



Procurement Risk Control and Supply Chain Performance among Manufacturing Firms in Nakuru County, Kenya

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ABSTRACT

*Procurement risk control within the domain of sustainable procurement enhances risk reduction within the supply chain. It supports the overall organization's strategy upon which it drives its operations on sustainable policies to gain social and economic benefits among manufacturing firms. However, manufacturing firms in Kenya are grappling with inadequate supply chain performance. Some of the challenges facing the sector include high costs, improper procurement planning, and slow adoption to process innovation in procurement. Therefore, this study assessed the effect of procurement risk control on supply chain performance of manufacturing firms. The study was anchored on transaction cost theory. The target population was the manufacturing firms operating in Nakuru County. Questionnaire was used in data collection and adopted descriptive and inferential data methods in analysis Findings were presented through tables. The descriptive research findings show that procurement risk control affect supply chain performance. Correlation analysis reveals significant relationship between procurement risk control and supply chain performance ($r=0.617^{**}$, $p=0.000$). Regression results indicate that sustainable procurement practices explain 38.1% ($R^2=0.381$) of the variation in supply chain performance. The study concludes that procurement risk control within sustainable procurement improve order fulfillment cycle time and workflow efficiency, thereby enhancing supply chain performance.*

Key Words: Manufacturing Firms, Procurement Risk Control, Sustainable Procurement, Supply Chain Performance.

1. INTRODUCTION

Procurement risk control has increasingly become a central practice within the broader framework of sustainable procurement, reflecting the need for organizations to balance efficiency, resilience, and responsible resource utilization (Masudin, Aprilia, Nugraha, & Restuputri, 2021). As supply chains continue to expand in complexity, uncertainties related to supplier reliability, fluctuating markets, regulatory demands, and environmental considerations expose firms to multifaceted risks that can hinder operational continuity. Effective control mechanisms are therefore critical in safeguarding procurement processes against disruptions that may arise from financial instability of vendors, logistical bottlenecks, contractual breaches, or socio-political instabilities affecting sourcing regions. Kannan (2021) contend that within the sustainability framework, procurement risk control extends beyond traditional cost and quality concerns to incorporate ethical sourcing, ecological impact, and social accountability, thereby aligning acquisition strategies with long-term corporate objectives and stakeholder expectations. By embedding proactive monitoring, adaptive planning, and supplier collaboration into procurement practices, organizations can enhance their ability to anticipate threats, minimize losses, and maintain steady supply flows even under adverse conditions. Furthermore, integrating advanced technologies has strengthened the predictive and preventive capabilities of procurement risk

frameworks, allowing managers to detect vulnerabilities early and implement targeted interventions (Khan, Golpira, Sharif, & Mardani, 2021). This convergence of sustainability principles with robust risk management not only improves reliability of goods and services delivery but also reinforces corporate reputation, regulatory compliance, and resilience of supply chains in increasingly volatile business environments.

Supply chain performance expresses the ability of a firm to attain its goals and optimize results (Kamble, Gunasekaran, & Dhone, 2020). This is the ability reach the set goals in an ever-changing business environment. It is usually looked at from the output of results, particularly the revenue trends and efficiency. Supply chain performance is rooted in strategy, focus, and consistency. Successful manufacturing firms achieve results in the face of risks, innovation and limited resources. Nugroho, Christiananta, Wulani, and Pratama (2022) asserted that manufacturing firms operate in highly competitive and dynamic environment, characterized with changing customer needs. As such, adoption of agility and flexibility is essential in align to the changes. This help the aforesaid firms to maintain and even improve their performance. Analysis of supply chain performance enable procurement managers to align resources and systems to meet their objectives. This further provide signals of potential challenges thereby allowing the managers to make adjustments to keep the procurement operations on the track (Masudin et al., 2021).

The manufacturing sector in Kenya plays a central role in the realization of Vision 2030 and the Big Four Agenda on manufacturing, with its mandate being the creation of employment opportunities and wealth. The sector is expected to drive economic transformation by increasing its contribution to GDP by at least 10% annually, as outlined in Vision 2030. However, between 2010 and 2019, the sector's contribution to GDP declined by an average of 3% (KIPPRA, 2020). In addition, the sector, which recorded a 4.3% growth in 2018, registered a lower growth rate of 3.2% in 2019 (KNBS, 2020). Such slow growth, attributed to the weak performance of individual firms, threatens the country's ambition of attaining middle-income status by 2030. Khan and Qianli (2017) emphasize that supply chain performance in manufacturing firms depends on their capacity to optimize production processes with respect to quantity, quality, and cost dimensions, since such optimization identifies areas for improvement and supports long-term sustainability. In Kenya, however, manufacturing firms continue to face significant challenges, including high production costs, poor procurement planning, and limited adoption of process innovations in procurement, which have contributed to the exit of several firms, especially in Nakuru County. Despite these realities, existing literature shows limited scholarly attention to procurement risk control within the framework of sustainable procurement in the manufacturing sector. For example, Bor and Juma (2019) investigated factors influencing procurement service quality in the manufacturing industry through a case study of Bidco Oil Industries, while Njagi and Shalle (2016) demonstrated that supplier relationship management had a significant impact on the procurement performance of East African Breweries. Similarly, Wanja and Achuora (2020) established that sustainable procurement practices influence procurement performance in food and beverage manufacturing firms in Kenya. Nonetheless, it remains unclear whether procurement risk control, as a dimension of sustainable procurement, significantly influences the supply chain performance of manufacturing firms in the country. To address this gap, the present study examined the effect of procurement risk control on supply chain performance of manufacturing firms in Nakuru County, Kenya.

2. OBJECTIVE OF THE STUDY

The objective of the study was to determine the effect of procurement risk control on supply chain performance of manufacturing firms in Nakuru County.

3. LITERATURE REVIEW

Procurement risk control within the domain of sustainable procurement, encompasses mechanisms designed to address both internal and external threats that undermine the efficiency of procurement activities (Rashid-Issa, 2019). The procurement function is highly exposed to risks associated with product quality, supplier performance, customer demands, cost variability, and delivery reliability. Dixit (2022) underscores that the implementation of robust control measures allows organizations to systematically monitor these risks, anticipate disruptions, and take corrective action to mitigate potential setbacks. Within the broader agenda of sustainability, procurement risk control is recognized as a cornerstone practice because it facilitates consistent resource utilization, improves long-term operational stability, and fosters resilience across supply networks (Galankashi, Helmi, Rahim, & Rafiei, 2019). In addition to managing costs,

effective procurement risk control strengthens collaborative relationships with suppliers, enhances the dependability of service delivery to clients, and positions firms to adapt more readily to changing market and regulatory environments.

Among the various dimensions of procurement risk, material quality risk remains a central concern due to its direct impact on sustaining production continuity and protecting organizational resources (Nyamah, Feng, Yeboah-Nyamah, Opoku, & Ewusi, 2023). Fluctuations or inconsistencies in input quality can disrupt production schedules, escalate operational costs through reprocessing and spoilage, and in some cases cause equipment malfunction or damage. These disruptions have the potential to cascade into significant performance setbacks if not adequately addressed. To mitigate such risks, organizations rely on rigorous supplier evaluation mechanisms, continuous quality monitoring, and ongoing supervision of procurement practices (Irakoze & Akumuntu, 2024). Proactive engagement with suppliers who demonstrate consistency in meeting quality standards is therefore essential, as it not only safeguards operational timelines but also reduces wastage and optimizes costs. Shabani-Naeeni and Ghasemy-Yaghin (2021) emphasize that managing quality risks directly enhances reliability and efficiency, while Berawi, Soepardi, and Sayuti (2020) highlight the role of systematic inspections and timely communication with suppliers when quality deviations are detected. Furthermore, strong internal coordination across procurement and production teams ensures alignment between material specifications and organizational requirements, thereby minimizing the likelihood of disruptions stemming from non-conformities.

Supplier-related risks represent another critical dimension of procurement risk control and are often tied to deficiencies in supplier selection, delivery consistency, contract enforcement, and relationship management (Ni, Hu, & Zhong, 2021). Ineffective supplier selection processes expose organizations to cost overruns, poor-quality inputs, and unreliable supply continuity, making supplier assessment a fundamental risk control strategy. Dixit (2022) stresses that suppliers significantly influence procurement outcomes through their role in maintaining cost efficiency and meeting operational benchmarks. Similarly, Hong, Lee, and Zhang (2018) note that comprehensive supplier performance evaluations are vital in protecting margins and sustaining revenue growth, while weak evaluation processes frequently contribute to supply chain breakdowns. Furthermore, inadequate contracting mechanisms amplify risks by creating loopholes in compliance and enforcement, leading to late deliveries or disputes (Rashid-Issa, 2019). Galankashi et al. (2019) add that poor relationship management not only jeopardizes procurement quality but can also expose firms to unethical practices that damage reputation and stakeholder trust. On the other hand, cultivating strong supplier relationships contributes to reduced risks, improved logistical performance, higher customer satisfaction, and long-term competitiveness in the market.

The institutional theory provides a useful lens for understanding procurement risk control within manufacturing firms. Institutional theory posits that organizational practices and managerial actions are shaped by social pressures and external expectations, often codified in the form of regulations or normative standards (Etse, McMurray, & Muenjohn, 2022). Such pressures, whether exerted by government agencies, industry regulators, or key stakeholders, influence the internalization of values and norms within firms, which then become embedded in their procurement practices. In the specific context of procurement risk control, institutional theory explains how external expectations drive the standardization of risk management approaches across different organizations in the manufacturing sector (Fayezi, Zomorodi, & Bals, 2018). Stakeholder demands for transparency, accountability, and compliance, as well as regulatory directives on governance and ethical procurement, exert significant influence on organizational leadership, prompting firms to adopt robust procurement risk control mechanisms. For instance, compliance with laws, adherence to industry standards, and the pursuit of improved governance structures are powerful motivators for firms to strengthen procurement risk management systems. This theoretical perspective reinforces the notion that procurement risk control is not only a technical necessity but also a socially driven response to institutional pressures. The relationship between procurement risk control and supply chain performance in manufacturing firms is further illustrated in the conceptual framework presented in Figure 1.

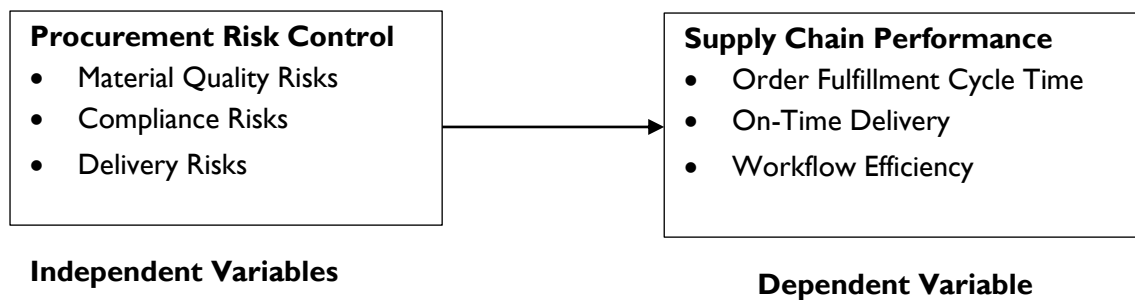


Figure 1: Conceptual Framework

Empirical studies related to procurement risk control and supply chain performance have been reviewed. Mburu (2017) assessed the effect of risk identification management strategy on supply chain performance in manufacturing companies in Kenya. The findings indicated that the relationship between risk identification management strategies was significant. Based regression analysis results, the t-value was 5.526 and P-value = 0.000 thus significant at 5% significance level. Njuguna and Ngugi (2020) researched on the influence of ISO 9001: 2015 procurement quality management on performance of manufacturing firms in Kenya. Findings showed a positive relationship ($r=0.387$) between and continuous improvement performance of manufacturing firms in Kenya. The results also indicated that there was a positive relationship ($r=0.598$) between supplier management and performance of manufacturing firms in Kenya. Furthermore, findings indicated a positive relationship ($r= 0.690$) between customer focus and performance.

Bor and Juma (2019) undertook a study on the factors affecting procurement service quality in the manufacturing industry in Kenya taking a case of Bidco Oil Industries. Findings showed that supplier development, contract management and supplier relationship management affect the procurement service quality of manufacturing firms. Njagi and Shalle (2016) investigated the role of supplier relationship management on procurement performance in manufacturing sector in Kenya. Findings indicated a positive relationship between the Supplier integration, organizational policy, ICT integration, lead time, and procurement performance. Ochiri and karungani (2017) undertook a research on the effect of internal procurement processes on organizational performance. The findings established that organizational performance is influenced by internal procurement processes. The internal procurement processes such as order processing, information sharing and payment processing determine the level of organizational. These processes enhance purchase quality and purchase controls which contribute to improved performance. A study by Awuah, Anane, and Egyir (2022) assessed the effect of procurement process on procurement performance. The findings revealed that procurement planning, procurement control and procurement monitoring has a positive and significant effect on the procurement performance of the public tertiary institutions.

Kiswili and Ismail (2016) examined the role of sustainable procurement practices on supply chain performance of manufacturing sector in Kenya taking a case study of East African Portland Cement Company. The study findings indicated that procurement preferences and reservations, green procurement practices, supplier involvement and electronic procurement influenced supply chain performance. Pearson's correlation coefficient findings indicated correlation coefficient values $r=0.224^*$, $r=0.357^*$, $r=0.414^{**}$, and $r=0.238^*$ for procurement preferences and reservations, green procurement practices, supplier involvement and electronic procurement. Analysis of variance showed F-value =10.937 with p-value=0.000 thus the model was fit and sustainable procurement practices taken together affected supply chain performance. According to regression analysis results, sustainable procurement practices explained 78.3% variation in supply chain performance. Overall, procurement preferences and reservations, green procurement practices, supplier involvement and electronic procurement had statistically significant effect impact on supply chain performance.

The above studies have mainly focused on risk identification (Mburu, 2017), ISO-based quality management (Njuguna & Ngugi, 2020), supplier development and integration (Bor & Juma, 2019; Njagi & Shalle, 2016), internal procurement processes (Ochiri & Karungani, 2017), procurement planning and monitoring (Awuah, Anane & Egyir, 2022), and sustainable procurement practices (Kiswili & Ismail, 2016). However, they overlooked procurement risk control in the context of sustainable procurement, particularly the influence of material quality risks, compliance risks,

and delivery risks on supply chain outcomes. This study addressed these gaps by examining how such risks affect order fulfillment cycle time, on-time delivery, and workflow efficiency, thereby providing a more comprehensive perspective on the role of procurement risk control in enhancing supply chain performance.

4. RESEARCH METHODOLOGY

The current study adopted descriptive research design. Descriptive research design aims to obtain information to systematically describe a phenomenon, situation, or population (Novikov & Novikov, 2019). Descriptive research design does not control or manipulate any variables. Instead, the variables are only identified, observed, and measured. The descriptive research design allowed the researcher to collect detailed data to describe the effect of procurement risk control on supply chain performance of manufacturing firms. The target population of the study was the manufacturing firms in Nakuru County. According to Kenya Association of Manufacturers (KAM, 2021), there are 31 registered manufacturing firms operating in Nakuru County. Managers and procurement officers were targeted in particular. There were two respondents from each manufacturing company; a manager and procurement officer hence the unit of observation was 62 managers and procurement officers of manufacturing firms in Nakuru County. The questionnaire served as the primary data collection instrument in this study, chosen for its ability to efficiently gather standardized information from respondents. The study adopted descriptive and inferential data analysis methods. Descriptive analysis is the type of analysis of data that helps describe, show or summarize data points in a constructive way such that patterns might emerge that fulfill every condition of the data. It incorporated means, percentages and standard deviations. On the other hand, inferential data analysis incorporated Pearson's correlation and multiple regressions analysis. Statistical Packages for Social Sciences (SPSS) aided the data analysis. Findings were presented through tables. Regression analysis model was applied as shown below:

$$Y = \beta_0 + \beta_1 X_1 + \varepsilon$$

Where;

Y= Supply Chain Performance

β_0 = Constant

β_1 = Beta Coefficient

X_1 = Procurement Risk Control

ε = Error of Margin

5. FINDINGS AND DISCUSSIONS

This section presents both the descriptive and inferential findings of the study. Specifically, it details the effect of procurement risk control on supply chain performance. The population consisted of 62 managers and procurement officers, and accordingly, 62 questionnaires were distributed. Out of these, 45 questionnaires were completed and returned, representing a response rate of 72.6%, which was adequate for analysis.

5.1 Descriptive Findings and Discussions

This descriptive statistical findings regarding the effect of procurement risk control on supply are displayed in Tables 1 and 2:

The findings show that 55.6% of the respondents strongly agreed and 28.9% agreed thus 84.5% at least agreed (Mean=4.29; Std. Dev.=1.014) that procurement risk assessment guides decision-making in selecting suppliers that align with operational sustainability goals. As such, choosing reliable and strategically aligned suppliers reduces the likelihood of delays and supply interruptions. This directly improves on-time delivery, as goods and services are more consistently sourced from dependable partners. Additionally, 51.1% of the respondents strongly agreed (Mean=4.20; Std. Dev.=1.014) that effective quality risk control contributes to the resilience of procurement function. This reliability ensures that procurement activities flow smoothly, without interruptions that could affect downstream operations. As a result, workflow efficiency across the supply chain is improved through consistent and dependable input availability. Furthermore, 60% of the respondents agreed that procurement quality risk control minimizes the potential for losses. By ensuring that procured goods meet required quality standards, procurement quality risk control

prevents delays caused by rework or returns. This keeps production on schedule and maintains a consistent supply of inputs. As a result, the order fulfillment cycle time is reduced, enhancing overall supply chain responsiveness.

Table 1: Effect of Procurement Risk Control on Supply Chain Performance

	N	SA	A	N	D	SD	Mean	Std. Dev.
	Percentage (%)							
Procurement risk assessment guides decision-making in selecting suppliers that align with operational sustainability goals.	45	55.6	28.9	6.7	6.7	2.2	4.29	1.014
Effective quality risk control contributes to the resilience of procurement function.	45	51.1	28.9	8.9	11.1	0	4.20	1.014
Procurement quality risk control minimizes the potential for losses.	45	17.8	60	22.2	0	0	3.96	0.638
We collaborate with suppliers in addressing compliance risks.	45	28.9	40	24.4	2.2	4.4	3.87	1.014
Proper management of compliance risks protect the organization from unnecessary spending.	45	26.7	46.7	17.8	8.9	0	3.91	0.900
Effective control of delivery risks control contributes to the stability of procurement operations.	45	31.1	33.3	22.2	13.3	0	3.82	1.029

The respondents were indifferent (Mean=3.91; Std. Dev.=0.900) that proper management of compliance risks protect the organization from unnecessary spending. This protection from unnecessary spending helps maintain financial stability within procurement activities. Ultimately, it supports smoother operations and strengthens supplier relationships, contributing to a more efficient and resilient supply chain. 31.1% of the respondents strongly agreed, 33.3% agreed, and 22.2% had differing views (Mean=3.82; Std. Dev.=1.029) that effective control of delivery risks control contributes to the stability of procurement operations. This stability ensures that production schedules are maintained and customer demands are met on time. As a result, procurement operations become more reliable, supporting overall supply chain continuity and efficiency.

The findings established that 37.8% of the respondents strongly agreed and 44.4% concurred hence 82.2% at least agreed (Mean=4.18; Std.Dev.=0.777) that order fulfillment cycle time enhances the efficiency of the supply chains. 40% of the respondents strongly agreed (Mean=4.18; Std. Dev.=0.936) that streamlined workflows reduce process delays across supply chain functions. Moreover, 46.7% of the respondents strongly agreed (Mean=4.22; Std. Dev.=0.927) that on-time delivery enhances inventory planning and supply chains' effectiveness. Additionally, 82.2% of the respondents agreed (Mean=4.13; Std. Dev.=0.694) that integrating cost overrun analysis enhances the evaluation of procurement operations. 84.4% of the respondents agreed (Mean=4.38; Std. Dev.=0.747) that efficient delivery minimizes supply chain bottlenecks. Furthermore, 44.4% of the respondents strongly agreed (Mean=4.27; Std. Dev.=0.809) that sustainable procurement practices contribute to increased operational efficiency. The findings revealed that risk control measures safeguard the supply network from unforeseen issues, maintaining consistency in order fulfillment.

Table 2: Supply Chain Performance

	N	SA	A	N	D	SD	Mean	Std. Dev.
	Percentage (%)							
Order fulfillment cycle time enhances the efficiency of the supply chains.	45	37.8	44.4	15.6	2.2	0	4.18	0.777
Streamlined workflows reduce process delays across supply chain functions.	45	40	46.7	8.9	0	4.4	4.18	0.936
On-time delivery enhances inventory planning and supply chains' effectiveness.	45	46.7	35.6	13.3	2.2	2.2	4.22	0.927
Integrating cost overrun analysis enhances the evaluation of procurement operations.	45	31.1	51.1	17.8	0	0	4.13	0.694
Efficient delivery minimizes supply chain bottlenecks.	45	53.3	31.1	15.6	0	0	4.38	0.747
Sustainable procurement practices contribute to increased operational efficiency.	45	37.8	48.9	4.4	8.9	0	4.16	0.878

5.2 Inferential Findings and Discussions

Inferential findings include correlation and regression analysis. They were conducted to establish the relationship between procurement risk control and supply chain performance.

5.2.1 Correlation Analysis

Correlation analysis was done to determine the relationship between procurement risk control and supply chain performance. The results are presented in Table 3:

Table 3: Correlation between Procurement Risk Control and Supply Chain Performance

	Supply Chain Performance	
Procurement Risk Control	Pearson Correlation	.617**
	Sig. (2-tailed)	.000
	N	45

According to the correlation coefficient results, there is a positive and significant relationship ($r=0.617^{**}$; $p=0.000$) between procurement risk control and supply chain performance. As such, an enhancement in the control of procurement risks contributes to an increase in supply chain performance of manufacturing firms. Therefore, the control of material quality risks, compliance risks, and delivery risks promote supply chain performance in terms of on-time delivery and reduction of order fulfillment cycle time.

5.2.2 Regression Analysis

Regression analysis was done to predict the supply chain performance from changes in procurement risk control. The pertinent results are presented in Tables 4, 5, and 6:

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.617 ^a	.381	.366	.32887

a. Predictors: (Constant), Procurement Risk Control

The regression model summary shows that there is a strong relationship between procurement risk control and supply chain performance. The correlation coefficient was $R=0.617$ while the coefficient of determination was $R^2=0.381$. Therefore, procurement risk control explain 38.1% of the variation in supply chain performance. The results implies that procurement risk control affect manufacturing firms' supply chain performance.

Table 5: ANOVA^a

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	2.858	1	2.858	26.425	.000 ^b
Residual	4.651	43	.108		
Total	7.509	44			

a. Dependent Variable: Supply Chain Performance

b. Predictors: (Constant), Procurement Risk Control

The analysis of variance (ANOVA) results shows that F-value was significant ($F=26.425$; $P=0.000$) at 95% confidence level. The results imply that the overall model was significant. Therefore, procurement risk control affected supply chain performance of manufacturing firms.

Table 6: Regression Coefficients^a

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	2.371	.361		6.575	.000
Procurement Risk Control	.458	.089	.617	5.140	.000

a. Dependent Variable: Supply Chain Performance

The regression model was; $Y = \beta_0 + \beta_1 X_1 + \varepsilon$

Where;

Y = Supply Chain Performance

β_0 = Constant (Autonomous Variable)

β_1 = Beta Coefficient

X_1 = Procurement Risk Control

ε = Error of Margin

Based on the regression coefficients, the model was interpreted as; $Y = 2.371 + 0.458X_1 + \varepsilon$.

The regression coefficients show that one unit change in the procurement risk control led to 0.458 unit change in supply chain performance. The study found a significant relationship between procurement risk control and supply chain performance ($t = 5.140$; $p = 0.000$). Accordingly, procurement risk control as a practice of sustainable procurement has a significant effect on supply chain performance.

6. CONCLUSION

The study concludes that procurement risk control affects the supply chain performance of manufacturing firms. Effective management of material quality risks ensures that products consistently meet required standards, which minimizes defects and reduces costly rework. This reliability enhances operational stability and contributes to sustained procurement efficiency. Addressing compliance risks protects firms from regulatory violations and associated penalties, fostering stronger supplier relationships based on trust and transparency. Proper compliance risk control also supports ethical procurement practices and long-term organizational sustainability. The control of delivery risks reduces disruptions in supply schedules by ensuring timely receipt of goods, which shortens order fulfillment cycle times and maintains seamless workflow continuity. Therefore, procurement risk control determines the supply chain performance of manufacturing firms.

7. RECOMMENDATION

It is recommended that manufacturing firms should integrate procurement risk control framework into their procurement policies to ensure consistent adherence to product standards and reduce the incidence of costly rework. They should establish strong compliance monitoring systems, including periodic supplier evaluations and internal audits, to mitigate regulatory risks and safeguard procurement sustainability.

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