers as a unit of analysis in the text levels and tried to extract open codes by separating the text into message elements in the entries of the lines and paragraphs. During the coding process and even in the integration process, the researcher reviewed the text of the interviews several times and considered the phrases and ideas that express the relationships between the main and sub-categories. Accordingly, the relationships between the categories and IT governance model based on COBIT framework in the electronic banking system were formed to increase productivity, and finally theory was formed using diagrams.

In the open and initial coding stage, analysis and summarization were performed. Tab. 1 presents the initial codes extracted from the interviews. Codes were extracted from review of literature.

Based on open coding, the main markers obtained from content analysis of the publications and previous studies include 8 concepts. Categories were extracted based on conceptual communality that markers and indicators had with each other. According to the general objective of the study, the main categories were extracted; in final analysis of the initial markers, with sufficient knowledge of what the different categories are, how they fit together and the whole story they tell about the data, an attempt was made to draw a satisfactory map of the themes (Fig. 1).

Based on thematic analysis and the results of the qualitative section, a conceptual model was presented, according to which COBIT IT governance was considered as an independent variable with four parameters (IT planning and organizing, IT acquisition and implementation, IT delivery and support, and IT monitoring and evaluation) and productivity was considered as a dependent variable including four

parameters (effectiveness, efficiency, improved performance and customer satisfaction).

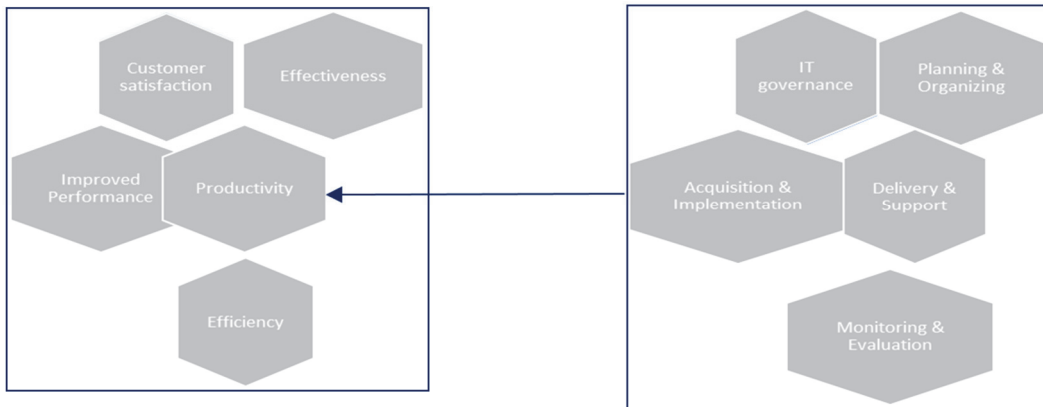


Figure 1 Theme map

Table 1 Conceptual classes forming the theme

Factor Reference	Dimension	Parameter	Variable Reference
Mingalevaet al. [1] ; Siregar & Harahap, [2]; Mikalef et al., [6]; von Solms & Langerman, [14]; Hosseinjani Miandehi et al. [24]; Nourizadeh et al. [25]; Kolahdooz et al., [26]; Ronaghi & Mahmoudi, [27]; Kazemi et al., [28]; Safari et al., [29]; Ronaghi et al. [30]; Ashtiyani & Keramati [31]	Technology governance (1A)	planning and organizing	Malatji et al. [19] Hanafi et al. [20] Dudukalov et al. [22]
		Acquisition and implementation	Siregar & Harahap [2] Mikalef et al. [6]
		delivery and support	Hensmans [13] von Solms & Langerman [14]
		Monitoring and Evaluation	Ronaghi et al. [35] Ashtiyani & Keramati [36]
	Productivity (1B)	Effectiveness	Kazemi et al. [28] Safari et al. [29] Ronaghi et al. [30] Harefa & Legowo [32]
		Efficiency	Malatji et al. [19] Hanafi et al. [20]
		Improved performance	von Solms & Langerman [14] HosseinjaniMiandehi et al. [24]
		Customer Satisfaction	Hanafi et al. [20] Dudukalov et al. [22] von Solms & Langerman [14]

Hypothesis (1): COBIT IT framework increases productivity in the electronic banking sector of an Iranian bank in Tehran province.

Sub-hypothesis (1): COBIT IT framework increases the efficiency of electronic banking in an Iranian bank.

Sub-hypothesis (2): COBIT IT framework increases the effectiveness of electronic banking in an Iranian bank. Sub-hypothesis (3): COBIT IT framework increases customer satisfaction in the studied bank in Tehran province.

Sub-hypothesis (4): COBIT IT framework improves employee performance in the studied Bank.

Based on demographic variables, the highest percentage of statistical samples in terms of age is related to the range of 31 to 40 years (46.87%). In the statistical sample, 60.15% of the samples were men and 39.85% were women. The findings indicate that most of the participants had a bachelor's degree. Before testing the hypotheses, it is necessary to determine whether the data is normal in order to decide on the tests to be used.

Findings related to confirmatory factor analysis are listed in Tab. 2. These findings indicate that the items related to the variables have acceptable factor loads. All of these factor loadings are significant at the alpha level of $P < 0.01$.

Table 2 CFA findings

Variable	CR	AVE	Cronbach's alpha
1. Planning and organizing	0.86	0.53	0.84
2. Acquisition and implementation	0.83	0.51	0.86
3. Delivery and support	0.87	0.53	0.79
4. Monitoring and evaluation	0.86	0.52	0.83
5. Effectiveness	0.80	0.57	0.86
6. Efficiency	0.86	0.58	0.84
7. Improved performance	0.89	0.53	0.89
8. Customer satisfaction	0.84	0.50	0.85
9. COBIT technology governance	0.85	0.54	0.79
10. Increasing productivity	0.82	0.52	0.82

The results also show that each of the constructs has acceptable fit indices. After determining the validity of the measurement instruments, identifying the relationship between the variables is the next step to discuss path analysis. Correlation coefficient was used to identify the relationship between the variables in the model. Findings obtained from the coefficient of correlation between the variables are listed in Tab. 3.

To predict the increasing productivity, the proposed conceptual model was examined through structural equation modeling; Partial least squares (PLS) method was used to estimate the model because normality will not be

an issue for PLS. In addition, as a result of bootstrapping, PLS requires no minimum sample size.

Table 3 Matrix of correlation of constructs

Variable	1	2	3	4	5	6	7	8	9	10
1. planning and organizing	1									
2. acquisition and implementation	0.36**	1								
3. delivery and support	0.31**	0.35**	1							
4. monitoring and evaluation	0.30**	0.37**	0.38**	1						
5. effectiveness	0.35**	0.30**	0.29**	0.32**	1					
6. efficiency	0.28**	0.31**	0.35**	0.33**	0.40**	1				
7. improved performance	0.30**	0.34**	0.29**	0.30**	0.31**	0.35**	1			
8. customer satisfaction	0.34**	0.29**	0.31**	0.32**	0.36**	0.39**	0.31**	1		
9. COBIT use	0.34**	0.30**	0.36**	0.29**	0.37**	0.35**	0.30**	0.09	1	
10. increasing productivity	0.29**	0.34**	0.32**	0.36**	0.38**	0.28**	0.37**	0.35**	0.33**	1

* $p < 0.05$; ** $p < 0.01$

Fig. 2 to Fig. 3 show the relationship between the variables.

As shown in Fig. 2, the effect of COBIT IT governance on productivity is 0.45, which indicates the positive effect of COBIT IT governance on increasing productivity.

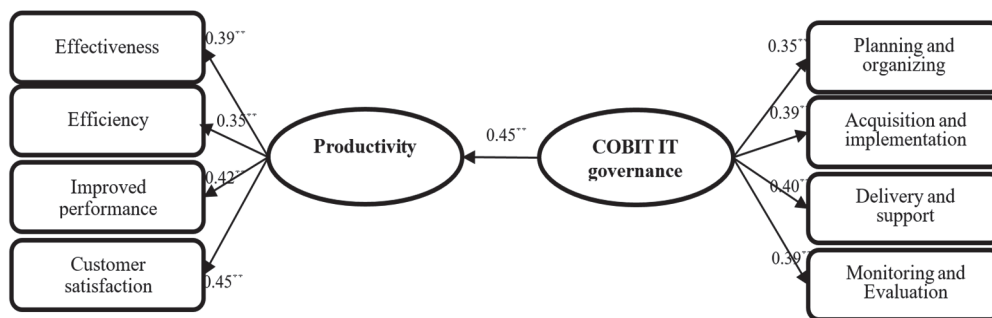
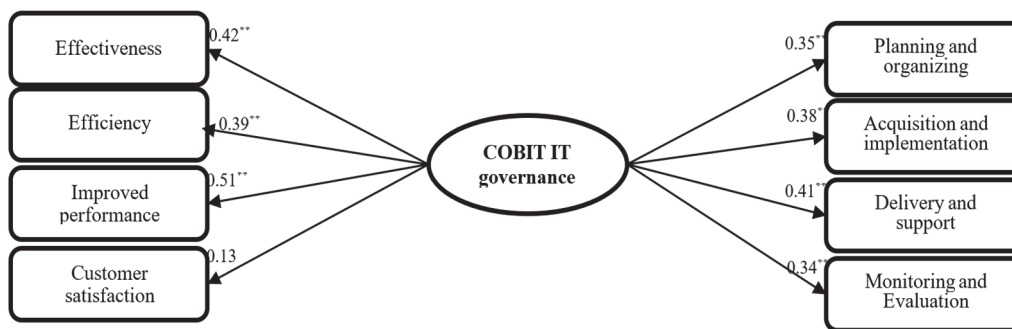


Figure 2 The tested model with standardized coefficients



** $P < 0.001$

Figure 3 The tested model with standardized coefficients

Fig. 3 shows that the effect of COBIT IT governance is not significant on customer satisfaction. COBIT IT governance has positive significant effect on improved performance, efficiency and effectiveness ($p < 0.01$). In general, COBIT IT governance is able to predict 0.45 of increasing productivity. As shown in Tab. 4, all CV-communality values are positive, which indicates the appropriate and acceptable quality of the present model.

Table 4 Variance explained and CV-communality of variables

Variable	CV-Redundancy	CV-Communality
1. COBIT IT governance	-	0.355
2. effectiveness	0.326	0.399
3. efficiency	0.371	0.354
4. improved performance	0.309	0.316
5. customer satisfaction	0.322	0.307

Finally, the fit indices of structural equation models by PLS method were used to show validity of the model

findings. In addition to the above indices, the overall model fit index in PLSbis Goodness of Fit (GOF) index which can be used to check validity or quality of the PLS model in general. This index also acts like fit indices of the LISREL model, varying from zero to one, and values close to one indicate the good quality of the model. This index examines the overall predictive power of the model and whether the tested model is successful in predicting endogenous latent variables. In the present study, $GOF = 0.57$ for the tested model; the value obtained for this fit index indicates the good fit of the tested model.

In total, this study evaluated and analyzed four basic hypotheses based on COBIT framework. Tab. 5 summarizes the results of hypothesis testing. According to Tab. 5, the hypothesis "COBIT framework improves performance in the electronic banking sector of studied Bank in Tehran Province" has a higher coefficient of correlation.

Table 5 Summary of hypothesis testing based on coefficient of correlation

	Hypothesis	Factor load	t-value	sig.	Result
H 1	COBIT framework increases productivity in the electronic banking sector of studied Bank in Tehran province.	0.45	5.26	0.01	Confirmed
H 1.1	COBIT framework increases effectiveness of the electronic banking sector of Studied Bank	0.42	4.85	0.01	Confirmed
H 1.2	COBIT framework increases efficiency in the electronic banking sector of Studied Bank	0.39	4.26	0.01	Confirmed
H 1.3	COBIT framework increases customer satisfaction in Studied Bank	0.13	1.52	0.13	Rejected
H 1.4	COBIT framework improves the performance of employees in Studied Bank	0.46	5.13	0.01	Confirmed

4 CONCLUSION

This study evaluated IT governance based on COBIT framework for electronic banking system and its impacts on productivity through a case study on an Iranian Bank in Tehran Province, based on the heuristic mixed method. The variables used to test the hypotheses were conceptualized based on thematic analysis and reliability and validity indices were used to measure the variables. The statistical population used for this study was managers and employees of the studied Bank in ($N = 258$). This study used the mixed method, in which COBIT IT governance and productivity were first identified based on literature review. To predict increasing productivity, the suggested conceptual model was examined through structural equations modelling; PLS method was used to estimate the model. The findings in the quantitative section showed that the effect of COBIT IT governance on increasing productivity is 0.45, which indicates the positive effect of COBIT IT governance on increasing productivity. The findings also showed that the effect of COBIT IT governance is significant on improved performance, efficiency and effectiveness ($p < 0.01$). Overall, COBIT IT governance is able to predict 0.45 increasing in productivity.

To explain the findings, it is suggested that the focus of the banking industry on COBIT IT governance and presentation of up-to-date products and transformation of traditional businesses into new businesses will increase productivity and good returns, and access to new markets and also creation of value chains can put the banking industry in good shape.

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Contact information:
Hosein SHOAEE

Department of Information Technology Management,
 Qom Branch, Islamic Azad University,
 Qom, Iran

Jafar BAGHERINEJAD

(Corresponding Author)
 Department of Industrial Engineering,
 Faculty of Engineering,
 Alzahra University,
 Tehran, Iran

Jalal REZAAE NOUR

Department of Industrial Engineering,
 Faculty of Engineering,
 Qom University,
 Qom, Iran