



Effect of Internal Control Systems on the Performance of Manufacturing Firms in Rwanda: A Case Study of SULFO Rwanda Industries Ltd

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Abstract: This study examined the effect of internal control system components on the performance of manufacturing firms in Rwanda, using SULFO Rwanda Industries Ltd in Kigali as a case. It was guided by four objectives: to assess the effect of risk assessment practices, control activities, information and communication systems, and monitoring mechanisms on firm performance. The study was anchored on Agency Theory, Control Theory, Institutional Theory, and the Resource-Based View. A descriptive and explanatory design with a quantitative, cross-sectional approach was adopted. The target population was 91 employees, and a census was used; 86 complete questionnaires were returned, a 94.5% response rate. Data were collected using a structured questionnaire and analyzed using descriptive statistics, Pearson correlation, and multiple regression. Correlation results showed significant positive relationships between performance and risk assessment ($r = 0.981$), control activities ($r = 0.952$), information and communication ($r = 0.817$), and monitoring ($r = 0.935$), all at $p = 0.000$. Regression showed the components explained 96.9% of variation in performance (adjusted $R^2 = 0.969$), each having a significant positive effect. The study concluded that effective internal control systems enhance performance and recommended strengthening segregation of duties, improving monitoring, and enhancing information systems.

Keywords: Control, Monitoring, Performance, Manufacturing, Governance

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1. Introduction

Internal control systems have become central to corporate governance because of their role in improving efficiency, protecting assets, assuring reporting reliability, and supporting regulatory compliance. In volatile and complex business environments, internal controls function not merely as administrative tools but as strategic governance instruments that shape organizational results and resilience (Du & Guo, 2023). Globally, the Committee of Sponsoring Organizations of the Treadway Commission provides the most widely accepted framework, defining internal control as a process designed to give reasonable assurance regarding

the achievement of objectives in operations, reporting, and compliance, and dividing it into five interdependent components, namely the control environment, risk assessment, control activities, information and communication, and monitoring (COSO, 2013).

Evidence from industrialized economies consistently indicates that robust internal controls improve performance by lowering inefficiencies, raising reporting quality, and reducing fraud risk. Doyle, Ge, and McVay (2007) and Feng, Li, and McVay (2009) reported that firms with effective controls experience fewer misstatements and higher profitability. However, this evidence derives largely from highly regulated settings with mature governance structures, which raises

questions about their transferability to developing contexts.

In developing countries, particularly in Africa, firms operate within institutional frameworks marked by regulatory inefficiencies, weak enforcement, and informality. Internal controls are frequently implemented inconsistently, undermining the integrity of the system as envisaged by COSO. Abor and Quartey (2010) argue that governance weaknesses, especially in internal control, are increasingly seen as structural causes of underperformance, while IFAC (2018) notes that many African firms lack formalized risk assessment, structured control activities, and systematic monitoring. Empirical results across Africa remain inconsistent, partly because studies often collapse internal control into composite indices that obscure the multidimensional nature of the COSO framework (Oppong, Atchulo, Dargaud Fofack, & Afonope, 2024).

Firms in East Africa operate in increasingly liberalized and competitive markets characterized by macroeconomic volatility, regulatory shifts, and supply-chain risks. Manufacturing companies face particular operational complexity that demands strong governance to assure efficiency, cost control, and stability. Evidence from the region suggests that, although internal control systems exist in many organizations, their implementation is frequently uneven, with greater emphasis on transactional controls such as authorization and documentation while risk assessment and monitoring functions remain underdeveloped (Zitha, Munzhelele, & Sirembe, 2024). This incomplete implementation undermines the COSO principle of system interdependence and may reduce the overall efficacy of internal controls in enhancing performance. Much of the regional evidence, moreover, is based on descriptive or cross-sectional methods that do not readily allow component-level analysis.

In Rwanda, the manufacturing sector is increasingly regarded as a critical pillar of industrialization, economic development, and job creation (World Trade Organization, 2024). Policy reforms aimed at strengthening governance and accountability have been undertaken to boost private-sector performance. Despite these improvements, manufacturing firms continue to encounter difficulties in operational efficiency, cost management, and sustainability. Existing empirical research in Rwanda has concentrated largely on banking and public-sector institutions, with limited attention to manufacturing firms, and where studies exist, they typically rely on aggregated measures of internal control that limit analytical depth and causal interpretability. There is therefore limited disaggregated evidence on how specific COSO components affect performance in Rwanda's manufacturing sector. Within this setting, manufacturing companies such as SULFO Rwanda Industries Ltd operate in complex production environments that necessitate strong internal governance, yet it remains unclear whether the individual

COSO components have statistically significant effects on their performance.

This study addresses that gap by examining the individual effects of risk assessment practices, control activities, information and communication systems, and monitoring mechanisms on the performance of SULFO Rwanda Industries Ltd, thereby generating context-specific, analytically rigorous, and policy-relevant evidence on the governance–performance relationship in a developing-economy manufacturing context.

1.1 Statement of the Problem

Internal control systems are widely acknowledged as critical for improving accountability, protecting assets, assuring compliance, and enhancing performance, particularly in manufacturing firms where operational complexity, procurement, inventory management, and resource utilization demand strong controls (Braum & Mohammed, 2023). Despite the growing adoption of formal internal controls, many manufacturing firms continue to face cost inefficiencies, operational losses, and volatile profitability, suggesting that the presence of controls does not automatically translate into better outcomes. SULFO Rwanda Industries Ltd, a leading Rwandan manufacturer of soaps, detergents, cosmetics, packaged water, and plastics, operates under such complexity, making the effectiveness of its internal controls central to its performance (SULFO Rwanda Industries Ltd, 2024). Evidence on the relative impact of specific COSO components remains ambiguous, and in Rwanda research on the relationship between COSO-based components and manufacturing performance is scarce. This study therefore investigated the effect of these components on the performance of SULFO Rwanda Industries Ltd.

1.2 Objectives of the Study

The general objective was to examine the effect of internal control system components on the performance of manufacturing firms in Rwanda, with specific reference to SULFO Rwanda Industries Ltd. Specifically, the study sought: (i) to assess the effect of risk assessment practices on performance; (ii) to examine the effect of control activities on performance; (iii) to evaluate the effect of information and communication systems on performance; and (iv) to establish the effect of monitoring mechanisms on performance.

1.3 Research Questions

The study was guided by four research questions: (i) What is the effect of risk assessment practices on the performance of SULFO Rwanda Industries? (ii) What is the effect of control activities on the performance of SULFO Rwanda Industries? (iii) What is the effect of information and communication systems on the performance of SULFO Rwanda Industries? (iv) What is the effect of monitoring mechanisms on the performance of SULFO Rwanda Industries?

1.4 Significance of Study

The study is significant at academic, policy, and managerial levels. Academically, it advances the literature on corporate governance and manufacturing performance by addressing the persistent tendency to treat internal control as an aggregated construct rather than a multidimensional governance structure. By disaggregating internal control into distinct COSO components, the study provides a more precise analytical framework for examining their individual and combined effects, deepening the application of Agency Theory, Institutional Theory, Control Theory, and the Resource-Based View to resource-constrained environments. At the policy level, by identifying the components that most influence performance, the findings can inform targeted regulatory and capacity-building initiatives that build manufacturing resilience and reduce business-failure rates, consistent with Rwanda's efforts to strengthen private-sector development. At the managerial level, the findings help owners and managers direct attention toward the governance practices that yield the greatest performance benefits, improving operational effectiveness and long-term sustainability.

1.5 Research Hypotheses

H₀₁: Risk assessment practices have no significant effect on the performance of SULFO Rwanda Industries.

H₀₂: Control activities have no significant effect on the performance of SULFO Rwanda Industries.

H₀₃: Information and communication systems have no significant effect on the performance of SULFO Rwanda Industries.

H₀₄: Monitoring mechanisms have no significant effect on the performance of SULFO Rwanda Industries.

2. Literature Review

This section reviews the theoretical and empirical literature on internal control systems and performance, identifies the study gap, and grounds the hypotheses. It draws on an integrated framework in which several theories each explain a distinct layer of the internal control–performance relationship rather than competing as isolated explanations.

2.1 Theoretical Review

Agency Theory provides the primary rationale for internal controls. In conditions of information asymmetry and potential goal divergence between owners and managers, internal controls reduce agency costs, limit opportunistic behavior, and align managerial action with organizational goals (Jensen & Meckling, 1976). Control and monitoring components thus serve as instruments of behavioral regulation that lower moral hazard and raise accountability, so that performance improves as inefficiencies fall and decisions become better aligned.

Control Theory extends this reasoning by viewing organizations as cybernetic systems governed by feedback loops, corrective action, and performance monitoring (Anthony & Govindarajan, 2007). Under this logic, control activities, risk assessment, and monitoring form the operational backbone of internal control, continuously detecting deviations, correcting inefficiencies, and stabilizing outcomes, so that performance is partly a system-regulated output rather than a purely behavioral consequence.

Institutional Theory adds an external layer, explaining that regulatory, normative, and cognitive pressures shape organizational structures (DiMaggio & Powell, 1983). In emerging economies such as Rwanda, firms adopt formal internal controls not only to raise efficiency but also to establish legitimacy, meet regulatory expectations, and access institutional resources. However, institutional compliance does not always equate to efficiency, creating a potential tension between legitimacy-driven adoption and performance-driven efficacy.

The Resource-Based View adds a strategic dimension, treating internal controls as intangible, firm-specific resources that can yield competitive advantage when they are valuable, rare, inimitable, and non-substitutable (Barney, 2021). From this perspective, well-designed COSO components improve resource-utilization efficiency and decision quality, so performance reflects how effectively controls are built and deployed as governance assets. Taken together, Agency Theory explains why controls exist, Control Theory how they operate, Institutional Theory why they are adopted, and the Resource-Based View how they create advantage, framing internal control as a mediating architecture linking behavioral alignment, operational feedback, institutional conformance, and strategic resource use to performance.

2.1.1 Risk Assessment and Performance

Structured risk assessment enables firms to identify, analyze, and prioritize uncertainties that threaten operational and financial goals. Mikes (2020) argues that mature risk governance increases resilience by embedding risk awareness into strategic and operational decisions rather than treating it as compliance. Lundqvist and Vilhelmsson (2021) provide evidence that firms with structured risk identification and appraisal processes experience lower volatility and greater performance stability, while Florio and colleagues (2020) show that firms with advanced risk governance achieve higher accounting performance during economic volatility. Much of this evidence, however, comes from large firms in developed economies, leaving the independent contribution of risk assessment in manufacturing firms of emerging economies underexplored.

2.1.2 Control Activities and Performance

Control activities are the enforcement component of internal control, comprising authorization protocols, segregation of duties, reconciliations, documentation,

and asset safeguarding. Bauer and colleagues (2020) found that firms with strong procedural enforcement experience fewer operational inefficiencies and reporting distortions, and Khlif and Samaha (2021) reported that segregation of duties and authorization hierarchies improve reporting quality and reduce earnings manipulation. Do and colleagues (2022) similarly link strong control mechanisms to higher operational efficiency in process-intensive settings such as manufacturing. Nonetheless, many studies still treat internal control as an aggregate construct, obscuring the marginal contribution of control activities.

2.1.3 Information and Communication Systems and Performance

Information and communication systems ensure that operational data are generated, processed, and distributed accurately and in a timely manner. Al-Debei and Avison (2020) emphasize that integrated information systems raise performance by enabling real-time data access and reducing information asymmetry, while Bhimani (2021) shows that digital accounting information systems improve reporting quality and managerial responsiveness. Appelbaum and colleagues (2022) find that data-driven communication and real-time analytics improve operational efficiency in complex production environments. Evidence remains concentrated in large firms and developed economies, with little firm-level insight from Sub-Saharan manufacturing contexts where systems are often only partially digitized.

2.1.4 Monitoring Mechanisms and Performance

Monitoring mechanisms are the evaluative components that keep controls effective over time through oversight, internal audit, and corrective feedback. Alzeban (2020) found that internal audit effectiveness is positively related to reporting quality and performance, and Al-Matari and colleagues (2020) reported that audit committee independence and meeting frequency improve firm performance. Al-Duawas and colleagues (2022) further show that active monitoring raises profitability and discipline, especially where institutional enforcement is weak. However, monitoring is frequently examined within broad governance frameworks rather than as a distinct COSO component, and firm-level evidence for manufacturing remains sparse.

2.2 Conceptual Framework

The study conceptualizes internal control as a multidimensional independent variable comprising four COSO components, namely risk assessment practices, control activities, information and communication systems, and monitoring mechanisms, each expected to influence the dependent variable, firm performance. Risk assessment refers to the identification and evaluation of operational uncertainties; control activities to procedural measures such as authorization, segregation of duties, and verification; information and communication systems to the creation and flow of information for decision-making; and monitoring mechanisms to the

oversight processes that review control effectiveness over time. Firm performance is measured through profitability, cost efficiency, revenue stability, asset utilization, and sustainability. The framework proposes that these components influence performance both individually and collectively.

2.3 Research Gap

Existing studies generally report a positive relationship between internal control and performance but suffer from three limitations. First, many aggregate the COSO components into single indices, obscuring the marginal contribution of each component and limiting understanding of which control dimensions matter most. Second, empirical findings are inconsistent, with some studies emphasizing control activities and monitoring while others privilege risk assessment or information systems. Third, most research concentrates on developed economies, banks, and public institutions, leaving manufacturing firms in developing countries under-represented; in Rwanda, available research focuses largely on public-sector organizations. This study addresses these gaps by assessing the disaggregated, component-level effects of internal control on performance in a Rwandan manufacturing firm using a multivariate analytical approach.

3. Methodology

3.1 Research Design

The study adopted a descriptive and explanatory research design within a quantitative, cross-sectional approach. The descriptive element allowed the current state of internal control practices to be characterized, while the explanatory element supported testing of the hypothesized relationships and estimation of the marginal contribution of each COSO component through regression analysis (Creswell & Creswell, 2018; Saunders, Lewis, & Thornhill, 2019).

3.2 Population and Sampling

The target population comprised all 91 employees of SULFO Rwanda Industries Ltd drawn from senior management, finance and accounting, internal audit, procurement, production and operations, and administrative support, because these units collectively operate the COSO components. A census technique was used, surveying the entire population; a census was appropriate given the small, finite, and accessible population and it eliminated sampling error, strengthening the reliability of the regression estimates.

3.3 Data Collection Instrument

A structured questionnaire was the sole instrument. Section A captured demographic and organizational attributes, and Section B captured the COSO-based constructs and performance using five-point Likert-scale items (1 = strongly disagree to 5 = strongly agree). Each

construct was measured with at least four to five indicators aligned to COSO (2013) definitions, supporting content validity and enabling composite reliability estimation. The instrument was self-administered under the researcher's supervision to ensure completeness.

3.4 Validity and Reliability

Construct validity was ensured by aligning indicators with COSO (2013) definitions and by using multiple items per construct to achieve convergent validity, while conceptual distinctions between constructs supported discriminant validity. Reliability was assessed using Cronbach's alpha, with a threshold of 0.70 regarded as satisfactory and values above 0.80 indicating strong internal consistency.

3.5 Data Analysis

Data were coded and analyzed in SPSS version 26 using descriptive statistics, Pearson correlation, and multiple linear regression. The regression model was specified as

$FP = \beta_0 + \beta_1RA + \beta_2CA + \beta_3IC + \beta_4M + \varepsilon$, where FP is firm performance, RA is risk assessment, CA is control activities, IC is information and communication systems, M is monitoring mechanisms, and ε is the error term. Hypotheses were tested at the 5% significance level, with the coefficient of determination used to assess model fit. Ethical safeguards covering informed consent, voluntary participation, confidentiality, and data protection were observed throughout.

4. Results and Discussion

4.1 Response Rate and Respondent Profile

Of the 91 questionnaires distributed, 86 were properly completed and returned, giving a response rate of 94.5%, while five (5.5%) were not returned. This high response rate was adequate and ensured that the findings were representative of the target population. The demographic profile of respondents is summarized in Table 1.

Table 1: Demographic Characteristics of Respondents (N = 86)

Factor	Category	Frequency	%
Gender	Male	55	64
	Female	31	36
Age group	18–24	8	9
	25–34	24	28
	35–44	21	24
	45–54	18	21
	55 and above	15	17
Education	High school diploma	10	12
	Bachelor's	36	42
	Master's	31	36
	Other	9	10
Experience	Below 2 years	12	14
	2–5 years	18	21
	6–10 years	22	26
	Above 10 years	34	40

Note. Source: Field data (2026).

As shown in Table 1, most respondents were male (64%) and fell within the economically active age brackets, with 52% aged between 25 and 44 years. A large majority held tertiary qualifications, with 42% holding a bachelor's degree and 36% a master's degree, implying the knowledge required to give informed responses on internal control and performance. In terms of experience, 40% had worked for more than ten years and a further 26% for six to ten years, indicating that most respondents were well positioned to provide credible insights into the

internal control practices and performance of SULFO Rwanda Industries.

4.2 Descriptive Statistics

Respondents rated each construct on a five-point Likert scale. Mean values were interpreted as very high (4.40–5.00), high (3.80–4.39), moderate (3.00–3.79), low (2.00–2.99), and very low (1.00–1.99); a standard deviation below 0.5 indicated homogeneity of responses and above 0.5 heterogeneity.

Table 2: Views on Risk Assessment Practices (N = 86)

Statement	M	SD
The organisation systematically identifies operational risks	3.83	0.63
Risks related to production and operations are regularly evaluated	3.92	0.57
Supply-chain risks are properly assessed and managed	3.83	0.56
Risks are formally analysed before decision-making	3.93	0.56
The organisation responds effectively to emerging risks	3.83	0.58
Overall mean	3.87	

Note. Source: Field data (2026).

Table 2 shows that risk assessment practices were highly practiced, with an overall mean of 3.87. Formal risk analysis before decision-making (M = 3.93) and regular

evaluation of production risks (M = 3.92) recorded the highest means, indicating that the firm anticipates and appraises operational uncertainties before acting.

Table 3: Views on Control Activities (N = 86)

Statement	M	SD
All transactions require proper authorization before execution	3.65	0.67
Duties are properly segregated to reduce risk of fraud or error	2.98	0.72
Regular reconciliation of records is conducted	3.67	0.66
Company assets are adequately safeguarded	3.70	0.56
Employees comply with established internal procedures	3.76	0.57
Overall mean	3.55	

Note. Source: Field data (2026).

Table 3 indicates that control activities were only moderately practiced (overall M = 3.55). The lowest-rated item was segregation of duties (M = 2.98), the only

item to fall into the low category, signaling a specific control weakness in which single employees may exercise excessive control over transaction cycles.

Table 4: Views on Information and Communication Systems (N = 86)

Statement	M	SD
Reports are prepared in a timely manner	3.80	0.57
Accounting information is accurate and reliable	3.87	0.58
Internal communication flows effectively across departments	3.83	0.56
Information is readily available for decision-making	3.88	0.58
Documentation systems are properly maintained	3.86	0.56
Overall mean	3.85	

Note. Source: Field data (2026).

Table 4 shows that information and communication systems were highly practised (overall M = 3.85), with availability of information for decision-making (M =

3.88) and accuracy of accounting information (M = 3.87) rated most highly, reflecting reliable information flows across the organization.

Table 5: Views on Monitoring Mechanisms (N = 86)

Statement	M	SD
Internal audits are conducted regularly and effectively	3.80	0.60
Supervisory reviews are carried out to ensure control compliance	3.77	0.62
Weaknesses in internal controls are promptly detected	3.70	0.66
Corrective actions are implemented after audit findings	3.79	0.61
Audit recommendations are properly followed up	3.83	0.56
Overall mean	3.78	

Note. Source: Field data (2026).

Table 5 indicates that monitoring mechanisms were moderately practiced (overall $M = 3.78$). Follow-up of audit recommendations ($M = 3.83$) was rated highest,

while prompt detection of control weaknesses ($M = 3.70$) was the lowest, suggesting scope to strengthen the early identification of control failures.

Table 6: Views on the Performance of SULFO Rwanda Industries (N = 86)

Statement	M	SD
The organization has experienced improved profitability over time	3.87	0.63
Cost efficiency has improved due to internal control systems	3.78	0.67
Revenue performance is stable and consistent	3.79	0.66
The organization utilizes its assets efficiently	3.86	0.56
Overall sustainability of the firm is strong	3.76	0.66
Overall mean	3.81	

Note. Source: Field data (2026).

As shown in Table 6, respondents perceived firm performance as high overall ($M = 3.81$), with improved profitability ($M = 3.87$) and efficient asset utilization ($M = 3.86$) rated most highly.

4.3 Financial Performance

Secondary financial data reinforced the perceptual results, as summarized in Table 7.

Table 7: Financial Performance of SULFO Rwanda Industries, 2022–2025

Year	ROA (%)	ROE (%)	NPM (%)
2022	6.9	7.2	1.8
2023	7.2	7.4	2.1
2024	11.0	11.3	3.6
2025	11.5	11.7	3.8

Note. ROA = return on assets; ROE = return on equity; NPM = net profit margin. Source: SULFO Rwanda Industries financial statements (2022–2025).

Table 7 shows a steady improvement across all three indicators. Return on assets rose from 6.9% in 2022 to 11.5% in 2025, return on equity from 7.2% to 11.7%, and

net profit margin from 1.8% to 3.8%, with the strongest gains in the final two years, indicating improving profitability and asset utilization over the period.

Table 8: Correlations Between Internal Control Components and Performance

Component	r with Performance	Sig. (2-tailed)
Risk assessment practices	0.981**	0.000
Control activities	0.952**	0.000
Information and communication systems	0.817**	0.000
Monitoring mechanisms	0.935**	0.000

Note. **Correlation is significant at the 0.01 level (2-tailed). N = 86. Source: Field data (2026).

Table 8 shows that all four components have strong, positive, and statistically significant correlations with performance, with risk assessment practices ($r = 0.981$) showing the strongest association, followed by control activities ($r = 0.952$), monitoring mechanisms ($r =$

0.935), and information and communication systems ($r = 0.817$). These results imply that improvements in each component are closely associated with higher organizational performance.

Table 9: Regression Model Summary and ANOVA

Statistic	Value	Statistic
R	0.985	F = 665.131
R ²	0.970	df = 4, 81
Adjusted R ²	0.969	Sig. = 0.000
Std. error of estimate	0.19543	

Note. Predictors: (constant), risk assessment, control activities, information and communication, monitoring. Dependent variable: performance. Source: Field data (2026).

As presented in Table 9, the four components jointly explained 96.9% of the variation in performance (adjusted R² = 0.969), meaning that factors outside the model account for only 3.1%. The model was statistically

significant (F = 665.131, p = 0.000), confirming that internal control components collectively and significantly predict the performance of SULFO Rwanda Industries.

Table 10: Regression Coefficients

Predictor	B	Beta	t	Sig.
(Constant)	0.030	–	0.269	0.788
Risk assessment	0.629	0.649	7.522	0.000
Control activities	0.261	0.267	3.138	0.002
Information & communication	0.174	0.173	1.378	0.007
Monitoring mechanisms	0.411	0.327	4.768	0.000

Note. Dependent variable: performance. Source: Field data (2026).

Table 10 indicates that each component had a positive and statistically significant effect on performance. Risk assessment practices had the largest effect ($\beta = 0.649$, $p = 0.000$), such that a one-unit increase raises performance by 0.649 units, followed by monitoring mechanisms ($\beta = 0.327$, $p = 0.000$), control activities ($\beta = 0.267$, $p = 0.002$), and information and communication systems ($\beta = 0.173$, $p = 0.007$). Consequently, all four null hypotheses were rejected at the 5% level, confirming that each internal control component significantly influences the performance of SULFO Rwanda Industries.

4.4 Discussion of Findings

The findings are discussed below in relation to each research question.

Research Question One: Risk assessment practices and performance

The significant effect of risk assessment practices ($\beta = 0.649$, $p = 0.000$) echoes Lundqvist and Vilhelmsson (2021), who found that structured risk identification improves performance stability, and Florio and colleagues (2020), who linked advanced risk governance to stronger accounting performance during volatility. The result supports Control Theory, which holds that firms achieve desired outcomes through mechanisms that identify deviations and trigger corrective action; through systematic risk assessment, SULFO Rwanda Industries can anticipate operational threats and respond appropriately.

Research Question Two: Control activities and performance

The effect of control activities ($\beta = 0.267$, $p = 0.002$) is consistent with Bauer and colleagues (2020), who found that strong procedural enforcement reduces operational inefficiencies, and with Khlif and Samaha (2021), who linked authorization systems and segregation of duties to improved reporting quality. This supports Agency Theory, which views control mechanisms as necessary to curb opportunistic behavior and align managerial actions with organizational objectives. The significant effect indicates that formal enforcement mechanisms, rather than managerial discretion alone, drive performance.

Research Question Three: Information and communication systems and performance

The role of information and communication systems ($\beta = 0.173$, $p = 0.007$) supports Al-Debei and Avison (2020), who found that integrated information systems reduce information asymmetry and speed decision-making, and Bhimani (2021), who linked digital accounting information systems to better reporting quality. The findings are based on the Resource-Based View, under which reliable information capability functions as a strategic resource supporting coordination and performance improvement.

Research Question Four: Monitoring mechanisms and performance

The effect of monitoring mechanisms ($\beta = 0.327$, $p = 0.000$) is consistent with Alzeban (2020), who linked internal audit effectiveness to stronger performance, and Al-Duawas and colleagues (2022), who found that active

monitoring raises profitability and discipline where institutional enforcement is weak. This reinforces the feedback logic of Control Theory, whereby continuous monitoring allows the firm to compare actual with expected performance and take corrective action, thereby strengthening internal control effectiveness and performance.

5. Conclusions and Recommendations

Conclusions and recommendations are presented for each research question in turn, followed by suggestions for further study.

Research Question One: Risk assessment practices. The study concluded that risk assessment practices have a significant positive effect on performance, as effective identification, evaluation, and management of operational risks enhance decision-making and reduce uncertainty. It is recommended that SULFO Rwanda Industries formalize and document its risk assessment procedures further, conducting regular reviews of production and supply-chain risks so that emerging threats are anticipated and mitigated before they affect performance.

Research Question Two: Control activities. The study concluded that control activities significantly influence performance, though they were only moderately practised and segregation of duties was rated low ($M = 2.98$). It is recommended that the firm strengthen its segregation-of-duties framework by clearly defining roles across procurement, production, finance, and authorization, ensuring that no single employee controls an entire transaction cycle, and reinforcing this with approval hierarchies and staff training on internal control procedures.

Research Question Three: Information and communication systems. The study concluded that information and communication systems have a significant positive effect on performance, such as reliable information flow, timely reporting, and proper documentation support effective decision-making. It is recommended that the firm continue to invest in its information and communication infrastructure, including digital reporting and documentation systems, to further improve the timeliness and accuracy of information available for cross-departmental decision-making.

Research Question Four: Monitoring mechanisms. The study concluded that monitoring mechanisms significantly contributes to performance, though they were only moderately practiced, with prompt detection of control weaknesses rated lowest ($M = 3.70$). It is recommended that the firm strengthen its monitoring function through more frequent internal audits and supervisory reviews, earlier detection of control weaknesses, and systematic follow-up of corrective actions and audit recommendations.

Suggestions for Further Studies. Future studies should extend the analysis to multiple Rwandan manufacturing

firms to allow comparison across organizational sizes and sub-sectors, and should adopt longitudinal, mixed-method designs combining questionnaires, interviews, and financial indicators to provide deeper evidence on how internal control systems influence performance over time.

References

- Abor, J., & Quartey, P. (2010). Issues in SME development in Ghana and South Africa. *International Research Journal of Finance and Economics*, 39, 218–228.
- Al-Debei, M. M., & Avison, D. (2020). Integrated information systems and organizational performance. *Journal of Enterprise Information Management*, 33(4), 789–810.
- Al-Duawas, M., Al-Matari, E. M., & Alosaimi, M. (2022). Internal audit function and firm performance in emerging markets. *International Journal of Auditing*, 26(2), 210–228.
- Al-Matari, E. M., Al-Swidi, A. K., & Fadzil, F. H. (2020). Audit committee characteristics and firm performance. *Corporate Governance*, 20(3), 456–475.
- Alzeban, A. (2020). Internal audit effectiveness, internal control and organizational performance. *Managerial Auditing Journal*, 35(4), 501–524.
- Anthony, R. N., & Govindarajan, V. (2007). *Management control systems* (12th ed.). McGraw-Hill.
- Appelbaum, D., Kogan, A., & Vasarhelyi, M. A. (2022). Data-driven communication systems and operational efficiency. *International Journal of Accounting Information Systems*, 45, 100–118.
- Barney, J. B. (2021). The resource-based view of the firm. *Journal of Management*, 47(7), 1936–1955.
- Bauer, T., Estep, C., & Malsch, B. (2020). Internal control effectiveness and operational reliability. *Contemporary Accounting Research*, 37(3), 1512–1540.
- Bhimani, A. (2021). Digital accounting information systems and reporting quality. *Management Accounting Research*, 52, 100–115.
- Braim, S. J., & Mohammed, R. B. (2023). The COSO framework: Implications of internal control components on the performance of manufacturing companies. *Qalaai Zanist Scientific Journal*, 8(1), 1203–1223.
- Committee of Sponsoring Organizations of the Treadway Commission (COSO). (2013). *Internal control—Integrated framework*. COSO.

- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage.
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality. *American Sociological Review*, 48(2), 147–160.
- Do, H., Nguyen, T., & Pham, L. (2022). Internal control and operational efficiency in manufacturing firms. *Journal of Management Control*, 33(2), 205–228.
- Doyle, J., Ge, W., & McVay, S. (2007). Determinants of weaknesses in internal control over financial reporting. *Journal of Accounting and Economics*, 44(1–2), 193–223.
- Du, Y., & Guo, Q. (2023). Green credit policy and green innovation in green industries. *Finance Research Letters*, 58, 104512.
- Feng, M., Li, C., & McVay, S. (2009). Internal control and management guidance. *Journal of Accounting and Economics*, 48(2–3), 190–209.
- Florio, C., & Leoni, G. (2020). Enterprise risk management and firm performance. *The British Accounting Review*, 52(4), 100–119.
- International Federation of Accountants (IFAC). (2018). *Global SMP survey: A snapshot of SMEs worldwide*. IFAC.
- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3(4), 305–360.
- Khelif, H., & Samaha, K. (2021). Internal control quality and earnings management. *Journal of Applied Accounting Research*, 22(3), 456–478.
- Lundqvist, S. A., & Vilhelmsson, A. (2021). Enterprise risk management and firm risk. *Journal of Risk and Insurance*, 88(1), 127–157.
- Mikes, A. (2020). Risk governance and organizational resilience. *Accounting, Organizations and Society*, 85, 101–118.
- Oppong, C., Atchulo, A. S., Dargaud Fofack, A., & Afonope, D. E. (2024). Internal control mechanisms and performance of Ghanaian banks: The moderating role of corporate governance. *African Journal of Economic and Management Studies*, 15(1), 88–103.
- Saunders, M., Lewis, P., & Thornhill, A. (2019). *Research methods for business students* (8th ed.). Pearson.
- SULFO Rwanda Industries Ltd. (2024). *Our story*. Retrieved from <https://sulforwanda.com/our-story/>
- World Trade Organization. (2024). *Rwanda: Striving for economic transformation*. Retrieved from <https://www.wto.org/>
- Xu, N., Lv, W., & Wang, J. (2024). The impact of digital transformation on firm performance. *Eurasian Business Review*, 14(3), 369–400.