



Design of an Internal Control System Evaluation Instrument Based on the COSO Framework: A Study of State Owned Insurance

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ABSTRACT

The growing complexity of governance and regulatory demands in state-owned enterprises necessitates robust and measurable internal control systems to ensure accountability and long-term sustainability. This study aims to design a comprehensive internal control system evaluation instrument based on the COSO Internal Control–Integrated Framework (2013) to support governance effectiveness and organizational sustainability in state-owned social insurance enterprises. Despite regulatory requirements mandating periodic internal control evaluations, many state-owned enterprises still lack standardized and measurable evaluation tools, resulting in fragmented and partial assessments. Addressing this gap, this research develops a COSO-based evaluation instrument integrated with national governance regulations and risk maturity principles. Using a project-based research design, data were collected through triangulation methods, including interviews, observations, documentation analysis, and questionnaires involving internal auditors and employees across head office and branch units. The instrument was constructed based on five COSO components, seventeen principles, and eighty points of focus, supported by a structured scoring system to assess both the existence (present) and effectiveness (function) of internal controls. This study contributes to the literature on internal control and sustainability governance by providing a replicable and context-sensitive evaluation framework for public sector and social insurance organizations in emerging economies. Practically, the proposed instrument offers internal auditors and regulators a structured tool to enhance accountability, risk management, and long-term organizational sustainability.

Keywords: COSO Framework, Governance, Internal Control System, State-Owned Enterprises, Sustainability

1. INTRODUCTION

In an increasingly complex economic and regulatory environment, internal control systems play a critical role in ensuring organizational accountability, transparency, and sustainability, particularly within state-owned enterprises (SOEs). As entities entrusted with managing public resources and delivering essential services, SOEs are expected to uphold high standards of governance while maintaining operational efficiency and long-term financial sustainability. An effective internal control system not only safeguards organizational assets but also supports reliable reporting, regulatory compliance, and risk-informed decision-making.

In Indonesia, governance reforms have reinforced the importance of internal control systems through regulatory frameworks that require SOEs to conduct periodic evaluations of their internal control effectiveness. However, in practice, many SOEs continue to face significant challenges in implementing comprehensive and consistent internal control evaluations. Reports issued by the Supreme Audit Agency of Indonesia reveal persistent weaknesses across accounting controls, budget execution, and internal control structures, indicating a gap between regulatory expectations and actual implementation. These weaknesses have been linked to major governance failures and financial misconduct cases in state-owned insurance and transportation enterprises, undermining public trust and organizational sustainability (BPK RI, 2024).

The Committee of Sponsoring Organizations of the Treadway Commission (COSO) Internal Control Integrated Framework (2013) has been widely recognized as an international benchmark for designing and evaluating internal control systems across both private and public sectors. Empirical studies demonstrate that COSO-based internal controls enhance reporting quality, reduce information asymmetry, strengthen risk management, and improve organizational resilience. Despite its global relevance, the application of the COSO framework within SOE particularly in the context of social insurance institutions often remains fragmented and insufficiently adapted to regulatory and operational realities in emerging economies.

The welfare of pensioners and civil servants in Indonesia is greatly assisted by PT TASPEN (Persero), a state-owned enterprise (SOE) that manages social security programmes for civil servants. In carrying out its duties, PT TASPEN (Persero) manages large amounts of public funds, which requires integrity, efficiency and high accountability in every operational process and decision. Therefore, the need for a strong internal control system that can be evaluated systematically is inevitable. As a state-owned enterprise, PT TASPEN (Persero) has the authority to assess the effectiveness of internal control implementation in accordance with Minister of SOEs Regulation No. PER-02/MBU/03/2023. However, in practice, based on internal interviews with PT TASPEN (Persero) auditors and the author's initial observations, it is known that PT TASPEN (Persero) auditors have evaluated the internal control system during each audit visit and reported it in the Audit Report (LHA), but they do not yet have a formally documented and structured instrument or tool to evaluate the effectiveness of the implementation of the internal control system in all work units simultaneously. Assessments of the internal control system that have been carried out so far tend to be ad hoc, are not supported by standard quantitative indicators, and are not integrated with the company's risk management and internal control information systems. This certainly has the potential to create blind spots in the control process, open up opportunities for potential fraud, and make it difficult for management to make decisions based on risk and objective data.

The COSO framework itself is an international framework that has been proven to improve the effectiveness of internal control through five key components. Various national and international companies have successfully implemented COSO and reaped significant benefits, one of which is PT Kalbe Farma, Tbk, which has implemented all elements of COSO. Based on studies conducted on the internal control system at PT Kalbe Farma Tbk, it has been implemented comprehensively, all COSO components are interrelated and support the effectiveness of the internal control system in achieving the company's operational objectives, maintaining compliance with regulations, and improving the reliability of financial reporting. With a comprehensive approach, PT Kalbe Farma Tbk is able to manage risk, improve operational efficiency, and maintain the integrity of the company's financial reports" (Permatasari, 2024). Therefore, the COSO framework and its measurement tools are crucial for assessing and monitoring a company's internal control system, given the positive benefits of a good or adequate internal control system.

The importance of the COSO framework is also mentioned in other studies, which mention the creation of a COSO and COBIT 5-based governance and internal control framework for the implementation of Robotic Process Automation (RPA), which has been validated through responses from 86 (eighty-six) professionals and is considered effective, achieving its stated objectives, and can be widely applied in various organisations (Eulerich et al., 2024). From these two studies, it is concluded that a good COSO-based internal control system evaluation framework is necessary to test the effectiveness and efficiency of the internal control system in place. so that with a structured internal control system evaluation tool, PT TASPEN (Persero) can not only conduct periodic and systematic self-assessments, but also use the evaluation results as a basis for developing improvement strategies, strengthening procedures, and enhancing the capabilities of the internal supervision and audit units. This will also improve the company's audit readiness in the event of an audit by the Supreme Audit Agency (BPK), the Inspectorate General of the Ministry of Finance, or other external auditors

This study addresses this gap by designing a COSO-based internal control system evaluation instrument tailored to the governance and sustainability needs of a state-owned social insurance enterprise. Unlike prior studies that focus primarily on assessing internal control effectiveness, this research emphasizes the development of a structured, measurable, and replicable evaluation tool that integrates the COSO framework with national governance regulations and risk maturity principles. By adopting a project-based research approach and applying triangulation methods, this study contributes both theoretically and practically. Theoretically, it extends the internal control and sustainability governance literature by operationalizing the COSO framework into a comprehensive evaluation instrument suitable for public sector organizations.

Practically, it provides internal auditors, regulators, and policymakers with a structured tool to enhance governance quality, accountability, and long-term organizational sustainability in state-owned social insurance enterprises and similar institutions.

2. LITERATURE REVIEW

2.1. Internal Control Systems and Organizational

In management and organizational systems, design is a systematic process of arranging system elements to ensure effectiveness, efficiency, and alignment with organisational objectives. Design encompasses not only structural and procedural aspects but also risk management and process continuity. Irawan (2016) states that design includes system planning, preliminary conceptualisation, mental structuring, and strategy development. Gaspersz (2023) defines work design as the organisation of jobs and tasks to improve productivity and job satisfaction through an understanding of work processes, resources, and interactions. Similarly, Indrajani (2018) explains that design aims to support organisational goals and activities. Therefore, design can be understood as a structured planning process translated into implementable systems or work designs.

Meanwhile, assessment refers to a systematic approach to collecting and analysing data to evaluate the achievement of objectives and support managerial decision-making (Queenta & Jayanti, 2025). According to Ambiyar & Panyahuti (2020), assessment or measurement involves collecting quantitative data on the characteristics or quality of objects or events. Nurizzati (2021) adds that measurement uses instruments to obtain data, while evaluation determines value based on measurement results. Thus, assessment is essential for data-based decision-making and the development of strategic planning and internal control systems.

2.2. Internal Control System

Internal control systems (ICS) are a key pillar of effective organisational governance and have been widely studied in both public and private sectors. Arens et al. (2016) define ICS as rules and processes that provide reasonable assurance regarding effective operations, reliable financial reporting, and compliance with laws and regulations, thereby helping to prevent and detect fraud. Tuanakotta (2014) similarly explains that internal control consists of procedures established and maintained by management and employees to manage risks and achieve organisational objectives.

Empirical evidence shows that weaknesses in internal control remain a critical issue. Lubis et al. (2024) identify deficiencies, particularly in non-financial business activities, and recommend adopting the COSO-based internal control framework, which includes the control environment, risk assessment, control activities, information and communication, and monitoring. Studies by Rosari et al. (2022) confirm that stronger internal controls reduce fraud risk, while Bakade & Paramitalaksmi (2024) find that audit opinions alone do not adequately reflect fraud risk, as internal control weaknesses play a more decisive role. These findings highlight that ICS function as strategic tools for fraud mitigation. However, limited research has focused on developing internal control assessment instruments aligned with recent SOE regulations, including PER-02/MBU/03/2023

2.3. Agency Theory

Chen et al. (2025) find that the implementation of COSO-based internal control significantly improves financial reporting quality, operational efficiency, and reduces the risk of information manipulation and stock price crashes. The COSO framework functions as a governance mechanism that internalizes agency theory by aligning management and shareholder objectives through transparent and continuously auditable controls. In the agency relationship, conflicts arise due to differing interests between principals and agents; therefore, COSO serves as a control mechanism to align managerial behaviour with owners' interests.

2.4. A The COSO Internal Control–Integrated Framework

The COSO Internal Control–Integrated Framework (2013) is widely recognized as a comprehensive model for designing, implementing, and evaluating internal control systems. The framework conceptualizes internal control as an integrated process designed to provide reasonable assurance regarding the achievement of objectives across three dimensions: operations, reporting, and compliance. These objectives are supported by five interrelated components control environment, risk assessment, control activities, information and

communication, and monitoring activities which operationalized through seventeen principles and detailed points of focus (COSO, 2013).

In public organizations and state-owned enterprises, the COSO framework improves accountability, risk management, and governance. COSO (2013) emphasizes that internal control integrates technical procedures with organizational culture and integrity. Yanti (2022) finds that misalignment with the COSO framework increases fraud risk and highlights the need to strengthen internal control, particularly in the revenue cycle. Similarly, Tadesse et al. (2022) show that COSO 2013 reduces long-term cybersecurity risks by enabling early detection of information technology control weaknesses. Overall, COSO 2013 provides a systematic approach to analysing and improving internal control through its five components to support organizational objectives.

3. RESEARCH METHODS

3.1. Research Design

This study adopts a project-based research approach aimed at developing a prototype to address real-world problems in business, industry, government, and public sectors (Purwohedi, 2022). In addition, the research involves the systematic collection, analysis, and interpretation of comprehensive visual and narrative data to gain an in-depth understanding of the phenomena under investigation (Yusuf, 2016).

3.2. Research Sample

This study utilised purposive sampling, a non-probability sampling technique, selecting participants from PT TASPEN (Persero). The main results of this study include the development of an applicable internal control assessment evaluation, an assessment report demonstrating its implementation, and recommendations for improvements to enhance the effectiveness of internal control in state-owned social insurance companies. The data were evaluated using the triangulation method, namely documentation, observation, and interviews, to strengthen the completeness and credibility of the data (Sarosa, 2021).

3.3. Data Collection Tools and Procedure

This approach aligns with data triangulation, where data are collected while simultaneously assessing their reliability by comparing multiple data sources and collection methods (Hardani et al., 2020). At this stage, document completeness is evaluated using a judgemental scoring system: a score of 1 for fully fulfilled documents, 0.5 for partially fulfilled documents, and 0 for unfulfilled documents. All fulfilment scores are recorded in the assessment worksheet according to their respective focus areas, as presented in the subsequent table. To evaluate the internal control system using documentation, observation, interviews and questionnaires to provide comprehensive and thorough results that are distributed to all employees at PT TASPEN (Persero). All evaluations are included in the working paper.

3.4. Ethical

In conducting assessments or evaluating internal control systems through documentation, observation and interviews, triangulation is used for data collection by combining various data collection techniques so that the data produced is more reliable because researchers collect data while testing the credibility of the data (Sugiyono, 2017).

4. RESULTS AND DISCUSSION

4.1. Research Results

The following are the results of the internal control system evaluation at PT TASPEN (Persero) using the framework instrument created by the author. In the table for each achievement score, it is adjusted to the achievement level in accordance with the internal control system compliance level previously created by the author. The following are the achievement scores for each element.

4.1.1. Control Environment

Table 1. Assessment Results for the Control Environment Component

No	Principle	Weight	Achievement Score	% Achievements
1	2	3	4	5 = 4/3
1.	Commitment to integrity and ethical values	6	3.85	64,15
2.	Supervisory responsibility of the board of commissioners	6	5.75	95,83
3.	Organisational structure that suits the needs	4.5	4.00	88,89
4.	Commitment to competence	7.5	4.47	74,49
5.	Enforcing accountability	6	3.92	72,25
Total		30	23.49	78.29

The control environment at PT TASPEN (Persero) shows a relatively strong governance foundation, supported by formal ethics policies, organisational structure, and defined authority. The overall achievement score is 78.29% (Effective), indicating that internal control foundations are generally in place. Very strong performance is observed in board oversight (95.83%) and organisational structure (88.89%), while improvements are needed in integrity and ethical enforcement (64.15%), commitment to competence (74.49%), and accountability (72.25%). Strengthening ethics enforcement consistency and employee competency development is required to move toward a "Highly Effective" level.

4.1.2. Risk Assessment

Table 2. Assessment Results for the Risk Assessment Component

No	Principle	Weight	Achievement Score	% Achievements
1	2	3	4	5 = 4/3
1.	Setting appropriate objectives	10	9.14	91.40
2.	Identification and analysis of risks	6.25	6.25	100.00
3.	Identification and analysis of fraud risk	5	3.96	79.17
4.	Identification and analysis of significant changes	3.75	2.68	71.52
Total		25	22.03	88.12

Risk assessment processes are well established, supported by formal risk management mechanisms and documentation. The component achieved 88.12% (Highly Effective). Objective setting (91.40%) and general risk identification (100%) perform strongly, while fraud risk assessment (79.17%) and identification of significant changes (71.52%) remain areas for improvement. These findings indicate that risk awareness at the operational level and responsiveness to environmental change still require strengthening.

4.1.3. Control Activities

Table 3. Assessment Results for the Control Activities Component

No	Principle	Weight	Achievement Score	% Achievements
1	2	3	4	5 = 4/3
1.	Selecting and developing control activities	7.5	5.44	72.57
2.	Selecting and developing general controls over technology	5	4.08	81.65
3.	Policies and procedures	7.5	6.05	80.64
Total		20	15.57	77.87

Control activities are generally implemented effectively, with documented authorisation, segregation of duties, and procedures, particularly in high-risk processes. The overall score is 77.87% (Effective). Control design (72.57%), IT general controls (81.65%), and policies and procedures (80.64%) function adequately, but require better alignment between SOPs and actual practices, as well as stronger IT control awareness and compliance.

4.1.4. Information and Communication

Table 4. Assessment Results for the Information and Communication Component

No	Principle	Weight	Achievement Score	% Achievements
1	2	3	4	5 = 4/3
1.	Use of relevant information	7.14	6.33	88.62
2.	Internal communication	5.71	5.49	96.10
3.	External communication	7.15	5.95	83.27
Total		20	17.77	88.84

Information and communication systems perform strongly, achieving 88.84% (Highly Effective). Relevant information (88.62%) and internal communication (96.10%) are highly effective, supporting decision-making and coordination. External communication (83.27%) is effective but requires improvement in consistency, responsiveness, and integration of external stakeholder information into governance processes.

4.1.5. Monitoring Activities

Table 5. Assessment Results for the Monitoring Activities Component

No	Principle	Weight	Achievement Score	% Achievements
1	2	3	4	5 = 4/3
1.	Ongoing monitoring and/or separate evaluation	3.5	2.65	75.76
2.	Evaluation and communication of control deficiencies	1.5	0.75	50.00
Total		5	3.40	68.03

Monitoring activities achieved 68.03% (Moderately Effective), indicating the weakest COSO component. Continuous monitoring and separate evaluations (75.76%) are conducted but lack consistency and systematic documentation. Evaluation and communication of control deficiencies scored 50.00%, reflecting delays in follow-up and incomplete integration of audit and risk monitoring results. Strengthening follow-up mechanisms, accountability for remediation, and coordination across monitoring functions is critical.

The assessment of the internal control system at PT TASPEN (Persero), based on the COSO Internal Control–Integrated Framework, indicates that the organisation has generally implemented internal controls effectively, with varying levels of maturity across components. The Control Environment is assessed as effective (78.29%), supported by strong board oversight and organisational structure, although improvements are required in ethical enforcement, employee competence, and accountability. The Risk Assessment component demonstrates a high level of effectiveness (88.12%), reflecting well-defined objectives and comprehensive risk identification, while fraud risk assessment and responsiveness to environmental changes remain areas for enhancement. Control Activities are effective (77.87%), particularly in policy implementation and IT controls, yet require stronger alignment between procedures and operational practices. Information and Communication achieves a highly effective level (88.84%), supported by reliable information systems and strong internal communication, although external communication can be further optimised. In contrast, Monitoring Activities show the lowest performance (68.03%), indicating that follow-up on control deficiencies and integration of audit and risk monitoring results need significant strengthening. Overall, the findings suggest that PT TASPEN (Persero) has established a solid internal control foundation, but targeted improvements are required to achieve a consistently high level of effectiveness across all COSO components.

These findings have several important implications. Practically, they highlight the need for state-owned social insurance enterprises to prioritise strengthening monitoring mechanisms, fraud risk assessment, and competency development to enhance internal control effectiveness. Managerially, the results emphasise that strong governance structures and risk management processes must be supported by consistent enforcement, integrated monitoring, and timely remediation of control deficiencies. Academically, this study contributes to the limited empirical evidence on COSO-based internal control assessment in Indonesian SOEs, particularly those operating in the social insurance sector. The study also demonstrates the usefulness of a structured internal control assessment instrument aligned with COSO principles and recent SOE regulations, providing

a basis for future research and policy development aimed at improving governance, risk management, and fraud mitigation.

4.2. Discussion

The findings of this study provide empirical insights into the maturity of internal control systems within a state-owned social insurance enterprise, offering both theoretical contributions and practical implications. By comparing these results with prior research, the discussion highlights areas of alignment, divergence, and the unique contributions of this study.

The control environment at PT TASPEN (Persero) achieved an overall score of 78.29% (Effective), indicating a generally sound governance foundation. This finding aligns with Lubis et al. (2024), who emphasized that a strong control environment is fundamental to effective internal control, particularly in state-owned enterprises. The strong performance in board oversight (95.83%) and organizational structure (88.89%) supports the assertion by COSO (2013) that a well-defined structure and active oversight are critical for setting the “tone at the top.” However, the lower scores in integrity and ethical enforcement (64.15%) and commitment to competence (74.49%) corroborate the concerns raised by Yanti (2022), who found that misalignment with COSO principles, particularly in the control environment, increases fraud risk. This suggests that while formal structures are in place at PT TASPEN (Persero), the consistent application of ethical values and the development of employee competencies require further strengthening to fully realize the benefits of a robust control environment.

The risk assessment component scored 88.12% (Highly Effective), reflecting a mature risk management culture. The perfect score in risk identification (100%) and strong performance in objective setting (91.40%) are consistent with the principles of the COSO framework, which posits that risk assessment is most effective when objectives are clearly defined (COSO, 2013). This finding also resonates with Tadesse et al. (2022), who demonstrated that COSO 2013 enables early detection of risks, thereby reducing long-term vulnerabilities. However, the relatively lower scores in fraud risk assessment (79.17%) and identification of significant changes (71.52%) indicate a gap. This gap supports the findings of Bakade et al. (2024), who argued that internal control weaknesses, rather than audit opinions, play a more decisive role in fraud risk. It appears that while PT TASPEN (Persero) excels at identifying routine operational risks, its mechanisms for proactively detecting fraud and adapting to dynamic environmental changes are less mature, a common challenge noted in emerging economy SOEs.

Control activities scored 77.87% (Effective), with IT general controls (81.65%) and policies and procedures (80.64%) functioning adequately. This suggests that the organization has established the necessary control mechanisms, aligning with Arens et al. (2016) definition of internal control as comprising rules and processes for reliable reporting and compliance. However, the need for “better alignment between SOPs and actual practices” points to a common implementation gap. This gap is similar to the issues identified by Rosari et al. (2022), who confirmed that stronger internal controls reduce fraud risk, implying that weaknesses in control implementation can undermine their effectiveness. This finding underscores that simply documenting controls is insufficient; their consistent application in daily operations is paramount.

Information and communication emerged as the strongest component, with a score of 88.84% (Highly Effective). The high effectiveness of internal communication (96.10%) and the use of relevant information (88.62%) demonstrates that PT TASPEN (Persero) has successfully implemented systems that support decision-making and coordination. This aligns with the COSO framework’s emphasis on information flowing throughout the organization to support the functioning of all other components (COSO, 2013). The slightly lower score in external communication (83.27%) suggests an opportunity to better integrate external stakeholder feedback into governance processes, an area for future enhancement.

In contrast, monitoring activities scored the lowest at 68.03% (Moderately Effective), representing the weakest COSO component. The particularly low score for the evaluation and communication of control deficiencies (50.00%) is a significant concern. This finding directly supports the argument of Tuanakotta (2014) that internal control consists of procedures maintained to manage risks; if deficiencies are not evaluated and communicated, the control system fails in its objective. This weakness also reflects the core agency theory problem outlined by Chen et al. (2025): without transparent and continuously auditable controls, the alignment between management (agents) and shareholder (principal) objectives is weakened. The lack of

systematic follow-up on identified deficiencies means that risks are not being mitigated in a timely manner, potentially exposing the organization to the very governance failures highlighted in the introduction (BPK RI, 2024).

Compared to the study on PT Kalbe Farma Tbk (Permatasari, 2024), which found comprehensive implementation across all COSO components, PT TASPEN (Persero) shows a more varied maturity profile. While PT Kalbe Farma serves as an example of a highly effective, integrated system, PT TASPEN (Persero) demonstrates strengths in foundational elements like risk assessment and information systems but has a critical weakness in closing the loop through monitoring. This disparity highlights the sector-specific challenges faced by SOEs, which may operate under different regulatory pressures and resource constraints compared to large private corporations.

In conclusion, this study's discussion moves beyond merely describing results by contextualizing them within the existing literature. It confirms the applicability of the COSO framework in diagnosing internal control strengths and weaknesses in an Indonesian SOE. It also extends prior research by quantifying the maturity gap between different COSO components, particularly highlighting the "monitoring gap" as a critical vulnerability. The findings reinforce the need for a holistic approach to internal control, where strong policies and risk identification must be matched by equally strong mechanisms for enforcement, follow-up, and continuous improvement to ensure long-term organizational sustainability and good governance.

5. CONCLUSIONS

This study aimed to design and empirically apply a COSO-based internal control system evaluation instrument to support governance effectiveness and organizational sustainability in a state-owned social insurance enterprise. By operationalizing the COSO Internal Control-Integrated Framework (2013) into a structured and measurable evaluation tool, this research addresses a critical gap between regulatory expectations and practical internal control assessment in public sector organizations.

The findings demonstrate that the proposed evaluation instrument is capable of providing a comprehensive and nuanced assessment of internal control effectiveness by distinguishing between the structural presence and functional performance of internal controls. The empirical application reveals that while the internal control system operates at an overall effective level, several governance-related areas particularly ethical culture, competency development, accountability enforcement, and monitoring activities require further strengthening to enhance long-term organizational sustainability.

More broadly, this study reinforces the view that internal control systems should not be treated merely as compliance mechanisms but as dynamic governance tools that support risk-informed decision-making, accountability, and organizational resilience. The integration of COSO principles with governance regulations and risk maturity considerations highlights the potential of internal control systems to contribute meaningfully to sustainability-oriented governance in state-owned enterprises.

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