


AN EMPIRICAL STUDY TO MEASURE THE IMPACT OF INFORMATION TECHNOLOGY GOVERNANCE UNDER THE CONTROL OBJECTIVES FOR INFORMATION AND RELATED TECHNOLOGIES ON FINANCIAL PERFORMANCE

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ARTICLE INFO	ABSTRACT
<p>Article history:</p> <p>Received 31 January 2023</p> <p>Accepted 27 March 2023</p>	<p>Purpose: To determine the effect of information technology governance (ITG) under the control objectives for information and related technologies (COBIT) on financial performance is the objective of this study. Additionally, the article seeks to look into the relationships between the factors under consideration.</p>
<p>Keywords:</p> <p>Information Technology Governance; COBIT; Performance.</p>	<p>Theoretical framework: Information technology and operational processes are evaluated and ensure their compliance with the instructions of the Central Bank of Iraq. Therefore, the research dealt with a conceptual framework by reviewing the literature on the importance of the COBIT framework in assessing financial performance.</p>
	<p>Design/methodology/approach: To investigate the effect of information technology; we the value-added intellectual coefficient approach and a defined corporate governance index were utilized. The performance of the company was assessed using operating efficiency ratio and Economic value Added (EVA).</p>
<p>Findings: the results Show there are the high level of application of ITG in the banks listed in the Iraqi stock exchange. Also, we found the effectiveness of ITG under the COBIT framework in banking financial performance.</p>	
<p>Research, Practical & Social implications: The findings should inform practitioners and legislative institutions of the necessity to follow strong COBIT procedures and enhance the effectiveness of IT to produce a better financial performance for firms.</p>	
<p>Originality/value: the study is among the first to consider the casual connections and how COBIT policies for ITG affect financial performance in the setting of Iraq.</p>	
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UM ESTUDO EMPÍRICO PARA MEDIR O IMPACTO DA GOVERNANÇA DE TECNOLOGIA DA INFORMAÇÃO SOB OS OBJETIVOS DE CONTROLE DA INFORMAÇÃO E TECNOLOGIAS RELACIONADAS NO DESEMPENHO FINANCEIRO

RESUMO

Objetivo: Determinar o efeito da governança de tecnologia da informação (ITG) sob os objetivos de controle para tecnologias da informação e relacionadas (COBIT) sobre o desempenho financeiro é o objetivo deste estudo. Além disso, o artigo procura examinar as relações entre os fatores considerados.

Referencial teórico: A tecnologia da informação e os processos operacionais são avaliados e asseguram a sua conformidade com as instruções do Banco Central do Iraque. Portanto, a pesquisa tratou de uma estrutura conceitual revisando a literatura sobre a importância da estrutura COBIT na avaliação de desempenho financeiro.

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Desenho/metodologia/abordagem: Investigar o efeito da tecnologia da informação; utilizamos a abordagem do coeficiente intelectual de valor agregado e um índice definido de governança corporativa. O desempenho da empresa foi avaliado por meio do Índice de Eficiência Operacional e Valor Econômico Adicionado (EVA)

Resultados: os resultados mostram que há alto nível de aplicação do ITG nos bancos listados na bolsa de valores iraquiana. Além disso, encontramos a eficácia do ITG sob a estrutura COBIT no desempenho financeiro bancário.

Pesquisa, implicações práticas e sociais: As descobertas devem informar os profissionais e as instituições legislativas sobre a necessidade de seguir procedimentos COBIT fortes e aumentar a eficácia da TI para produzir um melhor desempenho financeiro para as empresas.

Originalidade/valor: o estudo está entre os primeiros a considerar as conexões casuais e como as políticas COBIT para ITG afetam o desempenho financeiro no cenário do Iraque.

Palavras-chave: Governança de Tecnologia da Informação, COBIT, Desempenho.

UN ESTUDIO EMPÍRICO PARA MEDIR EL IMPACTO DE LA GOBERNANZA DE LA TECNOLOGÍA DE LA INFORMACIÓN BAJO LOS OBJETIVOS DE CONTROL DE LA INFORMACIÓN Y LAS TECNOLOGÍAS RELACIONADAS EN EL DESEMPEÑO FINANCIERO

RESUMEN

Propósito: Determinar el efecto del gobierno de la tecnología de la información (ITG) bajo los objetivos de control para las tecnologías de la información y relacionadas (COBIT) en el desempeño financiero es el objetivo de este estudio. Además, el artículo busca investigar las relaciones entre los factores bajo consideración.

Metodología: investigar el efecto de la tecnología de la información; Se utilizó el enfoque del coeficiente intelectual de valor agregado y un índice de gobierno corporativo definido. El desempeño de la empresa se evaluó mediante el índice de eficiencia operativa y el Valor Económico Agregado (EVA)

Conclusiones: los resultados muestran que existe un alto nivel de aplicación de ITG en los bancos que cotizan en la bolsa de valores iraquí. Además, encontramos la efectividad de ITG bajo el marco COBIT en el desempeño financiero bancario.

Implicaciones de la Investigación: los hallazgos deberían informar a los profesionales y las instituciones legislativas sobre la necesidad de seguir procedimientos sólidos de COBIT y mejorar la eficacia de TI para producir un mejor rendimiento financiero para las empresas.

Palabras clave: Gobierno de Tecnologías de la Información, COBIT, Desempeño.

INTRODUCTION

Over the past two decades, a special focus on IT governance has emerged as a result of the importance of technologies for business value creation and risk management in digital enterprises (Caluwe & De Haes, 2019). De Haes et al., (2015) stated that, “IT governance is a crucial component of corporate governance and addresses the definition and implementation of processes, structures, and relational mechanisms in the organization that enable both business and IT people to execute their responsibilities in support of business/IT alignment and the creation of business value from IT-enabled business investments,”.

Recently, studies on It governance were largely concerned with how to best set up the IT department. As the new century began, this emphasis turned to IT and business alignment. Previous studies also emphasised on the need for more board involvement in IT governance. Research on IT governance at board level shows that if the board is inactive in defining direction

for being in charge of digital assets, there will be major ramifications for enterprises that have gone digital.

Additionally, actual data demonstrates that, organizational performance is improved through the board-level IT governance while reducing business risk (Flayyih et al., 2022). In spite of current IT requirements, Turel and Bart (2014) come to the conclusion that strong board-level IT governance would enhance financial performance. The financial results of businesses with full functions of digital leadership are detailed by Valentine and Stewart (2015), including improvements in performance (+9%), profitability (+23%), and market value (+12%). Concerning risk factors, there is a necessity to adhere to more legal and regulatory regulations, many of which also have an influence on information technology (Valentine & Stewart, 2015). The roles of directors for IT governance are thereby redefined by these legislative obligations.

The majority of main and secondary business operations also largely depend on IT for continuity and dependability. As a result, the board management cannot hand over complete control of business risk brought on to IT specialists from IT. In an effort to clarify the paradox of productivity and to aid businesses in understanding the benefits of investing in IT, the value of IT in business has been researched during the past 20 years (Kohli & Devaraj, 2003). Particular attention has been paid in this field of study to show how IT capabilities and resources such as IT artefacts, policies, and human capital and management competencies affect business success.

A growing body of research shows that technology can become value-added resources if it is integrated into value-generating processes in a synergetic way (Kohli & Grover, 2008). These effects depend on a variety of factors which include planning procedures and capabilities, and IT management that are the subject of this study. Among these are the capacities to manage efficiently IT resources, recognize successful project, oversee IT functions and coordinate IT solutions and requirements with stakeholders.

CEOs are prioritizing investment in innovation and digital skills because they understand that concentrating only on organic growth and cost savings is insufficient but still vital. From a global poll in 2016, a survey interview with 1379 CEOs from 79 nations found that human capital and digital and technological capabilities are the desired areas for the CEOs to enhance the most in order to take advantage of emerging possibilities (Flayyih and Khiari 2022). They also understood the need of fusing human qualities with technology in order to

foster creativity. Consequently, it is a crucial and pressing strategic problem to have a deeper knowledge of how technology and people affect innovation (PwC, 2017).

A major force behind several technical innovations and organizational progress, according to research, is IT. According to McAfee and Brynjolfsson (2008), IT may be utilized to enable and drive substantial process, product, and service innovations, as well as activate and deliver new ideas (Heroux & Fortin, 2018). IT supports several strategic techniques, including as inventive differentiation and inbound open innovation (Arvanitis, Loukis & Diamantopoulou, 2013).

In short, the literature has highlighted how to use IT for innovation. Prior information system (IS) research emphasizes the need for greater study on the function of IT in company innovation, despite the fact that digital media systems are being used more and more. The body of information system literature is added in this empirical study by examining the potential of IT to fulfil this function (Fernandez-Mesa, Ferreras-Mendez, Alegre & Chiva, 2014).

The primary goal is to investigate how IT can help on innovation and, more specifically, how much of an influence it has on both innovation and financial performance. In order to do this, this study mainly drew on resource-based theory (RBT) (Barney, Ketchen, & Wright, 2011). The IT skills of the board of directors and executive management are viewed as dynamic competencies that may work in tandem to provide competitive advantages through technological implementation. It is anticipated that, these talents would result in improved governance. It is also possible to anticipate, given the alignment paradox, that the alignment of IT and business will reduce the influence of these predictors on innovation.

LITERATURE REVIEW

IT Governance

The IT governance is sometimes known as “corporate governance of IT” or “enterprise governance of IT,” is a subset of corporate governance that focuses on IT resources of organizations. It focuses on managing IT assets similar to corporate governance and how they add value to the organization, as well as reducing risks associated to such assets (De Haes, Huygh & Joshi, 2017; Al-Tae & Flayyih, 2023).

Researchers in the current literature on IT governance adopt a holistic method to IT governance, understanding that it may be applied utilizing a number of structures, relational mechanism and procedures. They do this by drawing on corporate governance De Haes & Van Grembergen, 2009). The organizations and establishments supervising IT decisions and

bridging IT and business decision making functions such as IT steering committee, make up IT governance structures. With formalization, IT governance processes deal for IT monitoring and decision-making, such as portfolio management.

Co-location of business and IT staff as relational mechanisms are actions that promote collaborations among the corporate leaders, business management and IT management. Abass et al., (2022) reported that as IT governance is one of the components of corporate governance, it is considered as an essential component. In another vein, IT governance is defined as “specifying the decision rights and accountability framework to encourage desirable behavior in the use of IT” (Weill & Ross, 2004). IT governance according to De Heas and Van Grembergen (2015) is defined as “an integral component of corporate governance which addresses the definitions and implementations of structures, processes, and relational mechanism in an organization that support IT/business collaboration.

As more businesses become heavily dependent on IT for their operational needs throughout time, IT governance gained pace. According to another definition provided by De Haes et al., (2015), IT governance is a crucial aspect of governance that falls within the purview of the board. Since there is a clear connection between the two ideas, many of the concerns raised about IT governance is concurrently applicable to corporate governance (Smits & Van Hillegersberg, 2018).

Relational mechanisms, structures and procedures can be implemented to execute IT governance, which draws on concepts from corporate governance. There are several processes mentioned in the body of knowledge on IT governance including portfolio management, steering committees, and strategy committees. Transparency is a significant topic in writing on corporate governance. However, academic research has not given the subject of transparent IT governance much attention until this point (Flayyih, 2016). In addition to scholarly writings, the international standard for good practices. COBIT5 also stresses on the significance of maintaining stakeholders’ openness in the domain of IT governance (Ali & Green, 2012).

This procedure is critical, according to COBIT5, to “ensure that corporate IT performance and conformity assessment and reporting are transparent, with stakeholders accepting the goals and KPIs and the necessary remedial measures.” (Joshi et al., 2013). The theoretical framework’s construction was based on knowledge gleaned through literature reviews on innovation, strategic governance and IT governance (Augustine, 2012). Following this stage, a model is created that is connected to the propositions and is mostly RBT-based. According to Wiengarten, Humphreys, Cao, and McHugh (2013), the RBT paradigm is

complemented by the contingency theory viewpoint of RBT. According to the upper echelon theory (Manner, 2010), the strategies of the decision makers are affected by personal values and cognitive biases, whereas the RBT contingency perspective relies on the idea of “fit” between business strategy and IT strategy which is traced to contingency theory to comprehend how values of IT business is produced (Al-tae & Flayyih, 2022).

Board-Level IT Governance

Corporate governance includes IT governance as a crucial component, which implies the involvement of the board of directors (De Haes et al., 2015). There are two distinct study areas in the literature on IT governance level namely the management level and the board of directors’ level (Nikkeh et al., 2022). The former concentrates on the administrative frameworks for making IT decisions and the circumstances that influence how IT governance should be implemented (Chun, Brown & Koeppel, 2014). Over time, the latter has drawn more attention. Research on board-level IT governance on the function of the board in strategic IT decision-making and control.

The theory of agency is the most often utilized theoretical paradigm to investigate board-level IT governance, according to corporate governance literature (Benaroch & Chernobai, 2017; Flayyih & Khiari, 2023), indicating a concentration on the control functions of the boards with relation to IT. Many researchers draw also from the resource dependency theory (Benaroch & Chernobai, 2017; Yayla & Hu, 2014) and resource-based view of the firm (Heroux & Fortin, 2018) in order to study board level IT governance, which suggests that board and board members could be valuable resources for the IT governance. Given that there is no one ideal, method for implementing of forming board-level IT governance, as mentioned by the contingency theory (Turel & Bart, 2014).

Relationship Between the Corporate Governance and the Board of Directors

The board of directors, sometimes known as “the board” is an official body in charge of supervising all organizational operations. Corporate governance is the set of guidelines and procedures that they use to lead and manage the company. “Corporate governance encompasses a set of connections between a company’s management, its board, its shareholders, and other stakeholders,” according to OECD. Also, corporate governance offers a framework in which the goals of a company are established as well as the approach upon which they are achieved.

There are several types of board structures. A board may use either a unitary or a two-tier structure. Two-tier boards are made up of a “management board,” which consists of executive directors and a “supervisory board” which comprises non-executive directors (directors who are not a member of the senior management). Both executive and non-executive directors make up unitary boards (OECD, 2015). It is important to be aware of this distinction between a unitary and a two-tier board structure since it is likely that different study may refer to “the board” but not necessarily to the same idea (Hillman & Dalziel, 2003).

Boards of directors play controlling, serving, and reliant roles in organizations (Johnson, Daily, & Ellstrand, 1996). The control function is derived from the agency theory which distinguishes between two factors: the principle, who assigns tasks, and the agent, who executes them. Conflicts can occur when ownership and control are separated, according to agency theory, since people have varying levels of risk tolerance and diverse interests. The board should safeguard the stakeholder interest as the principal and exercise control over executive management in its own self-interest as the agent. The service responsibility of the board is to advise and guide the chief executive officer (CEO).

Lastly, directors can be useful resources for the corporation in terms of abilities and enabling accessibility to resources, thus their resource reliance function according to the resource-based perspective of the organization and the resource dependence hypothesis (Huse, 2005). In fact, the board of directors contributes a specific amount of “board capital,” which supports its control, service, and resource reliance duties and consists of human capital (e.g., expertise, experience, knowledge) and relational capital (e.g., network of links and reputation) (Hillman & Dalziel, 2003).

Performance of IT Governance

IT governance performance from a business perspective measures how well the IT organization provides services. Jerry Luftman sought to offer advice for attaining strategic connection between IT and business in the framework of the mid-90s using the comparable but broader discipline of strategic alignment. Dahlberg and Lahdelma (2007) consolidated the literature on IT governance and produced another inclusive definition of the delivering of business value from IT. Weill and Ross from MIT performed a significant number of case studies on the effectiveness of IT governance in financially top-performing firms at the beginning of the new millennium. The book they wrote, which is maybe the most often mentioned piece of work in the subject of IT governance right, included their research

methodology and the findings from more than 250 enterprises. According to Weill and Ross, IT governance performance refers to how well it accomplishes four goals that are prioritized according to the organization as a whole:

- i. The economical usage of IT
- ii. IT effectively used to maximize asset utilisation.
- iii. IT effectively used for growth.
- iv. IT used efficiently to provide company flexibility.

The definition of governance performance by Weill and Ross is plain, user-friendly, and well-recognized, despite being straightforward and occasionally being attacked for it (Tu, 2007). As a result, it has received widespread use for benchmarking purposes among researchers and professionals.

COBIT Frameworks: Background and Theory

Governance Maturity

The most well-known methodology for evaluating the maturity of IT governance is COBIT, which stands for the control objectives for information and related technology (De Haes & Van Grembergen, 2009). It has undergone continuous change since the IT governance institute (ITGI) initially published it in 1998. COBIT in the same way to the capability maturity model from the software engineering institute, has a maturity model for IT governance (ITGI, 2003). According to the framework, IT governance comprises four domains and 34 procedures. Various indicators of IT governance maturity such as activities, documentation, responsibility assignment, metrics and support for job are included in each process. The following subsections provide a quick overview of the COBIT domains and procedures.

Organize and Plan

This domain, which consists of 10 IT strategy and tactical procedures, is concerned with figuring out how IT can most effectively help the company accomplish its goals. It is necessary to develop, convey, and manage the strategic vision's realization from many viewpoints, as shown in Table 1. Both an appropriate structure and a technological foundation should be established.

Table 1. Organizing and planning of IT processes (ITGI, 2007)

Code	Title of the process	Illustration
PO1	Establishing a strategic IT plan.	Business and IT management are taken into account when converting the requirements of the company into service offers. Creation of plans to provide the services in an efficient and clear way.
PO2	Describe the data architecture.	The creation of a business data model with data classification strategies to guarantee the consistency and integrity of all data.
PO3	Decide on technology direction.	Defining and putting into practice a plan, an architecture, and standards for a technology infrastructure that takes use of technological opportunities.
PO4	Explain the IT procedures, arrangement and relationships.	Creating IT organizational structures that are open, adaptable, and responsive, as well as designing and putting in place the processes of IT with the owners, responsibilities and roles incorporated into decision- and business-making processes.
PO5	Organize the IT investment.	By creating and monitoring the budgets of IT in according to investment decision, IT strategy and making efficient and effective IT portfolio decisions and investment.
PO6	Inform the management objectives and guidance.	Providing stakeholders with documentation that is accurate, comprehensible, and authorized and is included into an IT control model.
PO7	Organize the IT workforce.	Recruiting and educating staff, inspiring via distinct career routes, allocating positions that match talents, developing a clear evaluation procedure, generating descriptions and assuring knowledge of reliance on individuals are all examples of human resource management
PO8	Control quality.	It involves QMS definition, a program for continual IT service improvement and constant performance monitoring against predetermined targets.
PO9	Identify and control IT risks.	Creation of a risk management model that incorporates risk mitigation, risk assessment and residual risk communication with frameworks for operational and business risk management.
PO10	Control projects.	A well-defined method to program and project management used for IT projects that allows involvement of stakeholders and tracking of project progress and risks.

Source: Prepared by researchers (2023) based on previous studies.

Obtain and Apply

IT solutions must be created, found, or bought, deployed and integrated into the processes of business in order to accomplish IT strategies. This sector also includes updating and maintaining current systems to guarantee that the solutions keep achieving company goals. The seven procedures that deal with acquisition and implementation are listed in Table 2.

Table 2 Obtain and practice IT procedures (ITGI, 2007)

Code	Title of the process	Illustration
AI1	Determine automatic remedies.	Finding technically and economically sound solution.
AI2	Purchase and upkeep of application software.	Making sure that the development process is efficient and timely.
AI3	Purchase and upkeep of technology Infrastructure.	Supplying suitable platform for business application in accordance with the established IT technological and architectural guidelines.

AI4	Enable use and operation.	Delivering practical user guides, operating manuals and educational items to convey the information required for efficient system operations and usage.
AI5	Invest on IT resources.	Obtaining and keeping IT talents that support the desired plan, creating a standardized and integrated IT infrastructure, and lowering the risk associated with procurement of IT.
AI6	Control changes.	Controlling authorization, impact evaluation and implementation of all modifications to the IT environment, technical solution, and app; reducing mistakes brought on by inadequate request specifications; and stopping the execution of illegal changes.
AI7	Install and certify modifications and solutions.	Planning releases to production while ensuring that apps and infrastructure solutions are error-free and suitable for their intended use.

Source: Prepared by researchers (2023) based on previous studies.

Delivery and Support

The actual provision of necessary services which include service support for users, management of security and continuity, service delivery and administration of operational facilities and data—is the focus of this domain. Table 3 contains a list of the covered processes.

Table 3. Delivering and sustaining of IT procedures (ITGI, 2007)

Code	Title of the Process	Illustration
DS1	Establish and control service standards.	Determining service needs, deciding on service levels, and ensuring that service levels are being met.
DS2	Organize third parties Services.	Establishing communication channels and mutual obligations with authorized outside service providers, as well as keeping an eye on service delivery to check for compliance.
DS3	Control performance and capability.	Minimizing downtime, fulfilling SLA response time requirements, and continuously enhancing IT capacity and performance through measuring and monitoring.
DS4	Maintain consistent Service.	Creating, monitoring, and testing IT continuity strategies, as well as incorporating resilience into automated solutions.
DS5	Make sure systems are secure.	Establishing IT security policies, strategies, and guidelines as well as keeping track of, identifying, reporting, and addressing security flaws and occurrences.
DS6	Determine and distribute costs.	A system for timely report of IT expenses and use assigned, complete and accurate IT cost collection and a fair manner of allocations chosen by business users.
DS7	Inform and prepare users.	Thorough comprehension of the demands for IT user training, implementation of a successful training plan, and result evaluation.
DS8	Control the service desk and occurrences.	A competent service desk functions with prompt time of response, trend analysis, and transparent escalation protocols.
DS9	Control the configuration.	Creating and upkeep of a precise and comprehensive library of asset characteristics and configuration, and comparison and baselines of actual asset with the said repository.
DS 10	Manage issues.	Identifying solutions for identified operational difficulties, documenting, tracking, and addressing operational issues, looking at the underlying causes of all key issues.
DS11	Control data.	Ensuring that data is comprehensive, accurate, available, and protected.
DS12	Take care of the physical environment.	Establishing and sustaining a proper physical environment to safeguard assets of IT from damage, theft, and unauthorized access.
DS13	Control operations.	Maintaining infrastructure, monitoring and meeting operational service standards for securing sensitive outputs and planning data processing.

Source: Prepared by researchers (2023) based on previous studies.

Monitoring and Evaluation

Every IT process has to have its quality and adherence to control criteria periodically evaluated throughout time. Regulatory compliance, governance, internal control monitoring, and performance management are all covered in this paper. Table 4 lists the procedures in this domain.

Table 4. Observe and assess IT procedures (ITGI, 2007)

Code	Title of the Process	Illustration
ME1	IT monitoring and evaluation performance	Keeping track of and reporting process data, as well as locating and Putting performance improvement measures into practice
ME2	Observe and assess internal control	Keeping track of IT-related operations that fall within internal control processes and finding areas for improvement
ME3	Ensure adherence to regulations	determining all applicable laws, rules, and contracts, as well as improving IT operations to a commensurate degree of compliance and lowering the risk of noncompliance
ME4	Dispense with IT governance	Creating reports for the board on IT strategy, performance, and risks as well as meeting governance standards in accordance with the board's directives

Source: Prepared by researchers (2023) based on previous studies.

Underpinning Theory

Organizations can employ resources and capabilities, in accordance with RBT, to assist in choosing and carrying out plans (Barney et al., 2011). A greater performance may also result from the integration of several complimentary resources, according to this statement. The resource bases theory has widely been utilized to investigate the connection between business value, IT and company performance (Kim, Shin, Kim, & Lee, 2011). This theory's main justification is that through enhancing organizational capacities, IT resources may boost business performance. In other words, the fusion and coordination of organizational competencies with IT resources improves organizational performance (Liang et al., 2010).

MATERIAL AND METHODOLOGY

IT is a resource that a business may employ to “increase internal communication, boost product design quality, shorten the design cycle time, and minimize product development cost.” Therefore, RBT could be appropriate for the study's goals. IT resources, for example, have been described using a wide variety of terminology. According to Wade and Hulland (2004), resources accessible to the company is a set of assets and competencies. The goal of this study is to ascertain how COBIT's control goals for information and related technologies (COBIT) impact business performance through the planning, organizing, obtaining, implementing,

delivering, supporting, monitoring, and evaluating processes. Also, our study relied on a study method (De Haes et al., 2017).

By focusing on the public disclosure of ITG under the framework of COBIT with the aim of improving the internal credibility of banks, which is reflected in the financial performance. In the context of private banks in Iraq, there may be differences in the implementation of IT governance in Iraqi listed and unlisted banks regarding the implementation of IT governance. For this reason, we have specifically chosen the Iraqi banks listed on the Iraq Stock Exchange.

Sample

COBIT techniques have been applied in Iraqi banks in particular, starting in 2019, according to the directives of the Central Bank of Iraq. Therefore, the study sample included the Iraqi banking companies listed in the Iraq Stock Exchange in the year (2020-2022), which numbered 44 Iraqs, and after the banks under guardianship and liquidation were excluded, the total study sample became 33 Iraqs during that period.

Mathematical model

We used EVA modified scale to measure the level of performance according to the (Davoodi et al., 2022). In order to measure ITG based on a study (Joshi et al., 2013). ITG under COBIT includes five dimensions (planning, organizing, obtaining, implementing, delivering, supporting, monitoring, and evaluating processes). In measuring the relationship between IT governance under COBIT and financial performance, we use the following equation:

$$EVA_{it} = \alpha_o + COBIT1_{i,t} + COBIT2_{i,t} + COBIT3_{i,t} + COBIT4_{i,t} + COBIT5_{i,t} + Firmsize_{i,t} + Leverage_{i,t} + \varepsilon_{i,t}; \dots (1)$$

Where,

$EVA_{i,t}$	Level of Financial Performance, to bank (i) in year (t) .
$COBIT1_{i,t}$	Planning and organizing, to bank (i) in year (t) .
$COBIT2_{i,t}$	Obtaining and implementing, to bank (i) in year (t) .
$COBIT3_{i,t}$	Delivering and supporting, to bank (i) in year (t) .
$COBIT4_{i,t}$	monitoring, to bank (i) in year (t) .
$COBIT5_{i,t}$	evaluating processes, to bank (i) in year (t) .

RESULTS AND DISCUSSION

Descriptive summary statistics

Table 5 show the results of the descriptive statistics for the study variables.

Table 5. Descriptive summary statistics.

<i>Variables</i>	<i>Mean</i>	<i>Std. Dev.</i>	<i>Minimum</i>	<i>Maximum</i>
Dependent Variables:				
EVA	1.16	0.85	0.23	7.8
Independent Variables:				
<i>Planning & organizing</i>	1.99	0.22	1.22	2.4
<i>Obtaining & implementing</i>	0.91	0.613	1.2	2.1
COBIT <i>Delivering & supporting</i>	1.80	0.178	0.6	2.4
<i>monitoring</i>	0.71	0.174	0	1.90
<i>evaluating processes</i>	0.89			
Control Variables:				
<i>Firm size</i>	9.66	0.502	11.25	7.78
<i>Leverage</i>	0.52	0.6	0.01	3.32

Source: STATA program output

Table 5. shows a description of the main features of the data of the study sample during the period (2020-2022), from which we can notice the homogeneity of the study sample used in a large way, as the standard deviation indicates that there is a slight discrepancy between Iraqi companies in all indicators. We also note that the level of COBIT for the five sub-categories is that the most applied category in Iraqi companies was (planning and organizing) practices with an average of (1.99), followed by practices related to (delivering and supporting) with an average of (1.8), Then practices (Obtaining and implementing) with an average of (0.91). And then the practices related to (evaluating processes) with an average of (0.89). And finally, (monitoring) practices, which are considered the least applied practices in Iraqi companies, with an average of (0.71). In order to first verify the strength and direction of the assumed relationships between the variables, and the absence of the problem of double-stepping; The Pearson zero-degree correlations will be analysed among all study variables as shown in Table 6.

Table 6. Correlation matrix.

Variables	COBIT						Size
	EVA	Planning & organizing	Obtaining & implementing	Delivering & supporting	monitoring	Evaluating processes	
EVA	1						
Planning & organizing	0.6**	1					

Obtaining & implementing	0.41**	0.59*	1				
Delivering & supporting	0.44**	0.58*	0.49*	1			
monitoring	0.31**	0.45*	0.47*	0.167*	1		
Evaluating processes	0.52**	0.41*	0.13*	0.61*	0.47*	1	
Size	0.30**	0.11	0.358*	0.101	0.31*	0.47*	1
Leverage	0.29**	0.12*	0.358*	-0.21*	0.01	0.49*	0.19*

Source: STATA program output

The results indicate that the relationship between the dependent variable, the explanatory dimensions, and the control variables was positive and ranged between (0.6-0.29). Although most of them are low in terms of the level of correlation, the result was positive, as the relationship shows the strength of the correlation of the sub-dimensions among them. Also, the results showed that there was an inverse relationship between (Delivering and supporting) and the control variable (Leverage). Table 1 shows COBIT dimensions and firms' performance.

Table 7. Aggregate COBIT dimensions and firms' performance

<i>Variables</i>	β Coefficients	P> Sig	R ²	F	F> Sig
Independent Variables:					
<i>Planning & organizing</i>	0.51	0.000*			
<i>Obtaining & implementing</i>	0.26	0.001*			
COBIT <i>Delivering & supporting</i>	0.33	0.004*			
<i>monitoring</i>	0.8	0.012*	0.47	22.89	0.000**
<i>evaluating processes</i>	0.1	0.000*			
Control Variables:					
<i>Firm size</i>	0.27	0.008*			
<i>Leverage</i>	0.11	0.865			

Notes: ** and * are significant at the 1%, and 5% levels respectively.

Source: STATA program output

Table 7 shows many interesting results. It shows that there is a direct positive effect of the COBIT dimensions on the performance of Iraqi companies at the level of 1%, as the β of the dimension (Planning & Organizing) notes the effect ratio (0.51), and thus the increase by one degree in the level of performance of banks On average, it will lead to a direct increase in companies' performance by about half a degree. The result of significance indicates that it was statistically complete for the variable, and that its result was (0.000), which is less than 5%. As for the β for the dimension (Obtaining & implementing), the effect ratio is (0.26), and therefore an increase of one degree in the level of performance of banks will lead, on average, to a direct increase in the performance of companies by about a quarter of a degree. The result of significance indicates that it was statistically complete for the variable, and that its result was (0.001), which is less than 5%. The β for the dimension (delivering & supporting) has an effect

ratio of (0.33), and therefore an increase of one degree in the level of performance of banks will lead, on average, to a direct increase in the performance of companies by approximately one third of a degree. The result of significance indicates that it was statistically complete for the variable, and that its result was (0.004), which is less than 5%. The β for the dimension (monitoring) effect ratio is (0.8), and therefore an increase of one degree in the level of performance of banks will lead, on average, to a direct increase in the performance of companies by approximately one-eighth degree. The result of significance indicates that it was statistically complete for the variable, and that its result was (0.012), which is less than 5%. The β for the dimension (evaluating processes) has an effect ratio of (0.1), and therefore an increase of one degree in the level of performance of banks will lead, on average, to a direct increase in the performance of companies by about 10% degree. The result of significance indicates that it was statistically complete for the variable, and that its result was (0.000), which is less than 5%. And by transferring to the effect of the control variables, it was (0.27) and (0.11) respectively for the variable (company size and operating leverage) in terms of the effect on performance. The result of significance indicates that it was statistically complete for the variable size of the company, and that its result was (0.008), which is less than 5%. While it was not significant for the operating leverage variable, which amounted to (0.865), being greater than 5%. The value of (F) indicates the proof of the basic study hypothesis, while the significance of the model parameter was statistically perfect.

CONCLUSION

The application of ITG under the COBIT framework at the present time is very important, in light of the rise in financial crises related to the currency auction and money laundering operations, in exchange for the entry of many Iraqi banks into the blacklist of the US government. The results obtained showed interesting results, by comparing our current study and the results of previous studies that dealt with ITG according to the COBIT framework in Iraqi banks. Noting, through the results of the descriptive statistics, the high level of application of ITG in the banks listed in the Iraqi stock exchange, and although measuring the level of performance and the extent of applying the COBIT framework is not a primary aim in the study, the results of applying both variables are good compared to previous years. The results showed the effectiveness of ITG under the COBIT framework Influencing the banking financial performance, which necessitates that it be applied to various Iraqi companies listed in the Iraq Stock Exchange, and that the application should not be limited to banks only.

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