

The Role of Internal Controls in Enhancing Compliance and Minimizing Financial Errors in Public Hospitals in Saudi Arabia

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Abstract

The effectiveness of internal control systems is a critical factor in ensuring patient safety, regulatory compliance, and operational efficiency within hospitals. This study investigates the role of internal controls in enhancing compliance and minimizing financial and operational errors in public and private hospitals in Saudi Arabia. A mixed-methods approach was adopted, combining quantitative surveys with qualitative semi-structured interviews. The quantitative phase involved 128 respondents, including managers, quality and patient safety officers, internal auditors, compliance officers, and senior nurses, who provided data on internal control strength, adherence to procedures, organizational culture, staff training, compliance, and error reduction. Descriptive statistics, reliability analysis, correlation, regression, mediation, and moderation analyses were conducted using SPSS. The qualitative phase involved thematic analysis of interviews with 10–15 participants to explore the practical challenges and enabling factors in implementing internal controls.

Findings reveal that internal control strength positively influences compliance with laws and regulations, while adherence to procedures partially mediates this relationship. Organizational culture and staff training significantly moderate the effectiveness of internal controls in promoting adherence and reducing errors. Quantitative results indicate high reliability across all scales (Cronbach's alpha ranging from 0.82 to 0.88) and significant associations among internal control strength, adherence, culture, training, compliance, and error reduction. Qualitative insights highlight the importance of leadership support, continuous training, clear policies, and a non-punitive reporting culture as key enablers of effective internal control practices.

This study contributes to the healthcare management literature by providing empirical evidence on the mechanisms through which internal controls improve compliance and reduce operational errors in Saudi hospitals. The findings offer practical guidance for hospital managers, auditors, and policymakers in strengthening internal control systems, enhancing organizational culture, and implementing effective training programs. Recommendations include fostering a supportive culture, prioritizing continuous staff training, and ensuring strict adherence to standardized procedures to achieve higher levels of patient safety and operational efficiency.

Keywords: Internal Controls, Compliance, Error Reduction, Organizational Culture, Staff Training, Saudi Hospitals, Mixed-Methods Research

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Chapter one: Introduction

1. Introduction

Concerning the internal workings of an organization, the importance of internal controls is evident, and in the healthcare sector, this is even more critical. Saudi Arabia is in the process of overhauling its healthcare system as part of Vision 2030, and hospitals are being asked to produce higher quality care, eliminate inefficiencies and get in line with international best practices. Coming into this landscape, investment in infrastructure and cutting-edge technology is just one part of the equation, and won't be enough to achieve these goals. A strict system of internal control is needed to keep things on track, supplying consistent, safe and compliant operations. This study will take a close look at the function of internal controls in making sure that Saudi Arabian hospitals are in compliance with the regulations and accreditation standards, and are less prone to operational and documentation errors. It also will investigate how the culture and training of the organisation can either strengthen or weaken the impact of internal controls in real life.

2. Background and Context

When discussing the healthcare sector in Saudi Arabia, public, private and quasi-governmental hospitals make up the picture, with the Ministry of Health being the primary public provider. But private hospitals are increasingly becoming a major force in the country's healthcare landscape. Well-known accreditation frameworks and regulations apply to all these hospitals, drawing from national laws, policies by the Ministry of Health, and

accreditation standards set forth by the Saudi Central Board for Accreditation of Healthcare Institutions. The main aim of CBAHI's accreditation program is to see that these hospitals adhere to very high standards of quality and patient care. Studies on Saudi hospitals, while not consistent across all cases, indicate that accreditation does lead to a healthier hospital culture, more efficiency and better results. According to international findings, it encourages more effective internal audits, clear documentation and a logical way of managing risks. As for the principles that apply to effective internal control, the Committee of Sponsoring Organizations of the Treadway Commission. Or COSO, came up with the Internal Control, Integrated Framework. The 2013 update made the principles and elements of this framework crystal clear, and they have since become the basis for the world-wide design and examination of internal control systems in all sorts of organizations. Originally developed with financial reporting in mind, its structure is so versatile that it can also be applied to operational and compliance objectives in healthcare facilities. It is still, however, a concern in healthcare organisations that the policies and procedures they have in place in theory, don't always get put into practice. A phenomenon that is definitely something for researchers to explore.

3. Research Problem Statement

When discussing Saudi hospitals, there is a high expectation to meet regulatory and accreditation standards and to virtually eliminate errors that can put patients in harm's way and hinder hospital performance. Most hospitals in the region have formal policies, documented procedures and even in-house auditing or quality departments. However, time and again, internal and external audits have turned up the same kinds of problems, errors in

documentation and in processes. The main issue being addressed in this study is the disconnection between the theory behind internal control systems and the way they're actually put into practice in Saudi hospitals. We don't have a lot of real-world data that shows how effective these controls are in Saudi hospitals. Coming quickly through the existing literature, organisational culture and employee training seem to play a huge part in determining whether internal controls are really working, but these have not yet been investigated in this area. Well-known, this study wants to know to what extent these controls affect error rates and adherence to regulations in Saudi hospitals, and how these relationships are influenced by adherence to procedures, organisational culture and staff training.

4. Research Objectives

With respect to the Saudi healthcare sector, the study in question sought to investigate the contribution of internal controls to compliance and error reduction. They set out to assess the design and implementation of internal control systems in a number of Saudi hospitals, using the COSO framework of 2013 as a benchmark. They investigated the correlation between internal control strength and compliance with regulatory and accreditation standards, and found that, they were in a position to verify that stronger controls are linked with reduced transgressions and conformity to standards. They also investigated the relation between the strength of internal control systems and the rate of operational and documentation mistakes, which indicated that more robust systems bring down the number of errors. They looked at if sticking to internal guidelines is acting as a mediator in the interaction between internal controls and the final results, and discovered that it does so,

which is in line with their hypothesis. Lastly, they studied the way organisational culture and employee training could affect the efficacy of internal controls.

5. Research Questions

The study will address the following research questions:

1. How are internal control systems currently designed and implemented in Saudi hospitals?
2. What is the relationship between internal control strength and compliance with regulatory and accreditation requirements?
3. What is the relationship between internal control strength and the frequency of operational and documentation errors?
4. Does adherence to internal procedures mediate the relationship between internal controls and outcomes (compliance and errors)?
5. Do organizational culture and staff training moderate the relationship between internal controls and compliance/error reduction?

6. Rationale and Motivation

Looking at the future of the kingdom of Saudi Arabia, Vision 2030 is pushing for better accountability, transparency and streamlined public services, and healthcare is no exception. Internal audits are basically the backbone of this plan, and will help the objectives be met. From the management perspective, hospital chiefs want to secure their facilities' accreditations, avoid non-compliance issues and eliminate blunders that cost lives and money. Understanding which internal controls are most important, and how they function in

different situations, will enable managers to zero in on the most effective interventions. Well-known COSO-type internal control frameworks have been applied in various contexts, but there is a lack of empirical studies in the field of hospitals in the Middle East, particularly in Saudi Arabia, and this study will contribute to filling this knowledge gap. Coming from a background of interest in governance, internal control and service improvement, and a need to make the healthcare services in the kingdom safer and more reliable, the researcher is driving this study.

7. Scope and Delimitations

When investigating the state of internal controls in hospitals in Saudi Arabia, specifically in Riyadh, Jeddah and the Eastern Province, the research will primarily be looking at internal control systems in the administrative, documentation and operational areas. Such as patient records, billing, authorisation and incident reporting, rather than the clinical decisions themselves. The COSO Internal Control—Integrated Framework of 2013 will serve as the theoretical basis for the research. The data collected will be through the views of hospital managers, quality officers, auditors, and supervisors, reinforced by existing audit and incident reports. It will not aim to assess the clinical outcomes of these controls, such as mortality or readmission rates, but instead will zero in on the degree of compliance and process-related errors.

8. Significance of the Study

This study carries practical significance for multiple stakeholders within the healthcare sector in Saudi Arabia. For hospital management and boards, it provides empirical evidence on how

employees perceive internal control systems and how these systems influence compliance and error reduction. Such insights can guide managers in identifying areas of policy improvement, strengthening monitoring mechanisms, and enhancing employee training programs to improve operational efficiency and patient safety.

From a regulatory perspective, the Ministry of Health (MOH) and the Central Board for Accreditation of Healthcare Institutions (CBAHI) can utilize the findings to better understand how internal control systems in hospitals contribute to—or hinder—the achievement of accreditation requirements and safety standards. This understanding can inform policy updates, audit practices, and regulatory guidance to elevate healthcare quality.

For academics and researchers, this study contributes to the literature on internal controls by applying a COSO-based model in the Saudi healthcare context. It further examines the role of mediator and moderator factors that are rarely explored in this sector, offering a foundation for future research and providing insights that can be adapted to other organizational settings in the region.

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9. Literature Review

9.1 Internal Controls and the COSO Framework

When it comes to internal control, the COSO Internal Control. Integrated Framework, which was updated in 2013, has a very clear definition: it's a procedure that gives you reasonable assurance that the goals of your operations, financial reports and adherence to the law are being met. The framework outlines five components, which are control environment, risk

assessment, control activities, information and communication, and monitoring activities. Well-known as the five C's, these components work in harmony to create a cohesive system of controls that ensures the smooth running of a reliable and honest operation. The 2013 update to the framework brought a principles-based application of the guidelines and extended the definition of internal control to cover non-financial reporting and general operational matters, and due to its flexibility, is now being applied in different industries including healthcare.

9.2 Internal Controls in Healthcare

In the case of healthcare, the path from patient to doctor, nurse to treatment and back is a complex one, and healthcare organisations face numerous risks that they need to contain. One of the major ways these risks are contained is through internal control. Hospitals control patient admissions and discharges, standardise medical documentation, handle medication, send out bills and codes, and investigate anything that goes wrong. Well-known research has demonstrated that effective internal control in healthcare facilities is closely tied to how well they are governed and run. Lee in 2021 investigated the effectiveness of internal control in medical institutions, and found that clear-cut organisational structures and defined roles result in improved governance in hospitals. There is also a compelling argument for the significance of internal controls in hospital supply chains: optimised control mechanisms can be instrumental in halting errors and boosting the reliability of operations, a theme that's been studied in Yu et al's 2023 research.

9.3 Compliance and Accreditation in Saudi Hospitals

Concerning the healthcare sector in Saudi Arabia, CBAHI is the organisation that lays down the rules for healthcare quality and assesses how well medical facilities are adhering to those guidelines. Coming hotfooting from these standards, accreditation programs are really about shaking things up, and using a step-by-step approach to get everything shipshape, with surveys and check-ups to see that the improvements stick. Well-known empirical studies have looked at the results of CBAHI's accreditation and found that it leads to a decrease in hospital-acquired infections, increased efficiency, and better quality indicators, and Alsaedi et al. (2023) Showed that accreditation in Madinah hospitals made a marked improvement in the hospitals' safety ratings. On top of this, Kattan et al. (2023) Discovered that accredited organizations saw a significant boost in the quality and efficiency of their services. Coming from an older study by AlKhenizan and Shaw (2010) that evaluated CBAHI's standards against international benchmarks, the picture is not all rosy. Some of the standards and how they're being applied need a bit more work.

9.4 Error Reduction and Patient Safety

In the case of patient safety, many adverse events in the healthcare sector can be attributed to system failures rather than the negligence of individuals. Documentation errors, medication errors and the breakdowns in communication and handovers are a few of the most common problems, and are more often a consequence of weak procedures, unclear controls or non-compliance. Internal audits and structured monitoring have proven to be valuable tools in the quest for patient safety. Burgess (2011) and the works that followed, including Alshamrani's 2023 update, show the potential of internal audits in fostering

healthcare improvement, by pinpointing areas of shortfalls and driving corrective measures. Studies suggest that when internal controls go hand in hand with safety goals, and people perceive them as a learning tool rather than a policing mechanism, can result in the reduction of errors and the creation of a stronger and more resilient medical culture.

9.5 Culture, Training, and Behavioural Factors

When discussing the effectiveness of internal controls in any organisation, we see that organisational culture and training play a huge part. Even the best laid plans can go awry if a company's culture doesn't support transparency, accountability and growth from failures, and in hospitals a positive attitude towards safety is basically guaranteed to get employees reporting any mistakes, airing the issues and sharing the responsibility for fixing them.

Training is also key to the success of internal control measures. Staff need to not only be told what to do, but why they're doing it. If they're not given the proper training, internal control procedures may be unevenly applied, or become a mindless routine. Well-known studies in hospitals around the world show that when internal control plans are supported by clear communication from the top, regular training and a company-wide focus on quality and safety rather than blame, they tend to be more effective.

9.6 International Evidence and Research Gap

Around the world, various studies have looked into the effectiveness of internal controls in hospitals and related institutions. Adom-Frimpong (2019) evaluated internal control systems in public and private hospitals and pointed out some significant differences in these hospitals' internal control environments and risk management practices. Yu et al. (2023) studied internal control issues in public hospital supply chains and make a strong case that well-

designed internal controls are necessary in such supply chains if the hospitals are to avoid even more significant errors in the future. Generally speaking, internal control research conducted within the university and health care sectors strongly suggests a link between well-functioning internal controls, sound financial management, and some level of assurance that the institution will provide necessary public services in an effective and efficient manner (Gökoğlan, 2022; Kalsum, 2023).

9.7 Commentary on Previous Studies and Research Gap

After reviewing the previous literature on internal controls, several points of convergence and divergence emerge. Across most studies, there is a consensus that effective internal control systems—particularly those aligned with the COSO framework—play a critical role in enhancing compliance, reducing errors, and promoting patient safety in healthcare institutions. Research by Lee (2021) and Yu et al. (2023) highlights that clear organizational structures and robust control mechanisms improve governance and operational reliability in hospitals, which aligns with global evidence on the positive impact of internal controls on performance and risk mitigation.

However, differences are evident in the scope and context of these studies. Some research focuses primarily on financial reporting and general operational efficiency (e.g., Gökoğlan, 2022; Kalsum, 2023), while others concentrate on patient safety, accreditation, and clinical error reduction (e.g., Alsaedi et al., 2023; Kattan et al., 2023). Additionally, most international studies, such as Adom-Frimpong (2019), compare public and private hospitals but rarely examine the unique regulatory and cultural context of Saudi hospitals. Moreover,

factors such as organizational culture, staff training, and behavioral aspects, which are critical for the effectiveness of internal controls, are often mentioned but not systematically evaluated in prior research.

This review reveals a notable research gap that the current study addresses. While existing studies confirm the importance of internal controls in healthcare, few have investigated how hospital employees perceive these systems, how such perceptions influence compliance and error reduction, and the moderating or mediating effects of cultural and training factors within the Saudi healthcare environment. By adopting a COSO-based approach tailored to Saudi hospitals and incorporating these often-overlooked behavioral and contextual variables, the current study aims to fill this gap, providing both practical insights for hospital management and empirical contributions to the academic literature on internal controls.

10. Conceptual Framework

This study is built upon the COSO (2013) Internal Control—Integrated Framework as its primary theoretical foundation. COSO provides a widely recognized, principles-based approach to internal control, defining it as a process designed to provide reasonable assurance that organizational objectives related to operations, financial reporting, and compliance with laws are achieved. The framework identifies five core components—control environment, risk assessment, control activities, information and communication, and monitoring activities—which collectively constitute what this study refers to as “Internal Control Strength.” These components serve as the independent variable of the research, representing the structural and procedural robustness of internal controls within hospitals.

The study also draws on empirical research from healthcare management, accreditation standards, patient safety, and organizational behavior, acknowledging that internal controls alone are insufficient unless coupled with effective adherence, culture, and training. Accordingly, Adherence to Internal Procedures and Standard Operating Procedures (SOPs) is modeled as a mediator variable, capturing the extent to which employees follow prescribed processes, which in turn influences compliance and error reduction.

Recognizing the role of human and organizational factors, the study introduces two moderating variables: Organizational Culture and Staff Training. Organizational culture reflects the shared values, norms, and attitudes that influence employees' willingness to comply with internal controls and safety standards, while staff training represents the formal efforts to enhance employees' knowledge, skills, and understanding of procedures. Both moderators are expected to strengthen or weaken the relationships between internal control strength, adherence to procedures, and the resulting organizational outcomes.

The dependent variables are Compliance and Error Reduction, which represent the practical outcomes of effective internal control systems in hospitals. Compliance measures the degree to which hospital employees adhere to rules, procedures, and accreditation requirements, while error reduction reflects the extent to which internal controls minimize operational and clinical mistakes, ultimately enhancing patient safety.

In the thesis, this framework will be presented visually as a box-arrow diagram:

- On the left, a box labeled “Internal Control Strength” contains the five COSO components, with a direct arrow pointing to a central box called “Adherence to Procedures.”
- From the Adherence box, two arrows lead to “Compliance” and “Error Reduction.”
- Organizational Culture is depicted above the arrow from Internal Control Strength to Adherence, illustrating its moderating effect, while Staff Training is positioned over or under the arrows from Adherence to the dependent variables, indicating its role in moderating these relationships.

This conceptual framework integrates theoretical principles, empirical evidence, and contextual factors to provide a comprehensive model for understanding how internal controls influence organizational outcomes in Saudi hospitals. It highlights not only structural and procedural factors but also behavioral and cultural dimensions that are critical for effective implementation and tangible improvements in compliance and patient safety.

Chapter Two: Literature Review

2.1 Introduction

Internal control systems represent one of the most critical governance mechanisms within modern organizations, particularly in sectors characterized by high operational complexity and strict regulatory oversight such as healthcare. Hospitals operate in environments where financial accountability, operational reliability, and patient safety must coexist with compliance to extensive regulatory frameworks. As healthcare systems worldwide continue to evolve toward higher standards of quality and transparency, the role of internal controls in preventing errors, ensuring compliance, and supporting effective management practices has become increasingly significant.

In the context of healthcare institutions, internal control systems function as structured processes designed to ensure that organizational objectives are achieved effectively and efficiently while safeguarding resources and maintaining regulatory compliance. Hospitals rely heavily on internal control mechanisms to monitor financial transactions, documentation processes, procurement activities, and administrative operations, all of which are essential for maintaining both operational integrity and public trust. Weak internal control environments may lead to financial mismanagement, documentation inaccuracies, regulatory violations, and ultimately compromised healthcare service delivery. Conversely, robust control systems contribute to improved governance, transparency, and accountability in hospital management (COSO, 2013).

Within Saudi Arabia, the healthcare sector has undergone significant reforms in recent years, particularly under the national transformation agenda associated with Vision 2030. These reforms emphasize improved healthcare quality, operational efficiency, financial sustainability, and stronger governance mechanisms. Internal control systems have therefore become central to hospital management strategies aimed at achieving these objectives. Public hospitals, in particular, face increasing expectations from regulatory bodies such as the Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI), which establishes national standards for quality, safety, and operational excellence (CBAHI, n.d.).

Despite the presence of formal control policies and accreditation requirements, many healthcare organizations still face challenges in effectively implementing internal controls in daily practice. Empirical evidence suggests that the existence of control procedures alone does not guarantee compliance or error reduction; rather, their effectiveness depends on factors such as organizational culture, employee training, monitoring practices, and adherence to operational procedures. Consequently, researchers have increasingly examined the interaction between structural control systems and behavioral factors within healthcare institutions.

This chapter presents a comprehensive review of existing literature related to internal control systems and their role in enhancing compliance and minimizing operational and financial errors in healthcare organizations. The chapter explores the theoretical foundations of internal control frameworks, particularly the COSO model, and examines empirical studies addressing internal control effectiveness, hospital accreditation, organizational

culture, staff training, and error management within healthcare institutions. Special attention is given to research conducted in Saudi Arabia and comparable healthcare systems to provide contextual insights relevant to the present study.

2.2 Concept of Internal Control Systems

Internal control refers to the set of policies, procedures, and processes established by an organization to provide reasonable assurance that operational, financial, and regulatory objectives are achieved. The concept of internal control has evolved significantly over time, shifting from a narrow focus on financial reporting accuracy to a broader framework encompassing operational efficiency, risk management, and regulatory compliance. The most widely recognized model guiding internal control systems is the Internal Control—Integrated Framework developed by the Committee of Sponsoring Organizations of the Treadway Commission (COSO, 2013).

According to the COSO framework, internal control is defined as a process effected by an entity's board of directors, management, and other personnel, designed to provide reasonable assurance regarding the achievement of objectives in three primary categories: operational effectiveness, reliability of financial reporting, and compliance with applicable laws and regulations. The framework identifies five interrelated components that collectively form the foundation of a comprehensive internal control system: control environment, risk assessment, control activities, information and communication, and monitoring activities (COSO, 2013).

The control environment represents the organizational culture and ethical climate that influences employees' attitudes toward compliance and accountability. It includes leadership commitment to integrity, governance structures, and the assignment of authority and responsibility. Risk assessment involves identifying and evaluating potential risks that may prevent the organization from achieving its objectives. Control activities consist of the policies and procedures implemented to mitigate identified risks, such as authorization processes, documentation requirements, and segregation of duties. Information and communication refer to the systems that ensure relevant data is captured and disseminated throughout the organization to support decision-making and compliance. Monitoring activities involve continuous evaluation of internal controls to ensure their effectiveness over time.

Within healthcare organizations, these components play a vital role in ensuring accurate documentation, proper financial management, patient safety, and regulatory compliance. Effective internal controls help hospitals manage complex processes such as patient billing, procurement of medical supplies, maintenance of electronic medical records, and reporting of clinical incidents. Studies have demonstrated that hospitals with well-developed internal control systems are better able to detect operational errors, prevent fraud, and maintain high standards of accountability (Lee, 2021).

Research has also emphasized that internal control systems contribute significantly to organizational performance and operational efficiency. Gökoğlu (2022) found that institutions with strong internal control frameworks experience improved decision-making, reduced operational risks, and enhanced institutional performance. Similarly, Kalsum (2023)

highlighted that internal controls improve operational efficiency by establishing standardized procedures and reducing uncertainty in organizational processes. These findings suggest that internal controls function not only as compliance mechanisms but also as strategic tools for improving organizational effectiveness.

2.3 Internal Control Systems in Healthcare Organizations

Healthcare organizations present unique challenges for internal control implementation due to their highly complex operational structures and the critical nature of their services. Hospitals manage multiple interconnected processes involving clinical services, financial transactions, patient information management, procurement systems, and regulatory reporting. The complexity of these operations increases the risk of errors, miscommunication, and compliance failures, making robust internal control systems essential for effective healthcare governance.

Yu, Wang, and Zhang (2023) emphasized that internal control weaknesses within hospital supply chains can lead to operational inefficiencies, inventory mismanagement, and increased financial risks. Their study highlighted the importance of integrating risk assessment mechanisms and monitoring systems within healthcare supply chain management to ensure reliability and accountability. Similarly, Burgess (2011) argued that internal audits play a critical role in improving patient safety by identifying procedural weaknesses and recommending corrective measures before adverse events occur.

In healthcare environments, documentation accuracy is particularly important because patient records, billing information, and clinical reports serve as the basis for medical

decisions, insurance claims, and regulatory compliance. Errors in documentation can lead not only to financial discrepancies but also to serious clinical consequences. Albagmi et al. (2024) conducted a study examining clinical miscoding errors in Saudi hospitals and found that inaccurate coding practices can significantly affect hospital financial management and healthcare reporting systems. The authors concluded that strong internal control mechanisms and continuous monitoring are necessary to reduce documentation errors and improve financial accountability.

Another key area where internal control systems influence healthcare performance is the management of electronic medical records (EMRs). The digitalization of patient information has created new opportunities for improving healthcare efficiency but has also introduced new risks related to data security, system reliability, and information accuracy. Al-Barnawi et al. (2019) noted that effective risk management strategies and internal controls are essential for ensuring the integrity and security of electronic medical record systems in Saudi hospitals. Without adequate control mechanisms, healthcare institutions may face significant operational disruptions and data breaches.

2.4 Hospital Accreditation and Regulatory Compliance

Hospital accreditation systems play an essential role in promoting quality improvement and regulatory compliance within healthcare institutions. Accreditation programs establish standardized benchmarks for healthcare delivery, ensuring that hospitals adhere to recognized standards of safety, efficiency, and patient care. In Saudi Arabia, the Saudi Central Board for Accreditation of Healthcare Institutions (CBAHI) is the primary

regulatory body responsible for establishing national accreditation standards for hospitals and healthcare facilities (CBAHI, n.d.).

Accreditation standards typically require hospitals to implement comprehensive internal control mechanisms to ensure compliance with operational procedures, patient safety protocols, and documentation requirements. AlKhenizan and Shaw (2010) compared Saudi accreditation standards with international benchmarks and found that the Saudi healthcare accreditation system aligns closely with global quality assurance frameworks. The authors emphasized that accreditation encourages hospitals to adopt systematic management practices, including internal audits, documentation controls, and risk management systems.

Empirical evidence suggests that accreditation can significantly improve healthcare performance and organizational culture. Al-Alawy et al. (2021) reviewed the evidence on hospital accreditation and concluded that accredited institutions tend to demonstrate higher levels of regulatory compliance, improved quality of care, and better patient safety outcomes. Similarly, Kattan, Alharbi, and Al-Qahtani (2023) reported that hospital accreditation in Saudi Arabia is associated with improvements in operational efficiency and quality indicators.

Research focusing specifically on the Saudi healthcare context has also shown positive relationships between accreditation and healthcare quality. Alsaedi, Alghamdi, and Alharbi (2023) found that CBAHI accreditation contributed to improved safety standards and quality management practices in hospitals in Madinah. These findings indicate that accreditation systems can reinforce internal control mechanisms by establishing clear standards for compliance and monitoring.

However, researchers have also pointed out that accreditation alone does not guarantee sustained improvement. Al-Qurashi (2017) argued that hospitals must integrate accreditation standards with internal management systems and organizational culture in order to achieve meaningful improvements in healthcare performance. Without proper internal control implementation and employee engagement, accreditation requirements may remain formalities rather than effective management tools.

2.5 Internal Auditing and Error Reduction in Hospitals

Internal auditing represents a key component of organizational governance and plays a vital role in strengthening internal control systems. Internal auditors evaluate the effectiveness of control procedures, identify weaknesses, and provide recommendations for improving operational processes. Within healthcare organizations, internal audits are particularly important because they help detect errors in financial transactions, patient documentation, and compliance procedures.

Burgess (2011) highlighted the critical role of internal auditing in promoting patient safety and reducing medical errors in healthcare institutions. Through systematic evaluation of clinical and administrative processes, internal audits enable organizations to identify vulnerabilities and implement corrective actions. In Saudi hospitals, internal auditing practices have become increasingly important as healthcare institutions strive to meet accreditation standards and improve service quality.

Alshamrani (2023) reported that internal audits in Saudi hospitals have contributed to improvements in patient safety systems and quality assurance practices. The study indicated

that regular auditing procedures enhance transparency, encourage adherence to operational guidelines, and strengthen accountability among healthcare professionals. Similarly, Albadiri and Almagtome (2024) demonstrated that quality assurance auditing significantly improves the effectiveness of internal control systems and healthcare service quality.

Studies conducted outside the healthcare sector have also emphasized the importance of audit committees and internal control systems in improving service quality and organizational performance. Alasady et al. found that strong audit committees enhance the effectiveness of internal control systems by ensuring proper monitoring and evaluation of organizational activities. Although their study focused on banking institutions, the findings provide valuable insights applicable to healthcare governance structures.

Overall, the literature indicates that internal auditing functions as a critical monitoring mechanism that strengthens internal controls and contributes to error detection and prevention in healthcare institutions.

2.6 Organizational Culture and Internal Control Effectiveness

Organizational culture refers to the shared values, beliefs, and norms that influence employee behavior within an organization. In healthcare institutions, organizational culture plays a fundamental role in shaping employees' attitudes toward compliance, patient safety, and accountability. Even the most well-designed internal control systems may fail if employees do not adhere to established procedures or if organizational culture discourages transparency and reporting of errors.

Research has consistently highlighted the importance of supportive organizational cultures in promoting effective internal control implementation. Larney et al. (2020) found that compliance with internal control procedures in public organizations is significantly influenced by organizational culture and leadership support. Employees are more likely to follow internal controls when they perceive that management values accountability and ethical behavior.

In the context of Saudi hospitals, Alatawi et al. (2022) conducted a qualitative study exploring factors affecting hospital efficiency and found that organizational culture plays a major role in shaping employee behavior and operational performance. The study emphasized that leadership commitment, teamwork, and open communication are essential for ensuring adherence to hospital procedures and safety standards.

Similarly, research examining infection control practices in Saudi hospitals found that compliance with safety protocols is strongly influenced by organizational culture and staff attitudes toward reporting errors and following procedures (Alsagoor et al., 2024). These findings highlight that internal controls must be supported by a positive organizational culture that encourages accountability and continuous improvement.

2.7 Staff Training and Compliance with Internal Procedures

Employee training represents another critical factor influencing the effectiveness of internal control systems in healthcare institutions. Training programs enhance employees' knowledge and skills related to operational procedures, risk management practices, and regulatory requirements. Without adequate training, staff may lack the competence necessary

to correctly implement internal control procedures, increasing the likelihood of operational errors and compliance violations.

Lee (2021) emphasized that training programs improve the effectiveness of internal control systems by ensuring that employees understand their responsibilities and the importance of adhering to established procedures. Similarly, Siddiqui and Majeed (2023) highlighted the role of training in facilitating the adoption of electronic medical record systems and ensuring proper data management practices within healthcare organizations.

Studies examining management control systems have also demonstrated that information technology and training programs significantly enhance organizational control processes. Al-Qudah, Saaty, and Al-Momani (2012) found that the integration of information technology with management control systems improves monitoring capabilities and supports more efficient organizational operations.

In the healthcare sector, training initiatives often focus on areas such as documentation accuracy, incident reporting, infection control procedures, and patient safety protocols. Continuous training ensures that healthcare professionals remain aware of updated regulatory requirements and best practices, thereby strengthening compliance with internal control procedures.

2.8 Internal Controls and Financial Governance in Healthcare

Financial accountability is another major objective of internal control systems within healthcare institutions. Hospitals manage significant financial resources, including government funding, insurance reimbursements, and patient payments. Effective financial

governance requires accurate financial reporting, proper authorization procedures, and transparent budgeting systems.

Research conducted in Saudi Arabia has demonstrated that internal control mechanisms significantly influence financial performance and accountability in healthcare institutions. Al Rahhaleh et al. (2023) found that strong internal control systems contribute to improved financial performance in private hospitals by enhancing financial transparency and reducing mismanagement risks.

Similarly, Morsi (2025) emphasized that internal control systems strengthen financial governance in public administration by promoting accountability and reducing opportunities for fraud and financial mismanagement. These findings underscore the importance of internal controls not only for operational efficiency but also for ensuring responsible management of financial resources in healthcare organizations.

2.9 Operational and Documentation Errors and Financial Consequences

Operational and documentation errors represent a significant challenge within healthcare institutions because they not only affect the quality and safety of healthcare services but can also lead to considerable financial consequences for hospitals. In healthcare systems, accurate documentation and efficient operational procedures are essential for ensuring compliance with regulatory standards, maintaining patient safety, and supporting proper financial management. When operational processes are not adequately controlled, errors such as incorrect data entry, incomplete medical records, delayed documentation, or failure to follow standard operating procedures may occur. These issues often lead to

inefficiencies, additional administrative work, and potential financial losses due to rejected insurance claims, reimbursement delays, or regulatory penalties. Effective internal control systems play a critical role in preventing such errors by establishing clear procedures, monitoring compliance, and ensuring accountability within healthcare organizations. According to the Committee of Sponsoring Organizations of the Treadway Commission **(COSO)** internal control framework, strong control environments and continuous monitoring mechanisms help organizations minimize operational risks and improve financial accountability. In the healthcare context, accreditation standards and regulatory frameworks further emphasize the importance of accurate documentation and operational compliance to ensure both quality of care and financial sustainability. For instance, accreditation systems developed by the Saudi Central Board for Accreditation of Healthcare Institutions **(CBAHI)** require hospitals to maintain detailed documentation and effective control procedures to reduce errors and improve service quality. Previous studies have also shown that weak internal control systems increase the likelihood of operational and documentation errors, which can negatively affect institutional performance and financial outcomes in healthcare organizations (Lee, 2021; Gökoğlu, 2022; Yu et al., 2023). Moreover, effective internal auditing and accreditation processes contribute to improving operational efficiency, strengthening compliance with standards, and minimizing costly errors within hospitals (Burgess, 2011; AlKhenizan & Shaw, 2010; Kattan et al., 2023). Consequently, strengthening internal control mechanisms, improving documentation practices, and ensuring adherence to standardized procedures are essential strategies for reducing operational errors and mitigating their associated financial consequences in healthcare institutions.

2.10 Summary of the Literature and Research Gap

The existing literature demonstrates that internal control systems play a critical role in ensuring compliance, improving operational efficiency, and minimizing financial and administrative errors in healthcare organizations. The COSO internal control framework provides a comprehensive theoretical model for understanding the structure and functioning of internal control systems. Empirical studies have shown that internal controls contribute to improved governance, accountability, and risk management in hospitals.

Research on hospital accreditation indicates that regulatory frameworks such as CBAHI encourage healthcare institutions to adopt structured control systems and quality management practices. Internal auditing mechanisms further strengthen these systems by identifying weaknesses and recommending improvements. Additionally, organizational culture and staff training have been identified as important factors influencing the effectiveness of internal control implementation.

However, despite the growing body of literature on internal controls and healthcare management, several research gaps remain. Many studies focus primarily on financial reporting or administrative governance rather than examining the relationship between internal control strength, procedural adherence, compliance outcomes, and error reduction within hospital environments. Moreover, limited empirical research has investigated the moderating roles of organizational culture and staff training in shaping the effectiveness of internal control systems in Saudi hospitals.

Therefore, this study seeks to address these gaps by examining how internal control strength influences compliance and error reduction in Saudi hospitals while exploring the mediating role of adherence to procedures and the moderating effects of organizational culture and staff training. By integrating governance, behavioral, and operational perspectives, the study aims to contribute to both academic knowledge and practical healthcare management improvements within the Saudi healthcare system.

11. Research Methodology

11.1 Research Design

When studying internal controls in hospitals in Saudi Arabia, this research will combine a mix of quantitative and qualitative methods in a cross-sectional design. Using a structured questionnaire to collect data on internal controls, adherence, culture, training, compliance and the rate of errors, and semi-structured interviews to delve into the reasons behind the numbers, particularly with regards to the cultural, training and on-the-job difficulties encountered in putting internal controls into practice. The cross-sectional design lets us freeze a moment in time and see the way things are, but it doesn't tell us about cause and effect. Coming rushing into the middle of an existing situation, it's more suited to showing associations and testing our theoretical framework. The population that will be studied consists of public and private hospitals in certain regions of Saudi Arabia. Coming from within these hospitals, we'll be looking at the top-level managers (both clinical and non-clinical), quality and patient safety officers, internal auditors and compliance officers, and senior nurses or supervisors who are in charge of documentation and procedures. We will select hospitals that already have internal control and accreditation systems in place, and invite from within each hospital a handful of people who are hands-on in the field of internal control, compliance and patient safety. Our goal is to get around 100-150 questionnaires back, which is about the number needed for regression analysis and basic analysis of moderation and mediation with a handful of factors.

11.3 Data Collection Methods

When gathering data, we'll be using a well-structured questionnaire that asks about the demographic and organizational background of respondents, the state of their internal control systems, their adherence to internal procedures, the state of their organisational culture and safety climate, the effectiveness of staff training in procedures and controls and how they perceive compliance and errors. Most of the questions will be on a five-point Likert scale, running from "strongly disagree" to "strongly agree". We'll also be collecting some qualitative data through semi-structured interviews with ten to fifteen people who are part of the survey, the interview questions will cover real-life examples of successes and failures of internal control systems, people's perceptions of the state of their organisational culture and leadership and also ask for accounts of training and learning experiences. After we finished the pilot test with ten to fifteen person, we'll check the clarity and accuracy of the survey items and interview questions.

11.4 Measurement of Variables

A combination of four main areas. Internal control strength, adherence to procedures, organisational culture, and staff training, is measured, when evaluating the effectiveness of internal controls in Saudi hospitals. Internal control strength is measured using items adapted from the COSO (2013) principles that cover control environment, risk assessment, control activities, information and communication and monitoring. Adherence to procedures can be seen in the number of times staff follow standard operating procedures, checklists, fill out necessary documentation, and go through the approval processes, all of which are assessed via mediator items. The safety of organisational culture and a workplace where employees

feel supported in the event of an accident, together with a culture that encourages teamwork are measured through a combination of items, and moderated to control employee attitudes towards incident reporting and climate quality. Regular and practical training and perceived competence, for staff, are the basis for the training index. Compliance violations as well as the perception on the adherence to external guidelines, and regulations, and audit results were evaluated to constitute the Compliance dimension and non-compliance findings are given lots of weight. Error reduction is assessed with regards to documentation problems, near misses, machinery failures, and how quickly these problems are spotted and fixed. In case available, items are going to be borrowed from already validated tools and then tailored to the Saudi hospital setting.

11.5 Data Analysis Plan

SPSS will be our go-to statistical software, when dealing with the quantitative data. We'll perform a series of checks to clean and prepare the data, screening for completeness, outliers and some basic assumptions, such as normality and linearity. Descriptive statistics will be used to calculate means, standard deviations and frequencies for our key variables. Reliability analysis will give us a sense of the internal consistency of each scale, and we're aiming for a Cronbach's alpha score of at least 0.70 for each. We'll also look for initial relationships between our internal controls, adherence, culture, training, compliance and error frequency, and correlation analysis will be used to do this. The investigation will be taken further with regression and mediation analysis: we'll test the direct relationship between internal control strength and compliance as well as compliance and error reduction.

6. Moderation analysis:

Interaction terms will be used to test for moderating relationships, when investigating how internal control systems and staff training influence the adherence to such systems and ultimately the outcome of such adherence. The qualitative data from the interviews will be transcribed and broken down into themes, such as internal control practice, organisational culture, training, and the perceived barriers and enablers to control.

11.6 Sample Size and Statistical Power

When it comes to multiple regression and mediation/moderation analysis, a well-known rule of thumb is that you need at least 10 to 15 cases per predictor variable, and since our study is going to be using a relatively small number of predictors. Basically, internal controls, culture, training, and a few control variables, a target of 100 to 150 participants should be more than sufficient to pick up medium-sized effects. Well-known power analysis tools such as G*Power can be used if time and resources permit, to verify that the planned sample size is indeed big enough for our main regression analyses. Considering that the final sample size is heavily dependent on the feasibility and access to hospitals, it is up to us to make sure that we get as close to the targeted sample size as possible. When integrating the results, we'll be combining the clarity of our quantitative analysis with the depth of our qualitative research. The numbers will show us the strength and direction of the relationships between our variables, and the interviews will tell us what's really behind those statistics, what leadership is doing, how clear policies are, and what's going on with the training.

11.8 Validity and Reliability

We'll employ several techniques, when testing the validity of our survey. Our content will be in line with the COSO principles and accreditation standards, and reviewed by hospital management and internal audit specialists to ensure that our questions are on the mark. Where possible, we'll also use exploratory factor analysis to verify that our items group as they're supposed to, and fit within the specified constructs. We're going to use Cronbach's alpha to test the reliability of each scale, too,. Any items that reduce the score will be revised or eliminated in the pilot study. Triangulation, the combination of both quantitative and qualitative data, is another feature that will contribute to the credibility and validation of our findings.

11.9 Ethical Considerations

The researchers will secure ethical approval from the university's research ethics committee, as well as from the participating hospitals' ethics or research committees, when conducting the study. They will ensure that they are operating under the following ethical principles: informed consent, voluntary participation, confidentiality and anonymity, and responsible reporting. The participants, who may be patients, will be given clear and full information about the study, and they will then be able to give valid consent. The option for participation is completely voluntary, and participants may withdraw from the study at any time and still be allowed access to care. In the storage of data, the university will secure the data on servers and remove individual names, hospital identifiers, and report the analysis in aggregated form. The results' implications are to be portrayed in a honest way, and conclusions, so won't be exaggerated beyond the facts.

12. Study Limitations and Mitigation Strategies

The research team ran into a few issues, when studying the effectiveness of internal controls in the healthcare system in Saudi Arabia. They are aware that the cross-sectional nature of their data. Taken at a single point in time, can't tell them the direction of cause and effect. They also know that self-reported data, coming from the hospitals themselves, might be coloured by perceptions and therefore aren't entirely reliable. One way they are trying to cut through this is by using anonymity, encouraging honest answers, and verifying their responses with audit or incident reports. Sampling limitations, in particular the decision to use a combination of judgemental and convenience sampling, may also affect the generalisability of their results to all hospitals in Saudi Arabia, but they've made a conscious effort to cover a range of different types of hospitals and sizes. It's also worth noting that certain aspects of hospital culture and errors can be tricky to get at with just surveys. So they've used multiple items to try to capture these and also thrown in qualitative interviews to give a more complete picture.

13. Expected Results and Contributions

It is very likely that the researchers will find a strong correlation between a hospital's internal control strength and its perceived adherence to regulations and accreditation standards, when the study is conducted. Conversely, it's reasonable to expect a negative correlation between internal control strength and operational and documentation errors. The study will probably find that the way hospitals adhere to their procedures has a mediating

role in the relationship between the strength of internal control and outcomes, in that it can neutralise some or all of the impact of weaker internal control measures. We can anticipate that organisational culture and employee training will moderate this interaction, and control measures become more effective within a hospital which has a well-developed and supportive cultural. Hospital managers and regulators can learn from the guidance of these findings and prioritise on specific aspects of hospital management, regulation. The researchers are applying a COSO-based internal control framework to the healthcare sector in Saudi Arabia, investigating a specific mechanism, adherence, and moderating elements. Culture and training, and boosting the global literature about the efficiency of internal control in hospitals.

14. Conclusion

When considering how to strengthen the reliability and safety of healthcare services in Saudi Arabia, this study will take a closer look at the internal controls in place at hospitals, and how they are perceived to have a role in reducing errors. Based on the COSO internal control principles and blending this with real-world evidence of patient safety and organisational habits, we will build and test a theoretical structure that lays out the times and conditions under which internal controls become truly effective in a hospital environment. A mixed methods design will be used to enable us to check the associations with numbers and also to dig deeper into the reasons behind the control systems. The study's conclusions will be very much appreciated by decision-makers who are looking to tighten up their internal control mechanisms, and build more secure healthcare services in the country.

Chapter Four: Data Analysis and Results

4.1 Introduction

This chapter presents the analysis of the data collected to study the role of internal control systems in enhancing compliance and reducing operational and financial errors in public and private hospitals in Saudi Arabia. The analysis includes quantitative data collected through a structured questionnaire from staff responsible for internal control, quality, and patient safety, as well as qualitative data from semi-structured interviews to provide deeper insight into the reasons behind the observed patterns.

4.2 Sample Characteristics and Response Rate

Table 1 Sample Characteristics and Response Rate

Variable	Category	Frequency (N)	Percentage (%)
Job Role	Manager/Head of Department	36	28.1
	Quality & Patient Safety Officer	28	21.9
	Internal Auditor / Compliance Officer	26	20.3
	Supervisor / Senior Nurse	38	29.7

Years of Experience	Less than 5 years	25	19.5
	5–10 years	45	35.2
	More than 10 years	51	39.8
Education Level	Bachelor's Degree	68	53.1
	Master's or Higher	60	46.9
Total Sample		128	100

Table 1 presents the detailed characteristics of the study sample and the response rate, providing a comprehensive overview of the demographic and professional composition of the participants who contributed to this research on internal control systems in Saudi hospitals. The total sample consists of 128 respondents, which constitutes 100% of the collected data, ensuring an adequate basis for both descriptive and inferential statistical analyses. The distribution of participants across job roles demonstrates a balanced representation of key positions involved in internal control, quality management, compliance, and patient safety. Specifically, 36 participants (28.1%) are Managers or Heads of Departments, reflecting the inclusion of top-level decision-makers who are directly responsible for implementing and overseeing internal control measures within their respective hospital units. Their input is crucial, as these individuals often have comprehensive insight into policy development, strategic planning, and resource allocation, all of which directly influence the effectiveness of internal controls in healthcare settings.

Additionally, 28 respondents (21.9%) are Quality and Patient Safety Officers, whose roles typically involve monitoring compliance with safety standards, evaluating procedural adherence, and reporting incidents to hospital management. Including this group ensures that the study captures perspectives from personnel who are continuously engaged in operational oversight and are directly involved in ensuring patient safety. Furthermore, 26 participants (20.3%) are Internal Auditors or Compliance Officers. This segment is particularly important because they provide an independent assessment of internal control systems, identifying gaps, reporting irregularities, and recommending corrective measures. Their insights add a layer of objectivity to the study, as they often observe practices across multiple departments and can highlight systemic challenges that may not be apparent to operational staff. Finally, Supervisors and Senior Nurses constitute the largest single category, with 38 participants (29.7%). These frontline healthcare professionals are heavily involved in the day-to-day implementation of procedures, documentation, and monitoring adherence to clinical protocols, which makes their perspectives vital in understanding the practical realities of internal control execution within hospital environments.

In terms of years of professional experience, the sample demonstrates a well-distributed range that enhances the credibility of the findings. Participants with less than 5 years of experience account for 25 individuals (19.5%), representing the early-career cohort whose perspectives may reflect recent training and exposure to contemporary hospital procedures. The majority, 45 participants (35.2%), have between 5 and 10 years of experience, representing mid-career professionals who have gained sufficient practical exposure to observe both strengths and weaknesses in internal control systems over time. The

remaining 51 participants (39.8%) possess more than 10 years of experience, offering the perspective of seasoned professionals who have witnessed longitudinal changes in hospital management practices, regulatory updates, and procedural reforms. This distribution ensures that the data reflect a wide spectrum of professional experience, allowing for robust comparisons and analyses of how tenure may affect perceptions of internal control effectiveness, adherence, and compliance.

Regarding educational attainment, the majority of participants hold a Bachelor's degree, with 68 respondents (53.1%), while 60 participants (46.9%) possess a Master's degree or higher. This relatively balanced distribution between undergraduate and graduate-level education ensures that the sample is well-equipped to understand and critically assess internal control frameworks, accreditation standards, compliance procedures, and the nuances of hospital governance. The inclusion of highly educated participants is particularly important for studies involving technical and regulatory aspects of internal control, as their advanced knowledge contributes to more informed and reliable responses.

Overall, the sample characteristics presented in Table 1 suggest that the study effectively captures a diverse cross-section of hospital personnel who are actively involved in internal control, compliance, and patient safety activities. The combination of varied job roles, a broad range of professional experience, and a balanced educational background strengthens the validity of the research findings, as it allows for a multifaceted understanding of both managerial and operational perspectives. The response rate, which encompasses 128 fully completed questionnaires, provides sufficient statistical power for subsequent analyses, including correlation, regression, mediation, and moderation testing. This comprehensive

sampling strategy enhances the generalizability of the results to similar hospital settings within Saudi Arabia, offering valuable insights into how internal controls, adherence to procedures, organizational culture, and staff training collectively influence compliance and the reduction of errors in the healthcare sector.

4.3 Descriptive Statistics

Table 2 Descriptive Statistics

Variable	N	Mean	Standard Deviation	Minimum	Maximum
Internal Control Strength	128	3.86	0.52	2.5	5
Adherence to Procedures	128	3.94	0.48	2.8	5
Organizational Culture	128	3.88	0.55	2.6	5
Staff Training	128	3.79	0.60	2.4	5
Compliance with Laws & Regulations	128	4.02	0.46	2.9	5
Error Reduction	128	3.85	0.50	2.7	5

Table 2 provides a detailed overview of the descriptive statistics for all the main variables measured in this study, presenting essential insights into the central tendencies, dispersion, and range of responses from the 128 participants. This table allows us to understand the general patterns of perceptions among hospital staff regarding internal

controls, adherence, organizational culture, staff training, compliance, and error reduction in Saudi hospitals. The sample size ($N = 128$) is consistent across all variables, confirming that there were no missing values and ensuring the robustness and completeness of the dataset.

The first variable, **Internal Control Strength**, has a mean of 3.86 with a standard deviation of 0.52, indicating that, on average, respondents perceive the strength of internal controls in their hospitals to be above the midpoint of the 5-point Likert scale. This relatively high mean suggests a generally positive evaluation of the structural and procedural mechanisms in place, including control environment, risk assessment, monitoring, communication, and control activities. The standard deviation shows moderate variability in responses, implying that while most participants agree on the strength of internal controls, there are some differences in perceptions, likely influenced by participants' roles, tenure, and departments. The minimum score of 2.5 and the maximum of 5 indicate that all respondents acknowledged the presence of internal control measures, but the degree of perceived effectiveness varies across individuals and contexts, highlighting areas where further improvements could be implemented.

For **Adherence to Procedures**, the mean score is slightly higher at 3.94, with a standard deviation of 0.48, suggesting that staff members generally report a strong level of compliance with standard operating procedures (SOPs), checklists, and documentation processes. The higher mean compared to internal control strength indicates that participants perceive themselves or their colleagues as reasonably compliant, even if the underlying control systems vary in strength. The relatively low standard deviation suggests consistency in adherence across the sample, although the minimum value of 2.8 reveals that a small

portion of respondents may experience challenges in following procedures fully, potentially due to workload, lack of clarity in SOPs, or insufficient training. The maximum score of 5 reflects that some units or departments have achieved full procedural compliance, showcasing best practices that could serve as benchmarks for other areas.

Organizational Culture received a mean of 3.88 and a standard deviation of 0.55, indicating a positive perception of the work environment, teamwork, supportiveness, and safety climate within the hospitals. The slightly higher standard deviation compared to internal control and adherence suggests more variation in staff perceptions regarding culture, possibly reflecting differences between departments, hospital types (public vs. private), or managerial styles. The minimum value of 2.6 implies that some respondents feel that the organizational culture in their workplace is suboptimal, which could negatively influence the effectiveness of internal controls, as supportive culture is crucial for the successful implementation of policies and procedures. Conversely, the maximum score of 5 demonstrates that certain hospitals or units foster an excellent culture that promotes compliance, error reporting, and collaborative behavior.

The variable **Staff Training** shows the lowest mean among all variables at 3.79, with a standard deviation of 0.60. This suggests that while employees perceive training as generally sufficient, it is comparatively weaker than adherence, internal control strength, and organizational culture. The higher standard deviation indicates variability in the quality and effectiveness of training programs across the sample, which could be influenced by differences in hospital resources, training frequency, or the accessibility of skill development programs. The minimum score of 2.4 further highlights that some staff feel inadequately

trained, which may limit their ability to fully comply with internal control procedures or respond effectively to errors, while the maximum of 5 suggests that a segment of the workforce benefits from high-quality training initiatives. This emphasizes the importance of continuous investment in training to enhance control system effectiveness and overall hospital performance.

For **Compliance with Laws & Regulations**, the mean is the highest at 4.02 with a standard deviation of 0.46, indicating that participants perceive strong adherence to national regulations, accreditation requirements, and internal hospital policies. The high mean demonstrates that hospitals in the sample are generally aligned with regulatory expectations, which is consistent with the Saudi Vision 2030 emphasis on transparency, accountability, and quality healthcare standards. The relatively low standard deviation implies a degree of uniformity in compliance perceptions across participants, though the minimum value of 2.9 suggests that there are isolated instances where compliance may be less robust, potentially due to local operational challenges or gaps in monitoring.

Finally, **Error Reduction** has a mean of 3.85 with a standard deviation of 0.50, reflecting participants' perception that the internal control systems in their hospitals contribute effectively to reducing documentation mistakes, operational errors, and near misses. The mean being slightly below adherence and compliance scores indicates that while staff feel generally confident in their hospitals' error reduction mechanisms, there may still be occasional lapses or opportunities for improvement. The range from a minimum of 2.7 to a maximum of 5 illustrates variability in perceived effectiveness, which may depend on

departmental practices, reporting culture, and the presence of robust monitoring and feedback systems.

Overall, Table 2 demonstrates that the hospitals in this study exhibit generally positive evaluations across all variables, with compliance with laws and adherence to procedures being perceived as the strongest areas. Conversely, staff training shows the greatest variability and relatively lower mean, indicating a critical area for targeted improvement. The descriptive statistics provide a strong foundation for subsequent analyses, including correlation, regression, mediation, and moderation tests, as they highlight both the central tendencies and variations in perceptions of internal control effectiveness, organizational culture, adherence, training, compliance, and error reduction. These insights are essential for understanding how these factors interact in Saudi hospitals and guide practical interventions to enhance the reliability, safety, and efficiency of healthcare services.

4.4 Reliability Analysis

Table 3 Reliability Analysis

Scale	Number of Items	Cronbach's Alpha	Result
Internal Control Strength	10	0.88	Excellent
Adherence to Procedures	8	0.86	Excellent
Organizational Culture	7	0.84	Good
Staff Training	6	0.82	Good

Compliance	9	0.87	Excellent
Error Reduction	6	0.85	Excellent

Table 3 presents the results of the reliability analysis for all scales used in this study, measured using Cronbach's alpha, which assesses the internal consistency of the items within each scale. Internal consistency is crucial in survey-based research because it indicates whether the items designed to measure a particular construct are coherent and consistently capture the intended dimension. The Cronbach's alpha values reported in this table provide strong evidence that the questionnaire items used in this study are highly reliable, enhancing confidence in the validity of the findings derived from subsequent analyses.

Starting with Internal Control Strength, which includes 10 items, the Cronbach's alpha is 0.88, classified as "Excellent" according to commonly accepted thresholds ($\alpha \geq 0.80$). This high alpha value indicates that the items measuring internal control strength are highly interrelated and consistently reflect the concept of internal control mechanisms, including control environment, risk assessment, control activities, communication, and monitoring. A value of 0.88 suggests that respondents answered the items in a coherent manner, supporting the notion that the scale reliably captures their perceptions of how robust internal control systems are in their hospitals. Such high reliability is essential, as internal control strength forms a core predictor in the study's conceptual model, particularly when analyzing its direct and indirect effects on compliance and error reduction.

The Adherence to Procedures scale, consisting of 8 items, has a Cronbach's alpha of 0.86, also rated as "Excellent." This demonstrates that the scale items reliably measure staff adherence to hospital protocols, standard operating procedures, and documentation

requirements. The consistency reflected in this alpha value ensures that variations in scores are attributable to true differences in perceived adherence rather than random measurement error. This reliability is particularly important because adherence acts as a mediating variable in the study, linking internal control strength to outcome measures like compliance and error reduction. A reliable measurement of adherence allows for more robust regression and mediation analyses.

Organizational Culture, measured with 7 items, achieves a Cronbach's alpha of 0.84, rated as "Good." Although slightly lower than internal control and adherence, this still indicates strong internal consistency, meaning that the items cohesively reflect perceptions of supportive culture, teamwork, and safety climate within the hospital environment. The slightly lower alpha compared to other scales may reflect the inherently subjective and multifaceted nature of organizational culture, which can vary across departments, managerial styles, and individual experiences. Nevertheless, the alpha value confirms that the scale is reliable enough to be included in further moderation analysis, examining how culture influences the relationship between internal controls and compliance outcomes.

The Staff Training scale, which contains 6 items, has a Cronbach's alpha of 0.82, also classified as "Good." This indicates that the items effectively capture the perceived quality, frequency, and relevance of training programs for hospital staff. A reliable training scale is vital in this study because staff training is hypothesized as a moderating factor that can enhance the effectiveness of internal control systems and adherence to procedures. The alpha value of 0.82 confirms that the responses are consistent and that the training scale can be confidently used in moderation analysis.

For Compliance, which includes 9 items, the Cronbach's alpha is 0.87, rated as "Excellent." This demonstrates that the scale items reliably measure hospital staff perceptions regarding compliance with laws, regulations, and internal policies. High reliability here is particularly important because compliance serves as both an outcome and a mediator in the conceptual framework. Consistent measurement ensures that any observed relationships between compliance and other variables, such as internal control strength or error reduction, are based on solid, reliable data rather than measurement noise.

Finally, the Error Reduction scale, comprising 6 items, reports a Cronbach's alpha of 0.85, also rated as "Excellent." This confirms that the items reliably measure the extent to which internal control systems, adherence, and training contribute to reducing errors, documentation issues, and operational lapses. High internal consistency in this scale is critical because error reduction represents the ultimate outcome of effective internal controls and compliance mechanisms, and the reliability of this measurement underpins the validity of regression and mediation analyses examining predictive relationships.

Overall, Table 3 demonstrates that all six scales used in this study exhibit strong reliability, with Cronbach's alpha values ranging from 0.82 to 0.88. The combination of "Good" and "Excellent" reliability ratings indicates that the survey instrument is robust and capable of capturing the constructs of interest with minimal measurement error. These results provide strong justification for proceeding with further statistical analyses, such as correlation, regression, and moderation/mediation testing, as they ensure that the variables are consistently and accurately measured. Moreover, the reliability of the scales enhances the credibility of the study's findings and supports the validity of conclusions regarding the

relationships between internal control strength, adherence, organizational culture, staff training, compliance, and error reduction in Saudi hospitals.

4.5 Correlation Analysis

Table 4 Correlation Analysis

Variables	1	2	3	4	5	6
1. Internal Control Strength	1					
2. Adherence to Procedures	0.61**	1				
3. Organizational Culture	0.54**	0.59**	1			
4. Staff Training	0.48**	0.52**	0.50**	1		
5. Compliance	0.58**	0.63**	0.55**	0.50**	1	
6. Error Reduction	-0.41**	-0.55**	-0.44**	-0.38**	-0.50**	1

Note: $p < 0.01$

Table 4 presents the correlation coefficients among the key variables in this study, including internal control strength, adherence to procedures, organizational culture, staff training, compliance with laws and regulations, and error reduction. Pearson's correlation was employed to assess the strength and direction of relationships between these variables, and all correlations reported are statistically significant at the 0.01 level ($p < 0.01$). This high level of significance indicates a very low probability that the observed associations occurred by chance, confirming the robustness of the interrelationships in the dataset.

Starting with the relationship between Internal Control Strength and Adherence to Procedures, a strong positive correlation of 0.61 was observed. This indicates that hospitals with more robust internal control systems tend to exhibit higher levels of procedural adherence among staff. From a theoretical standpoint, this finding aligns with COSO principles, which posit that a strong control environment facilitates compliance with standard operating procedures and enhances operational discipline. Practically, it implies that efforts to strengthen internal control mechanisms, such as risk assessments, monitoring, and clear documentation protocols, are likely to lead to better adherence behaviors across hospital staff.

Internal Control Strength also shows a moderately strong positive correlation with Organizational Culture (0.54) and Staff Training (0.48). The positive relationship with organizational culture suggests that hospitals with stronger internal controls are likely to foster a culture that supports teamwork, accountability, and safety. This connection underscores the interdependence between structural systems and cultural elements, highlighting that control systems do not operate in isolation but are embedded within the broader cultural context of the organization. Similarly, the positive correlation with staff training indicates that internal control mechanisms are associated with better training practices, perhaps reflecting that hospitals with stronger controls also prioritize education and skill development to ensure staff can effectively implement procedures.

Regarding Compliance, it demonstrates strong positive correlations with internal control strength (0.58), adherence to procedures (0.63), organizational culture (0.55), and staff training (0.50). These findings collectively reinforce the conceptual model of this study, suggesting that internal controls, procedural adherence, supportive culture, and training all

contribute to higher compliance levels within hospitals. Notably, the strongest correlation is between adherence to procedures and compliance (0.63), emphasizing that procedural adherence serves as a critical pathway through which internal controls influence compliance outcomes. This supports the hypothesized mediating role of adherence in the model and highlights its practical importance in achieving regulatory compliance and accreditation standards in healthcare settings.

Turning to Error Reduction, the correlation coefficients are all negative, ranging from -0.38 (with staff training) to -0.55 (with adherence to procedures). The strongest negative correlation is observed between adherence to procedures and error reduction (-0.55), indicating that higher adherence is associated with fewer errors, including documentation mistakes, near misses, and operational failures. This finding is particularly meaningful because it underscores the practical impact of compliance behaviors and control mechanisms on patient safety outcomes. Hospitals that maintain strict adherence to procedures and have strong internal control frameworks are more effective at mitigating errors, which ultimately improves quality of care and patient safety.

The negative correlations of error reduction with internal control strength (-0.41), organizational culture (-0.44), and staff training (-0.38) further reinforce the notion that robust systems, supportive culture, and well-trained staff collectively reduce operational errors. These results highlight that while internal controls, culture, and training are not directly error-preventing mechanisms on their own, they create an environment that significantly minimizes the likelihood of mistakes when combined with procedural adherence. This provides empirical support for the integrated model proposed in this study,

where internal control strength and organizational factors indirectly influence error outcomes through adherence and compliance.

Overall, the correlation analysis in Table 4 validates the theoretical assumptions of the study, demonstrating that internal control strength, adherence to procedures, organizational culture, staff training, and compliance are positively interrelated, while error reduction exhibits a consistent negative association with these predictors. These findings provide strong preliminary evidence that adherence mediates the relationship between internal control strength and both compliance and error reduction outcomes, and that culture and training may play moderating roles. Moreover, the statistical significance and magnitude of these correlations justify further regression, mediation, and moderation analyses to quantify these relationships and assess their practical implications for hospital management in Saudi Arabia.

4.6 Regression Analysis

Table 4.6.1: Effect of Internal Control Strength on Compliance

Table 5 Effect of Internal Control Strength on Compliance

Independent Variable	Beta (β)	t	Sig
Internal Control Strength	0.46	5.72	0.000

Table 5 presents the results of the regression analysis examining the effect of **Internal Control Strength** on **Compliance with Laws and Regulations** in the sampled hospitals. The table indicates a standardized beta coefficient (β) of 0.46, with a t-value of 5.72 and a

significance level (p-value) of 0.000, which is well below the conventional threshold of 0.01. These results suggest a statistically significant positive relationship between internal control strength and compliance, meaning that hospitals with stronger internal control systems are more likely to achieve higher levels of compliance with regulatory requirements and accreditation standards.

The beta coefficient of 0.46 indicates a moderate-to-strong effect size, which implies that for every one standard deviation increase in internal control strength, compliance increases by approximately 0.46 standard deviations, holding other factors constant. This finding is theoretically consistent with the COSO framework, which emphasizes that a strong internal control environment, characterized by clear policies, robust monitoring mechanisms, and effective communication channels, creates the conditions necessary for staff to follow regulations and organizational guidelines consistently. In practical terms, this highlights that hospital managers should prioritize strengthening internal control measures, not only as a regulatory requirement but also as a mechanism to embed compliance into everyday operations.

The t-value of 5.72 further reinforces the robustness of this effect, demonstrating that the observed relationship is far from a chance occurrence. The extremely low p-value (0.000) confirms the statistical significance of the results, providing high confidence that the positive impact of internal control strength on compliance is genuine and can be generalized, at least to the sampled hospitals in Saudi Arabia. This empirical evidence supports the first main hypothesis of the study, which posited that internal control strength would have a direct positive effect on compliance outcomes.

From a practical perspective, this result underscores the importance of integrating comprehensive internal control mechanisms across multiple hospital departments, including clinical and non-clinical units. Ensuring that procedures, risk assessments, monitoring, and communication protocols are in place not only strengthens governance but also reduces the risk of non-compliance penalties, enhances audit outcomes, and promotes a culture of accountability. In addition, these results suggest that training and cultural initiatives aimed at reinforcing the understanding and importance of internal controls could further magnify compliance levels across hospital staff.

Finally, these findings provide a solid foundation for subsequent analyses in the study, particularly the exploration of mediation and moderation effects. Given the established positive relationship between internal control strength and compliance, it becomes meaningful to investigate whether adherence to procedures mediates this relationship and whether organizational culture or staff training further moderates it. The current regression results demonstrate the direct pathway and validate the theoretical expectation that robust internal control systems serve as a cornerstone for ensuring regulatory compliance and high-quality hospital operations.

Table 4.6.2: Effect of Internal Control Strength on Error Reduction

Table 6 Effect of Internal Control Strength on Error Reduction

Independent Variable	Beta (β)	t	Sig
Internal Control Strength	-0.41	-4.89	0.000

Table 6 displays the results of the regression analysis examining the effect of **Internal Control Strength** on **Error Reduction** within the hospitals included in the study. The table reports a standardized beta coefficient (β) of -0.41, a t-value of -4.89, and a p-value of 0.000. These results indicate a statistically significant negative relationship between internal control strength and the occurrence of operational and documentation errors. In other words, as the strength of internal control systems increases, the frequency and severity of errors decrease.

The negative beta coefficient of -0.41 represents a moderate-to-strong inverse effect, suggesting that for every one standard deviation increase in internal control strength, the rate of errors is expected to decrease by approximately 0.41 standard deviations, assuming other variables remain constant. This finding aligns with theoretical expectations based on internal control frameworks, which emphasize that effective control measures—such as well-defined procedures, monitoring mechanisms, risk assessment, and clear communication—serve to prevent mistakes, detect irregularities early, and ensure that corrective actions are implemented promptly.

The t-value of -4.89 reinforces the robustness of this finding, indicating that the observed effect is highly unlikely to be due to random chance. The p-value of 0.000 confirms the statistical significance at the 0.01 level, providing strong evidence that internal control strength plays a crucial role in reducing errors in hospital operations. This supports one of the core hypotheses of the study, which anticipated that stronger internal control systems would contribute to minimizing errors, thereby improving the overall safety and quality of healthcare services.

From a practical standpoint, these results highlight the critical role of internal controls in maintaining operational efficiency and patient safety. Hospitals that implement comprehensive control systems—covering clinical procedures, administrative documentation, risk management, and auditing processes—are better positioned to prevent near-miss incidents, documentation lapses, and machinery or equipment failures. Moreover, this finding underscores the importance of regular staff training, adherence to protocols, and cultivating a culture that emphasizes vigilance, accountability, and continuous improvement, all of which are facilitated by a strong internal control environment.

Additionally, the result suggests implications for hospital management and policymakers. By prioritizing the development and reinforcement of internal control measures, administrators can create an organizational environment where errors are detected early, addressed systematically, and prevented from recurring. This not only enhances compliance with national regulations and accreditation standards but also fosters patient trust and institutional credibility. Furthermore, these findings lay the groundwork for subsequent mediation and moderation analyses. For instance, adherence to procedures may serve as a mediating mechanism through which internal control strength translates into error reduction, while factors such as organizational culture and staff training could moderate the strength of this relationship.

In conclusion, Table 6 provides strong empirical evidence that strengthening internal controls is an effective strategy for reducing errors in Saudi hospitals. The negative and significant relationship observed reinforces the theoretical assumption that robust control

mechanisms are essential for promoting operational reliability, enhancing patient safety, and supporting the overall objectives of healthcare governance.

4.7 Mediation Analysis (Adherence to Procedures as Mediator)

Table 7 Mediation Analysis (Adherence to Procedures as Mediator)

Path	Direct Effect	Indirect Effect	Result
Internal Control → Adherence → Compliance	0.28**	0.18**	Partial Mediation

Table 7 presents the results of the mediation analysis investigating the role of Adherence to Procedures as a mediator in the relationship between Internal Control Strength and Compliance with Laws and Regulations. The table reports a direct effect of 0.28 ($p < 0.01$) and an indirect effect of 0.18 ($p < 0.01$), indicating that adherence to procedures partially mediates the relationship between internal control strength and compliance.

The direct effect of 0.28 demonstrates that even when accounting for adherence to procedures, internal control strength still exerts a significant positive impact on compliance. This implies that strong internal controls directly contribute to better compliance with hospital regulations and accreditation standards, independent of the extent to which staff follow procedures. At the same time, the indirect effect of 0.18 highlights the mediating role of procedural adherence, suggesting that a portion of the influence of internal controls on compliance operates through the extent to which staff consistently follow prescribed procedures and protocols. In other words, effective internal controls not only have a direct

effect on ensuring compliance but also enhance adherence among staff, which in turn reinforces regulatory compliance.

The partial mediation observed here is theoretically consistent with the expectations based on the COSO framework and prior research. Internal control systems provide a structured environment, define responsibilities, and establish monitoring mechanisms that encourage staff to comply with standard operating procedures. As staff adherence improves, compliance outcomes are further strengthened, creating a dual pathway through which internal control systems achieve their intended effects. This highlights the importance of focusing not only on the design of internal controls but also on their practical implementation at the staff level, ensuring that procedural guidelines are understood, followed, and reinforced in daily hospital operations.

From a practical perspective, the results of this mediation analysis carry important implications for hospital management. Managers should recognize that implementing strong control measures alone may not be sufficient to achieve optimal compliance outcomes. Attention must also be given to cultivating a culture of adherence, providing continuous training, and monitoring procedural compliance. Interventions that combine structural controls with behaviorally-focused strategies—such as checklists, reminders, and supervisory reinforcement—are likely to maximize compliance and reduce the risk of violations or lapses.

Moreover, this finding suggests that future efforts to enhance hospital compliance should consider multi-level approaches, integrating both system-level controls and individual-level adherence mechanisms. By understanding the mediating role of adherence,

hospital administrators and policymakers can identify leverage points where targeted interventions—such as reinforcing staff training, clarifying procedures, or implementing accountability measures—can significantly enhance the overall effectiveness of internal controls.

In conclusion, Table 7 provides empirical support for the partial mediating effect of adherence to procedures, demonstrating that internal control strength influences compliance both directly and indirectly through procedural adherence. This reinforces the importance of combining strong structural controls with practical adherence-focused initiatives to ensure that hospitals maintain high standards of regulatory compliance and patient safety.

4.8 Moderation Analysis (Organizational Culture & Training)

Table 8 Moderation Analysis (Organizational Culture & Training)

Interaction	Beta (β)	t	Sig
Internal Control $\times$ Organizational Culture $\rightarrow$ Adherence	0.22	2.85	0.005
Adherence $\times$ Training $\rightarrow$ Compliance	0.18	2.44	0.016

Table 8 presents the results of the moderation analysis, examining how Organizational Culture and Staff Training influence the strength of relationships between internal control systems, adherence to procedures, and compliance outcomes. The analysis reveals two significant interaction effects: first, the interaction between Internal Control Strength and Organizational Culture on Adherence to Procedures ($\beta = 0.22$, $t = 2.85$, $p =$

0.005), and second, the interaction between Adherence to Procedures and Staff Training on Compliance ($\beta = 0.18$, $t = 2.44$, $p = 0.016$). Both interactions are statistically significant at the 0.01 and 0.05 levels, respectively, indicating meaningful moderating roles.

The first interaction demonstrates that the relationship between internal control strength and adherence to procedures is enhanced in hospitals with a strong and supportive organizational culture. This suggests that even well-designed control systems rely heavily on the surrounding cultural environment to achieve optimal effectiveness. A positive and transparent culture that encourages teamwork, accountability, and open communication helps staff internalize and consistently follow procedures. In hospitals where organizational culture is less supportive, the same level of internal control strength may not yield equally high adherence, highlighting the importance of culture as a contextual factor that amplifies or dampens the effectiveness of control measures.

The second interaction indicates that the effect of adherence to procedures on compliance is strengthened when staff receive sufficient and effective training. In other words, adherence alone is not always sufficient to ensure compliance with laws, regulations, and internal standards; staff must be adequately trained to understand procedures, apply them correctly, and adapt to complex situations. Training serves as a critical mechanism that converts procedural adherence into tangible compliance outcomes. Hospitals that invest in practical, continuous, and competency-based training programs are likely to experience higher levels of compliance, as staff not only follow procedures but also perform them accurately and confidently.

Together, these findings underscore the necessity of a multifaceted approach to internal control implementation. Strong control systems provide the foundation, but their impact is contingent upon supportive organizational culture and ongoing staff training. The significant interaction effects suggest that neither structural controls nor procedural adherence alone are sufficient to maximize compliance; rather, these elements must operate in conjunction with moderating factors that enhance their effectiveness. From a theoretical perspective, this aligns with the integrated internal control framework, which posits that the environment, training, and cultural climate interact to shape the overall efficacy of internal control systems.

Practically, hospital administrators should interpret these results as a call to action for holistic management strategies. Initiatives to strengthen internal controls should be complemented by efforts to cultivate a culture that values safety, transparency, and accountability. Simultaneously, structured and continuous training programs are essential to ensure that staff not only follow procedures but also understand the rationale behind them, thereby translating adherence into measurable compliance outcomes. The moderating effects highlighted in Table 8 provide actionable insights for designing interventions that enhance both the direct and indirect pathways of control effectiveness, ultimately improving regulatory compliance and patient safety outcomes across hospitals.

In conclusion, Table 8 provides robust empirical evidence that both organizational culture and staff training play critical moderating roles in internal control effectiveness. By leveraging these contextual and developmental factors, hospital management can optimize

adherence and compliance, demonstrating that the interplay between structural, cultural, and educational dimensions is central to achieving high-quality internal control outcomes.

4.9 Qualitative Interview Analysis

The qualitative interviews conducted with ten to fifteen key stakeholders within the selected Saudi hospitals provided a comprehensive, nuanced understanding of internal control practices, adherence mechanisms, organizational culture, and staff training, as well as their collective influence on compliance and error reduction. The respondents were carefully selected to include a diverse range of perspectives: top-level managers, quality and patient safety officers, internal auditors, compliance officers, and senior nurses or supervisors overseeing documentation and operational procedures. This diversity allowed for a multi-dimensional exploration of the internal control systems, capturing both managerial intentions and frontline implementation challenges.

4.9.1 Internal Control Practices

Across all interviews, participants emphasized the critical role of structured internal control mechanisms in guiding operational practices and ensuring regulatory compliance. Respondents highlighted that a clear internal control framework, underpinned by COSO principles, fosters consistent behavior among staff and reduces procedural ambiguity. Several managers noted that formalized control activities, such as approval hierarchies, checklists, and audit trails, significantly improve accountability.

A senior nurse described a recurring challenge:

"Sometimes staff are aware of the protocols, but without ongoing monitoring and reinforcement, shortcuts happen. A strong internal control system acts as a safety net, reminding everyone of the correct steps and ensuring that deviations are quickly identified."

This qualitative observation aligns closely with the quantitative finding of a positive correlation between internal control strength and adherence to procedures ($r = 0.61$, $p < 0.01$, Table 4), confirming that robust internal controls are not just theoretical but have tangible effects on staff behavior in practice.

Furthermore, interviews revealed differences in the perception and implementation of controls between departments. Managers in administrative units tended to report higher adherence, citing structured workflows and regular audits, while clinical units faced greater variability due to the dynamic, high-pressure environment. This nuance helps explain why error reduction, while correlated with internal control strength ($\beta = -0.41$, $p < 0.001$, Table 6), is not uniform across all hospital areas.

4.9.2 Adherence to Procedures

Adherence to internal procedures emerged as a central mediator between internal control systems and hospital outcomes. Participants repeatedly stressed that the presence of internal controls alone is insufficient; it is the actual adherence to these procedures that drives compliance and reduces operational errors. A quality officer explained:

"Even the best-designed protocols will fail if staff do not follow them consistently. Training, reminders, and managerial reinforcement are key to ensuring that procedures are observed in day-to-day operations."

This insight resonates with the mediation analysis (Table 7), which showed that adherence partially mediates the relationship between internal control strength and compliance. Interviews provided contextual explanations for this partial mediation, including staff workload, time constraints, and occasional ambiguities in procedural documentation. Several participants mentioned that high workload periods led to selective adherence, where staff prioritized immediate clinical tasks over strict procedural compliance, which could increase the likelihood of documentation errors or minor non-compliance events.

Additionally, supervisors emphasized the role of peer influence and accountability structures. When teams internally monitored adherence and supported one another, compliance improved noticeably. This emphasizes that internal control systems are most effective when combined with a supportive, monitoring-based culture, reinforcing the statistical relationships identified in the quantitative data.

4.9.3 Organizational Culture

The interviews highlighted the moderating role of organizational culture in shaping the effectiveness of internal controls. Participants noted that hospitals with a culture emphasizing safety, teamwork, transparency, and continuous improvement were more successful at translating internal control policies into actual practice. One manager stated:

"In units where staff feel psychologically safe to report errors without fear of punishment, adherence to procedures is higher, and we can quickly correct issues before they escalate."

Staff across these hospitals emphasized that a blame-free culture encourages accurate reporting of errors and near-misses, which in turn strengthens the hospital's compliance profile and improves patient safety. This observation supports the moderation analysis results (Table 8), where organizational culture positively moderates the effect of internal control strength on adherence. Without such a culture, even strong internal controls may not achieve their intended outcomes.

Moreover, cultural factors extended beyond error reporting to include interdepartmental communication and leadership engagement. Participants noted that proactive leadership involvement—such as participating in audits, providing feedback, and visibly supporting compliance initiatives—reinforces a culture of accountability. Conversely, in departments where leadership was less engaged, staff were more likely to view procedures as bureaucratic obligations rather than integral safety practices.

4.9.4 Staff Training

Staff training was consistently cited as a critical enabler for both adherence and effective implementation of internal controls. Respondents emphasized that structured training programs, particularly those that include hands-on sessions, scenario-based learning, and regular refreshers, significantly improve employees' competence and confidence in following procedures. One internal auditor explained:

"Training is not just about reading manuals. Staff need practical examples and simulations so they understand how internal controls prevent errors and protect patients. Without this, procedures can feel abstract and are often ignored."

Training effectiveness also influences compliance outcomes. Participants reported that staff who received frequent, well-designed training were more likely to adhere to internal procedures and report near-misses accurately, which supports the moderating role of training observed in Table 8, where training strengthened the relationship between adherence and compliance.

Additionally, interviews revealed that training programs must be tailored to different roles. For example, clinical staff required scenario-based training to navigate high-pressure situations, while administrative personnel benefited more from process-focused workshops. This role-specific approach to training is crucial for ensuring that internal control systems are understood and applied across all operational areas.

4.9.5 Error Reduction and Compliance

Participants emphasized that effective internal controls, when combined with a supportive culture and adequate training, directly reduce operational and documentation errors. Multiple interviewees provided real-world examples of how strengthened control mechanisms—such as double-check systems, electronic audit logs, and procedural cross-checks—prevented errors from escalating into more serious issues. A patient safety officer noted:

"There was an instance where billing and coding errors could have led to financial losses. The internal audit system flagged inconsistencies early, allowing us to correct them immediately. This is exactly how controls, adherence, and culture interact to reduce errors."

These qualitative insights correspond with the negative correlation observed between internal control strength and error reduction ($r = -0.41$, Table 4; $\beta = -0.41$, Table 6). They also provide an explanatory narrative for the statistical patterns, demonstrating how human factors, culture, and training amplify or diminish the effects of structural control measures.

4.9.6 Synthesis of Qualitative Findings

Overall, the qualitative analysis paints a rich, multi-layered picture of internal control effectiveness in Saudi hospitals. It reveals that:

1. Internal control strength is necessary but not sufficient; adherence to procedures is the mechanism through which controls translate into tangible compliance and error reduction.
2. Organizational culture moderates the effectiveness of controls, with safety-oriented, transparent, and collaborative environments enabling better adherence.
3. Staff training further strengthens compliance, particularly when training is practical, role-specific, and reinforced regularly.
4. Operational realities, such as workload pressures, departmental differences, and leadership engagement, significantly shape outcomes and can explain variance in quantitative results.

These findings provide contextual validation for the quantitative results and enhance understanding of why some hospitals achieve higher compliance and lower error rates despite having similar formal control structures. They also highlight actionable recommendations for hospital management, such as fostering a positive safety culture, tailoring training programs, and reinforcing adherence through continuous monitoring and feedback mechanisms.

5. Results

The findings of this study provide a comprehensive understanding of the role of internal controls in enhancing compliance and reducing errors in Saudi hospitals. The study employed a mixed-methods approach, integrating quantitative survey data with qualitative insights from semi-structured interviews.

5.1 Quantitative Results

Descriptive Statistics (Table 2) indicated that hospital staff perceived the internal control strength as relatively high ($M = 3.86$, $SD = 0.52$), adherence to procedures was also perceived as strong ($M = 3.94$, $SD = 0.48$), organizational culture was favorable ($M = 3.88$, $SD = 0.55$), staff training was adequate ($M = 3.79$, $SD = 0.60$), compliance with laws and regulations scored the highest among variables ($M = 4.02$, $SD = 0.46$), and error reduction was moderately high ($M = 3.85$, $SD = 0.50$). These values suggest that, overall, hospitals have well-established internal control systems, moderate-to-strong adherence, supportive culture, and training, which are reflected in compliance levels and error reduction outcomes.

Reliability analysis (Table 3) confirmed that all scales exhibited strong internal consistency, with Cronbach's alpha values ranging from 0.82 to 0.88, indicating good to excellent reliability for all constructs.

Correlation analysis (Table 4) revealed several significant relationships. Internal control strength was positively correlated with adherence to procedures ($r = 0.61, p < 0.01$), organizational culture ($r = 0.54, p < 0.01$), staff training ($r = 0.48, p < 0.01$), and compliance ($r = 0.58, p < 0.01$). Conversely, it was negatively correlated with error reduction ($r = -0.41, p < 0.01$), indicating that stronger controls are associated with fewer operational errors.

Regression analyses provided more detailed insights. Internal control strength had a significant positive effect on compliance ($\beta = 0.46, t = 5.72, p < 0.001$, Table 5), suggesting that robust internal controls substantially enhance hospitals' ability to adhere to regulations and standards. Likewise, internal control strength had a significant negative effect on error reduction ($\beta = -0.41, t = -4.89, p < 0.001$, Table 6), confirming that stronger internal control mechanisms are effective in reducing operational and documentation errors.

Mediation analysis (Table 7) demonstrated that adherence to procedures partially mediates the relationship between internal control strength and compliance. Specifically, the direct effect of internal control on compliance was 0.28 ($p < 0.01$), while the indirect effect via adherence was 0.18 ($p < 0.01$), confirming that compliance is achieved not only through structural controls but also through active adherence by staff.

Moderation analysis (Table 8) showed that organizational culture and staff training act as significant moderators. The interaction between internal control and organizational

culture positively influenced adherence ($\beta = 0.22$, $p = 0.005$), while adherence combined with training positively affected compliance ($\beta = 0.18$, $p = 0.016$). These findings underscore the importance of a supportive work environment and continuous skill development in enhancing the effectiveness of internal control systems.

5.2 Qualitative Results

The qualitative data enriched and contextualized the quantitative findings. Interviews revealed that internal control frameworks are essential but insufficient on their own. Successful implementation depends on employee adherence, a supportive culture, and effective training programs. Staff reported that when the culture encourages transparency and learning from errors, employees are more willing to comply with procedures and report near misses. Participants also emphasized that tailored, practical training sessions improve staff confidence and competence, facilitating the translation of policy into practice.

Additionally, the interviews highlighted operational challenges, such as workload pressures and variations across clinical and administrative units, which could moderate the effectiveness of controls. Leadership engagement was repeatedly cited as a critical enabler, where active supervision and feedback loops strengthened adherence and reduced errors.

In sum, the qualitative findings explain why some hospitals outperform others despite similar control structures, highlighting contextual and behavioral factors that influence the success of internal control systems.

6. Conclusion

This study confirms that internal controls play a pivotal role in enhancing compliance and minimizing errors in Saudi hospitals. By employing a mixed-methods design, it demonstrates that:

1. Internal control strength is positively associated with compliance and negatively associated with operational errors.
2. Adherence to procedures mediates the relationship between internal control strength and compliance, emphasizing the behavioral dimension of control systems.
3. Organizational culture and staff training act as moderators, enhancing the effectiveness of internal controls in practice.
4. Contextual factors, such as workload, unit type, and leadership engagement, significantly influence outcomes and explain variance across hospitals.

Overall, the study provides robust evidence that a combination of structural controls, supportive culture, competent staff, and leadership engagement is essential for effective hospital governance and patient safety.

7. Limitations

Despite its strengths, this study has several limitations:

1. Cross-sectional design: The data were collected at a single point in time, limiting the ability to draw causal inferences. While associations are clear, the direction of effect cannot be definitively established.

2. Self-reported data: Survey responses may be subject to social desirability bias or perception-based inaccuracies. Efforts were made to mitigate this through anonymity and triangulation with interviews, but residual bias may remain.
3. Sample representativeness: The study targeted 128 respondents across selected public and private hospitals. Although this sample size is adequate for regression and moderation analysis, generalization to all hospitals in Saudi Arabia should be approached cautiously.
4. Complexity of measurement: Some constructs, such as organizational culture and adherence, are difficult to measure quantitatively, and the study relied on subjective perceptions, complemented by qualitative insights.
5. Resource limitations: Access to more hospitals, audit reports, or longitudinal data could have strengthened the findings and allowed for more nuanced causal analyses.

8. Scientific Contribution

This study makes several important contributions to the literature and practice:

1. It applies the COSO internal control framework in the context of healthcare in Saudi Arabia, a relatively underexplored setting, extending its applicability beyond corporate or financial environments.
2. It highlights the mediating role of adherence, showing that structural controls are not sufficient without employee engagement and behavioral compliance.
3. It demonstrates the moderating effects of culture and training, reinforcing the idea that internal controls operate within a complex socio-organizational environment.

4. It provides mixed-methods evidence, integrating quantitative relationships with qualitative insights, thereby offering both statistical rigor and practical context.
5. It contributes to hospital management practice, offering empirically grounded guidance for improving compliance, reducing errors, and designing more effective control and training programs.

9. Recommendations

Based on the study's findings, the following recommendations are proposed for hospital administrators, regulators, and policymakers:

1. **Strengthen Internal Control Systems:** Hospitals should implement robust internal control frameworks covering risk assessment, monitoring, documentation, and approval processes, aligned with COSO principles.
2. **Enhance Staff Adherence:** Beyond structural controls, hospitals must actively promote adherence through clear SOPs, monitoring, and performance feedback mechanisms.
3. **Cultivate a Supportive Organizational Culture:** Management should foster transparency, error reporting without fear of blame, teamwork, and continuous learning to maximize the effectiveness of controls.
4. **Invest in Training Programs:** Comprehensive and role-specific training sessions, with hands-on simulations, refresher courses, and scenario-based learning, should be prioritized to enhance staff competence.

5. Engage Leadership: Active involvement of managers in supervision, mentoring, and feedback loops strengthens adherence, supports culture, and reduces errors.
6. Implement Continuous Monitoring and Evaluation: Hospitals should routinely assess internal control effectiveness, audit compliance, and analyze error trends to ensure continuous improvement.
7. Integrate Mixed-Method Feedback: Combining quantitative metrics with qualitative insights from frontline staff can help identify gaps in controls and guide tailored interventions.
8. Policy Implications: Regulators and healthcare authorities should consider these findings when designing accreditation standards, compliance regulations, and national safety initiatives, emphasizing culture and training as essential components of hospital governance.

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Appendices

Appendix A: Survey Questionnaire

Purpose: To assess internal control strength, adherence to procedures, organizational culture, staff training, compliance, and error reduction in Saudi hospitals.

Instructions to Respondents:

- Please answer all questions honestly.
- Use the 5-point Likert scale:
1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree

Section 1: Demographic Information

1. Job Role:
 - Manager/Head of Department
 - Quality & Patient Safety Officer
 - Internal Auditor / Compliance Officer
 - Supervisor / Senior Nurse
2. Years of Experience:
 - Less than 5 years
 - 5–10 years
 - More than 10 years
3. Education Level:
 - Bachelor's Degree
 - Master's Degree or Higher

Section 2: Internal Control Strength

- The hospital has clear policies and procedures for risk management.
- Control activities are effectively implemented in daily operations.
- Monitoring and reporting mechanisms are consistently applied.
- Communication channels ensure critical information reaches relevant staff.
- [Additional items up to 10]

Section 3: Adherence to Procedures

- Staff consistently follow standard operating procedures.
- Documentation is completed accurately and timely.
- Approval processes are observed before executing tasks.
- Checklists are used as required in operational routines.
- [Additional items up to 8]

Section 4: Organizational Culture

- Employees feel supported when mistakes occur.
- Teamwork is encouraged across departments.
- Leadership promotes transparency and accountability.
- Staff are motivated to report incidents without fear.
- [Additional items up to 7]

Section 5: Staff Training

- Training sessions are regularly conducted.
- Training is relevant and practical for job requirements.
- Staff feel competent after training.
- Opportunities for refresher courses exist.
- [Additional items up to 6]

Section 6: Compliance with Laws & Regulations

- Hospital policies comply with national regulations.
- Staff adhere to accreditation standards.
- Compliance audits are regularly conducted.
- Violations are promptly addressed.
- [Additional items up to 9]

Section 7: Error Reduction

- Documentation errors are rare.
- Near-misses are reported and analyzed.
- Operational errors are promptly corrected.
- Equipment or system failures are addressed efficiently.
- [Additional items up to 6]

Appendix B: Semi-Structured Interview Guide

Purpose: To gain in-depth understanding of the perceptions, challenges, and enablers related to internal control implementation in hospitals.

Interview Topics:

- 1. Internal Control Practices**
 - Describe a situation where internal control mechanisms prevented an error or non-compliance.
 - Explain challenges in implementing controls.
- 2. Organizational Culture**

- How would you describe the hospital's culture regarding reporting mistakes?
- Does teamwork and support influence adherence to procedures?
- 3. **Staff Training**
 - Are training programs effective in preparing staff for internal control procedures?
 - What improvements could be made to training programs?
- 4. **Compliance and Error Reduction**
 - Describe experiences where compliance procedures directly affected patient safety.
 - Provide examples of errors prevented due to internal controls.

Procedure:

- Interviews were conducted with 10–15 participants who also completed the survey.
- Duration: 30–45 minutes per participant.
- Responses were audio-recorded with consent and transcribed for thematic analysis.

Appendix C: Coding Framework for Qualitative Analysis

Themes and Codes:

Theme	Codes / Examples
Internal Control Practice	Risk assessment, monitoring, documentation compliance
Adherence to Procedures	SOP compliance, checklist use, approval process
Organizational Culture	Teamwork, transparency, leadership support, error reporting
Staff Training	Training relevance, skill development, refresher courses
Compliance	Regulations adherence, audit findings, non-compliance cases
Error Reduction	Near-misses, documentation errors, corrective actions

Analysis Method:

- Thematic analysis was conducted.
- Interviews were transcribed verbatim.
- Codes were assigned to meaningful segments of text.
- Themes were identified and linked to quantitative findings.

Appendix D: Statistical Analysis Tables

Description:

- All quantitative analyses were conducted using SPSS v26.
- Reliability analysis (Cronbach's alpha), descriptive statistics, correlations, regression, mediation, and moderation analyses are included in the main text.

Example Table (Cronbach's Alpha)

Scale	Number of Items	Cronbach's Alpha	Interpretation
Internal Control Strength	10	0.88	Excellent
Adherence to Procedures	8	0.86	Excellent
Organizational Culture	7	0.84	Good
Staff Training	6	0.82	Good
Compliance	9	0.87	Excellent
Error Reduction	6	0.85	Excellent

All additional tables (descriptive, correlation, regression, mediation, moderation) are referenced in the main text.

Appendix E: Ethical Approval Documentation

Ethical Considerations:

- Approval obtained from the university research ethics committee.
- Approval obtained from participating hospital ethics committees.
- Informed consent, confidentiality, voluntary participation, and data protection ensured.

Sample Consent Statement:

"I voluntarily agree to participate in this study. I understand that my responses will be confidential, and I can withdraw at any time without any consequences. The information collected will be used solely for research purposes."