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Redesigning The Stages of The Procurement Process for Goods and Services with a Risk Mitigation Approach

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Abstrak

Salah satu upaya meningkatkan kesejahteraan masyarakat dan daya saing bangsa adalah dengan mewujudkan pengadaan barang dan jasa yang menghasilkan value for money. Untuk mencapai hal tersebut maka diperlukan tahapan proses pengadaan barang dan jasa guna mewujudkan transparansi dan akuntabilitas dengan pendekatan mitigasi risiko. Namun, berbagai risiko dapat muncul dalam setiap tahapan proses pengadaan barang dan jasa, yang berpotensi menghambat kelancaran pengadaan barang dan jasa. Penelitian ini bertujuan untuk merancang ulang tahapan proses pengadaan barang dan jasa dengan pendekatan mitigasi risiko, guna meningkatkan efisiensi, efektivitas, dan meminimalkan potensi lainnya. Metode penelitian yang digunakan adalah pendekatan kualitatif melalui wawancara mendalam dengan pihak-pihak terkait, observasi langsung, dan analisis dokumen. Identifikasi risiko dilakukan dengan pemangku kepentingan, serta analisis dokumen terkait yang dilanjutkan dengan perancangan ulang tahapan proses pengadaan barang dan jasa dengan pendekatan mitigasi risiko. Dengan perancangan ulang ini, diharapkan pelaku pengadaan dapat mengoptimalkan proses pengadaan barang dan jasa serta mengurangi potensi risiko. Hasil penelitian menunjukkan bahwa terdapat beberapa risiko signifikan dalam proses pengadaan barang dan jasa selama ini. Perancangan ulang tahapan proses pengadaan dengan pendekatan mitigasi risiko berhasil mengidentifikasi dan meminimalkan risiko-risiko tersebut. Implementasi perancangan ulang ini diharapkan dapat meningkatkan efisiensi dan efektivitas proses pengadaan, serta mengurangi risiko bagi pelaku pengadaan. Penelitian ini juga memberikan rekomendasi strategis bagi organisasi dalam menyusun kebijakan pengadaan yang lebih adaptif dan responsif terhadap risiko.

Kata Kunci: Procurement of goods and services; Risk mitigation; Process redesign; Transparency and accountability

Abstract

One of the efforts to improve public welfare and national competitiveness is to realize the procurement of goods and services that produce value for money. To achieve this, stages of the procurement process of goods and services are needed to realize transparency and accountability with a risk mitigation approach. However, various risks can arise at each stage of the procurement process of goods and services, which have the potential to hinder the smooth procurement of goods and services. This study aims to redesign the stages of the procurement process of goods and services with a risk mitigation approach, in order to increase efficiency, effectiveness, and minimize other potentials. The research method used is a qualitative approach through in-depth interviews with related parties, direct observation, and document analysis. Risk identification is carried out with stakeholders, as well as analysis of related documents which is continued with the redesign of the stages of the procurement process of goods and services with a risk mitigation approach. With this redesign, it is hoped that procurement actors can optimize the procurement process of goods and services and reduce potential risks. The results of the study indicate that there are several significant risks in the procurement process of goods and services so far. The redesign of the stages of the procurement process with a risk mitigation approach has succeeded in identifying and minimizing these risks. The implementation of this redesign is expected to improve the efficiency and effectiveness of the procurement process, as well as reduce risks for procurement actors. This study also provides strategic recommendations for organizations in developing procurement policies that are more adaptive and responsive to risk.

Keywords: Procurement of goods and services; Risk mitigation; Process redesign; Transparency and accountability

1. Introduction

In many developing countries, including Indonesia, public procurement represents a major portion of government expenditure and serves as a primary mechanism for delivering public goods and services. However, the procurement process is frequently marred by inefficiencies, irregularities, and high susceptibility to corruption. According to the Indonesia Corruption Watch (2023), there were 791 recorded corruption cases related to public procurement in a single year, underscoring the urgent need for reform. In response, the Indonesian government has issued a series of regulatory measures—such as Presidential

Regulations No. 16 of 2018 and No. 12 of 2021—to ensure greater transparency and accountability in public procurement.

Despite these efforts, several challenges remain, especially at the sub-national level. Issues such as vague planning, inadequate risk assessment, and limited institutional capacity often hamper effective procurement. Moreover, although the adoption of Electronic Procurement Services (LPSE) has significantly reduced face-to-face interactions and the potential for collusion, implementation has been inconsistent, and key risk areas remain unaddressed. This necessitates a comprehensive redesign of procurement stages to systematically integrate risk mitigation strategies, moving beyond mere procedural adherence to proactive risk management throughout the entire procurement lifecycle (Tsoulfas, 2025).

Public procurement reform is increasingly being understood through the lens of risk governance—the systematic identification, evaluation, and management of risks that may threaten the integrity, efficiency, or performance of procurement systems (OECD, 2023; The World Bank Group, 2014). Recent studies emphasize that traditional compliance-based procurement frameworks are insufficient in addressing dynamic risks such as fraud, contractual non-performance, and information asymmetry (Adjorlolo et al., 2025; Harju et al., 2024). Effective risk mitigation therefore requires a process redesign that embeds proactive risk management principles within each procurement stage, from planning and supplier selection to contract execution and post-award monitoring. The ISO 31000:2018 framework further supports this paradigm, advocating for risk integration within institutional governance structures to achieve accountability and sustainability (Imane et al., 2023). Specifically, this standard outlines principles and guidelines for managing risks that can be adapted to the nuanced context of public procurement, ensuring that risk management is an integral part of decision-making rather than an afterthought. Moreover, a holistic accountability framework, encompassing internal controls, robust procurement systems, and stringent risk and records management, is crucial for fostering an ethical, efficient, and transparent procurement environment (Holtzhausen, 2022). An all-inclusive approach to risk mitigation and corruption prevention across the entire public procurement process is essential to maintain integrity, ensuring ethical norms such as honesty, professionalism, and righteousness are upheld (Malan, 2021).

International experiences also illustrate that countries which adopt risk-informed procurement models achieve higher levels of transparency and performance. For instance, a recent study by the World Bank highlighted that countries utilizing robust risk assessment frameworks in their procurement processes reported fewer instances of corruption and greater public trust (Dimancesco, 2020). This global trend underscores the necessity of moving beyond rudimentary compliance toward a sophisticated, integrated risk management strategy in public procurement (Sarto, 2024). In this context, frameworks such as the European Union's Directive 2014/24/EU and the United Nations' Model Law on Public Procurement (UNCITRAL), have inspired hybrid procurement models that integrate digitalization, stakeholder engagement, and continuous risk monitored (UNCITRAL, 2011). In expending framework, however, the implementation of these models often encounters structural constraints—limited digital infrastructure, inadequate human capacity, and fragmented risk literacy among procurement officials. Building on this backdrop, the study addresses the research question of how Indonesia's public procurement stages can be systematically redesigned to embed risk mitigation while improving efficiency, transparency, and accountability. In doing so, it develops a qualitative framework that bridges institutional realities with global best-practice standards.

2. Literature Review

Risk in public procurement arises across all stages—from planning and provider selection to contract implementation and final delivery. An emphasize that risk management should be integrated into institutional governance, with clear frameworks for risk identification, analysis, and response (AS/NZS ISO 31000, 2009). The literature identifies various types of risks, such as technical risks due to inaccurate specifications, financial risks arising from flawed cost estimation, administrative and legal risks due to non-compliance, and corruption risks due to abuse of discretion or collusion between officials and suppliers.

Multiple models have been proposed for integrating risk mitigation in procurement. The Supply Positioning Model (SPM) and the Kraljic Matrix help classify procurement needs and guide appropriate risk-handling strategies (Kraljic, 1983). Additionally, the integration of electronic systems has shown promise in increasing transparency, but without adequate stakeholder capacity and risk literacy, these tools often fail to deliver their full potential. Previous studies have largely focused on quantitative modeling (e.g., House of Risk, ANP, ISM), while few have explored qualitative approaches embedded in institutional contexts. This study endeavors to fill this gap by proposing a qualitative risk mitigation framework tailored for redesigning public procurement stages in Indonesia, acknowledging both the institutional realities and international best practices (Arrang, 2024). This qualitative approach seeks to bridge the gap between theoretical risk management frameworks and the practical implementation challenges faced by public procurement entities in developing nations (Adi, 2020; Kussumardianadewi, 2024). Moreover, an effective project management office can significantly enhance procurement outcomes by providing continuous support, clear directions, and robust leadership throughout the tendering and decision-making processes, thereby mitigating various project-related risks (Ershadi, 2021).

Effective risk management within the procurement process thus necessitates a multi-faceted approach, encompassing identification, assessment, and the strategic formulation of mitigation actions to preclude negative impacts or reduce their severity (Kussumardianadewi, 2024; Popa, 2010). This holistic approach ensures that potential risks are addressed proactively, thereby safeguarding the integrity and efficiency of the procurement lifecycle. This systematic approach aims to minimize risk events that could affect key procurement project objectives by developing preventive measures and adapting to unforeseen risk factors

(Kartavyh, 2019). Although various models exist for supply chain and project risk management, their direct applicability to the complex and often politicized context of public procurement, particularly in developing nations, remains underexplored (Amrullah, 2021; Putriani Pandiangan, 2016). Specifically, while multi-project Project Management Offices are recognized for systematically analyzing and managing construction risks, their role in mitigating risks across all stages of public procurement for goods and services has not been comprehensively addressed (Ershadi, 2021). Furthermore, existing literature often overlooks the nuances of integrating qualitative risk assessment methodologies within rigid public procurement frameworks, necessitating a deeper examination of how such frameworks can be adapted for real-world application (Zakaria, 2022). This study addresses this gap by proposing a qualitative risk mitigation framework specifically designed for redesigning public procurement stages in Indonesia, acknowledging both institutional realities and international best practices, thereby providing a more holistic understanding of the PMO's role and impact (Umasekar, 2024). Such a framework will provide practitioners with actionable strategies to enhance procurement resilience, technological integration, and sustainability within global retail ecosystems, thereby strengthening compliance and fostering shared risk responsibility among stakeholders (Chowdhury, 2025). To effectively manage these risks, procurement professionals must possess the necessary skills and knowledge to identify, assess, and mitigate risks (Perović, 2024). Procurement stages should be investigated to present a better risk mitigation approach. This calls for a comprehensive re-evaluation of current procurement methodologies to embed robust risk management practices directly into the workflow, rather than treating them as an ancillary concern. A study highlights the importance of transparency, professional standards, SME support, and digital transformation in procurement. It identifies risks throughout the procurement cycle, proposing targeted mitigation. The study also emphasizes the national public procurement plan's role in simplifying procedures, reducing barriers, promoting fair competition and cost efficiency (Tsoulfas, 2025) and also made an early warning models to prevent malpractice in public procurement (Martínez, 2020).

3. Methods

This study adopted a qualitative research design, with a case study approach centered on the Procurement Bureau of the North Sumatra Provincial Government. A qualitative methodology was chosen to gain an in-depth understanding of the institutional dynamics, human factors, and decision-making processes involved in procurement. Data were collected through semi-structured interviews with certified procurement officers, including Pejabat Pembuat Komitmen (PPK), Pokja ULP, and LPSE administrators. Participants were chosen purposefully to capture diverse yet information-rich cases relevant to the research objective (Creswell, 2018). The selection emphasized expertise and variation in experience, ensuring that data saturation was achieved through depth. This approach allowed the research to generate contextually grounded and theoretically meaningful insights into risk mitigation practices within Indonesia's public procurement system.

The participants in this study consisted of seven certified procurement officers from the Procurement Bureau of the North Sumatra Provincial Government (*Biro Pengadaan Barang dan Jasa Setdaprovsu*). They were selected purposively based on their certification levels (Procurement Specialist Levels I–III) and their extensive professional experience ranging from 8 to 20 years in managing different stages of the public procurement process, which are planning, supplier selection, and contract implementation. Each participant holds an official certification issued by the National Public Procurement Agency (LKPP), ensuring that they possess the technical competence and institutional knowledge required to provide informed insights into procurement practices. Their positions included *Pejabat Pembuat Komitmen (PPK)*, *Kelompok Kerja (Pokja)*, and functional procurement officers (*Ahli Pertama–Madya*), enabling a multi-perspective understanding of both operational and strategic procurement risks. Additional data sources included procurement documents, government regulations, and direct observations of procurement procedures conducted through the LPSE system. Thematic analysis was employed to process the data. Key themes related to procurement risks, institutional weaknesses, and opportunities for process improvement were identified through coding and cross-case comparison. To ensure validity, data triangulation was conducted by comparing information from interviews, documents, and observations.

4. Result and Discussions

4.1. Procurement Planning Stage: Risk Identification and Mitigation

The procurement planning stage emerged as the most critical phase influencing the efficiency and integrity of subsequent procurement activities. Consistent with ISO 31000 principles, this stage determines how well risks are identified, analyzed, and treated before they escalate into contractual or performance failures. Across all interviews, respondents emphasized that planning serves as the “foundation of procurement governance”, where early misjudgments in needs assessment, technical specifications, or budgeting inevitably propagate to later stages.

Thematic analysis of the interviews revealed six dominant risk clusters:

- (1) inaccurate needs identification,
- (2) improper work packaging,
- (3) mis-specified technical requirements,
- (4) weak market analysis,
- (5) unrealistic scheduling and budgeting, and

(6) administrative errors in the procurement plan (RUP).

Each category aligns with one or more stages in the ISO 31000 risk cycle—particularly risk identification, analysis, and treatment—and represents systemic weaknesses within institutional coordination and human-resource capacity.

4.2. Procurement Planning Stage: Needs Identification

Nearly all informants agreed that inaccurate or incomplete needs identification is the *root cause* of procurement inefficiency. One senior procurement officer noted, “*The initial information from user units is often inaccurate or not aligned with program priorities... as a result, some items become redundant or underused.*” This pattern suggests that needs assessments remain largely reactive and lack participatory validation.

The data indicate that insufficient cross-unit consultation and the absence of structured risk reviews lead to procurement items that are inconsistent with institutional objectives. Such findings resonate with OECD (2023) observations that poor upstream planning increases the likelihood of “wrong-product” procurement and wasteful expenditure.

Mitigation therefore requires early inter-unit coordination, historical-data analysis, and stakeholder involvement—particularly end-users and technical experts—to validate relevance and scale. Embedding a risk-register template at this stage would institutionalize early detection and prioritization of planning errors.

4.3. Procurement Planning Stage: Work Packaging

Risks in packaging (or “pemeketan”) arise when contracts are either over-aggregated or excessively fragmented. Respondents highlighted that oversized packages tend to exclude small- and medium-scale suppliers, while over-segmentation complicates coordination and quality control. As one informant explained, “*When packages are too large, SMEs cannot participate; when too small, we end up with many contractors and inconsistent quality.*” This finding reflects a trade-off frequently cited in the procurement literature between economies of scale and competitive diversity. Improper packaging undermines fair competition and transparency—two fundamental pillars of good procurement governance.

Mitigation measures include conducting market-capacity analyses prior to packaging decisions and instituting a pre-RUP review by the Procurement Service Unit (UKPBJ) to verify proportionality and compliance with fair-competition standards. This internal validation serves as the “risk-treatment” phase within ISO 31000, ensuring that structural market risks are identified before tender announcement.

4.4. Procurement Planning Stage: Technical Specifications

Deficiencies in technical specification (and the Terms of Reference) were the second-most cited risk after needs identification. Informants frequently described specifications that were “*too generic to evaluate objectively*” or “*too restrictive, indirectly pointing to a specific brand.*” Such inconsistencies create ambiguity in evaluation and expose the process to legal contestation.

The evidence reveals that limited technical expertise among drafting officials often results in copy-pasted documents from prior projects, disconnected from field conditions. This leads to frequent contract addenda and re-scoping during execution.

Risk mitigation strategies, according to multiple respondents, include involving subject-matter experts, conducting market and technology scans to confirm specification feasibility, and introducing peer review or internal quality control before tendering. These measures correspond to the “risk-analysis” and “risk-treatment” steps in ISO 31000, strengthening accuracy and compliance while preserving competitive neutrality.

4.5. Procurement Planning Stage: Market Analysis and Method Selection

Market analysis remains an underdeveloped component of procurement planning. Respondents acknowledged that outdated or incomplete market data frequently distort cost estimation and selection of procurement methods. One official observed, “*Using last year’s prices or unverified supplier data often leads to choosing the wrong method—sometimes we tender when only a few suppliers exist, or do direct selection when the market is competitive.*”

This insight underscores a systemic weakness in data governance rather than mere procedural error. The lack of real-time market intelligence results in mismatches between planned methods and actual supplier capacity, a phenomenon similarly identified in World Bank (2016) benchmarking.

To mitigate, the study proposes institutionalizing periodic market surveys, integrating price-index databases into e-procurement platforms, and mandating documentation of market-analysis reports as auditable evidence. These practices enhance transparency and accountability while enabling adaptive method selection.

4.6. Procurement Planning Stage: Scheduling and Budgeting (HPS)

The scheduling sub-stage was found to suffer from overly optimistic timelines and disconnection from fiscal cycles. Informants admitted that unrealistic planning often stems from pressure to accelerate disbursement rather than empirical duration data. Consequently, procurement delays and under-absorption of budgets recur annually.

Similarly, inaccurate cost estimation, especially in determining the *Harga Perkiraan Sendiri (HPS)*—creates downstream problems such as bid cancellations or cost overruns. As one participant stated, “*Technical teams often finalize specifications before confirming budget ceilings, so later they must reduce volumes or revise scope.*” This reflects weak integration between planning and budgeting functions.

Mitigation involves synchronizing procurement schedules with the annual work-plan (RKA), conducting cross-checks between planning and finance divisions, and employing historical cost data and current market indexes for HPS validation. This aligns with ISO 31000's emphasis on *risk monitoring* and *control mechanisms* across inter-departmental interfaces.

4.7. Procurement Planning Stage: Procurement Plan (RUP) Administration

The final sub-stage, preparation of the *Rencana Umum Pengadaan (RUP)*, carries administrative and compliance risks. Common issues include delayed publication, incomplete entries, and misalignment with approved budgets or methods. Several informants cautioned that late or inaccurate RUP inputs can halt subsequent tenders and trigger audit findings.

Mitigation requires introducing a multi-layer verification process prior to RUP finalization, involving planners, finance officers, and UKPBJ staff. Staged data entry and periodic updates can transform the RUP from a static requirement into a "living document" reflecting real-time adjustments—thus fulfilling ISO 31000's *continuous improvement* principle.

4.8. Procurement Planning Stage: Cross-Cutting Insight

Across all sub-stages, the analysis reveals that risk persistence is not primarily regulatory but institutional and behavioral rooted in inadequate coordination, limited competence, and weak internal control. The pattern confirms Pressman and Wildavsky's implementation theory: policy failure often results from fragmented inter-actor communication rather than policy design itself.

Accordingly, the planning stage should not be viewed merely as a technical formality but as a risk-governance process requiring joint accountability among PPK, KPA, UKPBJ, and supervisory units. The integration of structured risk registers, collaborative validation, and data-driven planning mechanisms is therefore imperative to shift from reactive correction to proactive prevention.

4.9. Supplier Selection Stage: Risk Exposure and Governance Response

The supplier selection stage represents a crucial point of vulnerability where procedural fairness, transparency, and accountability are tested. Although Indonesia's procurement framework (Perpres No. 16/2018; No. 12/2021) is well-defined, interviews revealed that implementation remains prone to inconsistent interpretation, subjective evaluation, weak qualification checks, and poor documentation. These issues correspond to the *risk evaluation* and *treatment* phases of ISO 31000 and highlight institutional rather than regulatory weaknesses.

Table 1. Key Risk and Mitigation Strategies in Supplier Selection Stage

Risk Category	Key Findings Evidence from Interviews)	Proposed Mitigation	ISO 31000 linkage
Regulatory Interpretation & Procedural Inconsistency	<ul style="list-style-type: none"> Different evaluators interpreted clauses inconsistently, particularly in post-qualification, leading to uneven shortlisting and excessive clarifications. 	<ul style="list-style-type: none"> Conduct periodic alignment workshops, develop standardized evaluation checklists, and strengthen <i>UKPBJ</i> oversight. 	<ul style="list-style-type: none"> <i>Risk Communication & Consultation</i> – ensuring shared interpretation before evaluation.
Bias & Evaluator Discretion	<ul style="list-style-type: none"> Despite LPSE use, scoring remains subjective; "technical proposal scores depend on perception," creating bias and conflict-of-interest risks. 	<ul style="list-style-type: none"> Establish multi-layer evaluation teams, rotate evaluators, implement digital audit trails and integrity-pact acknowledgments within LPSE. 	<ul style="list-style-type: none"> <i>Risk Treatment & Control</i> – minimizing human bias through structural safeguards.
Verification of Supplier Qualifications	<ul style="list-style-type: none"> Uploaded credentials are seldom cross-checked; unverified tax, financial, or certification data enable unqualified bidders. 	<ul style="list-style-type: none"> Integrate LPSE with national tax and certification databases; apply risk-based verification for high-value tenders. 	<ul style="list-style-type: none"> <i>Risk Prioritization</i> – focusing due-diligence resources on high-exposure tenders.
Documentation & Audit-Trail Weaknesses	<ul style="list-style-type: none"> Evaluation notes and clarification records often incomplete, limiting traceability during audits. 	<ul style="list-style-type: none"> Enforce mandatory e-documentation upload before contract award; schedule periodic internal audits of LPSE records. 	<ul style="list-style-type: none"> <i>Monitoring & Review</i> – ensuring continuous compliance and traceability.
Cross-Cutting Institutional Insight	<ul style="list-style-type: none"> Persistent behavioral and capacity gaps show that digital tools alone cannot ensure transparency. 	<ul style="list-style-type: none"> Combine ethics reinforcement, evaluator training, and accountability frameworks among <i>Pokja</i>, <i>PPK</i>, and oversight agencies. 	<ul style="list-style-type: none"> <i>Risk Governance & Continuous Improvement</i> – integrating human and system-level adaptation.

4.10. Supplier Selection Stage: Risk Exposure and Governance Response

The supplier selection stage is the most sensitive phase of the procurement process, where compliance, transparency, and fairness are directly tested. Although Indonesia’s regulatory framework (Presidential Regulations No. 16 of 2018 and No. 12 of 2021) provides detailed procedural guidance, interviews with the seven certified procurement officers revealed that implementation remains inconsistent and vulnerable to discretion, weak verification, and documentation lapses. These issues illustrate that risk exposure at this stage stems more from institutional behavior and capacity gaps than from deficiencies in regulation. Table 4.2 summarizes the key risk themes, supporting evidence, proposed mitigation strategies, and their alignment with the ISO 31000 risk-governance principles.

Table 2. Key Risks and Mitigation Strategies in the Supplier Selection Stage

Risk Category	Key Findings (Evidence from Interviews)	Proposed Mitigation	ISO 31000 Linkage
Regulatory Interpretation & Procedural Inconsistency	<ul style="list-style-type: none"> Evaluators interpret clauses differently—especially during post-qualification—causing inconsistent bidder assessments and excessive clarifications. 	<ul style="list-style-type: none"> Standardize evaluation checklists and conduct regular alignment workshops under UKPBJ supervision. 	<ul style="list-style-type: none"> <i>Risk Communication & Consultation</i> – build shared understanding before evaluation.
Bias & Evaluator Discretion	<ul style="list-style-type: none"> Despite LPSE use, scoring of technical proposals remains subjective; evaluators admit reliance on personal judgment. 	<ul style="list-style-type: none"> Rotate evaluators, employ multi-layer evaluation teams, and record all scoring changes via LPSE digital audit trails. 	<ul style="list-style-type: none"> <i>Risk Treatment & Control</i> – reduce human bias through procedural safeguards.
Verification of Supplier Qualifications	<ul style="list-style-type: none"> Uploaded financial or certification data rarely verified; unqualified suppliers can pass screening. 	<ul style="list-style-type: none"> Integrate LPSE with tax and certification databases; apply risk-based verification for high-value tenders. 	<ul style="list-style-type: none"> <i>Risk Prioritization</i> – allocate due-diligence effort to high-exposure tenders.
Documentation Audit-Trail Weaknesses	<ul style="list-style-type: none"> Incomplete evaluation notes and clarification records hinder post-audit accountability. 	<ul style="list-style-type: none"> Enforce mandatory e-documentation before contract award and conduct periodic internal audits of LPSE files. 	<ul style="list-style-type: none"> <i>Monitoring & Review</i> – maintain traceability and continuous compliance.
Cross-Cutting Institutional Insight	<ul style="list-style-type: none"> Behavioral and capacity gaps persist; technology alone cannot ensure transparency. 	<ul style="list-style-type: none"> Reinforce ethics, training, and accountability frameworks among Pokja, PPK, and oversight agencies. 	<ul style="list-style-type: none"> <i>Continuous Improvement & Risk Governance</i> – integrate human and system adaptation.

4.11. Contract Implementation Stage: Operational Risks and Mitigation Practices

The contract implementation stage is where procurement outputs translate into tangible results, yet it also presents the highest operational risk exposure. Interviews with the seven certified procurement officers revealed that, even after a transparent selection phase, challenges persist during contract execution—particularly delays, deviations from specifications, and weak monitoring. Most of these issues originate from limited supervision capacity, poor communication between PPK and providers, and inconsistent application of sanctions. Such weaknesses highlight the need to strengthen the *monitoring, control, and review* dimensions of the ISO 31000 framework. Table 4.3 outlines the key risk themes, representative evidence, and recommended mitigation actions to enhance accountability and performance during contract execution.

Table 3. Key Risks and Mitigation Strategies in the Contract Implementation Stage

Risk Category	Key Findings (Evidence from Interviews)	Proposed Mitigation	ISO 31000 Linkage
Project Delays & Scheduling Slippage	<ul style="list-style-type: none"> Delays occur due to unrealistic timelines, weather disruptions, and late mobilization of contractors. Officers noted “work often starts before complete readiness.” 	<ul style="list-style-type: none"> Require early mobilization meetings, realistic scheduling based on risk assessment, and enforce penalty clauses for unjustified delays. 	<ul style="list-style-type: none"> <i>Risk Treatment & Monitoring</i> – anticipate and respond to schedule deviations.
Deviation from Technical Specifications	<ul style="list-style-type: none"> Contractors sometimes substitute materials or methods not matching specifications, especially in remote projects where supervision is limited. 	<ul style="list-style-type: none"> Implement digital progress-reporting tools (photo documentation / geo-tagging) and independent technical inspections. 	<ul style="list-style-type: none"> <i>Risk Control</i> – ensure compliance through verification and documentation.
Weak Contract Supervision & Communication	<ul style="list-style-type: none"> Coordination gaps between PPK, consultants, and contractors reduce oversight effectiveness. “Reporting is often reactive, not preventive.” 	<ul style="list-style-type: none"> Conduct routine joint-monitoring meetings; define clear communication protocols and escalation mechanisms. 	<ul style="list-style-type: none"> <i>Risk Communication</i> – strengthen coordination to prevent failure escalation.
Payment & Financial Administration Risk	<ul style="list-style-type: none"> Late verification of work completion leads to delayed payments or premature disbursement. 	<ul style="list-style-type: none"> Align progress payments with verified milestones and integrate e-verification within LPSE financial modules. 	<ul style="list-style-type: none"> <i>Risk Evaluation</i> – validate deliverables before financial commitment.

Risk Category	Key Findings (Evidence from Interviews)	Proposed Mitigation	ISO 31000 Linkage
Dispute & Sanction Management	<ul style="list-style-type: none"> Contract disputes arise from ambiguous clauses and inconsistent sanction enforcement. 	<ul style="list-style-type: none"> Standardize contract templates with clear dispute-resolution pathways and consistent sanction application. 	<ul style="list-style-type: none"> <i>Risk Governance</i> – clarify accountability to ensure fair enforcement.
Cross-Cutting Institutional Insight	<ul style="list-style-type: none"> Most risks stem from weak monitoring culture rather than regulatory gaps. Strengthening supervision capacity and data-driven evaluation is critical. 	<ul style="list-style-type: none"> Develop integrated monitoring dashboards and continuous training for PPK and supervisory teams. 	<ul style="list-style-type: none"> <i>Continuous Improvement</i> – institutionalize learning from implementation outcomes.

5. Conclusion

This study provides a comprehensive redesign of public procurement processes using a risk mitigation approach tailored to the provincial government context. By applying a qualitative lens, the research uncovers institutional and operational vulnerabilities that often escape quantitative analysis. The proposed five-feature redesign and its implementation framework aligns digital innovation, accountability mechanisms, and adaptive monitoring to be proactive risk management strategies that can significantly improve procurement efficiency, reduce irregularities, and strengthen public trust. By embedding structured risk identification, digital validation tools, continuous training, whistleblower integration, and post-contract monitoring, the redesigned process aligns risk management with the operational realities of local governments. The resulting framework clarifies roles, mechanisms, and priorities, providing a roadmap for gradual institutionalization of risk-aware procurement practices. The redesigned model offers a practical and scalable pathway toward transparent and accountable procurement governance at the sub-national level.

Future research is recommended to validate this five-feature model across other local governments and to explore hybrid designs combining qualitative insights with quantitative tools for procurement risk scoring tools that support evidence-based procurement reform and sustainable public-sector governance.

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Instructions to Authors for Word template

1. Locking of Copyright:

The copyright line is locked in the LWSA Conference Series templates. The author may not edit the same and making it editable only PSMs. If there are any copyright changes required, you are requested to contact Journal Manager through Guest Editors. For editable the below mentioned steps must be followed:

Steps:

- Click on copyright statement
- Click on **Properties** in **Developer** tab
- Remove the checks from **Content control cannot be deleted** and **Contents cannot be edited** under **Locking** and then Press **ok**

2. Docm format:

We have added macros in the Word templates for the below mentioned features. And since macros are not supported in doc and docx format we created the templates of all LWSA Conference Series titles in .docm format.

- Removal of all highlights
- Accept track change
- Locking of Rules

If .docm format needs to convert in docx format then the following steps must be performed:

Steps:

- Press **Alt F11**
- Click on **Project (JID_Template)**
- Enter "thomson" in Project Password
- Click on Microsoft Word Objects
- Click on **ThisDocument** under **Microsoft Word Objects**
- Delete all macros under **General**
- After deletion close the **Code** and **Project (JID_Template)** windows
- From **File** menu click on save as type **.docx** option

3. Comments added in the margin in Word master templates:

There are instances where author raising queries on what to do with key information lines such as “volume, page numbers”, “Conference title per issue” and “Copyright entity, year, copyright TALENTA Publisher Universitas Sumatera Utara. and Organizer Name” in the copyright statement and for these concerns the comments have been inserted in the Word template to guide Author/JM about the information to be inserted by them in these fields.

Comments removal from Print: In Word 2007 and 2010 the comments present in a document get printed by default. If the authors do not want to get the comments appearing in print, the authors must remove the comments from the Word template before printing by changing the Print markup setting of word using the following steps:

Steps:

- Click the **File** tab
- Click **Print**
- Under **Settings**, click the arrow next to **Print All Pages**
- Click **Print Markup** to clear the check mark

Instructions to Authors pages to be excluded from Print:

- Click the **File** tab
- Click **Print**
- Under **Setting**, Type page numbers and/or page ranges separated by commas counting from the start of the document or the section. For example, type 1, 3, 1-5

4. PDF creation from Word master template:

While creating PDF from Word template the below given steps should be followed to avoid difference in trim size and margins and to avoid decrease in resolution and size of the figure images of the Word template and the PDF created.

Steps in Word 2007 and 2010:

- Click the **File** tab
- Click **Print**
- Under **Printer** tab, select **Adobe PDF**
- Click **Printer Properties** link
- Under **Adobe PDF Settings** tab, click on **Edit** button
- Click on **Images** folder under **Standard**
- Make **Downsample** and **Compression** fields under **Color Images** and **Grayscale Images "Off"**. And in **Monochrome Images** field make only Downsample "Off"
- Then click on **OK** and given name of the setting in **File name** tab and click on **save**
- Then again Under **Adobe PDF Settings** tab, click on **Edit** button
- Then click on **Color** folder
- Choose **Leave Color Unchanged** option under **Color Management Policies** tab then click on **OK**
- Lastly click on **OK** in **Adobe PDF Settings** tab
- Click **Save As**
- Under **Save as type**, click the arrow next to **PDF (*.pdf)**
- Click **Save**

In Word 2003 the PDF can be created by using “Convert to Adobe PDF” symbol in tool bar or the required paper size can be adjusted in the Adobe PDF settings given in the Properties tab on the Print option. Please follow the above steps to avoid decrease in resolution and size of the figure images.

5. Reference style used in LWSA Conference Series:

Title	Reference style
LWSA Conference Series	APA Style

6. Content Paper:

This conference paper has four subchapters consisting of introduction, research methods, results and discussion, and conclusion, as well as acknowledgments (optional) and references. The submitted paper uses English.