

## AN ANALYSIS OF THE PROCUREMENT BUSINESS PROCESS IN THE SUPPLY MANAGEMENT DEPARTMENT OF AN INDONESIAN MINING CONTRACTOR COMPANY



**Jihan Fadila Maharani<sup>1</sup>**  
Universitas Islam Indonesia, Yogyakarta, Indonesia  
[21311185@students.uii.ac.id](mailto:21311185@students.uii.ac.id) \*(Corresponding)

**Siti Nursyamsiah<sup>2</sup>**  
Universitas Islam Indonesia, Yogyakarta, Indonesia  
[siti.nursyamsiah@uui.ac.id](mailto:siti.nursyamsiah@uui.ac.id)

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### Abstract

This study investigates the procurement business process of a leading mining contractor company in Indonesia, emphasizing its role within the Supply Management Department as a strategic driver of supply chain effectiveness and operational sustainability. Using a qualitative descriptive approach, data were collected through direct observation during an internship, in-depth interviews with internal stakeholders, and document analysis of supplier evaluation reports and procurement monitoring data. The analysis focuses on process mapping, system efficiency, and supplier performance using weighted indicators such as delivery timeliness, overdue rates, discrepancies, and product quality, aggregated into a final performance score for supplier categorization. Findings show that the procurement process operates through an integrated ERP system; however, several inefficiencies persist, including delays in manual approvals, late supplier deliveries, and limited warehouse automation that hampers real-time stock visibility. A comparative review of two major suppliers reveals performance gaps, with one achieving 95% on-time delivery while the other faces recurring discrepancies and overdue issues. Root cause analysis identifies weak interdepartmental coordination, poor communication, and minimal data-driven evaluation. The study concludes with recommendations to improve efficiency, reliability, and responsiveness in procurement operations, strengthening overall supply chain performance in the mining services sector.

**Keywords:** Procurement, Supplier Performance Evaluation, Business Process Analysis, Root Cause Analysis, Supply Chain Management

## INTRODUCTION

The procurement of goods and services is a vital function in sustaining the operational continuity of a leading mining contractor company in Indonesia. As a large-scale player in the mining industry, the company depends on the timely, accurate, and cost-efficient supply of spare parts and materials to ensure uninterrupted production. The Supply Management Department plays a strategic role in this process by managing the procurement of heavy equipment components and related services with efficiency, transparency, and reliability. Despite being guided by established Standard Operating Procedures (SOPs), field observations indicate several issues that hinder performance, including delivery delays, product specification deviations, reliance on single suppliers, market price volatility, and weak internal coordination. These inefficiencies increase the risk of stockouts, equipment downtime, and maintenance delays, ultimately impacting production and financial performance. A case in mid-2023 demonstrated these effects, when delayed spare part procurement caused prolonged equipment downtime and significant production losses.

Given the complexity of these challenges, an in-depth analysis is needed to uncover not only the visible issues but also their root causes. This study adopts a qualitative analytical approach to examine interdepartmental interactions, procurement policies, and other internal and external factors affecting process efficiency. Root Cause Analysis (RCA) supported by the fishbone (Ishikawa) diagram is employed to identify contributing factors across manpower, methods, materials, equipment, and environment. As noted by Andersen, B., & Fagerhaug (2006), RCA systematically reveals underlying causes to develop effective and sustainable improvements.

This study aims to provide practical recommendations to enhance the effectiveness of the procurement process. Proposed improvements include data-driven demand planning, supplier diversification to mitigate dependency risks, optimization of procurement information systems, and stronger cross-functional coordination. These measures are expected to reduce procurement delays, prevent stockouts of critical spare parts, and improve operational productivity. Ultimately, the implementation of these strategies will strengthen the company's competitiveness and support long-term sustainability within the mining services industry.

## REVIEW OF LITERATURE

### Supply Chain Management (SCM)

Supply Chain Management (SCM) is an integrated network coordinating procurement, transformation, and distribution of materials to ensure efficient delivery while balancing customer satisfaction with operational efficiency. It connects suppliers, manufacturers, distributors, retailers, and customers through continuous flows of information, products, and funds, managed via Customer Relationship Management, Internal Supply Chain Management, and Supplier Relationship Management (Chopra & Meindl, 2016). SCM integrates processes such as customer service, demand management, order fulfillment, supplier management, product development, and returns management (Mentzer et al., 2001). Effective SCM requires coordination, responsiveness, and shared objectives, reducing costs, mitigating risks, improving asset utilization, and driving innovation, making it a strategic capability for long-term competitiveness and growth.

**Procurement Process & Unit**

Procurement is a strategic function within the supply chain, managing the acquisition of goods, services, and resources critical for uninterrupted company operations. It involves need identification, supplier selection, contract negotiation, performance monitoring, and long-term relationship management, prioritizing total value over cost alone by considering quality, timeliness, sustainability, and risk (Monczka et al., 2016; Van Weele, 2010). In the Supply Management Department of a leading Indonesian mining contractor, procurement integrates five core functions: purchasing, inventory, warehouse, subcontractor management, and fuel and oil management. Purchasing covers issuing Purchase Orders and evaluating suppliers using KPIs on delivery accuracy, quality, and cost. Inventory and warehouse management ensure stock availability, verify deliveries, and optimize material flow (Frazelle, 2016; Heizer & Render, 2014). Subcontracting maintains operational support through strategic partnerships and performance evaluation, while fuel and oil management secures energy supply with quality control and system tracking. Together, these functions form an interconnected, efficient, and strategic procurement cycle, supporting operational continuity and supply chain reliability.

**Root Cause Analysis (RCA)**

Root Cause Analysis (RCA) is a systematic approach for identifying the underlying causes of procurement problems and implementing corrective actions to prevent recurrence (Andersen & Fagerhaug, 2006). In this study, RCA revealed that unplanned procurement costs largely resulted from weak data integration between the Supply Management Department and other units. The process involved defining observable problems such as inaccurate demand forecasting, inadequate supplier evaluation, single-supplier dependency, poor communication, and non-real-time systems, collecting supporting data, categorizing direct causes into human, process, material, system, and external factors, and tracing root causes using tools like the Five Whys and Fishbone Diagram. These insights support targeted improvements to enhance efficiency and reduce hidden costs (Monczka et al., 2016)A summary of RCA results is presented in Table 1.

**Table 1.**  
**Summary of root cause findings.**

No	Categories	Potential Root Cause
1.	Human Resources & Communication	<ul style="list-style-type: none"> <li>- Insufficient training on interdepartmental coordination.</li> <li>- Ineffective communication across cross-functional units.</li> <li>- Lack of awareness to comply with internal Service Level Agreements (SLA).</li> </ul>
2.	Procedures	<ul style="list-style-type: none"> <li>- Inadequate monitoring of goods delivery and receipt.</li> <li>- Ineffective periodic audits on the procurement process productivity</li> </ul>
3.	Spare Parts	<ul style="list-style-type: none"> <li>- Incomplete or unclear spare part specifications.</li> <li>- Lack of quality standardization and validation process before shipment.</li> </ul>
4.	Systems/Tools	<ul style="list-style-type: none"> <li>- Lack of integration between procurement and warehouse systems.</li> </ul>

		- Absence of automatic notification when stock reaches the minimum threshold.
5.	External Factors	- No early warning system for market conditions or regulatory changes. - Absence of strategic contingency plans for delivery delays caused by off-site factors.

Source: Data Processed (2025)

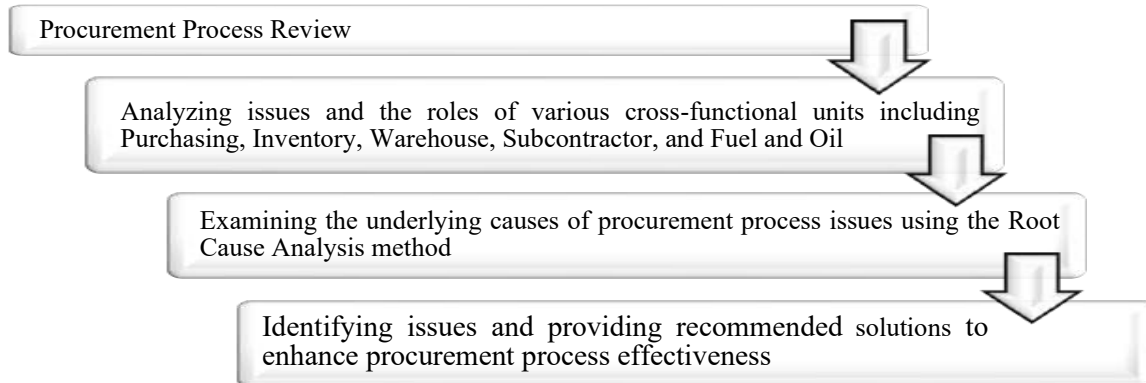
**Supplier Performance Evaluation**

Supplier performance evaluation is a strategic component of procurement management, ensuring suppliers consistently meet organizational standards for quality, timeliness, quantity, and service. (Monczka et al. (2016) describe it as a systematic process for measuring and analyzing supplier performance to guide development, contract renewal, and new supplier selection. The evaluation integrates quantitative metrics, such as on-time delivery, defect rates, and lead times, with qualitative measures, including communication, responsiveness, and flexibility (Van Weele, 2010). Key indicators include delivery performance, quality, cost efficiency, flexibility, and relationship management (Lysons & Farrington, 2016). When integrated with ERP and Supplier Relationship Management systems, it enables real-time monitoring, corrective actions, and Performance Improvement Plans, enhancing procurement effectiveness, supplier reliability, and overall supply chain resilience within a leading Indonesian mining contractor.

**Research Model**

The framework is developed by the researcher to analyze the efficiency of the procurement process within the Supply Management Department of a mining contractor company in Indonesia, as illustrated in Figure 1 below.

**Figure 1.**  
**Research Model**



**RESEARCH METHOD**

This study uses a qualitative approach to examine procurement processes, challenges, and root causes within the Supply Management Department of a mining contractor company. The analysis covers key activities such as planning, supplier selection, purchase orders, goods receipt, and payments, along with issues like delays, nonconformance, and communication gaps. Data were obtained through in-depth interviews, observations, and

document analysis. RCA was applied to identify underlying problems and propose actionable solutions to improve procurement performance (Andersen & Fagerhaug, 2006).

This study analyzes procurement processes in the Supply Management Department of a leading Indonesian mining contractor using primary and secondary data. Primary data were collected through in-depth interviews and four months of direct internship observations, revealing workflows and challenges. Secondary data, including SOPs, flowcharts, and supplier evaluations, assessed policy alignment. Triangulating these sources allowed verification, contextual understanding, and Root Cause Analysis, providing a basis for identifying issues and recommending improvements to enhance procurement efficiency, effectiveness, and overall supply chain performance.

This study applies thematic analysis to identify key themes from data collected through interviews, observations, and document reviews. The analysis follows the model of Miles and Huberman, as cited by Pahleviannur et al. (2022). It consists of four stages: data collection, data reduction, data display, and conclusion drawing with verification.

## RESULTS AND DISCUSSION

This chapter presents findings from an internship at a leading Indonesian mining contractor, focusing on the Supply Management Department. Data were collected through direct observation and semi-structured interviews with personnel involved in procurement. The procurement process includes need request submission via the SAP-based ERP system, verification and approval, supplier identification, quotation requests, bid evaluation, price negotiation, purchase order issuance, and goods receipt with payment. Supplier selection considers price, quality, delivery time, and past performance, coordinated with technical staff and end users. Approved POs formalize agreements, while delivered goods are verified and finance processes payments, ensuring operational continuity and compliance.

During the internship, several challenges were identified, including supplier delivery delays, nonconformance with specifications, and extended administrative processing due to internal system limitations. These findings highlight operational bottlenecks and inefficiencies within the procurement process. The collected data were subsequently analyzed using RCA to identify underlying issues and propose actionable improvements. This analysis provides insight into potential enhancements for efficiency, accuracy, and reliability in the company's procurement workflows.

### Informant Description

The informants in this study consisted of three employees who provided a comprehensive perspective on the upstream-to-downstream processes within the Supply Management Department, as summarized in Table 2.

**Table 2.**  
**Informant Description.**

Informant Code	Position	Interview Method
INF 1	Department Head of Supply Management	Face-to-Face
INF 2	Group Leader, Inventory and Warehouse	Face-to-Face
INF 3	Group Leader, Purchasing	Face-to-Face

Source: Data Processed (2024).

Table 2 shows that data were collected through face-to-face interviews and direct observation during a four-month internship in the Supply Management Department of a mining contractor company in Indonesia. Observations covered the complete procurement workflow, including need planning, ordering, goods receipt, and supplier evaluation, revealing challenges such as delayed deliveries, administrative bottlenecks, and limited warehouse capacity. Interviews were conducted with three key informants: the Department Head of Supply Management discussing overall processes and coordination, the Inventory Group Leader addressing purchase requisition conversion and storage issues, and the Purchasing Group Leader focusing on supplier selection, evaluation, and long-term relationship management.

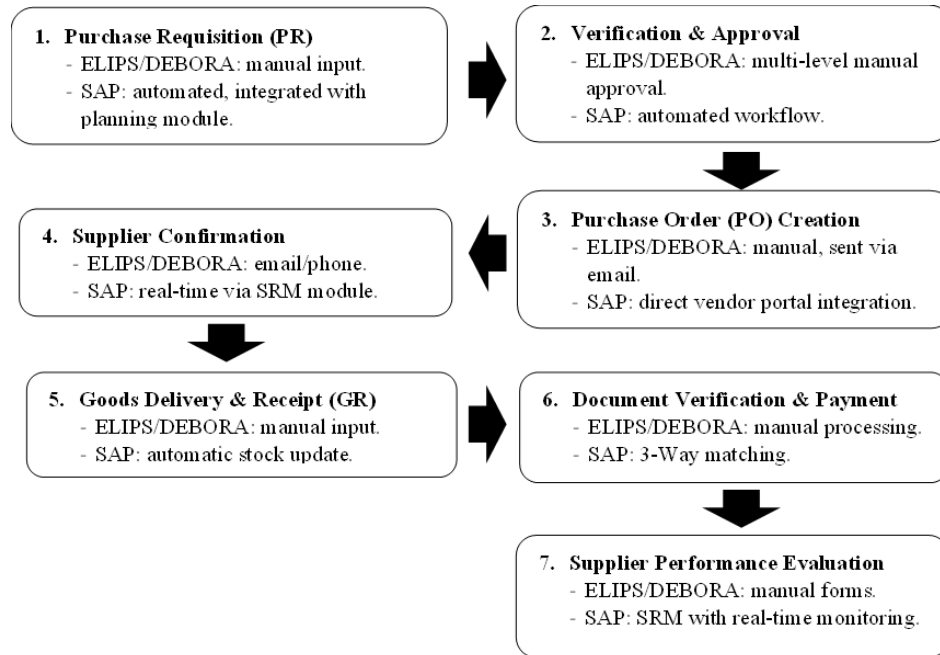
### **Field Findings Summary**

Observations and interviews revealed key insights into the procurement processes within the Supply Management Department of a mining contractor company, emphasizing workflow structure, coordination, supplier evaluation, and operational challenges. The procurement flow covers need planning, purchase order creation, negotiation, delivery, quality inspection, inventory management, and supplier performance review. Supplier analysis showed consistent performance from one vendor, while another faced delays and product discrepancies. During the internship, the company transitioned from internal systems (ELIPS and DEBORA) to SAP ERP, causing temporary integration issues. Key challenges included delayed deliveries, specification mismatches, slow approvals, and limited system monitoring that increased operational costs.

### **Analysis of Procurement Process Mechanism**

#### **Procurement Process Workflow**

The procurement process within the Supply Management Department of a mining contractor company is essential for ensuring uninterrupted operations by securing materials, spare parts, and supporting services. During the internship, procurement activities were managed using ELIPS and DEBORA, while the company began implementing SAP as an integrated ERP system in early 2025 to improve efficiency. The workflow includes several stages: purchase requisition submission, where users specify item details and timelines; internal verification and approval, ensuring alignment with budgets and stock availability; purchase order creation and issuance to suppliers; supplier confirmation and fulfillment through SAP SRM; goods delivery and warehouse receipt, including inspections and system updates; document verification and payment via a three-way matching process; and supplier performance evaluation based on delivery timeliness, quality, and contract compliance. SAP integration streamlines approvals, automates stock updates, enables real-time supplier confirmations, and facilitates continuous performance monitoring, enhancing the effectiveness, accuracy, and reliability of the procurement process across all stages. To clarify the procurement business process at a mining contractor company, a flowchart is presented illustrating the sequential stages of procurement activities, from user request submission to supplier performance evaluation, as shown in Figure 2.



**Figure 2.**  
**Flowchart Procurement Activities**  
Source: Data Processed (2025)

**Supplier Performance Evaluation**

Supplier performance evaluation in the Supply Management Department of a mining contractor company is conducted periodically using key indicators such as Delivery Time, On-Time Supply, Overdue, and Discrepancy. Weighted scores generate a final rating that determines supplier status and guides decisions on contract continuation, development programs, or termination. Interviews with key informants highlighted its strategic role: the Department Head noted that evaluations ensure procurement meets performance targets and supports continuous improvement, the Warehouse and Inventory Leader emphasized its impact on stock management, and the Purchasing Leader stressed that delivery timeliness and on-time supply are essential benchmarks throughout the procurement cycle. The summary of the supplier evaluation comparison is presented in Table 3 below.

**Table 3.**  
**Summary of Supplier Evaluation Comparison**

No	Key Indicators	Score Supplier A	Weight (%)	Weight Score	Score Supplier B	Weight (%)	Weight Score
1	Delivery Time	86.67	25.00	21.67	81.85	25.00	20.46
2	Ontime Supply	100.00	40.00	40.00	94.74	40.00	37.89
3	Overdue	100.00	20.00	20.00	80.00	20.00	16.00
4	Discrepancy	100.00	15.00	15.00	100.00	15.00	15.00
5	<b>Final Score</b>		<b>100.00</b>	<b>96.67</b>		<b>100.00</b>	<b>89.29</b>
6	<b>Predikat</b>	<b>Excellent</b>			<b>Good</b>		
7	Performance Trend	Stable			Increase		

Source: Data processed (2025).

Table 3 indicates that in the case study of an Indonesian leading mining contractor company, Supplier A achieved a final score of 96.67, rated Excellent, with nearly all indicators at 100 percent except Delivery Time (86.67%), reflecting stable and reliable performance. Supplier B scored 89.29, categorized as Good, excelling in Discrepancy (100%) and On-Time Supply (94.74%) but showing weaknesses in Delivery Time (81.85%) and Overdue (80%). Although Supplier B’s score slightly declined from 92.00, its trend shows gradual improvement. Both suppliers remain strategically valuable, but Supplier B requires targeted improvements in delivery punctuality and overdue management to reach Excellent.

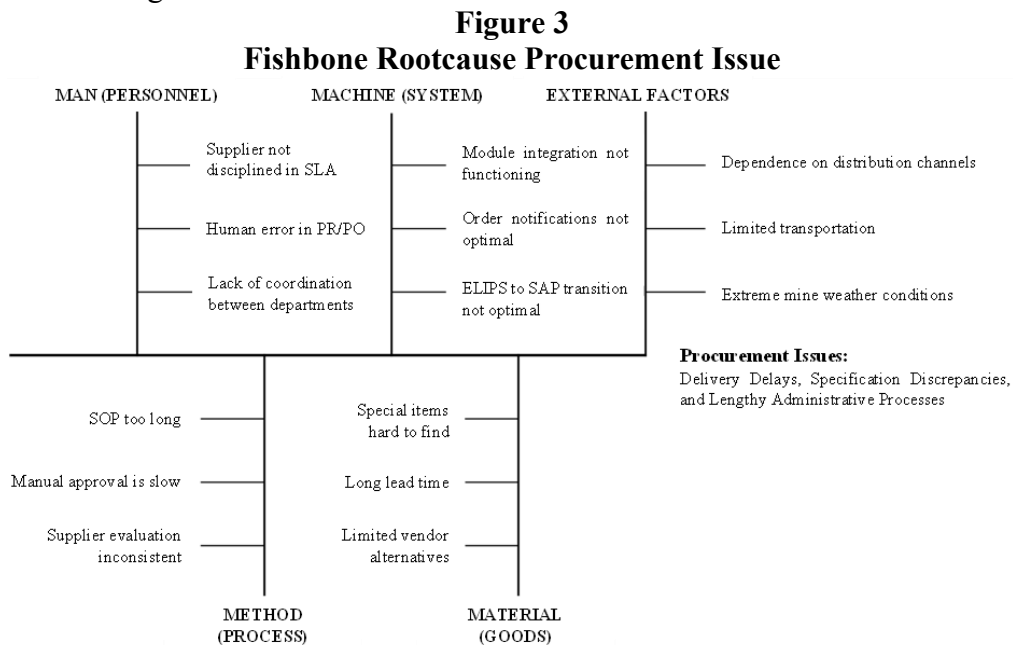
**Analysis of Procurement Issues Using Root Cause Analysis (RCA)**

**Problem Identification**

Based on internship observations and interviews at the Supply Management Department of a leading Indonesian mining contractor, key procurement issues include supplier delivery delays, discrepancies between delivered goods and Purchase Order specifications, and lengthy, multi-layered administrative procedures. These challenges reduce the effectiveness of the Supply Management function, causing operational disruptions, delays in heavy equipment maintenance, and setbacks in material distribution. Addressing these inefficiencies is essential to ensure smooth operations, timely servicing, and uninterrupted supply chain performance across the company’s mining activities.

**Root Cause Analysis Using Fishbone Diagram**

To identify the underlying causes of procurement issues, Root Cause Analysis (RCA) was conducted using a fishbone diagram approach. The analysis focused on five main factors: Man (Human Resources), Method (Processes), Machine (Systems), Material (Goods/Specifications), and Environment (External Factors). The fishbone diagram analysis is illustrated in Figure 3 below.



Source: Data Processed (2025).

Figure 3 illustrates the key factors contributing to procurement challenges, categorized into Manpower, Method, Machine, Material, and Environment. Several sub-factors were identified, including delayed approvals, human errors, suboptimal ERP system performance, and external constraints such as weather and transportation issues. The most significant root causes, prioritized by frequency and impact, include: (1) lengthy and duplicated administrative processes affecting all procurement stages (Method), (2) system readiness and integration issues during the SAP transition (Machine), (3) supplier capacity and management limitations affecting delivery performance (Material), (4) limited employee competency in SAP and interdepartmental coordination (Man), and (5) uncontrollable external factors causing delivery delays (Environment).

**Strategies and Recommendations to Enhance Procurement Effectiveness, Efficiency, and Reliability in the Supply Management Department**

Based on field observations, interviews, and RCA, the main challenges in the procurement process at the Supply Management Department of a leading mining contractor company in Indonesia include supplier delivery delays, discrepancies in goods specifications, and lengthy administrative procedures. These issues affect the effectiveness, efficiency, and reliability of procurement operations. The following strategies and recommendations are proposed to address these challenges, as summarized in Table 4.

**Table 4.**  
**Summary of The Procurement Challenges, Root Causes, Strategies, and Expected Impacts.**

<b>Challenge</b>	<b>Root Cause</b>	<b>Strategy/Recommendation</b>
Supplier delivery delays	Limited supplier capacity, inconsistent performance, lead time issues	Implement Vendor Rating System based on KPIs, contract penalties & rewards, joint inspection for high-value items
Discrepancy in goods specifications	Human error, insufficient quality control, lack of coordination	Conduct staff training on SAP and procurement standards, establish cross-functional task forces, automate data validation
Lengthy administrative processes	Layered approvals, parallel manual and digital documentation	Optimize e-Approval in SAP, full digitalization (paperless procurement), integrate supplier performance dashboards
ERP system issues	Transition from ELIPS/DEBORA to SAP causing bugs, incomplete module integration	Dedicated IT monitoring team, full SAP module integration, server backup & disaster recovery
External factors (weather, remote location)	Extreme weather, poor infrastructure, geographic remoteness	Partner with local suppliers, maintain buffer stock, develop contingency logistics plans

**Source:** Data processed (2025).

Table 4 summarizes key procurement challenges, root causes, and recommended strategies. Improvements include enhancing employee competence through regular SAP training, cross-functional coordination, and automated data validation to reduce errors and delays; simplifying administrative processes via optimized e-Approval, full digitalization, and integrated supplier performance dashboards; optimizing ERP performance with dedicated IT monitoring, full SAP integration, and backup systems; improving supplier performance through KPI-based evaluations, contract incentives, and joint inspections; and mitigating external disruptions by partnering with local suppliers, maintaining buffer stocks, and contingency logistics planning. These strategies aim to increase efficiency, accuracy, and supply reliability.

In summary, the roadmap of strategies and recommended improvements for the procurement process at a mining contractor company is illustrated in Figure 4 below.

**Figure 4**

**Roadmap of Strategies and Recommendations for Procurement Process Improvement**  
Source: Data Processed (2025).

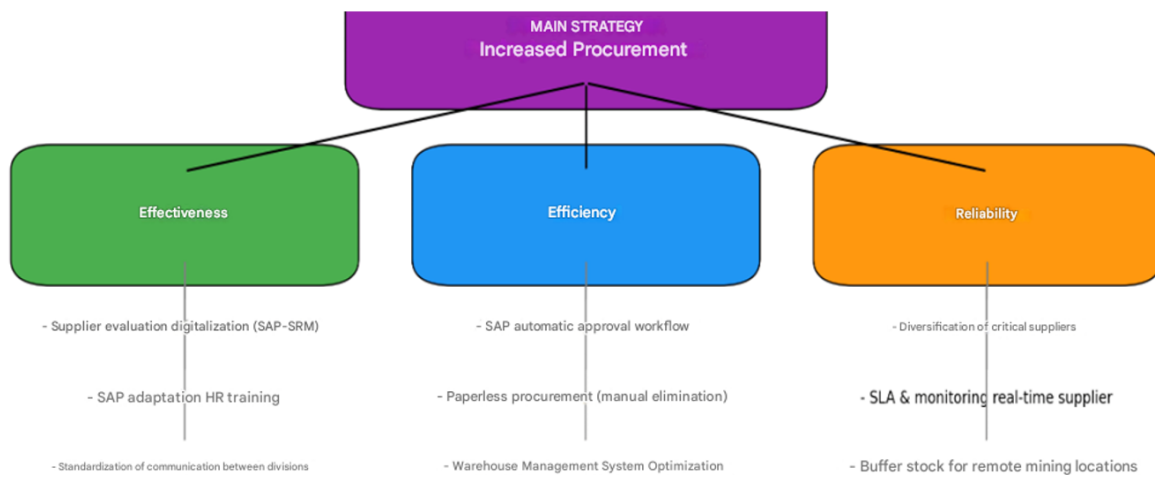


Figure 4 presents the procurement improvement framework, which focuses on enhancing effectiveness, efficiency, and reliability in a mining contractor company's procurement process. Key initiatives include digitalizing supplier evaluations, optimizing SAP and WMS systems, automating workflows, and implementing paperless procedures to streamline operations. Despite the SAP-based structure, challenges persist—such as system transition issues, layered approvals, and supplier delivery delays. Supplier evaluations show strong overall performance but highlight the need to improve delivery timeliness. Root Cause Analysis identifies administrative complexity, limited system integration, supplier capacity, and human resource gaps as major issues. To address these, the company should optimize SOPs, stabilize SAP, strengthen staff training, and apply supplier performance improvement plans. Collectively, these strategies aim to shorten lead times, minimize errors, and enhance procurement effectiveness, efficiency, and reliability.

## CONCLUSION

In conclusion, the analysis of the procurement business process in the Supply Management Department of a leading Indonesian mining contractor indicates that the

workflow is generally well-structured, encompassing planning, ordering, goods receipt, and supplier evaluation supported by the ERP system. Nevertheless, several challenges persist, including delivery delays, item discrepancies, limited warehouse capacity, and semi-manual monitoring. Supplier performance varies, with Supplier A rated “excellent” and Supplier B needing improvement in delivery punctuality. Overall, the procurement process remains effective but requires enhanced coordination, system integration, and supplier communication to improve efficiency.

This study recommends strategic improvements for a leading Indonesian mining contractor. Key actions include optimizing IT systems, such as enhanced ERP usage, automated warehouse monitoring, real-time integration with operational modules, and a supplier performance dashboard for faster, more accurate decisions. Supplier evaluation and collaboration should be reinforced through quarterly assessments and digital communication tools to ensure timely delivery and quality compliance. Internal coordination across procurement-related divisions can be improved with standardized SOPs and regular meetings. Finally, risk mitigation through alternative suppliers, buffer stock, and emergency procurement strategies will enhance procurement effectiveness, efficiency, and operational resilience.

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