The Role and Importance of Information Technology Governance in Reducing the Risks of Information Security in Government Units in Application of E-Government

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Abstract
The concept of "Information Technology Governance" has become one of the vital and significant concepts used in various fields of the society. In addition, governmental accounting information system is a significant information system which uses technology within government units. Although developing information and communication technology and electronic government system have achieved various advantages of government units, many relevant problems have appeared. Most importantly, such system threatens accounting information security and results in electronic financial manipulation. Accordingly, the study seeks at illustrating the role of mechanisms of information technology governance in reducing these risks in the light of the application of electronic government system in government units , thereby reducing electronic financial manipulation, theoretically.
Keywords: Mechanisms of information technology governance , electronic financial manipulation, Electronic government (E-government)

Introduction

Government units are the most prominent business enterprises affected by communication and information technology; using communication and information technology have resulted in the provision of governmental services and the preparation and exchanging of data. Today, most of governmental services are provided via websites through applying e-government programs.

Applying e-government programs provides various advantages, including time-saving services, electronic exchange of data and documents, provision of government services throughout the week without a break and conducting electronic financial transfers. However, electronic government system faces several difficulties and risks, the most important of which is a lack of customer confidence of these systems; from customers' point view, these systems may be penetrated; and data may be destructed; data pertaining to financial transactions, property records may be modified; in addition, governmental financial reports, data of tax declarations, financial statements pertaining to tax revenues and customs revenues may be penetrated, manipulated and modified. In order to address such risks, applying the concepts and mechanisms of information technology governance is important because it contributes to limit these risks. Accordingly, this study seeks to identify the importance of these mechanisms and methods which contribute to reduce such risks.

The problem of the study

Electrical financial manipulation is one of the most dangerous methods of financial corruption the process of preparation of governmental accounting information faces. The more technology and communication are used in processing and exchange of data between government units, customers and users in order to apply e-government, the more the risks of electronic financial manipulation and data security of government units appear. Therefore, methods contributing to decrease the risk of data manipulation shall be provided. Here, a necessity to apply governance mechanisms emerges. This study seeks to discuss the following question:
Does the application of information technology governance in the light of applying e-government contribute to reduce the risks of data security and the manipulation of electrical financial report in Jordanian government units?

The purposes of the Study

The governance of information technology provides the environment which builds a relationship between information technology with suppliers from one side and the strategies of governmental units with their goals from the other side. In addition, it shall improve decisions at government level and creates a wider range of transparency and accountability. Furthermore, information technology governance ensures the possibility of identifying and managing risks-related information technology and its applications well. The purposes of the study may be summarized as follows:

1- Developing a theoretical framework of applying the concepts of information technology governance in the light of applying e-government.

2- Identifying the importance and the role of the concepts and procedures of information technology governance and its contribution to reduce information security risks in government units.

3- Identifying the importance and role of concepts and procedures of information technology governance and its contribution to reduce the manipulation of governmental financial report in the light of applying e-government.

The importance of the Study

The study touches upon relatively importance topics, including information technology governance, information security, and e-governance and its role of reducing the manipulation of financial report; and governmental sector is very important.   The following points illustrate the importance of the study:

1- The study identifies the mechanisms and concepts of information technology governance and its applications in the light of e-government.

2- The study Identifies the importance and the role of information technology governance in reducing information security risks in the light of applying e-government.

3- The study identifies the role of applying the governance of information technology and communication in control, information technology in reducing and preventing the manipulation of financial report in government units within e-government.

The Methodology of the Study

The researcher has used the inductive method which depends on extrapolation, presentation and analysis of the relevant studies and topics. Practical work of the study has been exclude due to a lack of progress of e-government program.

The hypothesis of the study

The study seeks to discuss and analyze the subject of the study in order to test the following main hypothesis:

• Using and applying the mechanisms of information technology governance in government units contribute to reduce information security risk and the manipulation of financial report in the light of applying e-government program.

General Framework of the study

This section of the study touches upon the relevant aspects of study's subject.

First: Information Technology Governance and E-government

E-government is a relatively modern concept and is one of e-commerce fields. E-government aims at providing governmental services and electronic information, using quickly, accurately information technology at low costs throughout the day.

As defined by Information Technology Governance Institute (ITGI:2005 p.5),   E-government is a responsibility that includes leadership, organizational structure and processing and aims at achieving the goals of economic units through adding a value to a risk verse revenue of information technology and special processing operations; information technology governance provides a structure between the operations of processing information technology, information technology resources and information related to economic unit's strategies and goals.

Based on ISO IEC38500-2008 criteria, e-government is a system used to guide and control the current and future use of information technology. It also includes the assessment and guidance of using information technology in order to support the organization. Furthermore, control is used in this system for achieving the plans. Moreover, this system include strategies and policies which aim to use information technology inside the organization.

For achieving the purposes of the study, the researcher believes that it is an effective tool of managing electronic resources applied by e-government in government units and information technology processes; it also contributes to achieve a balance between the expected risks of using information technology in government processes and the return; it also seeks to address these risks including the processes of electronic financial manipulation.

A framework governing the logic work of information technology through developing an organizational structure and organizing all the activities relevant has become a necessity since e-government applications used for providing governmental services which are modern technology depend on material and nonmaterial elements and are subject to various risks such as piracy, forgery and financial manipulation. The concept of information technology governance provides a description of structure and processes of information technology. Consequently, the purposes of strategy of governmental units are achieved through using e-government programs and operational policies of these units are implemented.

Second: The Importance of Information Technology Governance in Governmental Units in the light of Applying E-government:

In the light of applying e-governance, information and communication technology is significant and plays an important role in: (Abdulrahman, 2011, p.22)

1. Developing government strategy pertaining information technology and contributing to operational and strategic test.
2. Developing and managing efficiently and appropriately information technology system and ensuring that the projects of government unit have been completed.
3. Identifying the methods, means and processes linked to information technology.
4. Using government's concepts and mechanisms in e-government programs in a manner that helps the employees to identify the best practices of technological development filed and manage and develop the technological applications.
5. Ensuring the effectiveness of information technology in order to convey the strategy to the departments of government unit's activities that increase the effectiveness and competency of performance of government units and provide governmental services.

Third: The elements of applying information technology governance in the light of applying e-government

Information Technology governance needs various integrated elements in order to be successfully applied in the light of applying e-government programs. Some of them are as follows:

1- A management of information technology infrastructure in government unit which provides the decisions pertaining to the types of hardware, software, network construction and data used in the unit plus the special criteria of developing information technology assets.
2- A management of the use of information technology in government unit which depends on planning – related decisions and creates electronic programs and applications plus develops governmental procedures through e-government programs.

Fourth: The requirements of information security in governmental unit in the light of applying e-government:

Information security is one of the most important control systems in e-government environment; control system contributes to:

1- Provide physical control in order to access to main equipments and hardware of computers plus databases in central administration and its affiliated departments and national information center and its affiliated departments and not to manipulate these equipments and databases.
2- Develop an organizational structure of information technology aiming at identifying organizational positions and responsibilities of important positions such as manager of information technology and system development; system analyst, database administrator who organizes data control team, and information security manager who studies and addresses the risks and threats and develops the mechanisms which limit them.
3- Separate information technology works between skilful designers, operators and programmers.
4- Use means, methods and procedures of information security via electronic network in order to encode the data during the process of exchanging the data so that the data is not modified, thereby providing data quality's characteristics and ensuring the user can access to the data.

Fifth: Electronic Financial Manipulation in the light of Applying E-government

Electronic financial manipulation is phenomenon defined by (Healyand Wahhlen, 1999) as " the use of management of the personal judgment on the financial report and process structure in order to amend the financial reports either for misleading stakeholders about company's economic performance or influencing the contracts based on the numbers. The researcher believes that corruption is the main motive of electronic financial manipulation in government units. Such manipulation includes misleading and manipulation of financial reports in order to achieve personal goals. It is done through illegal interference of processing the data such as preparing tax returns and manipulation and falsification of governmental financial data.

Sixth: The role of mechanisms of information technology governance in reducing the risks of information security and preventing financial manipulation in the light of applying e-government.

The mechanisms of information technology government include the principles, goals and criteria. In this section of the study, the previous concepts of information security and e-government are linked to the role of these mechanisms in reducing the risks of electronic financial manipulation.

*** The role of principles of information technology and communication governance in preventing electronic financial manipulation in the light of applying e-government:

The principles of electronic governance contribute to achieve the goals of applying e-government programs and include the following:

1- **Value added:** It focuses on creating the value in order to fulfill the needs of the parties through using information technology. E-governance helps identifying the value-added which information technology

and communication interest in through applying e-government programs. In the field of the study, information technology governance contributes to achieving the value-added in information security which reduces the risk of information security, prevents the penetrations and unauthorized modification in financial report, taking into account the cost-return correlation.

2- **Harmony and Strategic Compatibility of Information Technology**: Here, a type of compatibility and harmony between information technology applications, the requirements and goals of e-government in the field of information security shall be found according to the development of applied information technology and the evolving diverse risks of information technology.

3- **Resource Management**: the resources of information technology consist of infrastructure and communication networks. Here, the management of government unit or e-government program has to identify the resources necessary for investing in information security and control and the requirements of electronic systems protection.

4- **Performance Measurement**: It helps the persons who are responsible for e-government programs to measure the performance of e-government programs and applications; it also provides the controls planned and performed and identifies the aspects of shortness and the mechanisms of addressing them in order to achieve the desired goals.

5- **Risk Management**: All risks which may face the application and the processes of e-government shall be known; emergent plans shall be developed in order to confront all expected risks including information security risks plus operation and processing risks.

*** The role of goals of information technology and communication governance in reducing electronic financial manipulation in the light of applying e-government

Information Technology governance aims at achieving the requirements of information security and reducing the risks which face information security; this is illustrated by the following:

1- Applying information technology governance aim at separating between the ownership, management and control of information technology performance. Such separation contributes to prevent the manipulation of electronic governmental financial report; it may prevent the misleading while preparing the financial report; it also allows to amend the data stated in the report.

2- Information Technology governance aims at using physical control systems in order to access the systems and use early warning system for detect any unauthorized entry. This contributes to provide the controls, protecting e-government devices from unauthorized access and modification, or devastation.

3- Information technology governance aims to separate between the jobs, tasks and important responsibilities in the field of information technology; establishing a department of information security control which studies risks –related information security, touches upon the mechanisms of addressing these risks and illustrates the impact of these risks on financial and accounting information.

4- Special attention shall be given to logical control procedures in order to access the data and develop it according to the evolving risks of information technology, especially in the light of the tendency to use the Robert in order to penetrate the systems.

5- Information technology governance aims at developing internal control procedures according to the development of the systems plus electronic devices and communication systems.

6- Information technology governance aims at developing and testing contingency plans according to the risks in the field of information technology.

7- Information technology governance ensures that achieving the criteria of information quality including the effectiveness, capability, confidentiality and integration is a necessity; and these criteria shall be provided in governmental systems while applying e-government programs.

*** The role of standards of information technology and communication governance in reducing the risk of information security in order to prevent electronic financial manipulation in the light of applying e-government:

The most significant standards of information technology governance, which contribute to achieve the requirements of information security and limit the risks which may face, are as follows:

1- COBIT standards

COBIT standards are issued by IT Governance Institute in1995; it is a framework of control which links information technology to the requirements of work and the organization of information technology activities through using the model of accepted process and identifying the main resources of information technology and the goals of administrative controls which will be touched upon.

From point of view of the researcher, applying COBIT standards is one of the most important procedures used for controlling the risks of information security and identifying the resource necessary to confront these risks and achieve the goals of e-government processes.

2- ISO standards

ISO is an international organization established in 1970; it aims at developing and preparing the

standards pertaining to information technology security and protection; the most important standards issued by this organization are as follows:

1- ISO 27001 standard was issued in 2005 and touched upon the main bases and rules of management system of information security and protection in terms of attention to design, apply, control and continuously maintain management performance plus evaluate electronic risks; this is according to PDCA model which depends on four stages:
   - Plan: it aims at developing a system for managing information security and protection in information technology environment.
   - Do: it illustrates the mechanism of performing and operating the plans
   - Check : it is done through reviewing the system after implementing.
   - Act: it is a process which ensures the maintenance and improvement of the system.

2- ISO27002 Standard: It touches upon the real application of the previous standard through developing the bases and rules which were prepared; it also provides a protection for technological assets and seeks to avoid the risks of electronic operation through organizational management, resource management, information system development management and business and development management.

3- ISO38500 Standard: It identifies the tasks and responsibilities of information technology management and planning strategy which is compatible with company's goals and requirements; it also illustrates to which extent information technology is compatible with the applications, rules and systems.

Accordingly, applying the mechanisms of information technology governance contributes to reduce the risks of information security and limit the manipulation of governmental financial data. This can be achieved by the compatibility between the goals of the programs, e-government applications and the requirements of information security. In addition, it contributes to decrease the cost of producing accounting information and choose the appropriate operations of data processing and exchanging through value –added chain; the risks of using information technology shall be reduced and the process of manipulation of financial report shall be limited when value –added chain is applied and the processes of generating information are reduced. Consequently, accounting information quality is achieved and a credible and transparent financial report is prepared; the degree of confidence in e-government programs increases. Thus, the optimal use of information technology resources is achieved; internal control system is improved in terms of its ability to follow up and monitor governmental unit performance and detect easily financial manipulation.

Results

This section of the study discuses the mechanisms of information technology governance that contribute to reduce the risks of information security and limit the manipulation of financial report in the light of applying e-government. The study found that applying the mechanisms of information technology governance contributes to reduce the risks of information security and limit the manipulation of financial report in the light of applying e-government. The results of the study are outlined as follows:

1- Information technology governance is an important part of companies' governance which plays a main role in various business sections, especially e-government.

2- Applying e-government in preparing the financial report and the general budget of the country is significant because it contributes to improve the effectiveness of governmental accounting information systems. However, applying e-government faces various risks and difficulties which threaten information security and decrease the degree of confidence in e-government.

3- Due to the use of e-government, governmental accounting system has increasingly subjected to the manipulation. Therefore, providing control systems and more sophisticated internal control has become necessary and all developments of information technology and communication environment shall be coped with.

4- Providing an appropriate and effective control system that consists of procedures and policies meeting the requirements of accounting information security is a good method which limits the processes of electronic financial manipulation.

5- The mechanisms of information technology governance contribute to limit the processes of manipulating electronic governmental financial report. In order to achieve this role, a control system shall be designed, performed and operated; and a control environment which meets the requirements of information security in e-government environment shall be created.

Recommendations

Based on the results, the study recommends the following:

1- Insert the concepts and mechanisms of information technology governance into e-government's plans

and programs.

2- Apply the concepts of information technology to all stages of development, design and implementation of electronic system and focus on risks-related electronic systems.

3- Hold training courses on the importance and concepts of information technology governance

4- Develop teaching plans applicable in the university and teach courses of information technology governance and its relevant standards

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