

The Impact of Implementing COBIT 2019 Framework on Reducing the Risks of e-Audit

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Abstract

This research aims at clarifying the concept of COBIT2019 framework, its most important advantages, and public awareness level of its implementation benefits in IT environment, as well as clarifying the most important risks facing e-Audit to explain the potential impact of the COBIT2019 implementation on reducing the risks of e-audit.

The researcher employs descriptive approach by sending e-questionnaires to academics and auditors in Erbil - Iraq, and analyzing collected data by statistical tools using SPSS. He concludes that there is an average interest by responders in Erbil to implement COBIT2019 as an effective system in reducing e-audit risks, and the applying of e-audit through the efficient implementation of COBIT2019 can enhance the position of the audit profession as an important control tool. Main recommendations of this research can be the government should work to reduce the e-audit risks by enforcing all organizations to implement COBIT2019 framework, and it should encourage the applying of e-Audit in the organizations because that can be a good motivation to enhance the IT infrastructure in the country.

Keywords: COBIT2019, e-Audit, IT, Cloud Computing, Digital Divide.

اثر تنفيذ إطار عمل COBIT2019 على تقليل مخاطر التدقيق الإلكتروني

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المستخلص

يهدف هذا البحث إلى توضيح مفهوم إطار عمل COBIT2019 وأهم مميزاته ومستوى الوعي العام بفوائد تنفيذه في بيئة تقنية المعلومات، بالإضافة إلى توضيح أهم المخاطر التي تواجه التدقيق الإلكتروني من أجل توضيح الأثر المحتمل لتطبيق إطار عمل COBIT2019 بشأن الحد من مخاطر التدقيق الإلكتروني، إذ يستخدم الباحث المنهج الاستقرائي عن طريق طريق جمع البيانات بواسطة إستمارات إستبيان تم إرسالها إلكترونياً إلى أكاديميين ومدققين في أربيل - العراق، وتحليل البيانات المجمعة إحصائياً باستخدام الحزمة الإحصائية للعلوم الاجتماعية SPSS، ويخلص الباحث إلى أن هناك اهتماماً متوسطاً من قبل المستجيبين في أربيل بتنفيذ إطار عمل COBIT2019 كنظام فعال للحد من مخاطر التدقيق الإلكتروني، إذ أن تطبيق التدقيق الإلكتروني من خلال التنفيذ الكفوء لإطار عمل COBIT2019 يمكن أن يعزز من مكانة مهنة التدقيق بعدّها أداة مهمة للرقابة، ويوصي الباحث بضرورة توجه الحكومة الى تقليل مخاطر التدقيق الإلكتروني من خلال إلزام جميع المنظمات بتنفيذ إطار عمل COBIT2019، كما وينبغي أن تشجع الحكومة تطبيق التدقيق الإلكتروني في الوحدات الاقتصادية لأن ذلك يمكن أن يكون دافعاً جيداً لتعزيز البنية التحتية لتقنيات المعلومات في الدولة.

الكلمات المفتاحية: إطار عمل COBIT2019، التدقيق الإلكتروني، الحوسبة السحابية، الفجوة الرقمية.

1. INTRODUCTION

The tremendous development of IT and the heavy dependence on cloud computing, Internet, and the use of portable storage devices was the motivation for the emergence of a framework to define the controls of IT and related technologies through internationally accepted standards, and indicators of best practices to help benefit from the use of IT at the highest levels of efficiency, in addition to create an IT environment in which IT can be easily governed and controlled.

2. Problem Statement

The emergence of e-Audit as a result of the significant development in the use of IT to prepare the financial statements led to the emergence of many challenges and risks that faced the audit profession, which led to many relevant organizations proposing solutions to reduce these challenges and risks, one of the most important of these solutions is the COBIT framework. So, the problem of study lies in the following question: Can COBIT2019 implementation reduce the risks of e-Audit?

3. Research Objectives

This research aims to achieve the following objectives:

1. Clarifying the concept of COBIT2019 framework, its most important advantages, and the public awareness level of its implementation benefits in IT environment.
2. Clarifying the most important risks facing e-Audit.
3. Explaining the potential impact of the COBIT2019 implementation on reducing the risks of e-Audit.

4. Research Importance

Importance of research can be emerged from influence of

e-Audit as an added value for any organization that uses IT and that needs to enhance this added value by a reliable framework to reduce the risks of using e-Audit.

5. Research Hypotheses

Basically, this research based on the main hypothesis as following:

- H₁: There is a statistically significant effect of COBIT2019 on reducing e-Audit risks
- The main hypothesis stems from the following sub-hypotheses:
 - H₁₋₁: There is a significant effect of planning and organizing on reducing e-Audit risks.
 - H₁₋₂: There is a significant effect of ownership and implementation on reducing e-Audit risks.
 - H₁₋₃: There is a significant effect of support and delivery on reducing e-Audit risks.
 - H₁₋₄: There is significant effect of monitoring and evaluating on reducing e-Audit risks.
 - H₁₋₅: There is significant effect of control on reducing e-Audit risks.

6. LITERATURE REVIEW

6.1 COBIT2019 Framework:

The Concept:

Control Objectives for Information and Related Technologies (COBIT) is an IT management framework developed by Information Systems Audit and Control Association (ISACA) to help companies for developing, organizing, and implementing information management and governance strategies[1].

COBIT contains the latest ideas in corporate management, and is considered one of the most important developments in

the field of IT governance, which was first published in 1996 to reduce the difficulties faced by auditors under the electronic accounting systems, as well as to create a working guide for auditors in the IT environment[2]. It also helps organizations to get the most out of their information, understand the risks surrounding them, and speed up access to information.

COBIT can be considered as a derivative relationship between IT operations, IT resources, and business requirements[3]. It consists of a set of guidelines that are comprised of critical success factors, key goals, and performance indicators, and integrates other frameworks in order to fully cover the organization's activities[2].

The Historical Background:

COBIT was first released in 1996 as a set of IT control goals for helping the audit community to improve the development of IT environments[4]. In 1998 ISACA released its second version of COBIT, which expanded the framework to apply outside the audit community. COBIT4 was released in 2005 and upgraded to COBIT4.1 in 2007. These versions included more information on the governance related to IT.

ISACA released COBIT5 in 2012 and it added additional function to COBIT5 in 2013 which included more information for companies about risk management and information management[5].

In 2018 ISACA announced an updated version of COBIT, which is the summary of the system evolution over nearly 25 years and was named COBIT2019[6]. COBIT2019 has been designed to keep pace with the most frequent updates, contribute to develop more flexible and collaborative governance strategies, and adapt to new and changing

technology[7], where COBIT2019 updates the framework of organizations by taking into account new security trends, technologies, and needs.

The Objectives of COBIT2019:

COBIT2019 main objective is designing a framework that gives organizations more flexibility when developing a strategy for IT governance by introducing new concepts and terms into the core model of COBIT, which includes 40 goals for governance and management in order to develop a comprehensive program of governance, and also enables performance management with more flexibility when using maturity and ability measurements. So the objectives of COBIT2019 can be listed as following:

1. Providing a framework for assessing, directing, and monitoring IT in the organization.
2. Creating the optimum value of IT through a set of enabling factors that define processes, roles, responsibilities, and accountability.
3. Striving to improve the organization through the effective management by obtaining new opportunities and activities via the evaluation of the risks and costs related to them.
4. Proving that the current IT function is in line with business needs and aims to enhance business performance in organizations by ensuring compliance with external requirements such as laws, policies, and contractual obligations, and keeping IT-related risks at a minimum level.
5. Seeking to reduce the costs of IT services
6. Ensuring high-quality information that supports business decision-making, generates added value for business through IT-related investments, and achieves competitive advantage.

The Implementation of COBIT2019:

COBIT 2019 framework can be implemented by merging the business activities with IT activities. In other words, the governance and management of IT must be applied as an integral part of governance in the organization to cover all business and IT responsibilities[5]. In addition, the organization must have an executive management to set achievable goals, and extend the scope of the system's work[8].

The context of the organization's work must be fully understood in order to implement its strategies, as well as, the various factors surrounding the organization (internal and external) must be taken into consideration, such as community ethics, culture, internal regulations and instructions, and international standards[2].

6.2 The Theoretical Framework of e-Audit:***The Concept***

Audit is one of the most important functions performed by the auditor in the organization because it ensures the reliability and transparency of the financial statements and the annual reports of the organization, thus reducing the financial and administrative corruption, enhancing the credibility of the financial statements, contributing to rationalizing the organization's decisions, and increasing the public trust in the organization, which leads to increase investment, to attract external investors, and to strengthen the organization's position internally and externally[9].

Due to the development of IT, and the development of the accounting profession, its dependence on the technical aspect, and its use of new technologies, it was necessary to develop audit to e-audit in order to keep pace with the evolution of IT[10].

e-Audit can be defined as "all traditional audit activities but operates within an electronic environment"[11], which means e-audit is the audit and review of electronic documents, inputs, financial statements and periodic reports produced by e-accounting[9].

The organization can eliminate the physical limits and routine procedures when conducting business transactions by using IT resources, operating in a virtual environment, and dealing with electronic data audited by the audit firms, which speeds up the audit process and reduces the costs and errors[12].

The Methods of e-Audit

There are three main approaches in auditing companies with an electronic information environment that can be expressed as follows[13][14]:

1. Audit around the computer: It is the testing of data processed by computer electronic systems and the comparison of electronic outputs with manual outputs. This approach can be effective when electronic systems are simple and direct.
2. Audit through the computer: It is the use of information technologies to assist the auditor in performing his/her work. Although these techniques may radically improve the auditor's ability and effectiveness, they are still used mainly for performing objective tests only.
3. Audit by the computer: This approach focuses on the electronic test, the processing steps, the programming logic, the procedures of the amendment, the programmed control through the integration of all the electronic and human accounting procedures, and then identify the errors that occurred in it. For this reason, it is possible to rely on the outputs of this approach in a very acceptable manner as the degree of reliability will be very high. So, audit by the

computer can be very suitable for testing information and system in IT.

The Challenges of Using IT in e-Audit:

With the growing sophistication of IT and the growth in using IT, e-audit faces many challenges as follows:

1. The risks of using portable and mobile storage devices:

The transfer and storage of data and information in the IT environment is related to portable and mobile devices for processing or storing data. Despite the ease of use of these devices, there are many risks that they face, which can be summarized as follows[15]:

- The small size of the portable electronic devices makes them vulnerable to theft or loss and thus access to unauthorized persons to use or to view the data and information stored, especially if the data and information is not encrypted or password protected.
- The ease of using electronic devices in the transfer of data and information outside the electronic system, making it difficult to maintain data and information within a specific environment.
- The risk of loss of data or information stored on storage devices incidentally as a result of malfunction of the mobile storage device or intentionally caused by internal or external sabotage.
- Easy infiltration of spyware or malware into the electronic system through the use of portable storage devices where they can be a means of entering malicious software to the electronic system either incidentally or for purposes of sabotage.
- Deleting data and information stored on portable storage devices does not completely delete it. There are many

programs that can recover deleted data and thus be used by unauthorized persons.

2. The risks of using cloud computing:

The development of communications led significantly increased the use of cloud computing in the exchange of data and information. Despite the great benefit of this technology in providing electronic repositories of storage, and facilitate the participation of documents, there are some risks associated with it as follows[16][17]:

- Reducing the cost and achieve substantial savings using cloud computing may affect the work of some organizations by lowering barriers to the entry of new competitors or the threat of some of the activities of organizations competition.
 - When the organization adopts the use of cloud computing technology it will involve an external party in its digital resources, which will lead to security risks in the management of the organization's resources.
 - The heavy reliance on cloud computing technology dramatically by the organization will lead to the inability of the organization to meet the needs of its customers in the event of a technical malfunction or sabotage of the infrastructure of the system of cloud computing.
 - The steady increase in the use of cloud computing by organizations makes it an easy target for cyber-attacks and therefore the risk levels of data and information safety are greater when the organization uses cloud computing.
 - The use of cloud computing by the organization increases the risk of data and information leakage due to the use of common technical centers, usually outside the control of the organization.
 - Most cloud service providers are relatively small, so life
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expectancy and profitability from cloud services are unknown, which makes them merging with one another and thus changing policies and laws that may affect the organizations' work and the security of their data and digital information.

- Increased reliance on cloud computing may strengthen the cloud service provider's control and weaken the organization's control, so, that may lead the cloud service provider to controls the organization's decisions by virtue of owning its data and digital information.

3. The risks of digital divide:

The digital divide is one of the modern terms that have been addressed by many scholars who are interested in ICT. The digital divide has been defined as "the gap between those who can use the Internet because they possess the necessary skill and material ability and those who cannot use the Internet"[18]. The risks of the digital divide are among the most important challenges to the economies of developing countries because of the growing gap over time. The risks of the digital divide can be summarized as follows[19][20]:

- The digital divide is a dividing line between peoples, creating many classes and thus affecting the economies of poor peoples in terms of digital technologies.
- The digital divide impacts on the spread of digital commerce in the communities of developing countries, limiting their inputs and makes them easy prey for the communities of developed countries.
- The digital divide hinders the application of e-government in many developing countries, which will lead to delay in the implementation of routine transactions of citizens.
- The digital divide limits the development of international

trade because of the technical disparity between countries.

- The digital divide reduces the impact of ICT usage in government departments due to the disparity of digital culture among employees themselves.

7. RESEARCH METHODOLOGY

7.1 The Population and Sample of the Research:

The population of this research covers academic and professional auditors in Erbil - Iraq as shown in table (1).

TABLE (1)
THE STUDY POPULATION

Type	No.
Academic – M.Sc. in Accounting	96
Academic – Ph.D. in Accounting	31
Professional Auditor – in Governmental Organizations	112
Professional Auditor – in Private Companies	157
Total	396

So, the sample of research which selected randomly based on Yard equation is approximately (199). Therefore, researcher sent (220) e-questionnaires via e-mail, but the number of valid questionnaires for analyzing were (137) by (34.6%) of the research population, (68.8%) of the research sample, and (62.3%) of the sent questionnaires.

7.2 Research Tool:

The questionnaire was designed based on the related studies to test the main hypothesis of the research. The researcher divided the questionnaire to 5 main parts to test the 5 sub-hypotheses by submitting 5 paragraphs for each part as shown in tables (2), (3), (4), (5), and (6).

TABLE (2)
PARAGRAPHS OF QUESTIONNAIRE FIRST PART

Code	Paragraph
A ₁	There is an emergency plan to manage the urgent changes surrounding the organization.
A ₂	The continuous update of IT is within a specified time plan.
A ₃	There is a plan to manage the expected risks that the organization can be exposed to.
A ₄	The applied IT in the organization meets all its practical needs.
A ₅	The applied organizational structure in the organization serves the organization's long-term goals.

TABLE (3)
PARAGRAPHS OF QUESTIONNAIRE SECOND PART

Code	Paragraph
B ₁	The appropriate infrastructure is being set up to implement the system in an effective manner.
B ₂	IT infrastructure is maintained to increase the efficiency of the organization's information systems.
B ₃	The staff working on IT is highly qualified and skilled.
B ₄	Information security applications (confidentiality, safety, availability) are built to increase the efficiency and entrepreneurship of the organization's information systems.
B ₅	The organization has clear policies to deal with the expected risks from implementing the system in an efficient manner.

TABLE (4)
PARAGRAPHS OF QUESTIONNAIRE THIRD PART

Code	Paragraph
C ₁	The senior management of the organization provides the necessary support to implement the IT system effectively.
C ₂	Security controls of all kinds, preventive, exploratory and corrective, are applied against the environmental risks surrounding the organization.
C ₃	Management is keen to manage data and maintain it periodically in proportion to the changes surrounding it.
C ₄	The organization's IT helps to maintain the continuity of the organization in proportion to its plans recently and in the future.
C ₅	The organization's management works on performance management and capacity development to serve its strategic goals.

TABLE (5)
PARAGRAPHS OF QUESTIONNAIRE FORTH PART

Code	Paragraph
D ₁	Ensuring that the IT goals are achieved efficiently and effectively.
D ₂	Appropriate controls are provided to ensure the safety of organization information locally and globally.
D ₃	The management of the organization is informed of all its evaluation results to determine the real surrounding problems and solve them.
D ₄	IT controls help to achieve balance and benefit.
D ₅	Ensuring that information is transparent to shareholders in a timely manner.

TABLE (6)
PARAGRAPHS OF QUESTIONNAIRE FIFTH PART

Code	Paragraph
E ₁	The efficiency of the internal control systems is evaluated in proportion to its control directions.
E ₂	The results of the system application are evaluated and the deviations are adjusted.
E ₃	An appropriate approach and principles are established to monitor the organization's IT system performance to verify that it is operating as planned.
E ₄	The suggestions of the external users of the user's system are taken into consideration.
E ₅	Control and evaluate the compliance with external requirements.

7.3 Data Analyzing:

The researcher used percentages and frequencies, standard deviations, arithmetical averages, T-test to analyze the collected data. In addition, Cronbach's Alpha was employed to test stability of questionnaire's paragraphs.

The Stability Analyzing

Based on Cronbach's Alpha results $\alpha = 0.694$, and reliability value of $\alpha = 0.711$ which means paragraphs are accurate and consistent because $\alpha \geq 0.6$.

Test of the Hypotheses

H₁₋₁: There is a significant effect of planning and organizing on reducing e-Audit risks

TABLE (7)
ANALYZING RESULTS OF FIRST PART

Cod e	A. average	Std. dev.	T-Test	Ran k
A ₁	4.11	0.899	5.61	2
A ₂	3.94	0.905	5.72	4
A ₃	3.87	0.772	5.23	5
A ₄	4.12	0.845	5.75	1
A ₅	3.99	0.812	6.32	3

Table (7) shows the following:

- A₄, which is “There is an emergency plan to manage the urgent changes surrounding the organization”, obtains the best rank among other paragraphs with (4.12), and standard deviation value equals (0.845), so it confirms a very good level of respondents’ compatibility.
- The responds' compatibility of all paragraphs of the 1st part is very good, and the mean of the arithmetic average for (A₁-A₅) equals (4.006).

Based on the statistical results of analyzing the 1st part of the questionnaire, the researcher accepts 1st sub- hypothesis H₁₋₁.

H₁₋₂: There is a significant effect of ownership and implementation on reducing e-Audit risks.

TABLE (8)
ANALYZING RESULTS OF SECOND PART

Cod e	A. average	Std. dev.	T-Test	Ran k
B ₁	3.78	0.798	4.99	5
B ₂	4.01	0.896	4.97	2
B ₃	4.07	0.911	5.15	1
B ₄	3.99	0.807	6.13	3
B ₅	3.98	0.811	5.23	4

Table (8) shows the following:

- B₃, which is “The staff working on IT is highly qualified and skilled”, obtains the best rank among other paragraphs with (4.07), and standard deviation value equals (0.911), so it confirms a very good level of respondents’ compatibility.
- The responds' compatibility of all paragraphs of the 2nd part is very good, and the mean of the arithmetic average for (B₁-B₅) equals (3.966).

Based on the statistical results of analyzing the 2nd part of the questionnaire, the researcher accepts the 2nd sub- hypothesis H₁₋₂.

H₁₋₃: There is a significant effect of support and delivery on reducing e-Audit risks.

TABLE (9)
ANALYZING RESULTS OF THIRD PART

Cod e	A. average	Std. dev.	T-Test	Ran k
C ₁	3.97	0.794	6.44	3
C ₂	4.14	0.862	6.13	1
C ₃	3.83	0.907	5.54	4
C ₄	3.61	0.912	5.62	5
C ₅	4.11	0.803	6.21	2

Table (9) shows the following:

- C₂, which is “Security controls of all kinds, preventive, exploratory and corrective, are applied against the environmental risks surrounding the organization”, obtains the best rank among other paragraphs with (4.14), and standard deviation value equals (0.862), so it confirms a very good level of respondents’ compatibility.
- The responds' compatibility of all paragraphs of the 3rd part is very good, and the mean of the arithmetic average for (C₁-C₅) equals (3.932).

Based on the statistical results of analyzing the 3rd part of the questionnaire the researcher accepts 3rd sub-hypothesis H₁₋₃.

H₁₋₄: There is significant effect of monitoring and evaluating on reducing e-Audit risks.

TABLE (10)
ANALYZING RESULTS OF FORTH PART

Cod e	A. average	Std. dev.	T-Test	Ran k
D ₁	4.12	0.745	5.23	1
D ₂	4.04	0.728	5.84	3
D ₃	4.02	0.814	5.51	4
D ₄	4.09	0.902	5.75	2
D ₅	4.01	0.845	5.94	5

Table (10) shows the following:

- D₁, which is “Ensuring that the IT goals are achieved efficiently and effectively”, obtains the best rank among other paragraphs with (4.12), and standard deviation value equals (0.745), so it confirms a very good level of respondents’ compatibility.
- The responds' compatibility of all paragraphs of the 4th part is very good, and the mean of the arithmetic average for (D₁-D₅)

equals (4.056).

Based on the statistical results of analyzing the 4th part of the questionnaire the researcher accepts 4th sub-hypothesis H₁₋₄.

H₁₋₄: There is significant effect of control on reducing e-Audit risks

TABLE (11)
ANALYZING RESULTS OF FIFTH PART

Cod e	A. average	Std. dev.	T-Test	Ran k
E ₁	3.19	0.921	5.44	3
E ₂	3.89	0.872	5.67	4
E ₃	3.94	0.874	6.34	2
E ₄	3.89	0.817	5.41	4
E ₅	3.99	0.843	6.17	1

Table (11) shows the following:

- E₅, which is “Control and evaluate the compliance with external requirements”, obtains best rank among the other paragraphs with (3.99), and standard deviation value equals (0.843), so it confirms a very good level of respondents’ compatibility.
- The responds’ compatibility of all paragraphs of the 5th part is very good, and the mean of the arithmetic average for (E₁-E₅) equals (3.780).

Based on the statistical results of analyzing the 5th part of the questionnaire the researcher accepts 5th sub-hypothesis H₁₋₄.

The researcher accepts main hypothesis of research which is “There is a statistically significant effect of COBIT2019 on reducing e-Audit risks”, due to the acceptance of all sub-hypotheses.

8. CONCLUSIONS AND RECOMMENDATIONS

8.1 Conclusions:

1. The results showed that there is an average interest by responders in Erbil to readiness of implementing COBIT2019 as an effective system in reducing e-Audit risks.
2. There is an average level of awareness among auditors and academics in Erbil of the COBIT2019 importance, how to achieve maximum benefit from it, and how to deal with it.
3. There is a good interest among auditors and academics to track recent developments in IT governance that relate to controlling the confidentiality of information and storage.
4. Applying of e-audit through the efficient implementation of COBIT2019 can enhance the position of the audit profession as an important control tool.
5. Applying of e-audit through the efficient implementation of COBIT2019 can increase public confidence in the internal and external control systems, and contribute to the development of audit methods.

8.2 Recommendations:

1. The need to enhance the IT infrastructure and increase the public confidence in IT environment.
 2. The government should work to reduce the e-Audit risks by enforcing all organizations to implement COBIT2019 Framework.
 3. The government should encourage the applying of e-Audit in the organizations because that can be a good motivation to enhance the IT infrastructure in the country.
 4. Organize educational seminars and training programs for auditors to increase their awareness about the importance of COBIT2019 framework, and its positive impact on e-Audit and IT environment.
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