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Enhancing Operational Risk Governance in Digital-Based Pension Institutions: An RCSA Model Framework for Sustainable Resilience

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Abstract

This study examines the implementation of the Risk and Control Self-Assessment (RCSA) framework as a mechanism to enhance operational risk governance in digitally enabled pension institutions. It aims to develop an adaptive, technology aligned RCSA model tailored to the risk profile and transformation context of Dana Pensiun Telkom, Indonesia. Using a qualitative descriptive approach was employed, drawing on ISO 31000:2018 and the COSO Internal Control frameworks. Data were collected through semi-structured interviews, direct observation, and document analysis involving 8 internal stakeholders. Thematic analysis using the Miles and Huberman (1994) model was applied to identify challenges, gaps, and improvement opportunities in the RCSA process. The study finds that although the core elements of RCSA, risk identification, evaluation, monitoring, control, and reporting have been formally implemented, the lack of digital integration, staff digital literacy, and standardized execution undermines its effectiveness. The research highlights that risk reporting remains compliance-oriented rather than decision-supportive, while monitoring processes lack real-time dashboards. However, strong institutional commitment and regulatory awareness serve as a foundation for transformation. his research proposes an adaptive RCSA model that integrates digital risk registers, role-based execution, automated dashboards, and continuous capacity building. The model promotes proactive risk management, organizational resilience, and strategic alignment in public pension governance. Future studies should explore model scalability across different institutions and assess longitudinal impacts on digital risk maturity and institutional performance.

Keywords: digital transformation, operational risk, pension governance, RCSA framework, risk management

1. Introduction

In the evolving landscape of digital transformation and global financial volatility, operational risk governance has emerged as a critical concern for pension fund institutions. These institutions manage substantial long-term assets on behalf of retirees and are increasingly exposed to operational vulnerabilities stemming from internal process failures, cybersecurity threats, regulatory non-compliance, and technological inefficiencies (BCBS, 2021). As pension funds transition toward digitally enabled systems to improve efficiency and service delivery, the complexity and uncertainty surrounding operational risk governance intensify requiring robust, adaptive frameworks to ensure organizational resilience and regulatory compliance (Agrawal et al., 2025).

Risk and Control Self-Assessment (RCSA) is widely recognized as an effective tool for operational risk management, enabling institutions to proactively identify, evaluate, and monitor risk exposures within internal processes (Prabantarikso et al., 2022). However, despite its growing adoption in the financial services sector, empirical evidence on the implementation of RCSA in pension fund institutions particularly in developing economies remains limited. Furthermore, digital transformation demands a reconfiguration of traditional risk management models to align with modern information systems, integrated data governance, and dynamic regulatory environments (Badmus, 2024). Existing literature largely centers on RCSA applications within the banking sector (Oko-Odion & Angela, 2025), offering insufficient guidance for non-bank financial institutions such

as pension funds, whose risk characteristics and compliance obligations differ significantly (Surur & Widiyanita, 2021).

This study aims to address this gap by analyzing the implementation of the RCSA framework in Dana Pensiun Telkom, a state-affiliated pension institution in Indonesia, and developing a more effective, digital-aligned model tailored to its operational risk profile. Employing a qualitative descriptive methodology, the study incorporates primary data collected through in-depth interviews, participant observation, and document analysis involving risk management personnel and stakeholders within the institution. The research explores three central dimensions: (1) the current implementation of RCSA in managing operational risks; (2) the challenges and internal/external constraints associated with the digital transformation of risk governance; and (3) the design of an adaptive, structured, and integrated RCSA model that strengthens organizational resilience and sustains regulatory compliance.

The theoretical foundation of this research integrates ISO 31000:2018 on risk management principles and the COSO framework for internal control, contextualized with digital risk governance literature. This study contributes to the advancement of knowledge by offering a sector-specific, empirically grounded model for operational risk governance in digitally enabled pension institutions. It also responds to the regulatory emphasis on proactive risk management, as outlined in POJK No. 44/POJK.05/2020 and SEOJK No. 28/SEOJK.05/2020 in Indonesia. Ultimately, the paper seeks to fill the existing theoretical and practical gap by proposing a refined RCSA implementation model that aligns with digital transformation goals while supporting sustainable governance and resilience in pension fund operations.

2. Methods

This study employed a qualitative research approach with a descriptive design, aimed at providing a detailed and in-depth understanding of the implementation of the Risk and Control Self Assessment (RCSA) framework in operational risk governance at a digital-based pension fund institution, specifically Dana Pensiun Telkom. The qualitative approach was selected to explore contextual, procedural, and organizational dynamics that cannot be adequately captured through quantitative methods (Mantula et al., 2024). The study was guided by the ISO 31000:2018 risk management framework and the COSO Internal Control-Integrated Framework (2013). These frameworks emphasize a comprehensive and integrated approach to risk identification, evaluation, and control, particularly in organizational settings where risk management is expected to be embedded within all levels of operations (Batte, 2025). ISO 31000 provides the process structure for risk management, while the COSO framework adds the necessary dimensions for evaluating internal control effectiveness. The combination of these models offers a structured theoretical foundation for assessing the practical application of RCSA in the context of digital transformation and institutional risk resilience.

The research was conducted at the headquarters of Dana Pensiun Telkom in Bandung, West Java, Indonesia. Dana Pensiun Telkom is a major employer-sponsored pension institution in Indonesia that manages the retirement funds of PT Telkom Indonesia's employees. As a state-affiliated entity with a complex organizational structure and large-scale financial responsibilities, Dana Pensiun Telkom provides a relevant case for examining operational risk governance using the RCSA model.

The target population in this study included internal stakeholders: the risk management unit, IT department, internal audit, compliance, and operations. Purposive sampling was used to select information, rich participants who have direct experience or responsibility based on their roles, expertise, and involvement in the implementation and oversight of the RCSA process. A total of 8 informants were interviewed, consisting of: 3 risk management officers; 2 IT and systems administrators; 1 internal auditor; 1 compliance officer; 1 operational staff member responsible for reporting and documentation.

Data were collected using three primary methods. First, in-depth semi-structured interviews were conducted with key stakeholders to explore their experiences, perceptions, and challenges related to the RCSA implementation. Interview questions were structured around core elements of the ISO and COSO frameworks, including risk identification, risk evaluation, risk monitoring, and control mechanisms. Second, direct observations were conducted within relevant departments and units to assess how the RCSA process was integrated into daily operations, including the use of digital tools for data collection, monitoring, and reporting. Third, document analysis was carried out on a range of institutional materials, such as internal SOPs, RCSA templates, risk registers, audit reports, and relevant regulatory guidelines (e.g., POJK No. 44/POJK.05/2020 and SEOJK No.

28/SEOJK.05/2020). Document review templates were used to ensure systematic and consistent data extraction. Interview guides, observational checklists, and document review forms were developed in alignment with the conceptual framework to ensure methodological rigor and data validity.

Data analysis followed the Miles and Huberman (1994) model, which consisted of three stages. First, data reduction, where raw data from interviews, field notes, and documents were categorized into themes such as digital readiness, internal control effectiveness, and RCSA integration. Second, data display in the form of matrices and summary tables helped identify cross-case patterns and inconsistencies. Third, conclusion drawing and verification involved synthesizing the findings in relation to the theoretical framework and research objectives. Thematic coding was performed manually and cross-validated through researcher peer review to enhance coding accuracy and consistency. Triangulation was applied to strengthen credibility by comparing insights across interviews, observations, and documents. Member checking was conducted with selected informants to validate interpretations and avoid misrepresentation of perspectives.

To ensure the validity of the study, several strategies were employed: triangulation of data sources and methods, prolonged engagement in the research site, and peer debriefing sessions with academic supervisors. Reliability was reinforced through consistent use of data collection protocols, careful transcription and documentation of interview responses, and the development of a clear audit trail. Ethical clearance was secured from the host institution, and informed consent was obtained from all participants prior to data collection.

3. Results and Discussion

3.1 Results

This section presents the findings from field data, organized and analyzed based on the core elements of the Risk and Control Self Assessment (RCSA) process in alignment with ISO 31000 and COSO frameworks. The analysis addresses the research questions concerning the implementation, challenges, and enhancement of the RCSA model in Dana Pensiun Telkom. Table 1 summarizes key implementation findings across five dimensions of the RCSA cycle.

RCSA Component	Implementation Findings	Status	Interpretation
Risk Identification	Conducted quarterly using a risk register. Focus remains on conventional risks (e.g., admin delays, fraud).	Partially Met	Emerging digital risks such as cybersecurity threats are underrepresented.
Risk Evaluation	Evaluation based on risk matrix (impact × likelihood), reviewed by internal risk unit.	Partially Met	Subjective assessment leads to inconsistent risk scores across departments.
Risk Monitoring	Performed periodically, but lacks automation or real-time dashboards.	Not Met	Absence of digital tools weakens proactive monitoring and alerts.
Risk Control	Control measures follow COSO components, but vary in depth between divisions.	Partially Met	Controls exist but are not uniformly documented or audited.
Risk Reporting	Reports submitted manually to top management; used mostly for compliance/audit.	Not Met	Risk reports lack analytical depth and visual insights for strategic decisions.

Table 1. Summary of RCSA Implementation at Dana Pensiun Telkom
Source: Field interviews, observations, and document analysis (2025)

These results confirm that while a formal RCSA structure exists, the implementation lacks digital integration and analytical depth. The organization has made substantial efforts in initiating risk governance, but execution gaps persist due to low digital system maturity and varying staff competencies. Table 2 describes that institutional challenges in RCSA implementation were analyzed based on internal capacity, external pressures, and existing deficiencies, using triangulated data from interviews, observations, and document analysis.

Challenge Category	Findings	Status	Interpretation
Internal (Obstacle)	Limited digital competence among staff; inconsistent understanding of RCSA methodology	Partially Met	Training is irregular; risk ownership is weak in non-risk units.
External (Challenge)	Changes in regulatory requirements and increased pressure for digital transparency.	Partially Met	Regulatory push exists, but execution support (guidelines/tools) is lacking.
Resource Deficiency	No centralized digital risk dashboard; absence of real-time analytics	Not Met	Infrastructure and tools remain manual, limiting responsiveness and traceability.

Table 2. Summary of Challenges in RCSA Implementation at Dana Pensiun Telkom
Source: Processed from interview data, internal SOPs, and observation records (2025)

Table 2 outlines the main challenges in implementing the Risk and Control Self-Assessment (RCSA) framework at Dana Pensiun Telkom, categorized into internal, external, and resource-related issues. Internally, limited staff digital competence and inconsistent understanding of RCSA outside the risk unit show that risk ownership is not yet institutionalized, and training remains irregular. Externally, while regulatory demands for digital transparency are increasing, the lack of practical tools, execution support, and technical guidance hinders effective implementation. Resource-wise, the absence of a centralized digital dashboard and real-time analytics leads to continued reliance on manual processes, reducing the effectiveness, responsiveness, and traceability of risk monitoring and reporting. These constraints highlight the urgent need for digital infrastructure investment and institutional capacity-building.

3.2 Discussion

The findings suggest that the implementation of RCSA in Dana Pensiun Telkom, while formally established and structured, has not yet achieved its full potential due to several organizational and technological constraints. First, the risk identification process has largely focused on conventional operational risks, such as administrative delays and compliance lapses. The lack of attention to IT-based risks such as data breaches, cyberattacks, and system outages reflects a digital blind spot in the current risk register. This supports the argument by (Bazarova, 2025) that legacy-focused risk taxonomies fail to capture the evolving risk landscape in digitally transforming institutions. Second, the risk evaluation phase, though aligned with ISO standards, is still carried out using manual methods and subjective assessments. The absence of a calibrated risk scoring tool or inter-departmental validation process has led to inconsistent evaluations, confirming prior findings by (Rani et al., 2025), who emphasized the need for objective and standardized risk quantification mechanisms (Sheehan et al., 2025).

Third, the monitoring and control activities remain semi-formalized. Without automated systems or dashboard integration, risk monitoring is reactive rather than predictive. This gap mirrors observations by (Prabantarikso et al., 2022), who emphasized that effective RCSA requires real-time data and digital traceability for meaningful oversight. Fourth, risk reporting still emphasizes compliance rather than strategic insight. Risk reports are delivered periodically but lack visual dashboards or trend analytics that could enhance decision-making. As noted by (Gomes et al., 2025), digital transformation in pension governance must be accompanied by reform in risk reporting methods to support data-driven resilience. Furthermore, the challenges identified reveal that both internal capacity limitations and the absence of digital infrastructure contribute to the underperformance of RCSA. While management commitment is strong, operational readiness is limited especially in terms of staff digital literacy, resource allocation, and IT support systems. This resonates with the findings of (Oko-Odion & Angela, 2025), who highlighted that without adequate reskilling and systemic support, risk management tools often become routine checklists rather than strategic instruments.

Lastly, the study confirms that to optimize RCSA effectiveness, Dana Pensiun Telkom must shift from a compliance-oriented model to an adaptive, technology-enhanced governance framework. The proposed adaptive RCSA model, which integrates digital risk registers, role-based execution, and real-time dashboards, aims to respond to this need by embedding risk awareness across functions and enabling proactive mitigation strategies.

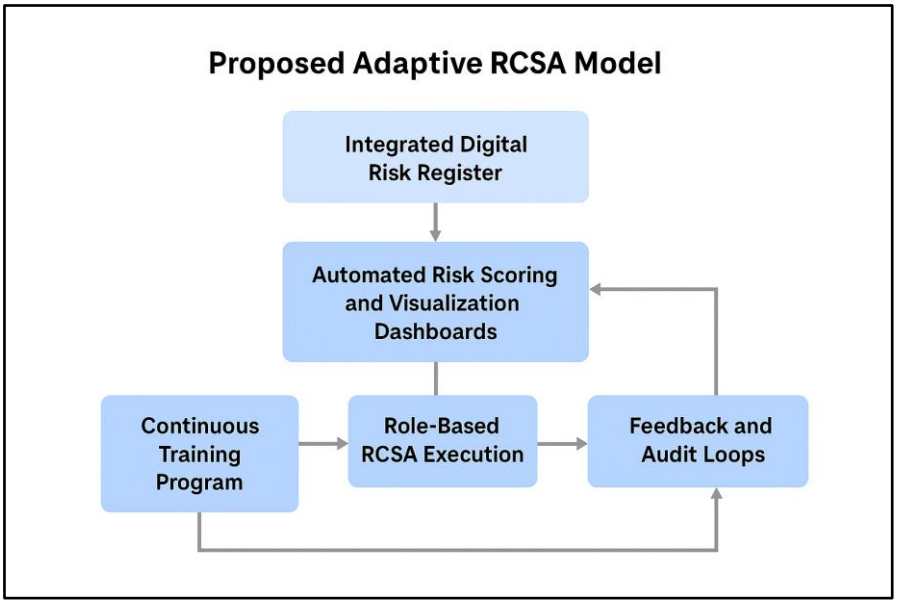

Figure 1. Adaptive RCSA Implementation Model for Digital-Based Operational Risk Governance
Source: Developed by the author based on ISO 31000:2018 and COSO Internal Control Framework (2025)

Figure 1 describes the Proposed Adaptive RCSA Model, designed to enhance operational risk governance in digitally transforming institutions such as pension funds. The model integrates key components to ensure a proactive, data-driven, and collaborative approach to Risk and Control Self-Assessment (RCSA). At the core is the Integrated Digital Risk Register, which captures and organizes risk data in a centralized system. This feeds into the Automated Risk Scoring and Visualization Dashboards, enabling real-time analysis and intuitive risk monitoring across departments. The Role-Based RCSA Execution ensures that responsibilities are clearly distributed based on roles, promoting accountability and clarity in risk management tasks.

Supporting elements include a Continuous Training Program to enhance staff digital competence and foster a culture of risk ownership, and Feedback and Audit Loops, which provide mechanisms for ongoing improvement, learning, and control validation. The cyclical structure reflects the model's adaptability, allowing institutions to refine their risk strategies in response to evolving operational and regulatory conditions. This model emphasizes integration, automation, and continuous capacity-building to shift RCSA from a compliance-oriented process to a strategic governance tool. Overall, the findings validate the hypothesis that an integrated, digitally enabled RCSA model enhances operational risk governance and institutional resilience, particularly in the context of rapidly digitizing public sector institutions.

4. Conclusion

This study has examined the implementation of the Risk and Control Self-Assessment (RCSA) framework as a strategic mechanism for operational risk governance within Dana Pensiun Telkom, a digitally oriented pension institution. By applying the ISO 31000:2018 and COSO Internal Control frameworks, the research assessed the alignment between institutional practices and internationally recognized risk management principles. The findings indicate that while the structural components of RCSA such as risk identification, evaluation, control, and reporting have been formally adopted, their execution remains largely manual and fragmented. The absence of real-time monitoring tools, inconsistent application of controls, and limited staff capacity in digital risk literacy hinder the full realization of RCSA's intended benefits. These issues are particularly pressing as the institution navigates increasing digital exposure, regulatory scrutiny, and demands for operational resilience.

Nonetheless, the study also identified strong institutional commitment and compliance awareness as enablers for future improvement. This suggests that the foundation for a more adaptive and integrated risk management system already exists, but requires strategic enhancement through technology adoption and internal capacity building. From a theoretical standpoint, the research affirms that effective operational risk governance in the digital era requires more than procedural adherence it demands process integration, data-driven decision-making, and organizational

transformation. To address these challenges, the study proposed an adaptive RCSA model incorporating digital risk registers, automated dashboards, role-based execution mechanisms, continuous staff training, and feedback loops. This model not only supports better risk visibility and responsiveness but also encourages risk ownership across operational units.

Implications for future research include recommending the evaluation of the practical application of the proposed model across multiple pension institutions or financial entities to assess scalability and contextual adaptability. Additionally, longitudinal studies may offer insights into how digital maturity in risk governance evolves over time and how consistent digital interventions influence institutional resilience. Ultimately, this study contributes to the growing discourse on digital governance by offering practical and theoretical insights into how integrated risk management systems can enhance accountability, responsiveness, and sustainability in public financial institutions.

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