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Improving the performance of the central auditing organization: Overcoming the challenges of digital transformation using COBIT 19

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Abstract

The study aimed to develop a COBIT 19-based approach to overcome the obstacles to digital transformation within the Central Auditing Organization. The study explored the concept of digital transformation and its benefits, identified implementation barriers, and emphasized the importance of applying international standards for digital technologies. This aligns with the government's efforts to build a digital Egypt and a digitally connected government, which improves the efficiency and effectiveness of administrative systems. The main focus is on training CAO members and their international counterparts on adopting digitalization, supporting e-government, and enhancing transparency, accountability, and public participation, all goals pursued by INTOSAI and its members worldwide. All of these goals can be furthered through COBIT 19.

Keywords: Central auditing organization, COBIT 19, Digital transformation, INTOSAI.

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1. Introduction

International oversight and auditing organizations, including the (CAO) Central Auditing Organization in Egypt [1] a member of the International Organization of Supreme Audit Institutions (INTOSAI) [2], aim to verify institutions' compliance with laws and regulations, promote transparency, improve performance, and ensure accountability. These organizations also encourage maintaining credibility and combating corruption, with a focus on strengthening and supporting the independence of supreme audit bodies through globally applied digital auditing. In contrast, the COBIT 2019 standard is a comprehensive framework for IT governance and management in organizations [3]. It aims to achieve

business objectives by organizing and guiding IT operations. Therefore, the COBIT 2019 standard can be used as a tool to strengthen IT oversight within organizations audited by international oversight organizations. The Egyptian government has launched a digital transformation plan titled "Egypt's Digital Strategy 2030," which aims to achieve digital transformation in three main sectors: digitizing the public sector, developing youth skills, and attracting global, regional, and local investments. This requires a robust infrastructure, which the government is developing and implementing, along with legislation and regulations that support digital governance [4, 5]. The government is also working to digitize the education and healthcare sectors. Digital transformation is a dynamic, multidimensional process that combines modern digital technologies with business processes. It offers benefits such as flexibility, cost reduction, continuity, and continuous improvement. However, it also requires the integration of technologies such as cloud computing, artificial intelligence, and big data analytics. In this context, the accounting profession plays a fundamental role in supporting digital transformation by providing accurate and reliable data and helping overcome challenges that arise during the process [6, 7]. Despite these advantages, many members of audit and anti-corruption bodies around the world, such as INTOSAI (AFROSAI, ARABOSAI, ASOSAI, CAROSAI, EUROSAI, OLACEFS, PASAI), are still struggling to adapt to this transformation due to the numerous obstacles they face. This requires improving their processes to support the implementation of these technologies and aligning them with their desired strategies and objectives, with the help of advanced governance standards, such as COBIT 2019. The problem addressed by this study is the significant development in information technology and the widespread use of digital transformation techniques, especially in audit bodies, including the CAO in Egypt, with COBIT 2019.

2. Literature Review and Problem Statement

The study by Manita et al. [8] examined the impact of digital transformation on auditing, particularly focusing on big data technology and the digital transformation of internal operations in accounting and auditing firms in France, concluding that digital transformation improves the audit process. Rahman et al. [9] investigated the effect of AI on accounting and auditing during COVID-19 in Gaza, Palestine, finding that AI enhances the quality of professional performance in accounting and auditing. Riham [10] agreed, adding a positive impact on auditors themselves. Cooke [11] discussed continuous auditing using COBIT 2019, highlighting its role in providing risk indicators and improving governance and systems when used effectively. Edmead Mark [12] emphasized COBIT 2019 as a governance and management framework that helps businesses create value from their IT initiatives, focusing on consistency, planning, and organization. Abdul Rafeq and Elangovan [13] noted that COVID-19 changed the way companies manage their operations and services, stressing the importance of maintaining systems through comprehensive governance frameworks like COBIT 2019. Abdul Rafeq [14] proposed a model for governance and control using COBIT 2019 to address the challenges of COVID-19. This study differs from previous ones in the following ways:

- Previous studies explored the impact of digital technologies on auditing and identified obstacles but did not address how to overcome them.
- While previous research was conducted in private audit firms, this study focuses on the use of COBIT 2019 in auditing by government audit offices.
- The study aligns with previous research on COBIT 2019 but differs in exploring its role in overcoming challenges related to digital transformation within government audit offices, a topic not addressed in prior studies. Most previous research was theoretical and conducted in settings different from Egypt, and in private entities not subject to the scrutiny of significant international oversight organizations such as INTOSAI and its members. The contribution of this study lies in addressing the challenges faced by the primary audit body in Egypt, which can be readily applied to all INTOSAI members due to their shared objectives, with the aim of overcoming obstacles to implementing digital transformation using COBIT 2019. This research gap is significant, as no studies have explored this aspect in the Egyptian or international context represented by INTOSAI members.

3. The Objectives and Contributions of the Study

3.1. Study Objective

The main goal of this study is to examine the use of COBIT 2019 to reduce difficulties in applying digital transformation techniques within the CAO. Specific objectives include:

- Exploring the concept and benefits of digital transformation and identifying the challenges preventing its implementation within the CAO.
- Investigating COBIT 2019 and its application to digital transformation within the CAO.
- Proposing a strategy for the CAO to address challenges using COBIT 2019 to facilitate digital transformation.

3.2. Study Contributions

The study contributes in the following ways:

- Highlighting the importance of digital transformation to achieve digital leadership and sustainable development, in line with INTOSAI's goals and Egypt's Vision 2030.
- Supports the national recommendation from the 2019 Youth Conference for digital transformation across all institutions.
- Identifies challenges preventing the CAO from adopting digital transformation and proposes solutions to overcome them.

- Emphasizes the need for international standards, such as COBIT 2019, to guide the CAO in adapting to the evolving digital environment.

3.3. Study Hypotheses

Based on the study's objectives, the main hypothesis is:

There is a statistically significant positive relationship between the application of COBIT 2019 and the reduction of digital transformation challenges within the (CAO). The following sub-hypotheses derive from this:

1. There is a statistically significant positive relationship between the application of COBIT 2019 and the reduction of digital transformation challenges related to human resources.
2. There is a statistically significant positive relationship between the application of COBIT 2019 and the reduction of digital transformation challenges related to financial funding.
3. There is a statistically significant positive relationship between the application of COBIT 2019 and the reduction of digital transformation challenges related to information security.
4. There is a statistically significant positive relationship between the application of COBIT 2019 and the reduction of digital transformation challenges related to regulations and laws.
5. There is a statistically significant positive relationship between the application of COBIT 2019 and the reduction of digital transformation challenges related to organizational processes.

4. Variables and Methods of the Study

4.1. Study Correlated Variables

(COBIT 19 Standard) & (Obstacles). The researchers will conduct an applied study on a sample of members of the CAO, specifically those involved in auditing public sector companies.

4.2. Study Methods

To achieve the study's goals and test the hypotheses, both theoretical and practical approaches will be used. Theoretical research will involve auditing accounting literature from Arabic and foreign sources, followed by practical application on a sample from the CAO's auditors of public sector companies. The study will be divided into the following sections:

4.2.1. Auditing in the Digital Transformation Context

Digital transformation refers to the use of digital technologies such as cloud computing, big data, and artificial intelligence to expand job opportunities and develop innovative business models. It also helps businesses achieve successful transformation. For example, cloud computing provides on-demand flexible resources, and big data analysis accelerates decision-making by integrating AI programs into companies [15].

Many studies have outlined the objectives of digital transformation, including the following [6].

- Establishing, maintaining, and managing digital infrastructure, ensuring accessibility, and improving the quality of digital services for society while keeping costs affordable.
- Enhancing and developing a more innovative culture at the corporate and societal levels.
- Protecting and enhancing digital data, transparency, independence, and trust.
- Implementing new and innovative business models to increase income, productivity, and added value to the national economy.
- Improving the regulatory framework and standards used [7].
- Facilitating transactions more flexibly and bridging the digital divide between countries.
- Creating a business environment conducive to greater competitiveness.
- Increasing citizen participation to enhance contributions to decision-making [16].
- Improving service efficiency, streamlining processes, and reducing costs.
- Achieving sustainable development goals and developing a consumer-focused business model.
- Attracting foreign investments and developing technology villages [17].
- Supporting financial inclusion goals by improving distribution, diversifying channels, utilizing digital innovation, stimulating electronic industries, and enhancing Egypt's role both locally and internationally [18].

Digital transformation has many advantages, not only for customers but also for governments in various sectors such as education, healthcare, and more. It also benefits companies by providing opportunities for innovative and creative services beyond traditional methods. The main advantages include [19-22].

- Increasing profits by reducing costs, decreasing the number of employees, and minimizing repetitive tasks.
- Increased competition and pressure on companies to discover new ways to enhance efficiency.
- Reshaping how people live, work, think, interact, and communicate.
- Improving quality and responding quickly to customer needs by leveraging digital technologies.
- Changing business models, altering mindsets, increasing workflow efficiency, and reducing errors.
- Improving operational efficiency and accessing new markets.

4.2.2. Steps to Implement Digital Transformation

Digital transformation begins with building a digital strategy by assessing current digital capabilities and determining the best structure for activities, along with providing a digital transformation program manager due to the impact on its implementation. It is carried out through a set of resources, including [23-25].

- **Processes:** A set of interconnected activities and tasks that produce goods or services. Companies must create an effective technological structure that allows for the development of processes to ensure optimal digital transformation implementation, along with monitoring process completion.
- **Data:** Managing and analyzing data regularly and effectively to provide reliable, comprehensive information and actions, and developing appropriate tools for searching and tracking data to ensure its flow and utilization.
- **Technologies:** Using a system of devices, operating systems, storage media, and software that work within technological environments to utilize all assets efficiently.
- **Human Resources:** Providing qualified human resources capable of using and analyzing data to make effective decisions and implement the specified plans.

Many studies have identified the steps of digital transformation as follows [19, 26].

1. Implementing improvement measures and building a digital strategy.
2. Assessing current digital capabilities.
3. Determining the best organizational structure for digital marketing activities.
4. Identifying requirements.
5. Forming a management body to keep up with digital transformation.
6. Identifying challenges of digital transformation.

The researchers believe that identifying the difficulties and obstacles of any new technology is a key step in reducing these challenges and minimizing obstacles, which is addressed in the following point.

4.2.3. Challenges in Implementing Digital Transformation

No modern technology is free from difficulties and obstacles that affect its potential for implementation. Therefore, many studies have addressed the obstacles and challenges that hinder the application of digital transformation, including those mentioned [27-30].

The researchers conclude that the most important points in the literature regarding these obstacles are as follows:

1. **Human Difficulties:** Resistance to change from human resources and human efficiency.
2. **Financial Difficulties:** Financial requirements and the need for human resources.
3. **Information Security Difficulties.**
4. **Difficulties Related to Regulations and Laws.**
5. **Difficulties Related to the Organizational Process.**

4.2.4. The Impact of Digital Transformation on the Audit Profession

The audit profession faces challenges regarding how to audit digital assets, for example, due to the increasing digital transformation processes and the growing engagement with these assets and their impact on financial statements [31]. Auditing firms and financial regulatory authorities must be able to evaluate themselves objectively to ensure appropriate audit operations. Adopting digital technologies and standards that affect current and potential clients allows audit firms (whether accounting firms or independent bodies) to stay informed and adapt continuously to the changing landscape [18]. Therefore, auditors must make significant investments to develop their work or the companies they audit in order to apply digital transformation and benefit from its advantages. A study by Aditya et al. [32] concluded the following:

- The implementation of digital transformation leads to many challenges in auditing information technology, resulting in increased complexity in its practices.
- The increasing need for qualified IT auditors and the lack of support from current electronic audit standards are difficulties faced by auditors when auditing digital transformation technologies.
- Digital transformation technologies are applied in many industries for development, and their evolution has affected auditing practices, such as the increasing demand for IT audits to improve their role and make real contributions to business development in companies.
- Digital transformation is a great opportunity for auditing to take a more positive role and contribute to the development of educational and practical qualifications to create qualified IT auditors.

4.2.5. COBIT 2019 Information and Technology Governance Objectives Standard

COBIT 2019 is a standard for controlling information and related technology goals. It focuses on several key areas, including risks and digital security. Its reference model contains 40 processes (objectives) for managing and controlling the execution of information technology use operations [33-35].

- **COBIT 2019 Objectives**
- COBIT 2019 can be relied upon to leverage its high efficiency in managing information technology and optimizing its resource usage [36]. The objectives of COBIT 2019 are based on three main goals, each of which includes several points. For more details, refer [37-39].

Enterprise Goals (EGs)

Alignment Goals (AGs)

Governance and Management Goals (GMs).

- The Role of COBIT 2019 as a Standard for Controlling the Use of Modern Technologies

ISACA published in 2018 a guide for designing an information and technology governance system, known as COBIT 2019, as a standard for controlling and auditing the use of modern technologies within companies. The guide suggested adopting the outlined steps for designing a dedicated governance system to develop a plan for auditing IT systems [3, 37].

- Using COBIT 2019 in the Auditing Process

COBIT 2019 can be used in the auditing process by developing an IT audit plan using this standard to assess the risks companies face when using it. This can be achieved through the following [40].

1. When developing an IT audit plan, one basic rule is to remember that nothing is perfect; perfection simply does not exist.
2. Applying this standard does not eliminate risks entirely but reduces them to the lowest acceptable level as defined by senior management due to the rapid and continuous evolution in the IT environment.
3. Adapting the existing approach in companies to the design factors of this standard. Therefore, the IT audit plan should align closely with the company's strategy and objectives to add value. Additionally, ongoing IT audit objectives can be defined using COBIT 2019 by measuring risk indicators, tracking them, and reporting them.

4.2.6. IT Control Steps in the Context of COBIT 2019 Application

This standard, issued in 2019, marks a significant new beginning for a set of guidelines for effective IT governance. The governance and management objectives are grouped into five main steps that include 40 processes for implementing this standard within companies, as outlined below: (more details can be found [3, 37, 39])

Evaluate, Direct & Monitor (EDM)

Align, Plan & Organize (APO)

Build, Acquire & Implement (BAI)

Deliver, Service & Support (DSS)

Monitor, Evaluate & Assess (MEA)

Suggested Approach to Overcome Digital Transformation Challenges Using COBIT 2019 within the Central Auditing Authority: The COBIT 2019 standard includes five main steps, and the role of implementing these steps can be explained in the application study.

5. A practical analysis of CAO digital development in COBIT 19

The Central Auditing Organization (CAO) of Egypt is an independent organization with a public legal personality that reports directly to the President of the Arab Republic of Egypt. The role of the CAO has expanded to include not only financial control (both accounting and legal) but also performance oversight, monitoring plan implementation, and legal control over decisions regarding financial violations. Furthermore, the scope of the CAO's work has broadened to include political parties, national press institutions, party newspapers, professional unions, sports clubs, charitable associations, non-governmental organizations, and matters related to grants and loan agreements.

Study Community: The study community consists of a sample of members from the Auditing and Information Technology Department within the (CAO) and those responsible for auditing companies in the public business sector.

Study Sample: The sample was selected from the study community, consisting of 100 individuals, with 93 responses retrieved, representing a 93% response rate. The data are as follows:

- Number of responses: 93 (93%)
- Invalid responses for statistical analysis: 5 (due to incomplete data)
- Non-returned responses: 2
- Valid responses for analysis: 93

5.1. Demographic Distribution of the Study Sample:

Distribution of the Study Sample by Gender: The study sample was composed of 47 females and 46 males.

Table 1.
Study Sample by Gender.

Gender	Frequency	Percentage
Males	46	49.4%
Females	47	50.6%
Total	93	100%

Distribution of the Study Sample by Job Title: The following table shows the distribution of the study sample according to their job titles in the Central Auditing Organization.

Table 2.

Study Sample by Job Title.

Job Title	Frequency	Percentage
Head of Sector	3	3.3%
General Manager	10	10.8%
Head of Division	25	26.8%
Auditor	40	43.1%
junior Auditor	15	16.0%
Total	93	100%

Distribution of the Study Sample by Academic Qualification: The following table shows the academic qualifications of the study sample members.

Table 3.

Study Sample by Academic Qualification.

Academic Qualification	Frequency	Percentage
Bachelor's	40	43.0%
Postgraduate Studies	9	9.7%
Master's Degree	6	6.4%
Doctorate	3	3.3%
Other	35	37.6%
Total	93	100%

Distribution of the Study Sample by Years of Experience: The table below shows the distribution of the study sample based on the number of years of experience.

Table 4.

Study Sample by Years of Experience.

Years of Experience	Frequency	Percentage
5-10 years	15	16.0%
10-15 years	40	43.1%
15-20 years	35	37.6%
20+ years	3	3.3%
Total	93	100%

Distribution of the Study Sample by Accounting System Used: The following table shows the distribution of the sample based on the accounting system used. The majority of departments within the Central Auditing Organization rely heavily on digital technology, with 95% of departments using it, while some use a combination of information technology and human resources, which makes up 5%. None of the departments use a purely manual system that relies solely on human input.

Table 5.

Study Sample by Accounting System Used.

Accounting System Used	Frequency	Percentage
Manual (human input only)	0	0.0%
Partially digital (uses both human and IT)	67	72.0%
Fully digital (relies on digital technologies)	26	28.0%
Total	93	100%

Data Collection Method: The researchers relied on two complementary methods for data collection: the questionnaire and personal interviews. The researchers personally distributed 100 questionnaires to the members of the Central Auditing Organization within the organization's headquarters and later returned to collect them. This process was facilitated by the researchers' ten years of experience working at the Central Auditing Organization, which enabled effective interaction. A total of 93 questionnaires were retrieved, representing a 93% response rate. Of these, 5 questionnaires were invalid for statistical analysis due to incomplete data, and 2 were not retrieved, resulting in 93 valid questionnaires for analysis.

Personal Interviews: The interviews were limited to employees of the Audit and Information Technology Department at the CAO, as well as those responsible for auditing public sector companies. The results were:

- Continuous education and training are essential for working within CAO
- The organization continues to invest in developing the skills and capabilities of its employees, not only by providing innovative solutions to apply new technologies in today's digital world but also by ensuring that the necessary skills are in place to meet the changing requirements of the groups targeted by the organization for examination and auditing.

- The organization trains its employees on many modern auditing techniques used in financial and governmental auditing across the world. Training is also provided on all auditing and accounting standards, both Egyptian and international.

5.2. Reliability and Validity Testing of the Measurement Tool (Questionnaire)

After collecting the questionnaires from the sample, the researchers tested the validity and reliability of the study's scales using the Cronbach's Alpha test to calculate the reliability and validity coefficients. Table 6 shows the values of the reliability and validity coefficients for the study's variables as follows:

Table 6.
Reliability and Validity Coefficients for the Study Variables.

Variables	Reliability Coefficient	Validity Coefficient	Number of Items
(2019 COBIT Standard)			
1. Direction and Monitoring	0.925	0.962	5
2. Communication and Planning	0.885	0.941	5
3. Creation and Implementation	0.907	0.953	8
4. Service and Support	0.876	0.936	5
5. Evaluation and Assessment	0.897	0.947	4
(Obstacles)			
1. Human Resources	0.886	0.942	5
2. Financial Funding	0.892	0.944	3
3. Information Security	0.895	0.946	4
4. Regulations and Laws	0.897	0.947	3
5. Organizational Process	0.881	0.938	5
Overall Questionnaire	0.904	0.951	47

The table shows that all the reliability coefficients for the scales used to measure the study variables are high and acceptable, as the acceptable threshold for reliability is considered to be 0.6. The validity coefficients for all study variables are also high. Additionally, the overall reliability and validity coefficients for the questionnaire as a whole are high, recording 0.904 and 0.951, respectively. These results indicate that the measurement tool is reliable and valid from a statistical perspective.

5.3. Means and Standard Deviations for the Study Variables

Table 7 illustrates the descriptive indicators for the study variables, including the means and standard deviations on the Likert scale.

Table 7.
Means and Standard Deviations for the Study Variables.

Variables	Mean	Standard Deviation	Chi-Square
(2019 COBIT Standard)			
1. Direction and Monitoring	2.957	0.153	205.280**
2. Communication and Planning	2.615	0.708	173.398**
3. Creation and Implementation	2.410	0.803	57.387**
4. Service and Support	2.391	0.788	31.344**
5. Evaluation and Assessment	2.731	0.422	93.796**
All (2019 COBIT Standard) Question	2.621	0.236	157.355**
(Obstacles)			
6. Human Element	2.660	0.500	80.376**
7. Financial Funding	2.487	0.668	34.441**
8. Information Security	2.097	0.873	5.226
9. Regulations and Laws	2.667	0.571	75.097**
10. Organizational Process	2.265	0.794	42.000**
All (Obstacles) Question	2.435	0.250	71.011**
Overall Questionnaire	2.528	0.249	

Note: N = 93 individuals.

The table above shows a clear similarity in the means of all the study variables based on the total values from the sample. Most of these means are greater than the individual mean of 2. Overall, the means for the study variables ranged from 2.097 to 2.957, indicating a clear perception among the sample members regarding the study variables. Additionally, the standard deviations for the variables, all of which are less than 1, suggest a high level of agreement among the study sample in their perceptions of these variables.

5.4. Bivariate Correlation Coefficients Between the Study Variables

To determine the significance of the correlation between the study variables, Pearson's bivariate correlation test was conducted. Table 8 shows the bivariate correlation coefficients between the study variables.

Table 8.
Bivariate Correlation Coefficients Between the Study Variables.

Serial No.	1	2	3	4	5	6	7	8	9	10
Steps	1	2	3	4	5	Obstacles	1	2	3	4
1	1									
2	0.491**	1								
3	0.306**	0.790**	1							
4	0.311**	0.802**	0.985**	1						
5	0.387**	0.904**	0.867**	0.836**	1					
6	0.371**	0.879**	0.899**	0.852**	0.965**	1				
7	0.326**	0.801**	0.943**	0.892**	0.888**	0.924**	1			
8	0.258*	0.653**	0.922**	0.939**	0.676**	0.684**	0.838**	1		
9	0.435**	0.988**	0.800**	0.813**	0.916**	0.890**	0.812**	0.666**	1	
10	0.307**	0.768**	0.964**	0.980**	0.782**	0.788**	0.887**	0.984**	0.781**	1

Results from Table 8.

The results from the table show the following:

- There is a statistically significant linear correlation between all the study variables.
- The correlation coefficients between these variables did not exceed 80%, which indicates that there is no high correlation among them. This confirms the independence of the variables and their lack of overlap. Therefore, there is no need to combine any of the variables.

5.5. Frequency Distributions and Relative Importance for the First Group (EDM) to Implement the 2019 COBIT Steps

In this section, the researchers aim to assess the extent to which the steps of the 2019 COBIT standard are applied within the Central Auditing Organization, as follows, to determine the level of agreement among the sample members regarding its implementation.

Table 9.
Degree of Agreement of the Study Sample on Implementing the First Step EDM (Direct & Monitor).

1. Direction and Monitoring	Mean	Standard Deviation	%	Relative Importance	Rank
1.1 Assigning human resources capable of dealing with digital technologies	2.97	0.178	96.8%	Agree	3
1.2 Maximizing the benefits of using digital technologies to improve audit quality	2.98	0.146	97.8%	Agree	2
1.3 Managing risks resulting from using digital technologies and ensuring they are within acceptable limits	2.96	0.204	95.7%	Agree	4
1.4 Enabling participation and support from members and audited entities in the decision-making process	2.89	0.311	89.2%	Agree	5
1.5 Establishing a general framework for monitoring the use of digital technologies and ensuring its effectiveness	2.99	0.104	98.9%	Agree	1

Analysis of Table 9 from the table above, the researchers conclude that there is a strong agreement among the sample members regarding the implementation of the first step of the COBIT standard, specifically the "Direction and Monitoring" within the Central Auditing Organization. The relative importance of this agreement ranges from 89.2% to 98.9%. The highest agreement was recorded for the CAO establishment of standards for monitoring the use of digital technologies. On the other hand, the least applied process was the participation and support of employees and audited entities in the decision-making process.

5.6. Frequency Distributions and Relative Importance for the Second Group (APO) to Implement the 2019 COBIT Steps

Table 10.

Degree of Agreement of the Study Sample on Implementing the Second Step Communication and Planning.

2. Communication and Planning	Mean	Standard Deviation	%	Relative Importance	Rank
2.1 Support and manage strategies and processes necessary for implementing digital technologies	2.62	0.765	79.6%	Agree	2
2.2 Support innovation and creativity for all auditors in light of using digital technologies	2.52	0.842	74.2%	Agree	3
2.3 Continuous training for human resources to deal with digital technologies	2.71	0.685	83.9%	Agree	1
2.4 Provide guidelines for practicing governance to monitor information security	2.71	0.685	83.9%	Agree	1
2.5 Provide procedures for managing and utilizing data and disposing of it when no longer needed	2.52	0.842	74.2%	Agree	3

Analysis of Table 10 from the table above, the researchers conclude that there is an agreement among the sample members regarding the implementation of the second step of the COBIT standard, Align, Plan & Organize, within the organization, with a relative importance ranging between 74.2% and 83.9%. The highest agreement was observed for the (CAO) commitment to continuous training for human resources capable of dealing with digital technologies and providing guidelines for practicing governance to monitor information security. On the other hand, the least applied process was support for innovation and creativity for all auditors in the context of using digital technologies, as well as providing procedures for managing and benefiting from data and disposing of it when no longer needed.

5.7. Frequency Distributions and Relative Importance for the Third Group (BAI) to Implement the 2019 COBIT Steps

Table 11.

Degree of Agreement of the Study Sample on Implementing the Third Step: Creation and Implementation.

3. Creation and Implementation	Mean	Standard Deviation	%	Relative Importance	Rank
3.1 Ability to manage programs and requirements needed to use digital technologies	2.41	0.837	63.4%	Agree	2
3.2 Identifying and implementing solutions to address challenges in applying digital technologies	2.41	0.837	63.4%	Agree	2
3.3 Providing resources necessary for applying digital technologies	2.41	0.837	63.4%	Agree	2
3.4 Ability to transition from applying information technology to using digital technology easily	2.41	0.837	63.4%	Agree	2
3.5 Acceptance of necessary changes by employees to apply digital technologies	2.52	0.842	74.2%	Agree	1
3.6 Ability to manage its assets related to the application of digital technologies, monitor and develop them	2.52	0.842	74.2%	Agree	1
3.7 Providing infrastructure and materials necessary for applying digital technologies and maintaining them	2.10	0.873	43.0%	Agree	3
3.8 Approving programs to perform audits without delay to ensure effective inspection and monitoring of entities	2.52	0.842	74.2%	Agree	1

Analysis of Table 11 from the table above, the researchers conclude that there is agreement among the sample members regarding the implementation of the third step of the COBIT standard, Build, Acquire & Implement, within the organization, with a relative importance ranging between 43.0% and 74.2%. The highest agreement was observed for the employees' acceptance of necessary changes to apply digital technologies, the ability to manage assets related to digital technologies, monitor and develop them, and the approval of programs to perform audits without delays to ensure effective inspection and monitoring of entities. On the other hand, providing infrastructure and materials necessary for applying digital technologies and maintaining them is considered the least applied process.

Table 12.

Degree of Agreement of the Study Sample on Implementing the Fourth Step Service & Support.

4. Service and Support	Mean	Standard Deviation	%	Relative Importance	Rank
4.1 Ability to manage operational processes related to applying digital technologies	2.52	0.842	74.2%	Agree	1
4.2 Ability to provide digital services within the organization's headquarters and branches	2.10	0.873	43.0%	Agree	3
4.3 Ability to keep up with developments in the digital government technology environment	2.52	0.842	74.2%	Agree	1
4.4 Ability to provide security services to protect digital technologies from malware and hacking	2.31	0.821	53.8%	Agree	2
4.5 Identifying, documenting, and managing monitoring activities of operations or during the implementation of audit programs	2.52	0.842	74.2%	Agree	1

Analysis of Table 12 from the table above, the researchers conclude that there is agreement among the sample members on the implementation of the fourth step of the COBIT standard, Deliver, Service & Support, within the organization, with a relative importance ranging between 43.0% and 74.2%. The highest agreement was found regarding the ability to manage operational processes related to applying digital technologies, the ability to keep up with developments in the digital government technology environment, and identifying, documenting, and managing monitoring activities during the implementation of audit programs. On the other hand, the ability to provide digital services within the organization's headquarters and branches is considered the least applied process. This is likely due to the rapid and continuous development of these technologies.

5.8. Frequency distributions and relative importance of Group 5 (MEA) for applying the steps of the 2019 COBIT standard

Table 13.

Extent of the study sample's agreement on applying the fifth step: Evaluation and Assessment.

5. Evaluation and Assessment	Mean	Standard Deviation	%	Relative Importance	Rank
5.1 No conflict and alignment between the device's objectives and the goals of using digital technologies	2.89	0.311	89.2%	Agree	2
5.2 Ability to manage the internal control system when using digital technologies	2.52	0.842	74.2%	Agree	3
5.3 Compliance with laws, regulations, and external requirements necessary for applying digital technologies	3.00	0.000	100.0%	Agree	1
5.4 Designing and developing procedures to ensure the effective and proper use of digital technologies	2.52	0.842	74.2%	Agree	3

From Table 13, the researchers find that there is agreement among the sample individuals on applying the processes of the fifth step MEA within the system, with relative importance ranging from 74.2% to 100%. The highest-ranking process was compliance with laws, regulations, and external requirements necessary for applying digital technologies, while the ability to manage the internal control system and the design and development of procedures to ensure the effective and proper use of digital technologies were the least applied processes.

Frequency distributions and relative importance of Group 2: Reducing Digital Transformation Challenges

In this section, the researchers will explore the ability to reduce digital transformation challenges within the (CAO) as follows:

5.9. Frequency Distributions and Relative Importance of the First Axis: Reducing Human Element Challenges

Table 14.

Extent of the study sample's agreement on applying the reduction of human Resources challenges.

6. Human Element	Mean	Standard Deviation	%	Relative Importance	Rank
6.1 Benefiting from members capable of handling digital technologies and their continuous training and development	2.97	0.178	96.8%	Agree	2
6.2 Ensuring the support and participation of all relevant stakeholders	2.52	0.842	74.2%	Agree	3
6.3 Implementing changes in the organizational structure	2.41	0.837	63.4%	Agree	4
6.4 Knowledge management among members	2.41	0.837	63.4%	Agree	4
6.5 Senior management's ability to handle issues	3.00	0.000	100.0%	Agree	1

From Table 14, it is clear that there is agreement among the sample individuals on the organization's ability to reduce human challenges through the application of the operations of this standard. These operations varied in their ranking based

on their ability to reduce these challenges, with senior management's ability to handle issues having a relative importance of 100%. Meanwhile, changes in the organizational structure and knowledge management among members were considered the least effective in reducing human challenges, with a relative importance of 63.4%.

Table 15.

Extent of the study sample's agreement on applying the reduction of Financial Funding.

7. Financial Funding	Mean	Standard Deviation	%	Relative Importance	Rank
7.1 Managing and controlling its assets and budget items	2.41	0.837	63.4%	Agree	2
7.2 Identifying and managing the programs and requirements necessary to use digital technologies	2.41	0.837	63.4%	Agree	2
7.3 Senior management is managing the priority assessment process to secure the necessary funding to acquire digital technologies	2.65	0.481	64.5%	Agree	1

Table 15 shows the sample members' agreement on the entity's ability to mitigate financial funding challenges by applying the processes of this standard. These processes were very close in their ranking, as their relative importance ranged from 63.4% to 64.5%. This may be due to the nature of (CAO) and its subjection to one type of revenue, government funding only. This made the maximum benefit of the standard in these obstacles an attempt to draw the attention of senior management to the importance of managing the three elements efficiently when evaluating priorities, when funding is available from the government, unlike external audit bodies whose revenues vary.

Table 16.

Extent of the study sample's agreement on applying the reduction of Information Security.

8. Information Security	Mean	Standard Deviation	%	Relative Importance	Rank
8.1 Managing and controlling risks arising from digital technologies and limiting them to the permissible level.	2.10	0.873	43.0%	Agree	1
8.2 Establishing an information oversight system and identifying the various plans and problems associated with using digital technologies.	2.10	0.873	43.0%	Agree	1
8.3 Utilizing and disposing of data securely once the connection is no longer required.	2.10	0.873	43.0%	Agree	1
8.3 Establishing digital procedures to protect against malware when using data.	2.10	0.873	43.0%	Agree	1

From Table 16, it is clear that there is an agreement between the opinions of those surveyed regarding this item, and this confirms what was stated in Table 7 in terms of their differences being insignificant in this goal and the effect of COBIT 19 in reducing it. The percentage of 43.0% indicates that there is no difference between the averages of the sample's opinions on the application of reducing information security and the value of the general average in this dimension, which is insignificant.

5.10. Frequency Distributions and Relative Importance of the Fourth Axis: Reducing Challenges Related to Regulations and Laws.

Table 17.

Extent of the study sample's agreement on applying the reduction of challenges related to regulations and laws.

9. Regulations and Laws	Mean	Standard Deviation	%	Relative Importance	Rank
9.1 Setting standards for monitoring the use of digital technologies and ensuring their effectiveness and continuous operation	2.52	0.842	74.2%	Agree	2
9.2 Effective management of standards for monitoring the use of digital technologies	2.52	0.842	74.2%	Agree	2
9.3 Compliance with the requirements and laws related to the application of digital technologies	2.97	0.178	96.8%	Agree	1

From Table 17, it is clear to the researchers that there is agreement among the sample individuals on the organization's ability to reduce challenges related to laws and regulations through the application of this standard, with relative importance ranging between 74.2% and 96.8%. The most effective operation for reducing these challenges is compliance with the requirements and laws related to the application of digital technologies.

Table 18.

Extent of the study sample's agreement on applying the reduction of Organizational Process.

10. Organizational Process	Mean	Standard Deviation	%	Relative Importance	Rank
10.1 Leverage the benefits of digital services and establish the necessary infrastructure	2.10	0.873	43.0%	Agree	2
10.2 Support the implementation of a comprehensive strategy and process engineering for the application of digital technologies across all departments	2.10	0.873	43.0%	Agree	2
10.3 Create an environment for innovative ideas and facilitate their understanding and acceptance	2.52	0.842	74.2%	Agree	1
10.4 Manage relationships with agency members, reviewing entities, and digital service providers	2.10	0.873	43.0%	Agree	2
10.5 Manage operational processes for the application of digital technologies efficiently and effectively	2.52	0.842	74.2%	Agree	1

Table 18 shows that there is agreement among sample members regarding the organization's ability to address organizational process challenges through the application of this standard's processes. These processes varied in their ranking based on their ability to mitigate these challenges, with the importance of senior management's ability to create the necessary infrastructure, implement a comprehensive strategy, process engineering, and relationship management reaching 43.0%. Meanwhile, changes in creating an environment for innovation and managing operational processes were considered the most important at 74.2%. These results may be explained in light of the nature of the government agency's work, which requires more time to change the infrastructure, implement a comprehensive strategy, process engineering, and relationship management, while it is easier to do so through training and qualification, creating an environment for innovation and managing operational processes more quickly.

Table 19.

Correlation Coefficients Between the application of COBIT 2019 and the reduction of digital transformation challenges.

variable	Correlation Coefficient	Sig. (2-tailed)
The reduction of digital transformation challenges	0.943**	0.000
Human Resources	0.888**	0.000
Financial Funding	0.921**	0.000
Information Security	0.883**	0.000
Regulations and Laws	0.790**	0.000
Organizational Process	0.928**	0.000

Note: ** Correlation is significant at the 0.01 level.

The table highlights the correlation between the application of COBIT 2019 and reducing obstacles to digital transformation. It actually had a high correlation coefficient of 0.943. The correlation coefficients for the remaining variables are shown in the table, confirming the validity of the main hypothesis of the study and the sub-hypotheses. There is a statistically significant positive relationship between the application of COBIT 2019 and the reduction of digital transformation challenges within the (CAO).

6. Conclusions

Digital transformation has become a core global practice, impacting both implementers and regulators. Like any new technology, it comes with implementation challenges. This study explores how the COBIT 19 standard can help CAOs address these challenges, both internally and in their oversight of other entities. Given the limited research in this area, the study focuses on the effectiveness of COBIT 19 in mitigating the digital transformation challenges faced by international audit organizations with similar objectives, such as those of INTOSAI. COBIT 19, with its 40 governance processes, was found to significantly mitigate digital transformation obstacles and support sustainable implementation in oversight bodies. The findings suggest that COBIT 19 plays a pivotal role in enhancing digital governance and audit performance. However, despite its usefulness, the standard is not equally robust across all components, indicating the need for complementary frameworks and further research. Policymakers and audit bodies can use these insights to improve their digital regulatory strategies. The study also acknowledges some limitations, such as the impact of the standard on reducing government funding constraints and the participation of audited entities, and suggests future research to expand and deepen the analysis. Finally, the study relied solely on Pearson's bivariate correlation analysis; future studies could conduct additional analyses to arrive at more accurate results.

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Appendix A.

Survey Questionnaire and Response.

Independent Variables	Agree	Neutral	Disagree
First: Direction and Monitoring			
Recruiting staff skilled in digital technologies	90	3	0
Maximizing digital technology use to improve audit quality	91	2	0
Managing and minimizing digital technology risks	89	4	0
Enabling member participation in decision-making	83	10	0
Establishing a framework for controlling digital technology use	92	1	0
Second: Communication and Planning			
Managing strategies for digital technology implementation	90	3	0
Encouraging innovation and creativity among auditors	89	4	0
Continuous digital technology training for staff	93	0	0
Providing guidelines for information security governance	90	3	0
Establishing procedures for data management and disposal	85	8	0
Third: Implementation and Application			
Managing programs for digital technology use	91	2	0
Solving challenges in digital technology application	90	3	0
Providing resources for digital technology implementation	90	3	0
Facilitating the transition to digital technologies	92	1	0
Gaining staff acceptance of digital technology changes	93	0	0
Managing and developing digital technology assets	92	1	0
Maintaining infrastructure for digital technology use	92	1	0
Adopting programs to ensure timely audits	85	8	0
Fourth: Service and Support			
Managing operational processes for digital technology	90	3	0
Providing digital services within CAO's locations	88	5	0
Keeping up with government digital technology advancements	92	1	0
Protecting digital technologies from malware and hacking	90	3	0
Managing control activities during audits	93	0	0
Fifth: Evaluation and Assessment			
Aligning CAO goals with digital technology objectives	93	0	0
Managing internal control systems with digital technologies	92	1	0
Ensuring compliance with digital technology regulations	93	0	0
Designing procedures for effective digital technology use	92	1	0
Dependent Variables			
First: Human Resources			
Utilizing and training staff on digital technologies	90	3	0
Ensuring stakeholder support and participation	83	10	0
Restructuring the organization when necessary	89	4	0
Managing knowledge among members	91	2	0
Senior management's ability to address challenges	93	0	0
Second: Financial Funding			
Managing assets and budgets effectively	93	0	0
Identifying programs and requirements for digital technologies	90	3	0
Prioritizing funding for digital technology needs	93	0	0
Third: Information Security			
Managing and mitigating risks from digital technologies	90	3	0
Creating a system to control information and address risks	88	5	0
Safely handling and disposing of data	87	6	0
Protecting against malware when using digital technologies	89	4	0
Fourth: Regulations and Laws			

Establishing standards for controlling digital technology use	92	1	0
Managing standards for digital technology control	91	2	0
Complying with regulations for digital technology use	93	0	0
Fifth: Organizational Process			
Leveraging digital services and infrastructure	88	5	0
Supporting a strategy for digital technology across departments	86	7	0
Fostering an environment for innovative ideas	84	9	0
Managing relationships with internal and external parties	82	11	0
Efficiently managing digital technology processes	89	4	0