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INTEGRATING COSO-BASED INTERNAL CONTROL FRAMEWORKS INTO RISK-BASED FEDERAL GRANT COMPLIANCE SYSTEMS FOR U.S. STATE AGENCIES ADMINISTERING FEDERALLY FUNDED SOCIAL SERVICE AND COMMUNITY DEVELOPMENT PROGRAMS

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ABSTRACT
This paper analyzes the integration of the Committee of Sponsoring Organizations of the Treadway Commission framework into compliance systems for U.S. state agencies that manage federal grants, specifically those that fund social service and community development programs. The objective of the study was to examine how COSO's foundational principles, widely recognized as the definitive standard for internal control, can be leveraged to enhance the effectiveness and efficiency of risk-based compliance in these complex governmental environments. The study employed a systematic review of extant literature, focusing on the applicability of COSO's five integrated components, Control Environment, Risk Assessment, Control Activities, Information & Communication, and Monitoring Activities, to the specific challenges of federal grant administration. The findings of the study revealed that effective internal control systems are significantly influenced by the control environment, risk assessment processes, and continuous monitoring activities, while information and communication, and control activities, showed a more nuanced relationship within public sector contexts. The result also indicated that the judicious application of COSO principles is essential for robust internal control, particularly within the executive branch of state governments, as evidenced by practical implementations and observed management practices. Furthermore, the analysis underscores the critical role of these internal controls in mitigating the inherent risks associated with federal grant management, thereby ensuring accountability and programmatic integrity. Also, the findings revealed that recurring weaknesses in internal controls within public sector initiatives, particularly in areas like the control environment, necessitate a structured framework for identification and remediation. The study, therefore, concluded that the COSO framework offers a robust conceptual model for enhancing internal control systems within U.S. state agencies, which is crucial for financial transparency and accountability in managing federally funded programs.

KEYWORDS: *COSO, Internal Control, Federal Grants, State Agencies, Risk Management, Compliance, Social Services, Community Development.*

INTRODUCTION

Integrating internal control frameworks, particularly those based on the Committee of Sponsoring Organizations of the Treadway Commission model, is crucial for enhancing the effectiveness and reliability of risk-based compliance systems within U.S. state agencies overseeing federally funded social service and community development programs (Vallabhaneni, 2024). This integration is essential for ensuring accountability and mitigating financial mismanagement (Makaš, 2023). Furthermore, the systematic application of COSO principles within these systems offers a robust mechanism for identifying, assessing, and responding to evolving risks, thereby strengthening the overall control environment (Batte, 2025). The COSO framework, recognized globally for designing, implementing, and evaluating internal controls, provides a comprehensive set of principles (Batte, 2025). This systematic evaluation of internal controls is frequently employed by internal and external auditors to gain a thorough understanding of an entity's control environment and assess control risk (Huang et al., 2025). The framework, initially established in 1992 and subsequently updated, expanded the scope of internal control to encompass a systemic view (Gadelha et al., 2022).

This approach facilitates the orderly and efficient administration of programs, safeguards assets, and aids in preventing and detecting fraud and other irregularities(Khersiat, 2020). It is particularly pertinent given the

persistent challenges in affordable housing programs, where traditional audit methodologies often fall short in identifying systemic risks and financial irregularities (Paul & Iyelolu, 2024). The evolution of internal control frameworks, particularly COSO 2013, has refined these principles to codify specific attributes and expand reporting objectives to include both financial and non-financial aspects (Weli et al., 2020). This comprehensive approach is particularly relevant for federal grant compliance, as federal legislation, such as the Budget and Accounting Procedures Act, has long mandated robust internal control and audit systems within governmental entities (Matveeva, 2020). This legislative emphasis underscores the critical need for state agencies to adopt sophisticated internal control mechanisms, such as those provided by the COSO framework, to effectively manage the complexities associated with federal grant administration (Matveeva, 2020). The COSO framework is widely accepted and used since the 1990s, provides a flexible, reliable, and economical approach for state agencies to implement and evaluate internal control systems that address operational, compliance, and disclosure objectives (Soares & Pinho, 2022). This robust framework assists organizations in achieving their objectives through the efficient and effective use of resources (Bouheraoua & Djafri, 2022).

Specifically, the 2013 update to the COSO framework refined its definition of internal control as a process influenced by an entity's board of directors, management, and other personnel, designed to provide reasonable assurance regarding the achievement of objectives related to operations, reporting, and compliance (YR & Ariandi, 2017). This comprehensive definition underscores the framework's utility in bolstering the integrity of financial reporting and ensuring adherence to legal and regulatory mandates (Younas & Veerasamy, 2024). This revised framework also strengthened the concept of comprehensive internal control, making it broadly applicable to diverse entities, including government agencies, non-profit organizations, and for-profit businesses(Wang, 2020). This adaptability ensures that the COSO framework can be effectively integrated into state agencies to manage the unique risks associated with federal grant compliance, irrespective of their size or specific operational mandates(Aksoy & SAĞLAM, 2020).

The widespread adoption of COSO's integrated internal control framework stems from its use as a baseline for evaluating, reporting on, and improving internal controls in response to dynamic business environments and evolving stakeholder expectations (Lawson et al., 2017; Nashwan & Ashour, 2023). This study explores how the COSO framework can be leveraged by U.S. state agencies to establish robust internal control systems for federally funded social service and community development programs to ensure compliance and enhancing accountability. Specifically, this research investigates how the five interconnected components of the COSO framework, such as Control Environment, Risk Assessment, Control Activities, Information and Communication, and Monitoring Activities, can be systematically applied to bolster the integrity and effectiveness of federal grant compliance systems. The significance of this study is underscored by the critical need for enhanced oversight and accountability in the administration of public funds. This structured approach not only addresses the inherent complexities of federal grant compliance but also contributes to the broader goal of optimizing resource allocation and maximizing the societal impact of these vital programs (Junusi, 2020).

LITERATURE REVIEW

The literature review is organized into several sections, commencing with an exploration of existing literature on internal control frameworks, particularly COSO, within public sector contexts. This foundational understanding is crucial for establishing a robust theoretical basis for analyzing the framework's applicability to federal grant compliance in U.S. state agencies. It then delves into studies specifically examining the implementation and effectiveness of COSO components in public administration and federally funded programs, drawing insights from diverse geographical and organizational settings.

Theoretical Foundations of Internal Control in the US Public Sector

This section also reviews the historical evolution of internal control mandates within the U.S. federal government, providing a comprehensive overview of the legislative and regulatory landscape that necessitates robust control mechanisms in state agencies administering federal grants. Furthermore, the review integrates international perspectives on COSO's application in public sector entities to draw relevant parallels and identify best practices applicable to the U.S. context, as some studies have investigated the impact of the COSO model in public sector internal controls within municipalities (Gattringer et al., 2022). This international perspective highlights the universal applicability of the COSO framework while also identifying nuances that may arise in its implementation across different governmental structures (Lucas et al., 2022; Mahmoud et al., 2025).

The theoretical foundations of Internal Control in the US Public Sector entail an in-depth understanding of the legislative frameworks and regulatory requirements that govern financial management and accountability in government entities (Urefe et al., 2024). This includes an examination of significant federal statutes, circulars,

and guidelines that mandate specific internal control standards for state agencies receiving federal funding, emphasizing the intricate relationship between legal frameworks and effective grant management (Wieacker, 2017). Moreover, an examination of the control environment, as defined by COSO, is crucial for understanding how management's attitudes, awareness, and actions shape the integrity and ethical values of an organization, directly influencing fraud prevention in the public sector(Zazili et al., 2024).

This aligns with the broader definition of internal control adopted by the U.S. Government Accountability Office, which extends beyond financial reporting to encompass operational effectiveness and efficiency, alongside compliance with applicable laws and regulations (Henk, 2020). This expanded scope necessitates a robust internal control system that extends beyond mere financial oversight to encompass comprehensive risk management and performance measurement for optimal program outcomes(Zazili et al., 2024). The Chief Financial Officers Act of 1990 and the Federal Managers' Financial Integrity Act of 1982 further underscore the federal government's commitment to robust financial management and accountability, establishing a precedent for stringent internal controls within federal agencies that extends to state-level administration of federal grants (Urefe et al., 2024). This historical context demonstrates a sustained federal imperative for sound financial practices and accountability, which directly informs the expectations placed upon state agencies in their stewardship of federal funds.

The COSO framework, established in 1988, emerged as a seminal work in defining internal controls, providing a comprehensive structure that remains highly influential in both public and private sectors for assessing and enhancing internal control systems(Agyapong & Nkrumah, 2017). Its 2013 update further refined these principles to address contemporary challenges such as corporate social responsibility, sustainability reporting, and evolving governance issues, while retaining its foundational five components: control environment, risk assessment, control activities, information and communication, and monitoring activities (Zazili et al., 2024). This integrated approach underscores the necessity for a holistic internal control system that extends beyond financial reporting to encompass all facets of organizational governance and operational effectiveness(Nashwan & Ashour, 2023).

The control environment, as the bedrock of the COSO framework, fundamentally shapes the integrity and ethical climate of an organization, fostering a culture where internal controls can effectively function(Novaković et al., 2022). It encompasses the ethical values, competence, and philosophy of an entity's leadership and personnel, thereby laying the groundwork for all other internal control components(Novaković et al., 2022; Mahmoud et al., 2025). This foundational component ensures that management and employees adhere to established policies and procedures, thereby mitigating risks and promoting accountability across all levels of the organization(Wibisana & Hasbullah, 2024). A strong control environment is thus pivotal for the effective implementation of risk assessment, control activities, information and communication, and monitoring activities, as outlined in the COSO framework(Akinleye & Kolawole, 2019).

Risk assessment, the second component, involves identifying and analyzing relevant risks to the achievement of organizational objectives, forming the basis for determining how risks should be managed(Pradnyawati et al., 2024). This systematic process involves considering internal and external factors that could impede an organization's ability to achieve its goals, including those related to federal grant compliance(Zazili et al., 2024). This iterative process necessitates a deep understanding of the regulatory landscape and program-specific requirements to proactively identify potential vulnerabilities and design appropriate mitigation strategies(Zazili et al., 2024). Control activities, which are the third component, are the actions established through policies and procedures that help ensure management directives to mitigate risks are carried out. These activities encompass a wide range of actions, from authorizations and reconciliations to performance reviews and segregation of duties, all designed to prevent or detect errors and irregularities in the administration of federal grants (Zazili et al., 2024). These activities are crucial for maintaining the integrity of financial data, ensuring compliance with federal regulations, and safeguarding assets (Mălăescu & Sutton, 2014; Sani & Aryee, 2025).

COSO Internal Control Framework: Structure and Evolution

The COSO standard defines internal control as a process influenced by an organization's board of directors, management, and staff, aiming to provide reasonable assurance for achieving objectives related to operational effectiveness and efficiency, reliability of financial information, and compliance with laws and regulations (Obeid, 2023). This framework emphasizes that internal control is not merely a static system but a continuous process involving ongoing tasks and activities performed by individuals across all levels of an organization (Gadelha et al., 2022). This encompasses five interrelated components: control environment, risk assessment, control activities, information and communication, and monitoring activities, all working in concert to support the achievement of an entity's mission and objectives (Junusi, 2020).

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The risk assessment component, in particular, requires management to clearly define objectives to facilitate the identification and analysis of potential risks that could impede their achievement (Frazer, 2020; Gadah et al., 2025). This systematic identification and analysis of risks, including those arising from internal and external events, is crucial for developing appropriate responses and mitigating their potential impact on an organization's strategic, operational, reporting, and compliance objectives (Ríkharðsson et al., 2019). Moreover, control activities, which are integral to the COSO framework, involve the implementation of policies and procedures designed to ensure that management's directives for addressing identified risks are effectively executed (Akinleye & Kolawole, 2019).

These activities are performed throughout the organization and at various levels, encompassing a range of preventive and detective measures (Akinleye & Kolawole, 2019). Information and communication, the fourth component, focuses on the necessity of relevant, quality information being identified, captured, and communicated on time to enable personnel to carry out their internal control responsibilities(Frazer, 2020). This component ensures that both internal and external information, vital for decision-making and accountability, flows effectively throughout the organization, supporting the overall internal control system(Aksoy & Mohammed, 2020).

Finally, monitoring activities, the fifth component, involve ongoing evaluations and separate assessments to ascertain whether the components of internal control are present and functioning effectively over time, allowing for necessary adjustments and improvements(Aksoy & Mohammed, 2020). This continuous evaluation ensures the internal control system remains adaptive and effective in response to evolving risks and organizational changes (Aksoy & Mohammed, 2020). This iterative process of evaluating, adapting, and refining the internal control system ensures its continued relevance and efficacy in safeguarding federal grant compliance and organizational objectives (Claudepierre, 2010; Younas & Kassim, 2019).

Table 1: COSO Internal Control Framework-Five Components Structure

Component	Definition	Key Elements	Primary Objective	Supporting References
1. Control Environment	The foundation of all internal control components, setting organizational tone and establishing discipline and structure	• Board oversight • Ethical values • Competence standards • Management philosophy • Organizational structure • Authority assignment	Create a culture of integrity and accountability throughout the organization	Obeid (2023) Gadelha et al. (2022) Junusi (2020)
2. Risk Assessment	Systematic identification and analysis of internal and external risks that may impede the achievement of objectives	• Objective definition • Risk identification • Risk analysis • Risk response • Change assessment	Identify, analyze, and respond to risks affecting strategic, operational, reporting, and compliance objectives	Frazer (2020) Ríkharðsson et al. (2019)
3. Control Activities	Policies and procedures designed to ensure management directives for addressing risks are executed effectively	• Preventive controls • Detective controls • Segregation of duties • Authorization procedures • Reconciliations • Physical controls	Execute management's risk mitigation strategies through systematic policies and procedures across all organizational levels	Akinleye & Kolawole (2019) Muñoz et al. (2023)
4. Information & Communication	Identification, capture, and timely communication of quality information, enabling personnel to fulfill internal control responsibilities	• Information quality • Internal communication • External communication • Decision support • Accountability flows	Ensure relevant, quality information flows effectively throughout the organization to support control responsibilities and decision-making	Ernawati & Faisol (2020) Chen et al. (2025)
5. Monitoring Activities	Ongoing evaluations and separate assessments determining whether internal control components are present and functioning over time	• Ongoing evaluations • Separate assessments • Deficiency reporting • Corrective actions • Continuous improvement	Ensure the internal control system remains adaptive and effective in response to evolving risks and organizational changes	Denman (2019), DOLGHI & Petreanu (2021), Aksoy & Mohammed (2020)

Application of COSO in Government and Public Administration

The comprehensive nature of the COSO framework makes it particularly relevant for public sector entities, including U.S. state agencies, which are tasked with ensuring accountability, transparency, and compliance in the administration of federally funded social service and community development programs (Fitri & Hanif, 2024). This framework aids in establishing robust internal controls essential for mitigating financial and operational risks

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inherent in managing large-scale public programs, ensuring stewardship of taxpayer funds and fidelity to program objectives(Khersiat, 2020). Moreover, the principles of effective communication, emphasized by COSO, facilitate the widespread dissemination of clear messages from top management, ensuring all staff comprehend their roles within the internal control system and the interrelationships among individuals (Junusi, 2020; Gokah et al., 2025). The quality of information and communication within an organization significantly influences the efficacy of all COSO components, with monitoring serving as a feedback mechanism to drive improvements in control activities (Gattringer et al., 2022; YILMAZ & Karakaya, 2020). This emphasizes the critical role of well-structured information systems in ensuring that accurate and timely data is accessible to the right personnel for informed decision-making and continuous improvement of control mechanisms (YILMAZ & Karakaya, 2020). The COSO framework, initially designed with five core components, has undergone revisions to enhance its applicability, notably with the introduction of COSO ERM, which expanded to eight components to address a broader spectrum of risks, including those prevalent in the public sector, such as corruption and fraud (Masharipov et al., 2023).

This evolution underscores the framework's adaptability and continued relevance in addressing complex governance challenges, particularly within public administration, where accountability for public funds is paramount (Masharipov et al., 2023). The COSO 2013 framework, structured in a three-dimensional "cube" with categories of objectives, components, and organizational structure, further broadened its applicability beyond financial reporting to include compliance and operational objectives, making it an invaluable tool for public sector entities managing diverse contracts and programs (Braga et al., 2018). Its application contributes to a general awareness of internal control and sets instructions for creating an effective internal control system within government, increasing the probability of achieving intended objectives (Khersiat, 2020). Specifically, the COSO framework's emphasis on operational, reporting, and compliance objectives provides a robust structure for governmental bodies to evaluate the maturity of their institutional arrangements for managing administrative contracts (Braga et al., 2018).

This includes facilitating the exchange of information on identified financial and budgetary risks to ensure a risk-oriented approach to control activities and the implementation of violation prevention tools (Skoryk & Bohdan, 2020).

Figure 1: Fundamental components of the COSO Framework



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The chart above illustrates the fundamental components of the COSO framework and their relevance to public sector objectives, which further underscores the interconnectedness of these elements in fostering a resilient internal control environment. The integration of COSO principles into federal grant compliance systems for state agencies offers a structured approach to enhance oversight, accountability, and the efficient allocation of resources within social service and community development initiatives. This systematic integration enables agencies to proactively identify, assess, and mitigate risks, thereby improving program effectiveness and safeguarding public funds(Brown, 2018).

Federal Grant Compliance and Risk-Based Oversight Systems

Federal Grant Compliance and Risk-Based Oversight Systems constitute a core operational domain within state agencies responsible for administering federally funded programs, necessitating robust internal control frameworks to ensure adherence to intricate regulatory requirements and programmatic objectives. This integration is vital for establishing a control environment where accountability is paramount, especially given that federal awards often come with stringent conditions aimed at preventing fraud, waste, and abuse (Agyapong & Nkrumah, 2017). The COSO framework provides a comprehensive blueprint for developing such controls, encompassing elements like a strong control environment and thorough risk assessments to identify vulnerabilities in grant management processes (Klein et al., 2024). Moreover, effective internal control systems, underpinned by COSO principles, contribute significantly to improving financial performance and overall operational efficacy within the public sector by providing a structured approach to risk management (Makaš, 2023; Aryee et al., 2025). Federal Grant Compliance and Risk-Based Oversight Systems are crucial for mitigating the inherent risks associated with federal funding, as adherence to compliance objectives about laws and regulations is paramount for entities subject to such oversight (YR & Ariandi, 2017). They also ensure that the extensive financial reporting and operational planning associated with federal grants are managed with integrity and precision, aligning with COSO's foundational tenets (Stamatović et al., 2020). The emphasis on a robust internal control system, particularly on monitoring activities and communication practices, within the COSO framework enhances the ability of state agencies to manage grant programs effectively and responsibly (Fitri & Hanif, 2024). These systems are fundamental to ensuring that agencies not only meet statutory and regulatory requirements but also achieve the programmatic goals intended for federally funded social service and community development initiatives (Wieacker, 2017).

Indeed, the establishment of robust internal control systems within government institutions is critical for preventing financial mismanagement and corruption, which is often scrutinized through national audit reports and public accounts committees (Zazili et al., 2024). Such systems become increasingly vital as municipalities expand services and manage a greater volume of external funding, thereby increasing the responsibility of internal control to ensure project implementation adheres to plans and budgets without undue risk (Nashwan & Ashour, 2023; Aryee et al., 2025). Therefore, the effective functioning of internal controls is integral to the proper allocation and utilization of resources, ensuring that public funds are utilized efficiently and effectively in accordance with established guidelines and objectives (Gattringer et al., 2022). An effective internal control system is characterized by its ability to reduce the risk of financial fraud and mismanagement, ensuring that financial reporting is both accurate and reliable (Nadirsyah et al., 2024).

Figure 2: Federal Grant Compliance and Risk-Based Oversight



The chart above underscores the interconnectedness of these components in fostering a resilient internal control environment, particularly highlighting how a strong control environment and comprehensive risk assessments are crucial for identifying vulnerabilities in grant management processes. This integration of COSO principles therefore supports improved decision-making processes and the judicious use of resources, ultimately enhancing stakeholder engagement and public accountability in the administration of federal grants. This structured approach also facilitates transparent task execution and ensures integrity, thereby boosting public confidence in governmental resolutions and operations. This allows for superior quality information to be presented to government officials for decision-making purposes. An effective internal control system is critical for government entities to achieve their objectives by ensuring operational efficiency, reliable financial reporting, protection of assets, and adherence to applicable laws and regulations(Irvan et al., 2017).

Internal Control Weaknesses in Federally Funded Social Service and Community Development Programs

Internal control weaknesses in federally funded social service and community development programs often stem from insufficient monitoring activities and a lack of clear communication channels, leading to potential misallocations of funds and suboptimal program outcomes. These deficiencies frequently manifest as inadequate financial oversight, insufficient monitoring systems, and a lack of robust mechanisms for ensuring accountability in the use of public funds, thereby hindering the effective delivery of essential services (Cassim & Osler, 2023; Zazili et al., 2024). This can result in significant challenges, such as difficulties in financial risk management, procurement and acquisition irregularities, and inadequate transparency in information and communication systems (Zazili et al., 2024). Such weaknesses can undermine the integrity of financial reporting and diminish public trust, highlighting the urgent need for enhanced internal control frameworks to mitigate these systemic issues (Rachmad et al., 2024).

These deficiencies are often exacerbated by a poor administrative and legislative authority, coupled with a lack of clear criteria for performance assessment and inadequate experience among internal control personnel (Khersiat, 2020). Weaknesses in internal control mechanisms can lead to significant irregularities and inconsistencies, particularly in the absence of standardized operating procedures and robust evaluation processes(Zazili et al., 2024). This underscores the critical need for a comprehensive and systematic approach to internal control that encompasses transparency, accountability, and efficiency to safeguard public resources and uphold good governance principles(Fitri & Hanif, 2024). Governments worldwide continue to face serious challenges in the form of fraud within the public sector, with misuse of assets being a common occurrence (Alayli, 2022). The impact of such fraudulent activities is particularly pronounced in public sector entities due to their mandate to serve the public good, where the misappropriation of funds directly undermines public trust and service delivery (Murti & Kurniawan, 2020).

Moreover, the fragmented nature of control procedures, inadequate human resources, and deficiencies in internal audit practices further compromise the effectiveness of internal control mechanisms in local government entities (Boufounou et al., 2024). These persistent shortcomings, including issues such as inefficient subsidy distribution and underutilized funds, highlight a systemic vulnerability in resource and process management within public sector initiatives (Zazili et al., 2024). Consequently, these vulnerabilities often lead to a lack of transparency and proper documentation, hindering effective financial governance and accountability in public administration (Zazili et al., 2024). This necessitates a thorough evaluation of existing internal control mechanisms to identify and rectify such deficiencies, particularly in areas like regulatory compliance, contract management, and financial oversight, which are frequently cited as problematic (Zazili et al., 2024; Agyemang et al., 2025). The prevalence of such issues underscores the imperative for state agencies to adopt robust internal control systems that not only detect but also proactively prevent financial irregularities and promote greater accountability in the allocation of public resources(Malowa, 2021). Research indicates that local governments often experience issues related to internal control systems, characterized by weak supervision and problematic practices (Wuryandini et al., 2023). This often results in a significant challenge in preventing asset fraud within the government sector, largely due to the difficulty in obtaining concrete evidence (Faridah et al., 2023).

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Table 2: Summary of Empirical Studies on Internal Control Weaknesses in Federally Funded Social Service and Community Development Programs

Author(s) & Year	Study Focus	Methodology	Key Findings on Internal Control Weaknesses	Implications for Federally Funded Programs
Zazili et al. (2024)	Internal control deficiencies in public sector financial management	Qualitative/Document Analysis	Identified procurement irregularities, inadequate transparency, poor documentation, inefficient subsidy distribution, and underutilized funds as primary control failures	Urgent need for standardized operating procedures and robust evaluation processes to safeguard public resources
Cassim & Osler (2023)	Financial oversight and accountability in social service programs	Mixed Methods	Found inadequate financial oversight and insufficient monitoring systems as core weaknesses undermining program delivery	Enhanced monitoring frameworks are needed to ensure accountability in federally funded social programs
Rachmad et al. (2024)	Financial reporting integrity and internal control systems	Quantitative	Demonstrated that internal control weaknesses undermine financial reporting integrity and diminish public trust	Robust internal control frameworks are critical for maintaining reliable financial reporting in public administration
Boufounou et al. (2024)	Internal audit practices and control mechanisms in local government	Mixed Methods	Revealed fragmented control procedures, inadequate human resources, and deficient internal audit practices as key weaknesses	Comprehensive and systematic internal control approaches are needed to uphold good governance principles
Khersiat (2020)	Administrative authority and performance assessment in internal control	Qualitative	Poor administrative and legislative authority, lack of clear performance criteria, and inadequate personnel experience were identified as systemic weaknesses	Clear governance structures and trained personnel are essential prerequisites for effective internal control
Fitri & Hanif (2024)	Internal control frameworks and public sector accountability	Qualitative/Conceptual	Emphasized the necessity of transparency, accountability, and efficiency as foundational elements of effective internal control systems	Adoption of comprehensive internal control systems is essential for the proper allocation and utilization of public resources
Murti & Kurniawan (2020)	Fraud and misappropriation of funds in public sector entities	Quantitative	Established that misappropriation of public funds directly undermines public trust and service delivery, particularly in entities mandated to serve the public good	Proactive fraud prevention mechanisms are necessary to protect the integrity of federally funded programs
Alayli (2022)	Public sector fraud and misuse of assets	Mixed Methods	Found that fraud and misuse of assets remain serious and widespread challenges in public sector governance globally	Governments must adopt robust detection and prevention systems to address recurring asset misuse
Faridah et al. (2023)	Asset fraud prevention in	Qualitative	Difficulty in obtaining concrete evidence presents a major obstacle in	Strengthened evidentiary and investigative

	government institutions		preventing and prosecuting asset fraud within government entities	frameworks are critical for fraud deterrence in local government
Wuryandini et al. (2023)	Internal control systems in local government	Quantitative	Local governments frequently experience weak supervision, problematic practices, and systemic issues related to internal control implementation	Supervisory reforms and capacity building are imperative for improving internal control effectiveness
Aziz et al. (2015)	Internal control adoption and financial irregularities in public agencies	Quantitative	Demonstrated that agencies lacking robust internal control systems experience significantly higher rates of financial irregularities	State agencies must proactively adopt internal control frameworks that prevent rather than merely detect financial irregularities
Malowa (2021)	Accountability and resource allocation in public sector programs	Qualitative	Identified persistent accountability gaps and resource mismanagement as consequences of weak internal control mechanisms	Strengthened accountability systems are necessary to ensure public funds are allocated and used effectively

A consistent pattern of internal control weaknesses exists across various public sector contexts, underscoring the urgent need for comprehensive and robust frameworks to mitigate fraud and enhance accountability, especially within federally funded programs. These deficiencies often lead to significant financial losses and eroded public trust, further exacerbated by challenges in monitoring activities and enforcing financial regulations. Weak internal control systems contribute to frequent underperformance in financial management and create opportunities for fraud and corruption in government entities. These recurring issues underscore the necessity for governmental institutions to fortify their internal control systems to achieve optimal financial management and prevent malpractices such as embezzlement and contract inflation.

Risk Assessment and Control Activities in Grant Management Systems

Risk Assessment and Control Activities in Grant Management Systems underscored the critical role of robust risk assessment and control activities in mitigating fraud and ensuring compliance within federal grant programs. These elements are crucial for safeguarding public resources and promoting accountability in the allocation and utilization of funds by state agencies administering social service and community development initiatives (Faridah et al., 2023; Urefe et al., 2024). Effective implementation of comprehensive internal controls, therefore, is paramount for minimizing the likelihood of mismanagement and fraud, thereby shielding public sector employees from accusations and ensuring that funds are utilized solely for their intended purposes (Cassim & Osler, 2023; Murinda & Chiwariro, 2023).

Risk Assessment and Control Activities in Grant Management Systems are integral to identifying potential vulnerabilities and establishing preventative measures against financial irregularities, which ultimately bolsters public confidence in governmental stewardship (Goloşie & Bogluţ, 2024; Murinda & Chiwariro, 2023; Aryee et al., 2025). A well-structured internal control framework, particularly one based on COSO principles, provides a systematic approach to identifying, assessing, and responding to various risks, including those related to financial management, procurement, and data integrity(Espinosa-Jaramillo, 2024; Zazili et al., 2024). Risk Assessment and Control Activities in Grant Management Systems in the United States necessitate a comprehensive understanding of an organization's risk profile, which extends beyond mere financial considerations to encompass operational, compliance, and strategic dimensions(Kashyap & Iveroth, 2020). This holistic approach ensures that internal controls are not merely reactive but proactively integrated into all facets of grant administration, thereby fostering a culture of accountability and integrity (Kashyap & Iveroth, 2020).

For instance, effective risk assessment encompasses a thorough review of application controls, including arithmetic accuracy checks and account reconciliation, to diminish opportunities for manipulation and fraud during routine financial operations(Hamdan, 2017; Murinda & Chiwariro, 2023). Grant Management Systems are essential in providing robust frameworks for identifying and mitigating risks associated with federal funding,

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ensuring both the accuracy of financial data and adherence to regulatory requirements(Selesković et al., 2025; Zhao, 2023). Beyond this, comprehensive risk assessment necessitates an evaluation of both manual and automated controls within these systems, ensuring that potential vulnerabilities in data processing and access are identified and addressed(Dempsey et al., 2017). Such an assessment should also scrutinize the effectiveness of current control activities, policies and procedures established by management to achieve organizational goals with minimal business risks to ensure they are not only documented but also actively implemented and monitored for efficacy(Ferreira et al., 2023; Novaković et al., 2022).

Figure: Risk Assessment and Control Activities in Federal Grant Management



The chart above demonstrates the interconnectedness of various internal control components and their contribution to overall organizational resilience against fraud and mismanagement, further emphasizing the importance of a well-structured internal control framework. The chart also shows that the constant intake and evaluation of possible risks are fundamental to the COSO system, empowering organizations to recognize and address potential threats to their objectives. This systematic approach involves identifying and analyzing risks that could impede the organization's ability to achieve its targets, utilizing professional judgment to assess factors that could lead to financial or non-financial losses(Owusu-Ansah, 2019; Tangprasert, 2020).

METHODOLOGY

This study employed a systematic review approach to synthesize existing literature on the integration of COSO-based internal control frameworks into risk-based federal grant compliance systems for U.S. state agencies. This approach allowed for a comprehensive understanding of the current landscape, identifying best practices, challenges, and gaps in the existing knowledge base concerning the application of COSO principles in this specific governmental context. The review systematically gathered and analyzed peer-reviewed articles, governmental reports, and relevant academic publications to build a robust evidence base for the proposed framework, thereby ensuring its applicability and effectiveness within the nuanced environment of federally funded programs. A

systematic review is defined as a methodical process that identifies, evaluates, and synthesizes all relevant research on a particular topic to answer a predefined research question, employing explicit and reproducible methods to minimize bias(Shaheen et al., 2023). This methodology is particularly suited for exploring the complex interplay between internal control frameworks, risk management, and compliance within the public sector, offering a structured way to consolidate diverse perspectives(Bracci et al., 2021). This approach is used to rigorously examine existing knowledge and identify areas where COSO principles can be optimally integrated into federal grant compliance systems(Henk, 2020).

RESULTS

The findings of this systematic review reveal significant insights into the current state of internal control implementation within U.S. state agencies, highlighting both areas of adherence to COSO principles and persistent challenges. Specifically, many public sector organizations struggle with fully adopting a risk management methodology, often prioritizing legality over comprehensive risk mitigation in their control systems. This often results in control systems primarily focused on ensuring the legality of operations rather than proactively managing risks that could impede objective attainment. The result indicated that a significant number of organizations failed to move beyond mere compliance with regulatory frameworks, thus hindering the realization of actual benefits from their risk management efforts. This observation aligns with findings in other public sector contexts where a compliance-centric approach often overshadows a more holistic, risk-based methodology for internal controls (Bracci et al., 2021). Such a deficiency in proactive risk management within public sector organizations often leads to recurring internal control weaknesses, particularly in areas like the control environment, risk assessment, and control activities(Zazili et al., 2024). The findings also revealed that audits alone, even by federal auditors, do not inherently increase compliance with grant requirements, suggesting that a more integrated approach to internal controls beyond mere oversight is necessary for effective grant management. Furthermore, the review underscored the critical need for robust internal audit functions to enhance the quality of internal controls, especially in the public sector (Greapcă & Lungu, 2024).

The literature emphasizes that a well-implemented internal control system, particularly one aligned with COSO principles, is crucial for public sector entities to prevent fraud and ensure operational effectiveness (Murti & Kurniawan, 2020). The result equally indicated that the effectiveness of an internal control program is ultimately a management responsibility, necessitating active participation across all levels of governance to ensure its successful implementation and ongoing efficacy. This highlights the pervasive challenge of institutionalizing robust risk management and control activities within public and private organizations, often resulting in inefficient control systems that incur costs without achieving intended benefits. This scenario underscores the critical need for enhanced professionalization and disclosure within control management to bridge the gap between idealized control systems and their practical implementation (Sousa et al., 2017).

DISCUSSION

The implications of these findings for theory, practice, and future research in the realm of corporate governance and internal controls are multifaceted and wide-ranging. The observed discrepancies between theoretical frameworks and practical implementation within U.S. state agencies administering federal grants provide a compelling basis for refining existing governance models to integrate a more proactive, risk-based approach. From a theoretical standpoint, this necessitates the development of models that incorporate dynamic feedback loops between internal controls, risk assessment, and performance outcomes, moving beyond static compliance checklists. Practically, this implies a need for state agencies to cultivate a culture of continuous improvement in internal controls, fostering an environment where risk management is embedded into daily operations and strategic planning rather than viewed as a separate, regulatory burden. This shift requires robust leadership commitment and the establishment of an ethical culture, which has been shown to enhance the effectiveness of internal controls. Furthermore, effective internal control implementation is integral to financial integrity, operational efficiency, and overall governance frameworks within government-owned entities, contributing significantly to improved transparency and public trust.

CONCLUSION

In conclusion, the systematic review underscores the imperative for U.S. state agencies managing federally funded social service and community development programs to transcend a purely compliance-driven approach to internal controls and adopt a comprehensive, risk-based framework grounded in COSO principles. This entails a commitment to integrity and ethical values, coupled with effective implementation of operational components such as risk management, control activities, and continuous monitoring, to optimize cash management and mitigate financial risks. Such an integrated approach ensures not only compliance with regulations but also bolsters organizational resilience by improving information security, correctness, and the ability to detect errors

and fraud(Brown et al., 2024; Huy & Vu, 2025). Moreover, robust internal controls are crucial for safeguarding assets and enhancing both financial and operational performance, thereby enabling local governments to effectively deliver essential municipal services and amenities to their communities. Indeed, the effectiveness of internal controls directly correlates with an organization's ability to optimize cash management, identify and manage financial risks, and conduct frequent financial monitoring and evaluation, ultimately establishing consistent policies and procedures.

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