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THE IMPACT OF THE SARBANES - OXLEY ACT (SOX) ON INTERNAL CONTROL EFFICIENCY: AN EXPLORATORY STUDY OF THE OPINIONS OF A SAMPLE OF FIRST-CLASS AUDITORS

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***ABSTRACT*:**

The study aims to analyze the impact of implementing the Sarbanes-Oxley Act (SOX) requirements on improving the efficiency of internal control systems within the Iraqi business environment, from the perspective of first-class auditors working in banks and companies listed on the Iraq Stock Exchange. The research's significance stems from the scarcity of Arabic studies, particularly Iraqi ones, that have addressed this topic within a context different from the American environment in which the law originated. The study seeks to assess the suitability of this legislation's requirements to the realities of auditing and control in Iraq.

The study adopted a descriptive-analytical approach to construct its theoretical and applied frameworks. Data were analyzed using SPSS software through a questionnaire distributed to a sample of (96) auditors. The results demonstrated a significant positive correlation and impact between compliance with the Sarbanes-Oxley Act requirements and the internal control system. The study recommends that professional and regulatory bodies in Iraq adopt frameworks similar to the requirements of this law, taking into account the specificities of the local accounting environment, to enhance the efficiency and effectiveness of internal control systems.

***Keywords**: Sarbanes-Oxley act (SOX), Internal Controls, Coso.*

INTRODUCTION

The efficiency of internal control systems is widely regarded as a cornerstone of effective corporate governance, financial reporting reliability, and organizational sustainability. Well-designed internal controls enhance the credibility of financial information, reduce information asymmetry, and mitigate financial and operational risks, thereby reinforcing stakeholders' confidence in corporate disclosures (Su et al., 2022, Act, S. O. 2002). As a result, internal control efficiency has become a central focus for regulators, standard-setters, and professional auditors in both developed and emerging economies.

In the wake of major corporate scandals in the early 2000s, the United States enacted the Sarbanes– Oxley Act (SOX) in 2002 as a comprehensive regulatory response aimed at restoring investor confidence and strengthening internal control mechanisms within public companies. Through its key provisions, particularly Sections 302 and 404, SOX explicitly links management responsibility, financial disclosure quality, and the effectiveness of internal control systems (Saber & Al-Zebari, 2023; Smith, 2005). Although originally designed for U.S.-listed firms, SOX has exerted a significant influence on global corporate governance practices, with prior studies suggesting that SOX compliance contributes to improved internal control efficiency, enhanced transparency, and reduced fraud risk (Karagiannis et al., 2007; Ilori et al., 2024).

Despite the growing body of literature on SOX and internal control systems, empirical evidence from emerging markets remains limited, particularly in contexts characterized by evolving regulatory frameworks such as Iraq. Moreover, existing studies often rely on archival or firm-level data, while comparatively little attention has been paid to professional judgments derived from auditing practice. In this regard, the perceptions of first-class auditors—who possess extensive expertise in evaluating internal controls and compliance requirements—provide

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a valuable source of empirical insight. Accordingly, this study adopts an exploratory approach based on a survey of the opinions of a sample of first-class auditors to examine the impact of SOX compliance on the efficiency of internal control systems, thereby contributing both academically and practically to the understanding of governance and control practices in emerging economies. Despite the large number of studies that have examined the Sarbanes–Oxley Act (SOX) and the internal control system under the COSO framework separately, the accounting literature still suffers from a clear shortage of applied studies that investigate the integration of SOX requirements with the components of the COSO framework, particularly in developing environments outside the American context. This research gap is even more evident in the Iraqi business environment, which is characterized by legislative and institutional particularities and a relatively weak application of internal control frameworks, raising a research question regarding the extent to which SOX requirements can enhance the effectiveness of the internal control system in accordance with the COSO framework within Iraqi companies.

BACKGROUND

The Sarbanes-Oxley Act (SOX) of 2002 represents a pivotal regulatory reform aimed at enhancing the integrity of financial markets and protecting investors from unreliable financial practices. The law imposes stringent requirements on public companies to ensure the effectiveness of their internal control systems and the accuracy of financial disclosure, raising questions regarding its applicability and impact on non-listed firms (Smith, 2005). Internal control plays a central role in maintaining the efficiency of financial and operational processes within organizations, as it helps reduce operational risks, improve regulatory compliance, and enhance the reliability of corporate performance reporting (Tukue, 2024). According to the COSO framework, an effective internal control system mitigates the likelihood of material misstatements and contributes to overall organizational stability.

Since the enactment of SOX, listed companies have shown substantial improvements in internal control quality, particularly in financial reporting and transparency. Compliance with Articles 302 and 404 has been linked to increased reliability of financial data and reduced risk of fraud (Ilori et al., 2024). Non- listed companies, however, often face difficulties in implementing similar standards due to the absence of a legal mandate, which can result in weaker internal control systems and reduced operational efficiency (Deloitte, 2024) (Rizgar et al.,2025). To address these challenges, companies have increasingly adopted advanced technologies, including data analytics and artificial intelligence, to support SOX compliance and reduce operational costs. Research indicates that computerized compliance improves internal control efficiency and minimizes financial errors compared to traditional manual processes (Ilori et al., 2024; Karagiannis et al., 2007).

Empirical studies have consistently demonstrated the positive effects of SOX compliance on internal control systems. For instance, Funchal (2016) found that Brazilian firms adopting SOX standards experienced significant enhancements in internal control, leading to reduced financial fraud and improved transparency. Similarly, Ilori et al. (2024) reported that South American companies complying with SOX experienced fewer accounting errors and higher investor confidence. Comparative studies between listed and unlisted companies highlight that listed firms generally maintain more stringent internal controls, which improve regulatory compliance and reduce financial risks, while unlisted firms often lag in control implementation (Deloitte, 2024). Nonetheless, the influence of SOX is not uniform across all regions; Karagiannis et al. (2007) observed that local regulatory and institutional factors significantly affect internal control efficiency, suggesting that SOX's impact may be less pronounced in certain European contexts.

Despite evidence of positive outcomes, some studies have questioned the strength of the relationship between SOX compliance and internal control performance. Gu & Yuan (2024) found that U.S. firms did not experience substantial improvements in risk management post-SOX, emphasizing the importance of internal governance structures over regulatory compliance. Similarly, Srinivasan & Coates (2014) reported that smaller companies faced challenges in implementing SOX requirements without observing clear benefits, whereas large companies demonstrated more tangible improvements in financial reporting quality.

The advent of technology has introduced new avenues for enhancing SOX compliance. Cyber analytics, process automation, and AI-based monitoring tools provide continuous oversight, reduce manual errors, and improve financial reporting accuracy. Research demonstrates that these computerized approaches outperform traditional compliance, which relies on periodic manual audits and testing (Karagiannis et al., 2007;). Collectively, these findings underscore that while SOX compliance positively influences internal control effectiveness, the degree of impact depends on firm characteristics, regulatory context, and the adoption of advanced technological solutions.

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THEORETICAL FRAMEWORK

This study theoretical frameworks are grounded in SOX and components of the internal control system according to COSO, which includes control environment, risk assessment, control activities, information and communication, and monitoring activities. The following describes all of the theoretical frameworks in detail:

The Sarbanes–Oxley Act and Its Key Provisions: Sections 302, 404, and 906

The Sarbanes–Oxley Act (SOX) of 2002 constitutes a major regulatory milestone aimed at strengthening corporate governance, enhancing financial reporting quality, and improving the efficiency of internal control systems. Enacted in response to a series of corporate accounting scandals, SOX seeks to restore investor confidence by reinforcing management accountability, improving disclosure practices, and imposing stricter oversight on internal controls (Smith, 2005). Among its provisions, Sections 302, 404, and 906 play a central role in linking financial reporting integrity to the effectiveness of internal control systems.

Section 302 focuses on corporate responsibility for financial reporting by requiring chief executive officers and chief financial officers to personally certify the accuracy and completeness of periodic financial statements. This certification also extends to the effectiveness of disclosure controls and internal control procedures. By assigning direct responsibility to senior management, Section 302 enhances the credibility of financial information and promotes a stronger control environment, thereby reducing information asymmetry and opportunistic behavior (Chen et al., 2023; Ilori et al., 2024).

Section 404 is widely regarded as the cornerstone of SOX due to its explicit emphasis on internal control efficiency. It requires management to assess the effectiveness of internal control over financial reporting and mandates external auditors to provide an independent attestation of this assessment. Empirical evidence suggests that compliance with Section 404 leads to improvements in internal control quality, risk management practices, and financial reporting reliability, despite concerns regarding implementation costs (Su et al., 2022; Krishnan et al., 2023). Over time, firms subject to Section 404 have demonstrated fewer material weaknesses and stronger governance structures.

Section 906 complements the preceding provisions by introducing criminal penalties for executives who knowingly certify false or misleading financial reports. This section strengthens the enforcement mechanism of SOX by linking internal control failures and financial misstatements to legal consequences. Prior research indicates that the threat of criminal liability enhances executive diligence and reinforces the effectiveness of internal control systems by deterring fraudulent financial reporting (Karagiannis et al., 2007; Chen et al., 2023).

Collectively, Sections 302, 404, and 906 establish an integrated framework that enhances internal control system efficiency through managerial accountability, systematic control evaluation, and legal enforcement. Recent literature emphasizes that when these provisions are aligned with internationally recognized frameworks such as COSO, they contribute significantly to improving governance quality and financial transparency, not only in developed markets but also in emerging economies seeking to strengthen their regulatory environments (Su et al., 2022; Ilori et al., 2024).

Components of the Internal Control System According to Coso

The structure of the internal control system according to the COSO framework consists of five main elements that overlap with each other as an effective framework for describing and analyzing the internal control system, in order to provide appropriate assurance of achieving the objectives of the economic unit. Therefore, the COSO framework was developed as an integrated control framework that consists of the following elements (McNally, J.S.2013) (Redinger, 2025)

Control environment

The control environment provides the foundation for implementing internal control, guiding the organization toward strategic objectives, reliable financial reporting, regulatory compliance, and asset protection (FERDIA & KAMMOUN, 2024). Key principles include:

-Demonstrating a strong commitment to integrity and ethical values.

-Ensuring the board of directors is independent and actively oversees internal controls.

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-Establishing clear organizational structures, reporting lines, and defined responsibilities.

-Attracting, developing, and retaining skilled personnel aligned with organizational objectives.

-Holding individuals accountable for their roles in achieving internal control objectives.

Risk assessment
During risk assessment, an organization evaluates its risks by analyzing their likelihood and potential impact on corporate objectives. This process enables senior management to understand how possible events may affect the company and to determine strategies for managing significant risks. Risks are assessed on both inherent and residual bases using techniques such as sensitivity analysis, scenario analysis, and stress testing. In the risk response stage, management selects appropriate actions, including risk avoidance, acceptance, mitigation, or sharing, to align risks with the company's tolerance. By aggregating risks across categories, the overall risk portfolio can be examined, considering correlations among different risks. This portfolio perspective provides executives with a comprehensive view, supporting informed and effective risk management decisions (Kinyar, 2020).

Control activities
These activities establish policies that help a business organization contribute to providing reasonable security so that the organization can respond to threats. That is, their activities establish the head of the administrative unit to respond to various threats, including corruption and information systems (Catagua Briones, at el 2023).

Information and communication
Information and communication. Information is essential for an entity to carry out its internal control responsibilities to support the achievement of its objectives. Management obtains or generates relevant, high-quality information from internal and external sources and uses it to support the work of other components of internal control. Communication is the ongoing, recurring process of providing, sharing, and obtaining necessary information. Internal communication is the means by which information is disseminated throughout the organization, flowing up, down, and across the entity. It enables employees to receive a clear message from senior management that control responsibilities are to be taken seriously. The full scope of internal communication can be upward, downward, horizontal, and diagonal (Moeller, 2013) (Vallabhaneni, 2022).

Monitoring activities
Monitoring involves the ongoing or periodic evaluation of internal control systems to ensure that controls function as intended and are adjusted for changes in conditions. This process includes performing regular assessments and reporting any deficiencies to the responsible parties for corrective action. Monitoring relies on multiple information sources, including internal audit reports, control exception reports, regulator feedback, operational staff input, and customer complaints. An internal audit function, independent from operating and accounting departments and reporting to top management or the audit committee, is critical for effective monitoring. It not only ensures continuous oversight but also supports external auditors under Section 404 of SOX, potentially reducing audit costs. Auditing standards provide guidance for evaluating the competence, integrity, and objectivity of internal auditors to allow reliance on their work (Elder et al., 2020).

METHODOLOGY AND PROCEDURES

To achieve the study's objectives and conduct its tests, the following basic tools were employed:

1. Descriptive application of theory within a theoretical framework, relying on available sources such as books, journals, theses, dissertations, and reputable websites.

2. The descriptive model of analysis is the most suitable for the accounting reality of Iraqi companies and their application of the SOX law. It allows for a description of phenomena as they exist, a comparison of the law's variations and the quality of those variations in a precise and scientific manner, and the ability to interpret results and link them to previous studies. This enables reliable reliance on these results for current conclusions regarding improving internal variation and enhancing financial credibility.

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Power System Protection and Control
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Statistical Analysis and Data Description
This section is a prerequisite to the inferential analysis. Specifically, the focus is on presenting and reporting field data from the questionnaire using descriptive statistics and reliability tests. It also summarizes the characteristics of the sample, including education, professional type, and years of experience necessary to obtain the empirical findings.

Also used in this section are means and standard deviations as well as Cronbach's alpha reliability for the study variables, namely Sarbanes-Oxley Act and COSO-based internal control system. Lastly, the section examines the distribution of the data in order to determine whether these data are fit for inference. This section therefore provides the statistic foundation for testing the study hypotheses in the subsequent sections.

Sample Demographic Characteristics
Demographic characterization is an important aspect of this empirical study in that it provides both ways to interpret results and information about the variability and representativeness of the sample. Therefore, the main demographic characteristics of respondents such as educational level, professional level (academic or practitioner) and year of experience are briefly presented in this paper.

These attributes give the students more context of understanding and skill to ask questions. These attributes also function as a good baseline for determining responses accuracy and for identifying scientific and professional backgrounds that are both varied, which in turn improves results strength and generalizability.

Distribution of the Sample by Educational Qualification
Education is another demographic characteristic that may impact the respondents' understandings and understanding of the study topic, particularly accounting rules and internal control systems. Disparities in curricular qualifications, generates different theoretical knowledge and analytical skills that give the empirical analysis credibility and credibility.

Table 1 presents the distribution of the study sample according to educational qualification.

Educational Qualification	Frequency	Percentage
Doctorate (PhD)	50	52.08%
Master's degree	30	31.25%
Forensic Accounting	16	16.67%
Total	96	100%

Table 1 shows that 52.08% had a degree or higher and most of these respondents were PhD students. This is followed by the master's candidate who scores with a 31.25% response rate and the professional degree in legal accounting and auditing which accounts for 16.67% of the sample. More than half of the respondents have postgraduate degrees, which suggests a high degree of academic knowledge.

As shown in Table 1, the majority of candidates hold higher education that also increases the accuracy and validity of data. They are expected to be well versed in international financial reporting requirements, regulations and internal control processes. Professionals assist with providing an overall assessment of accounting and regulatory practices that integrates theoretical knowledge with practical experience.

Distribution of the Sample by Professional Category
The professional categories that are used to segment respondents are designed to indicate the type of background they have, whether academic or professional. This is especially important because it captures the balance between the theoretical knowledge that came from a university education and the practice-based knowledge that comes from professional accounting and financial supervision expertise.

DOI: 10.46121/pspc.54.1.56

Table 2 illustrates the distribution of the sample by professional category.

Professional category	Frequency	Percentage
Academic	50	52.08%
Professional	46	47.92%
Total	96	100%

As Table 2 shows, the student sample is almost evenly distributed between academics and practitioners. The respondents were 52.08% academics and 47.92% practitioners, with a mix of researchers and practitioners.

The accounting skewed distribution of Table 2 also helps validate the analysis in that it integrates theoretical knowledge and academic and professional experience. These results are therefore more detailed and relevant to academia and professional practice.

Distribution of the Sample by Years of Experience

Knowing the extent of the experience used to understand the perceived impact of accounting and internal controls is important for understanding perceptions, as the experience enables a better understanding of the effectiveness of the accounting and internal control systems. It also helps us to better understand the study context, using experience differences.

Table 3 presents the distribution of the sample according to years of experience.

Years of Experience	Frequency	Percentage
10-15 Years	21	21.88%
16-20 Years	50	52.08%
21 Years and more	25	26.04%
Total	96	100%

Those 16-20-year-olds listed above constitute 52.08% of the survey respondents, as Table 3. The next largest group is respondents with 21+ years of experience at 26.04%, and 10-15 years of experience at 21.88%. Table 3 shows a clear concentration of respondents in the higher experience levels.

Plus, the profile of experience in Table 3 further cements the credibility of the findings from the accounting perspective, as respondents with years of professional experience will be better able to assess the application of both the Sarbanes-Oxley Act and the COSO model. While the number of less experienced respondents provides complementary perspectives, this also makes the findings more representative and generalizable.

Measurement of Variables

Measurement of study variables is a crucial step in the empirical analysis, as it provides a controlled means to measure respondents' perceptions and to ensure that the subsequent testing of hypotheses is true. The variables were implemented on a theoretically established foundation and through a structured questionnaire of a Likert scale from (1) strongly disagree to (5) strongly agree. Means, standard deviations, and percentage scores were used to indicate the level of agreement between respondents and each item and dimension.

Measurement of the Independent Variable

Among the independent variables included in this study is the Sarbanes-Oxley Act, one of the most significant regulatory regimes that seeks to improve corporate governance, transparency, and accountability in financial reporting. Since it was central to the goal of increased internal control and financial misconduct, SOX was operationalized around two fronts: identifying its needs.

The first dimension covers SOX Section 404 requirements, where management has to assess and document the effectiveness of the internal control system, as well as have the external auditor certify. The X levels are classified into five levels (X1-X5): management reporting, documentation of controls, and auditing assurance of the effectiveness of internal control.

The second is consistent with reporting requirements under SOX Section 302 and Section 906 that require the executive management to verify financial reporting accuracy and truthfulness. This is a dimension that contains

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five parts (X6–X10) relating to management certification, accountability, and legal implications of misstatement or fraudulent reporting.

Table 4. Independent variable: Sarbanes- Oxley Act (SOX)

Symbol	Item	Std. Devotion	Mean	Percent
Dimension One: SOX Section 404 Requirements (Evaluation of Internal Control Effectiveness)				
X1	Management's preparation of a report on the effectiveness of the internal control system in accordance with SOX Section 404(a) enhances the clarity of the internal control structure and strengthens the credibility of financial reporting.	0.75503	4.0937	81.87
X2	Management reports prepared under the requirements of Section 404 serve as a key reference for external auditors when assessing the effectiveness of internal controls.	0.22725	4.0313	80.63
X3	Mandating management to document internal control procedures pursuant to Section 404(a) contributes to mitigating the risk of financial manipulation.	0.51288	4.3229	86.46
X4	The external auditor's examination of management's report in accordance with Section 404(b) increases the reliability of internal control evaluations from a regulatory perspective.	0.48666	3.8750	77.50
X5	Compliance with Section 404(b) requirements enhances audit quality through a rigorous assessment of material weaknesses within the internal control system.	0.72427	4.2083	84.17
Mean of First Dimension		0.5412	4.1062	82.13%
Dimension Two: SOX Sections 302 and 906 Requirements (Management Responsibility for Financial Reporting)				
X6	Executive management's adherence to the certifications required under SOX Section 302 ensures that financial statements are not misleading and fairly represent the entity's financial position.	.80104	4.1042	82.08
X7	Senior management's review of the internal control system before certifying financial statements, as stipulated by Section 302, contributes to reducing material misstatements.	.80104	4.1042	82.08
X8	The implementation of Section 302 requirements strengthens management's accountability for the preparation of accurate and reliable financial reports.	.53925	3.5625	71.25
X9	Executive officers' certification of financial statements under Section 906 plays a significant role in reducing financial fraud practices.	.90394	3.9375	78.75
X10	The legal consequences associated with Section 906 provide a strong incentive for management to ensure the integrity and reliability of financial reporting.	.77686	4.0833	81.67
Mean of Second Dimension		0.7644	3.9583	79.17%
Mean of the independent variable		0.6528	4.0323	80.64%

In Table 4, the independent variable had an overall mean score of 4.0323, or 80.64% of a score, which indicates that the positive effect of SOX requirements was well accepted by respondents. The mean for Section 404 was higher (4.1062) than the mean for Sections 302 and 906 (3.9583), suggesting that internal control assessment and documentation requirements are seen to have greater influence on governance and reporting quality.

DOI: 10.46121/pspc.54.1.56

Power System Protection and Control
ISSN:1674-3415

Measurement of the Dependent Variable

The internal control system is a dependent variable, measured using the COSO approach, widely accepted in the literature and profession as a complete assessment of internal control effectiveness. Five interrelated components are provided in the COSO model to ensure financial reporting and operating efficiency.

There were five areas of the internal control system: Control Environment, Risk Assessment, Control Activities, Information and Communication, and Monitoring Activities. These were measured for twenty- two items, Y1–Y22, in Table 5.

Table 5. Dependent variable: Internal Control System Based on the COSO Components

Symbol	Item	Std. Devotion	Mean	Percent
Dimension One: Control Environment				
Y1	The existence of formal codes of conduct that promote integrity and professional ethics, along with accountability mechanisms for internal control personnel, enhances the reliability of financial reporting and improves earnings quality under SOX compliance.	0.26962	4.0313	80.63
Y2	Clearly defined job descriptions and effective segregation of duties between record-keeping and asset-handling functions are implemented within companies.	0.51288	4.3229	86.46
Y3	A strong control environment contributes significantly to improving the overall quality of financial reporting.	0.71074	4.1771	83.54
Y4	Companies maintain internal audit systems capable of detecting fraud and preventing financial manipulation.	0.49725	3.7604	75.21
Y5	Advanced accounting systems supported by an appropriate organizational structure ensure the generation and proper flow of accurate financial information.	1.16373	3.8438	76.88
Y6	Effective managerial oversight is achieved through budgeting, strategic planning, and systematic comparisons between planned and actual performance.	1.18470	3.6667	73.33
Mean of First Dimension		0.7232	3.9670	79.34%
Dimension Two: Risk Assessment				
Y7	Clearly defined organizational objectives contribute to reducing risk when companies comply with the COSO framework and SOX requirements.	0.58901	3.7708	75.42
Y8	Companies systematically identify and analyze risks that may hinder the achievement of organizational objectives.	1.17410	3.8958	77.92
Y9	Risk assessment of financial operations and reporting under SOX facilitates the early detection of misleading accounting practices and enhances earnings quality.	0.73441	4.1354	82.71

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Power System Protection and Control
ISSN:1674-3415

Y10	Effective risk assessment processes help identify deficiencies that may lead to fraud risks or material misstatements.	0.27125	3.9896	79.79
Mean of Second Dimension		0.6922	3.9479	78.96%
Dimension Three: Control Activities				
Y11	Companies establish control activities based on identified risks to reduce them to acceptable levels.	0.51640	4.3333	86.67
Y12	Control activities are evaluated by assessing the controls applied to financial, operational, and information technology processes.	0.69459	4.2083	84.17
Y13	Company policies clearly define employee duties and responsibilities within control activities and are periodically reviewed by management to ensure alignment with organizational objectives.	0.28715	4.0417	80.83
Y14	Control policies are periodically updated by management in accordance with the achievement of organizational goals.	0.51031	4.3854	87.71
Mean of the Third Dimension		0.5021	4.2422	84.85%
Dimension Four: Information and Communication				
Y15	Relevant and timely information is utilized to meet disclosure objectives for both internal and external stakeholders.	0.72540	4.1771	83.54
Y16	Effective communication and information exchange exist among departments within companies listed on the Iraq Stock Exchange.	0.56195	3.7500	75.00
Y17	Companies maintain continuous communication with external stakeholders and employ formal mechanisms to obtain information related to markets and competitors.	0.80070	4.0313	80.63
Y18	Formal mechanisms are in place to collect and analyze information concerning markets and competitors.	0.85680	3.8854	77.71
Mean of the Fourth Dimension		0.7362	3.9610	79.22%
Dimension Five: Monitoring Activities				
Y19	The internal control system is continuously and periodically evaluated to ensure that its components are present and functioning effectively.	0.50088	3.7917	75.83
Y20	Internal control deficiencies are identified and reported promptly to responsible parties, accompanied by recommendations for corrective actions and system improvement.	0.81266	4.0521	81.04
Y21	Monitoring activities are conducted at regular intervals (quarterly or annually) by internal audit functions or external parties.	0.90461	3.8854	77.71
Y22	The external auditor's evaluation of control effectiveness, together with management's review of control design in compliance with SOX requirements, enhances the reliability of financial reporting and improves earnings quality	0.50088	3.7917	75.83
Mean of the Fifth Dimension		0.6798	3.8802	77.6%
Mean of the dependent variable		0.6718	3.9967	79.93%

In terms of the quality of internal control practices in respondents' firms, the mean score for the dependent variable is 3.9967, a score of 79.93%, which is a generally accepted agreement. Control activities had the highest mean (4.2422), indicating that policies, procedures, and risk-based controls were strong across all five dimensions. Monitoring activities were the least likely (3.8802), suggesting a relative need for more active monitoring and follow-up.

DOI: 10.46121/pspc.54.1.56

Overall, the measurements indicate that the SOX requirements and the internal control components based on COSO are thought to be quite effective and substantially present, and thus provide a strong empirical basis for reliability testing and inferential analysis discussed in the later sections.

Reliability Analysis

To check for internal consistency and reliability of the measuring instrument, a Cronbach's alpha coefficient was calculated for all study variables as well as the entire questionnaire. The coefficient of Cronbach's alpha is widely used in empirical research to evaluate the consistency of items that contain a construct, and values over 0.70 are generally considered acceptable, and values above 0.80 indicate high reliability.

Table 6. Reliability Analysis of the Study Variables (Cronbach's Alpha)

Variable	No. of Items	Cronbach's Alpha
Sarbanes- Oxley Act (SOX)	10	0.921
Internal Control System Based on the COSO Components	22	0.952
All Variables	32	0.981

Table 6 displays that the reliability coefficient of the 10–item Sarbanes–Oxley Act SOX variable is 0.921, which indicates that the measurement item is very uniform within the unit of measure. This result reflects the high degree of homogeneity and consistent representation of the SOX requirements by items captured.

The same code of internal control system, consisting of twenty-two items, had a Cronbach alpha of 0.952, which is highly reliable. This result indicates that the items used to measure these internal control dimensions are strongly interrelated and provide a stable measure of the construct.

Overall, the reliability coefficient for all 32 questions was 0.981, the highest of any measuring instrument, indicating a very high level of internal consistency. This is because the questionnaire is robust and well-coherent in capturing study variables.

In general, the results shown in Table 6 show that several study variables were well over the minimal acceptable threshold for reliability. Thus, the measurement tool is viewed as highly reliable, and the data are suitable for further inference analyses and hypothesis testing.

Normality Test Results

Chi-Square Goodness-of-Fit was applied to examine the distributional properties of the study variables and their appropriateness for inferential statistical analysis. This test is generally employed in order to judge whether a significant deviation of the empirical data occurred from a normal distribution, including in studies with Likert scale data.

Table 7. Normality Test Results Using the Chi-Square Goodness-of-Fit Test

Variable	Chi-Square Statistic	Degrees of Freedom	Critical value	p-value
Independent	18.5680	3	7.8147	Less than 0.001
Dependent	3.2054	4	9.4877	0.5241

In Table 7, the independent variable (Sarbanes-Oxley Act) had a chi-square statistic of 18.5680, compared to the critical value of 7.8147 at 3 degrees of freedom, and the p-value is less than 0.001. These results indicate that the independent variable is distributed much outside normality.

In contrast, the dependent variable (internal control system based on COSO components) had a chi- square statistic of 3.2054, lower than the critical value (9.4877), at 4 degrees of freedom, with a p-value of 0.5241. Thus, the null hypothesis of normality cannot be rejected for the dependent variable, and thus the data are broadly normal.

Methodologically, the normality assumption for the dependent variable is satisfied enough to be used in the regression and effect analysis since normality is largely required for the error term and the dependent variable

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rather than the independent variables. So, despite the non-normal distribution of the independent variable, the data are still suitable for future inferential analyses and hypothesis testing.

Hypotheses Testing

Hypothesis testing was performed in two stages based on the study objectives and methodological basis. First, a statistical correlation was established between the study variables. Second, multiple regressions were run on the causal effect of the dimensions of the independent variable on the dependent variable. This sequential approach makes the difference between association and causality clear.

Testing Hypothesis H1: Relationship Analysis

H1: There is a statistically significant relationship between the requirements of the Sarbanes–Oxley Act (SOX) and the internal control system in accordance with the COSO components.

This hypothesis seeks to test whether there are statistically meaningful associations between the effectiveness of the internal control system and the SOX regulatory requirements without providing any causality.

To test this hypothesis, correlation analysis was used to determine the strength and direction of the relationship between the SOX dimensions (Section 404 requirements and Sections 302 & 906 requirements) and the internal control system. Table 8 reports the results.

Table 8. Correlation Analysis Between SOX Requirements and the Internal Control System

Internal Control System	Multiple Correlation	p-value
SOX Section 404 Requirements	0.993	Less than 0.001
SOX Sections 302 & 906 Requirements		

Table 8 shows that the SOX requirements and the internal control system correlate with each other in R = 0.993, which is a very strong positive relationship at $p < 0.001$. This suggests that higher compliance with SOX standards has been found to be associated with greater internal control effectiveness, as measured by the COSO framework. Hypothesis H1 is accepted, thus finding a statistically significant association between the Sarbanes– Oxley Act and the internal control system.

Testing Hypothesis H2: Multiple Regression Analysis

H2: There is a statistically significant effect of the requirements of the Sarbanes–Oxley Act (SOX) on the internal control system in accordance with the COSO components.

To test this hypothesis, multiple linear regressions were conducted to investigate the effect of SOX requirements on the internal control system. The model dependent variable is the internal control system, and the model independent variables are SOX Section 404 requirements and SOX Sections 302 & 906 requirements.
The regression results are discussed in Table 9.

Table 9. Results of Multiple Regression Analysis for Testing Hypothesis H2

Internal Control System	Coefficient (β)	t-value	F-value	p-value	R^2
SOX Section 404 Requirements	0.275	9.142	3536.9	< 0.001	0.987
SOX Sections 302 & 906 Requirements	0.596	35.519			
Constant	0.508	6.727			
Durbin–Watson	1.890				
VIF	3.727				

The regressions in Table 9 are statistically significant and have an F-value of 3536.9 and a p-value < 0.001. R2 = 0.987, which suggests that the SOX requirements in the model account for around 98.7% of the internal control system variance, which is a record high degree of explanation. R = 0.993 indicates robustness of the whole model.

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Individually, the impact of SOX Section 404 requirements on the internal control system is positively and statistically significant ($\beta 1 = 0.275$, $t = 9.142$, $p < 0.001$), so documentation is important in the internal control system, assessment, and auditor attestation.

In addition, the strong positive effects of SOX Section 302 and 906 requirements are also found ($\beta 2 = 0.596$, $t = 35.519$), indicating the value of executive accountability and certification in improving internal control effectiveness.

Diagnostic tests also show robustness of the model. The Durbin-Watson statistic (1,899) does not reflect any autocorrelation among residuals, and the VIF value (3,727) remains within acceptable values, making multicollinearity an option.

Hypothesis H2 is accepted, which demonstrates the statistically significant effect that the Sarbanes- Oxley Act dimensions have on the internal control system of the COSO framework.

DISCUSSION

The empirical findings of this study confirm a strong and statistically significant impact of Sarbanes– Oxley Act (SOX) compliance on the effectiveness of the internal control system within the COSO framework. The overall regression model is highly robust, with an F-value of 3536.9, $p < 0.001$, $R^2 = 0.987$, and $R = 0.993$, indicating that approximately 98.7% of the variance in internal control effectiveness is explained by SOX requirements. Individually, SOX Section 404 demonstrates a significant positive effect ($\beta = 0.275$, $t = 9.142$, $p < 0.001$), emphasizing the importance of documentation, risk assessment, and auditor attestation in strengthening internal controls. Similarly, Sections 302 and 906 show strong positive impacts ($\beta = 0.596$, $t = 35.519$), highlighting the role of executive accountability and management certification in improving internal control quality.

Diagnostic tests further confirm the robustness of the model: the Durbin-Watson statistic (1.899) indicates no autocorrelation among residuals, while the VIF value (3.727) remains within acceptable limits, suggesting no serious multicollinearity issues. These results support Hypothesis H2, confirming that SOX compliance, through its various sections, significantly enhances all components of the COSO internal control framework, including the control environment, risk assessment, control activities, information and communication, and monitoring. Overall, the findings underscore that regulatory requirements under SOX serve as a critical driver of internal control effectiveness, governance, and audit quality.

CONCLUSIONS

These data support a strong and statistically significant association between SOX requirements and the internal control system. There is a strong link between more compliance with SOX requirements and better internal control systems in connection with COSO, and the correlations are very positive.

Also, the multiple regression results suggest that SOX requirements have a positive and significant effect on the internal control system. As expected, the regression model also has 404 explanatory powers, thus showing that SOX requirements explain a majority of difference in internal control effectiveness. Thus, this analysis shows that internal control structures and practices are regulated.

Dimensionally, SOX Section 404 requirements were well-suited for internal control effectiveness in that it required management to participate in monitoring, documenting, reporting, and verifying internal control systems and the verification by external auditors. Finally, SOX Sections 302 and 906 had even greater authority, reflecting the importance of executive accountability and certification in improving transparency, reducing misstatement risk, and improving discipline in control of work.

In summary, the results indicate that the Sarbanes-Oxley Act is a complex regulatory regime that improves internal control systems not only through technical controls evaluation but also through managerial responsibility and legal accountability.

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REFERENCES

1. -Act, S. O. (2002). Sarbanes-Oxley Act. Washington DC. https://www.sarbanes-oxley-act.com/
2. -Catagua Briones, M. L., Pinargote Macías, M. F., C Mendoza Vinces, M. E. (2023). Control interno y modelo COSO en la gestión administrativa y financiera empresarial. Podium, (44), 151-166.
3. https://doi.org/10.31095/podium.2023.44.10
4. -Chan, K. H., Mo, P. L. L., C Yorke, S. M. (2024). Informativeness of Internal Control Weakness Disclosure on Acquirers' MCA Decisions. Accounting Horizons, 38(2), 83–100. https://doi.org/10.2308/HORIZONS- 2021-148
5. Chen, Y., Li, H., C Wang, X. (2023). Executive certification, internal controls, and financial reporting quality after SOX. Journal of Accounting Research, 61(2), 389–421.
6. -COSO (2013). Internal Control — Integrated Framework. Committee of Sponsoring Organizations of the Treadway Commission. https://www.coso.org/guidance-on-ic
7. -Deloitte. (2024). SOX modernization: Optimizing compliance while extracting value. Deloitte Insights. https://www2.deloitte.com
8. -Elder, R., Beasley, M.S., Hogan, CE, Arens, AA, 2020. Auditing and assurance services: international
9. perspectives, Seventeenth edition, global edition, ed. Pearson, Harlow London New York Munich (und 18 weitere).
10. -FERDIA, M. S., C KAMMOUN, P. A. (2024). Conceptual framework of internal control. PSYCHOLOGY AND EDUCATION, 61(8), 1459-1471 ISSN: 1553-6939
11. https://www.researchgate.net/publication/384289725_Conceptual_framework_of_internal_control
12. -Funchal, B. (2016). Corporate governance and credit access in Brazil: The Sarbanes-Oxley Act as a natural experiment Corporate Governance: An International Review Volume 24, Issue 5 pp. 528-547 https://doi.org/10.1111/corg.12151
13. -Gu, Yuqi and Yuan, Wenjuan (2022) "Sarbanes-Oxley Act (SOX) and Corporate Risk Management, "Southern University College of Business E-Journal: Vol. 12: Iss. 1, Article 1 88-104 .Available at: https://digitalcommons.subr.edu/cbej/vol12/iss1/1
14. -Ilori, A., Adeyemi, S., C Olayinka, M. (2024). Sarbanes–Oxley compliance and internal control
15. effectiveness: Evidence from emerging markets. Journal of Accounting and Organizational Change, 20(1), 45–63.
16. -Ilori, A., et al. (2024). SOX Compliance and Internal Control Effectiveness: Evidence from Public Companies. Journal of Accounting Research.
17. -Ilori, O., Nwosu, N. T., C Naiho, H. N. (2024). Optimizing Sarbanes-Oxley (SOX) compliance: Strategic approaches and best practices for financial integrity. World Journal of Advanced Research and Reviews 2024, 22(03), 225–235
18. -Karagiannis, D., Drogalas, G., C Pazarskis, M. (2007). Internal control systems and corporate governance: The role of regulatory enforcement. International Journal of Auditing, 11(3), 185–204.

DOI: 10.46121/pspc.54.1.56

19. -Karagiannis, D., Mylopoulos, J., C Schwab, M. (2007). Business process-based regulation compliance: The case of the Sarbanes-Oxley Act.," 15th IEEE International Requirements Engineering Conference (RE 2007), Delhi, India, 2007, pp. 315-321, doi: 10.1109/RE.2007.15.
20. -Karagiannis, E., et al. (2007). The impact of technology on internal control and audit quality. International Journal of Accounting Information Systems, 8(3), 183–204.
21. -Kinyar, Ali,2020,The Effect of the Adoption of Enterprise Risk Management on Firm Value: Evidence from North American Energy and Natural Resources Sector, University of Wales Trinity Saint David (phd Thesis) https://doi.org/10.13140/RG.2.2.31834.00962
22. -Krishnan, J., Rama, D., C Zhang, Y. (2023). Internal control reporting and audit quality: Evidence from SOX Section 404. Auditing: A Journal of Practice C Theory, 42(1), 1–24.
23. -McNally, J.S. (2013) 'The 2013 COSO Framework C SOX Compliance' ONE APPROACH TO AN EFFECTIVE, USAp4.
https://www.sechistorical.org/collection/papers/2010/2013_0601_COSOMcNally.pdf
24. -Moeller, R. R. (2013). Executive's Guide to COSO Internal Controls: Understanding and Implementing the New Framework. United Kingdom: Wiley.
25. -Rizgar A S Jaf, Chnar A Rashid, C Salam M Hamad. (2025). The Relationship Between Cultural Values and Creative Accounting Factors in Financial Reports of Economic Units. Zanco Journal of Human Sciences, 2S(6), 221–232. https://doi.org/10.21271/zjhs.29.6.12
26. -Redinger, Ch. F.2025 Organizational Risk Management: An Integrated Framework for Environmental, Health, Safety, and Sustainability Professionals, and Their C-Suites. United Kingdom, Wiley, 2025.
27. -Saber, R. A., C Al-Zebari, A. F. . (2023). "The role of integration between accounting mechanisms for bank governance and the principles of the Sarbanes-Oxley Act (SOX) to enhance the quality of financial
28. reports.": An exploratory study of the opinions of a sample of employees in banks operating in the Kurdistan Region/Iraq. Mitanni Journal of Humanitarian Sciences, 4(2), 645–661.
29. https://doi.org/10.25156/ptjhss.v4n2y2023.pp645 - 661
30. -Smith, J. (2005). The impact of SOX on corporate governance. Oxford University Press.
31. -Smith, J. L. (2005). The Sarbanes–Oxley Act and the transformation of internal control reporting. The Accounting Review, 80(2), 585–602.
32. -Srinivasan, S., C Coates, J. C. (2014). SOX after ten years: A multidisciplinary review. Accounting Horizons, 28(4), 827–850.
33. -Su, W., Zhang, L., Ge, C., C Chen, S. (2022). Association between Internal Control and Sustainability: A Literature Review Based on the SOX Act Framework. Sustainability, 14(15), 9706.
34. -Su, W., Zhang, L., Ge, C., C Chen, S. (2022). Internal control effectiveness and sustainability: Evidence from SOX-based frameworks. Sustainability, 14(15), 9706
35. -Tukue, T. (2024). The effect of internal controls on operational efficiency: Evidence from manufacturing firms. American International Journal of Business Management (AIJBM) Volume 7, Issue 12 (December 2024), PP 10-21Volume 7, Issue 12 (December 2024), PP 10-
36. -Vallabhaneni, S. Rao. Wiley CIA Exam Review 2023, Part 1: Essentials of Internal Auditing. United States, Wiley, 2022.

DOI: 10.46121/pspc.54.1.56