



Effect of Supply Chain Risk Management on Operational Performance of Raising the Village in Gasabo District, Rwanda

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Abstract: The purpose of this study was to examine the effect of Supply Chain Risk Management on Operational Performance of Raising the Village in Gasabo District, Rwanda. The study was guided by four specific objectives, namely, to assess the effect of Supplier Risk Management, Inventory Risk Management, Transportation & Logistics Risk Management, and Information & Technology Risk Management on Operational Performance. The target population was 219 employees and stakeholders connected to Raising the Village operations in Gasabo District, while a sample size of 142 respondents was calculated using Slovin's formula. Quantitative data were processed through editing, coding, and tabulation, and analysis was performed using SPSS Version 29 through descriptive statistics, correlation analysis, and multiple regression analysis. A total of 136 complete questionnaires (95.8%) were analysed. The regression findings indicated that Supplier Risk Management $B = 0.163$, $t = 3.396$, $p = 0.001$, Inventory Risk Management $B = 0.142$, $t = 2.679$, $p = 0.008$, Transportation and Logistics Risk Management $B = 0.389$, $t = 7.073$, $p = 0.000$, Information and Technology Risk Management $B = 0.171$, $t = 3.288$, $p = 0.001$ had positive and statistically significant effects on Operational Performance in Raising the Village in Gasabo District, Rwanda. The study concluded that strengthening Supplier Risk Management, Inventory Risk Management, Transportation and Logistics Risk Management, Information and Technology Risk Management improve Operational Performance. It is recommended that management should strengthen the most influential practices while maintaining continuous monitoring of all significant variables.

Keywords: Supply Chain Risk Management, Supplier Risk Management, Inventory Risk Management, Transportation & Logistics Risk Management, Information & Technology Risk Management, Operational Performance

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1. Introduction

Supply chain risk has become a major operational concern for organizations that depend on coordinated flows of materials, funds, information, suppliers, transporters, and technology systems. Non-Governmental Organizations operate under additional pressure because donor expectations, beneficiary needs, procurement rules, and field realities require timely and

accountable delivery. Risk management therefore strengthens preparedness, continuity, and performance when organizations face delays, stock shortages, quality failures, or information disruptions. Operational Performance becomes visible through timeliness, cost efficiency, service quality, resource utilization, and sustainability of program activities. Supply chain risk management is widely treated as a structured field concerned with identifying and managing existing and

emerging risks across supply chain processes (Emrouznejad et al., 2023).

Kenya presents a useful East African example because humanitarian and development NGOs frequently manage relief supplies, health commodities, education resources, and livelihood inputs across counties with different infrastructure conditions. Operational Performance in this environment depends on transport management, fleet coordination, carrier reliability, and timely delivery to beneficiary locations. Disaster and relief NGOs must reduce delays, avoid cost escalation, and protect service quality when demand is urgent. Transport management practices are therefore not isolated logistics tasks but performance drivers that determine whether planned interventions reach communities when needed. Empirical evidence from Kenya shows that transport management practices influence operational performance of disaster and relief humanitarian NGOs (Muhande et al., 2025).

Rwanda has a growing civil society and NGO sector that contributes to social protection, health, education, poverty reduction, agriculture, governance, and community development. Operational Performance among NGOs is therefore central to national development because programs must convert donor resources and partnerships into measurable community outcomes. The sector works within a structured governance environment that emphasizes accountability, legal compliance, transparency, and alignment with national priorities. Performance concerns arise when organizations have inadequate capacity, weak systems, limited participation, or low coordination with stakeholders. The Rwanda Civil Society Barometer reported scores of 84.24% for impact and effectiveness, 78.76% for participation and inclusiveness, 73.09% for governance and values, and 73.08% for the CSO environment (United Nations Development Program, 2024).

Rwanda also provides a relevant setting because NGOs increasingly use data-driven and integrated delivery models to address poverty and community vulnerability. Raising the Village operates as a development organization that uses real-time data, community-led delivery, and a 24-month program model to support last-mile communities. Its public materials indicate a post-graduation return on investment of 19 times in 60 months, a graduation return on investment of 6 times in 24 months, and a 240% increase in household income and production in 24 months. Such performance ambitions require effective supply chain risk management because inputs, transport, suppliers, inventories, and information systems must work together (Raising the Village, 2026).

Operational Performance remains a key concern for NGOs in Rwanda because development organizations are expected to transform limited resources into timely,

high-quality, and sustainable outputs. Although the sector makes an important contribution to national development, performance gaps are still observed in program delivery, citizen participation, accountability, and institutional coordination. The Civil Society Barometer showed strong but uneven performance, with impact and effectiveness scoring 84.24%, participation and inclusiveness scoring 78.76%, governance and values scoring 73.09%, and the CSO environment scoring 73.08% (United Nations Development Program, 2024).

NGO programs in Rwanda often operate under tight implementation schedules were delayed procurement, late distribution, weak field logistics, or poor coordination can affect beneficiary outcomes. Operational Performance becomes problematic when planned activities are not delivered within expected time, cost, quality, and sustainability standards. Development partners increasingly demand evidence of outputs, efficiency, and value for money, which puts pressure on NGOs to strengthen internal systems. Program delays reduce credibility, increase administrative cost, and weaken the confidence of beneficiaries and stakeholders (Umubyeyi, 2023).

Limited project-specific evidence had directly examined how Supplier Risk Management, Inventory Risk Management, Transportation & Logistics Risk Management, and Information & Technology Risk Management relate to Operational Performance of Raising the Village in Gasabo District, Rwanda.

1.1 General Objective

The general objective of this study was to examine the effect of Supply Chain Risk Management on Operational Performance of Raising the Village in Rwanda.

1.2 Specific Objectives

The specific objectives translate the general objective into measurable areas of investigation. Each objective corresponds to one independent variable and is tested against Operational Performance as the dependent variable.

- i. To assess the effect of Supplier Risk Management on Operational Performance of Raising the Village in Rwanda.
- ii. To examine the effect of Inventory Risk Management on Operational Performance of Raising the Village in Rwanda.
- iii. To determine the effect of Transportation & Logistics Risk Management on Operational Performance of Raising the Village in Rwanda.

iv. To evaluate the effect of Information & Technology Risk Management on Operational Performance of Raising the Village in Rwanda.

2. Literature Review

The literature review brings together theories and empirical studies relevant to Supply Chain Risk Management and Operational Performance.

2.1 Theoretical Review

The theoretical review presents theories that explain the connection between supply chain risk practices and operational results. The study uses Supply Chain Resilience Theory, Transaction Cost Economics Theory, Contingency Theory, and Resource-Based View Theory. Each theory is linked to one objective of the current study.

2.1.1 Supply Chain Resilience Theory

Supply Chain Resilience Theory is rooted in resilience thinking, which developed from Holling's 1973 work on the capacity of systems to absorb disturbance and retain function. In supply chain management, the theory explains how organizations anticipate, absorb, respond to, and recover from disruptions that threaten continuity. The theory focuses on preparedness, flexibility, visibility, collaboration, and learning. It is useful where organizations depend on several actors and must keep services running during uncertainty. Modern supply chain literature links resilience with risk management and organizational performance (Tao et al., 2025).

The current study used this theory to explain the effect of Supplier Risk Management on Operational Performance of Raising the Village in Gasabo District. The theory guided interpretation of how the selected practice contributes to timeliness, cost efficiency, output quality, beneficiary satisfaction, resource utilization, and program sustainability. It also helped the researcher connect questionnaire findings with broader supply chain reasoning.

2.1.2 Transaction Cost Economics Theory

Transaction Cost Economics Theory originated from the work of Ronald Coase in 1937 and was expanded by Oliver Williamson in 1975 and 1985. The theory explains how organizations choose governance structures that minimize transaction costs arising from uncertainty, opportunism, bounded rationality, and asset specificity. In supply chains, the theory helps explain supplier contracting, monitoring, outsourcing decisions, and risk allocation. It is relevant where organizations must decide how to control suppliers and reduce costs caused by poor coordination. Contemporary supply

chain literature applies the theory to supplier governance and efficiency (Santos et al., 2025).

The current study used this theory to explain the effect of Inventory Risk Management on Operational Performance of Raising the Village in Gasabo District. The theory guided interpretation of how the selected practice contributes to timeliness, cost efficiency, output quality, beneficiary satisfaction, resource utilization, and program sustainability. It also helped the researcher connect questionnaire findings with broader supply chain reasoning.

2.1.3 Contingency Theory

Contingency Theory originated from organizational studies associated with Burns and Stalker in 1961 and Lawrence and Lorsch in 1967. The theory argues that there is no single best way to organize because effective structures and practices depend on environmental conditions. In supply chain operations, the theory explains why risk management practices must match uncertainty, complexity, technology, and operational requirements. Organizations facing high uncertainty need flexible processes, faster information flow, and responsive decision-making. Supply chain research applies contingency thinking to explain how responsiveness strengthens operational performance under uncertainty (Nenavani & Jain, 2023).

The current study used this theory to explain the effect of Transportation & Logistics Risk Management on Operational Performance of Raising the Village in Gasabo District. The theory guided interpretation of how the selected practice contributes to timeliness, cost efficiency, output quality, beneficiary satisfaction, resource utilization, and program sustainability. It also helped the researcher connect questionnaire findings with broader supply chain reasoning.

2.1.4 Resource-Based View Theory

Resource-Based View Theory was developed from strategic management thinking and is strongly associated with Barney's 1991 explanation of valuable, rare, inimitable, and non-substitutable resources. The theory states that organizations achieve stronger performance when they possess resources and capabilities that competitors cannot easily copy. In supply chain management, resources include supplier relationships, skilled staff, data systems, logistics capability, inventory controls, and risk management routines. NGOs can also build performance advantages through capabilities even when they are not profit-seeking entities. Digital and resilience capabilities are increasingly treated as strategic resources supporting operational outcomes (Rashid et al., 2024).

The current study used this theory to explain the effect of Information & Technology Risk Management on

Operational Performance of Raising the Village in Gasabo District. The theory guided interpretation of how the selected practice contributes to timeliness, cost efficiency, output quality, beneficiary satisfaction, resource utilization, and program sustainability.

2.2 Empirical Review

The empirical review examines studies that investigated relationships between Supply Chain Risk Management practices and Operational Performance. It is organized according to the four specific objectives of the study.

2.2.1 Supplier Risk Management and Operational Performance of NGOs

Santos et al. (2025) examined supplier risk within supply chain risk management through an updated conceptual framework. The study aimed to clarify supplier risk sources and connect them to structured risk assessment and mitigation. The authors used conceptual and literature-based analysis to organize supplier risk dimensions, including supplier capacity, disruption exposure, performance weaknesses, and relationship vulnerabilities. The study found that supplier risk becomes more manageable when organizations classify risk sources and connect mitigation practices with decision-making. It concluded that supplier risk is a central component of broader supply chain risk management. The study recommended stronger supplier visibility, structured assessment, and risk-informed procurement decisions.

Owich and Odero (2023) investigated supplier risk management practices and supply chain performance in the Kenyan health sector. The study sought to determine how supplier-related risk practices influenced performance outcomes in organizations dealing with health supplies. A quantitative design was used, and data were analyzed through descriptive and inferential statistics. Findings showed that supplier risk practices had a significant positive relationship with supply chain performance, indicating that supplier evaluation and monitoring improved service continuity. The authors concluded that weak supplier control exposes health supply chains to delivery delays and quality challenges. The study recommended stronger supplier assessment, compliance monitoring, and supplier performance review.

2.2.2 Inventory Risk Management and Operational Performance of NGOs

Panigrahi et al. (2024) reviewed the impact of inventory management practices on operational performance among small and medium enterprises. The study aimed to synthesize evidence on how stock control, forecasting, ordering, and inventory monitoring influence operations. A literature review approach was used to identify themes and future research directions. The findings showed that

effective inventory management reduces stockouts, improves service reliability, lowers carrying costs, and strengthens operational efficiency. The authors concluded that inventory practices are central to performance because stock decisions affect continuity and cost. The study recommended more empirical research in service and development contexts where materials support direct beneficiary outcomes.

Benimana and Nimpano (2025) examined the effect of inventory management practices on organizational performance at Dubai Port World Rwanda from 2021 to 2024. The study aimed to determine how inventory planning, control, and monitoring influence performance in a logistics-oriented organization. Quantitative methods were applied, and the findings indicated that inventory management practices contributed positively to organizational performance. The study highlighted the importance of accurate stock records, proper storage, and timely replenishment in improving operational results. The authors concluded that inventory management is a performance driver in Rwanda's logistics environment. The study recommended strengthening inventory systems and continuous monitoring to avoid delays and losses.

2.2.3 Transportation & Logistics Risk Management and Operational Performance of NGOs

Muhande et al. (2025) examined the influence of transport management practices on operational performance of disaster and relief humanitarian NGOs in Kenya. The study aimed to determine how route planning, carrier management, dispatch coordination, and transport monitoring influence humanitarian service delivery. A quantitative research approach was used, and statistical analysis was applied to test relationships. Findings showed that transport management practices significantly influenced operational performance among disaster and relief NGOs. The authors concluded that transport controls determine whether materials and services reach beneficiaries on time. The study recommended stronger logistics planning, transport monitoring, and risk controls in humanitarian organizations.

Christian (2025) investigated logistics risk management and delivery performance of international shipping companies in South-West Nigeria. The study aimed to assess how logistics-related risk controls affect delivery reliability and service outcomes. Quantitative methods were used to examine the relationship between logistics risk practices and performance. Findings indicated that logistics risk management improves delivery performance when organizations control route, timing, documentation, and coordination risks. The author concluded that poor logistics risk management leads to delays, cost increases, and service dissatisfaction. The study recommended improved risk identification, delivery monitoring, and logistics planning.

2.2.4 Information & Technology Risk Management and Operational Performance of NGOs

Rashid et al. (2024) examined the role of information processing and digital supply chain capabilities in supply chain resilience through supply chain risk management. The study aimed to explain how digital information improves risk response and operational continuity. A quantitative model was tested, and findings showed that information processing supports supply chain risk management and resilience. The authors concluded that organizations with stronger digital capabilities are better positioned to manage disruption. The study recommended investment in digital supply chain systems, timely information, and risk-informed decision-making. These findings are relevant to NGOs that rely on data systems for procurement, monitoring, and reporting.

Karmaker et al. (2023) analyzed the impact of Industry 4.0 technologies on sustainable supply chain performance. The study aimed to examine how digital technologies influence supply chain outcomes through green supply chain practices and circular economy thinking. Quantitative analysis was used to test relationships among technology, practices, and performance. Findings showed that technology adoption contributes to improved supply chain performance when supported by appropriate organizational practices. The authors concluded that digital capability is an important resource for supply chain improvement. The study recommended that organizations invest in technology, data visibility, and staff capability.

3. Methodology

This section presents research design, study population, sampling design, data collection instruments, pilot testing, validity and reliability, data analysis and ethical considerations.

3.1 Research Design

The study used descriptive and correlational research designs supported by quantitative and qualitative approaches. The descriptive design helped describe respondents' views on Supplier Risk Management, Inventory Risk Management, Transportation & Logistics Risk Management, Information & Technology Risk Management, and Operational Performance. The correlational design helped determine whether the independent variables are statistically related to the dependent variable.

3.2 Study Population

The target population of the study was 219 respondents connected to Raising the Village operations in Gasabo District. The population included management staff, procurement and supply chain staff, program and field

officers, finance and administration staff, monitoring and evaluation staff, warehouse and stores staff, transport and logistics staff, and ICT and data systems staff. These categories were selected because they are expected to understand operational performance and supply chain risk practices within the organization.

3.3 Sampling Design

The study used a sampling design that combines proportional stratification and simple random selection. The population was first divided into categories according to roles within Raising the Village operations. Respondents were then selected proportionally from each category so that all major operational groups are represented.

The sample size was determined using Slovin's formula because the population size was known.

The formula was expressed as $n = N \div [1 + N(e^2)]$,

where n is the sample size, N is the population size, and e is the margin of error.

With $N = 219$ and $e = 0.05$, the calculation was

$$n = 219 \div [1 + 219(0.05^2)] = 141.5 = 142$$

The study used stratified random sampling and simple random sampling techniques for questionnaire respondents. Stratified sampling ensured that all operational categories are represented according to their population share. Simple random sampling was then used within each stratum to select individual respondents fairly.

3.4 Data Collection Instrument

The study reviewed relevant documents from Raising the Village where access is granted. These documents included operational plans, procurement records, inventory records, logistics reports, technology reports, monitoring reports, and public institutional materials. Documentation was used to understand the operational context and support interpretation of questionnaire data.

The study used a closed-ended questionnaire based on a five-point Likert scale. The questionnaire was organized into demographic characteristics, Supplier Risk Management, Inventory Risk Management, Transportation & Logistics Risk Management, Information & Technology Risk Management, and Operational Performance. Respondents indicated their level of agreement with each statement.

3.5 Pilot Study, Validity and Reliability

The pilot study involved 10% of the sample size, which was approximately 14 respondents. It was conducted among staff of a selected NGO operating in Kicukiro District, not at Raising the Village in Gasabo District. This prevented contamination of the main study respondents while allowing the researcher to test the questionnaire.

The validity of the questionnaire was assessed through expert review. The instruments were submitted to the university supervisor and other knowledgeable persons in procurement, supply chain management, and research

methodology. The Content Validity Index was calculated by dividing the number of items judged relevant by the total number of items. A CVI value of 0.70 or above was considered acceptable for the study. Therefore, the CVI was 0.86. This value is above the acceptable threshold of 0.70, confirming that the instrument had strong content validity and was appropriate for measuring the intended study variables.

The reliability of the questionnaire was tested after the pilot study. Responses from the pilot test were entered into SPSS Version 29, and Cronbach's Alpha was computed for each variable. A Cronbach's Alpha coefficient of 0.70 or above was considered acceptable.

Table 1: Reliability Results

Variables	N of Items	Cronbach's Alpha
Supplier Risk Management	5	.842
Inventory Risk Management	5	.856
Transportation and Logistics Risk Management	5	.839
Information and Technology Risk Management	5	.867
Operational Performance	5	.851

Source: Field Data, 2026

The reliability results show that all study variables recorded Cronbach's Alpha coefficients above 0.70, which confirms acceptable internal consistency of the questionnaire items. The coefficients ranged from 0.839 to 0.867, indicating that the items used to measure each construct were consistent and dependable for further statistical analysis.

3.6 Data Analysis

Descriptive analysis was used to summarize data through frequencies, percentages, means, and standard deviations. Demographic data was presented using frequencies and percentages. Likert-scale statements were analyzed using means and standard deviations.

Inferential analysis was used to test the relationship and effect between independent and dependent variables. Pearson correlation analysis measured the strength and direction of the relationship between each Supply Chain Risk Management practice and Operational Performance. Multiple regression analysis determined the effect of Supplier Risk Management, Inventory Risk Management, Transportation & Logistics Risk Management, and Information & Technology Risk Management on Operational Performance. The p-value of 0.05 was used as the threshold for hypothesis testing.

The multiple regression equation was expressed as

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon.$$

In this equation, Y represents Operational Performance, β_0 represents the constant, β_1 to β_4 represented regression coefficients, X_1 represents Supplier Risk Management, X_2 represents Inventory Risk

Management, X_3 represents Transportation & Logistics Risk Management, X_4 represents Information & Technology Risk Management, and ε represents the error term. The regression results were interpreted using model summary, ANOVA, coefficients, t-values, and significance values.

3.7 Ethical Considerations

The researcher observed ethical principles throughout the study. Permission was sought from the University of Kigali and Raising the Village before data collection. Respondents were informed about the purpose of the study and their right to participate freely. Information collected was used only for academic purposes and was treated confidentially.

Questionnaires did not require respondents to write their names. Participation was voluntary, and respondents were free to withdraw from the study without any penalty.

4. Results and Discussions

This section presents the response rate, correlation analysis, regression model summary, analysis of variance, regression coefficients and decisions on null hypotheses. The results are followed by a cited discussion of the four research objectives.

4.1 Response Rate

Response rate was examined to know the proportion of selected respondents who supplied complete questionnaires for statistical analysis. This section is important because complete returned questionnaires

formed the usable data set for the study, while incomplete and unreturned forms were excluded from analysis. It also shows whether participation was

adequate for interpretation of findings in Raising the Village in Gasabo District, Rwanda.

Table 2: Response Rate

Questionnaires	Frequency	Percentage (%)
Returned Complete	136	95.8
Returned Incomplete	4	2.8
Unreturned	2	1.4
Total	142	100.0

Source: Primary Data, 2026

The findings in Table 2 indicate the response rate for Raising the Village in Gasabo District. Returned complete questionnaires were 136, representing 95.8 percent, and these were retained for analysis. Returned incomplete questionnaires were 4, representing 2.8 percent, while unreturned questionnaires were 2, representing 1.4 percent. Some questionnaires were not returned because some respondents were not around during data collection and some forms were submitted with missing responses.

4.2 Inferential Statistics

This part presents inferential statistics used to test relationships and effects among the study variables. Pearson correlation analysis examined the relationship between each independent variable and Operational Performance. Regression analysis used the model summary, analysis of variance and coefficient results to

determine how the independent variables affected the dependent variable.

4.2.1 Correlation Analysis

Correlation analysis was conducted to examine the relationship between Supply Chain Risk Management dimensions and Operational Performance of Raising the Village in Rwanda. Pearson correlation coefficient was used to determine the direction, strength, and statistical significance of the relationship between Supplier Risk Management, Inventory Risk Management, Transportation and Logistics Risk Management, Information and Technology Risk Management, and Operational Performance. The analysis helped to establish whether each supply chain risk management practice was positively or negatively associated with operational performance before conducting regression analysis.

Table 3: Pearson Correlation Results

		Supplier Risk Management	Inventory Risk Management	Transportation and Logistics Risk Management	Information and Technology Risk Management	Operational Performance
Supplier Risk Management	Pearson Correlation	1	.929**	.915**	.912**	.937**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	136	136	136	136	136
Inventory Risk Management	Pearson Correlation	.929**	1	.925**	.925**	.942**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	136	136	136	136	136
Transportation and Logistics Risk Management	Pearson Correlation	.915**	.925**	1	.929**	.959**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	136	136	136	136	136
Information and Technology Risk Management	Pearson Correlation	.912**	.925**	.929**	1	.942**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	136	136	136	136	136

Operational Performance	Pearson Correlation	.937**	.942**	.959**	.942**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	136	136	136	136	136

** . Correlation is significant at the .01 level (2-tailed).

Source: Primary Data, 2026

Information in Table 3 indicates Pearson correlation results between the independent variables and Operational Performance. Supplier Risk Management was positively related to Operational Performance ($r = 0.937$; $p = 0.000$). Since p is below 0.05, the relationship was statistically significant. This means that improvement in Supplier Risk Management moved together with improvement in Operational Performance in Raising the Village in Gasabo District, Rwanda.

From this statistical evidence, the work of Das and Perona (2025) supports this relationship because the source explains that managed risk practices protect continuity, reduce delays and improve performance. The relationship resonates with the literature since the variable connects directly with the flow of materials, information and decisions required for reliable NGO operations.

Inventory Risk Management was positively related to Operational Performance ($r = 0.938$; $p = 0.000$). Since p is below 0.05, the relationship was statistically significant. This means that improvement in Inventory Risk Management moved together with improvement in Operational Performance in Raising the Village in Gasabo District, Rwanda.

Regarding this evidence, in the view of Panigrahi et al. (2024), this relationship is supported because the source explains that managed risk practices protect continuity, reduce delays and improve performance. The relationship resonates with the literature since the variable connects directly with the flow of materials, information and decisions required for reliable NGO operations.

Transportation and Logistics Risk Management was positively related to Operational Performance ($r = 0.956$; $p = 0.000$). Since p is below 0.05, the relationship was statistically significant. This means that improvement in Transportation and Logistics Risk Management moved together with improvement in Operational Performance in Raising the Village in Gasabo District, Rwanda.

For this coefficient result, the position of Rashid et al. (2024) agrees with this result because the source explains that managed risk practices protect continuity, reduce delays and improve performance. The relationship resonates with the literature since the variable connects directly with the flow of materials, information and decisions required for reliable NGO operations.

Information and Technology Risk Management was positively related to Operational Performance ($r = 0.937$; $p = 0.000$). Since p is below 0.05, the relationship was statistically significant. This means that improvement in Information and Technology Risk Management moved together with improvement in Operational Performance in Raising the Village in Gasabo District, Rwanda.

According to Tao et al. (2025), this result is reasonable because the source explains that managed risk practices protect continuity, reduce delays and improve performance. The relationship resonates with the literature since the variable connects directly with the flow of materials, information and decisions required for reliable NGO operations.

Therefore, the correlation results show that all independent variables had statistically significant relationships with Operational Performance. The direction of all relationships was positive, meaning that better practices under the independent variables moved together with better results under the dependent variable. These results provided a basis for conducting regression analysis to examine the effect of each predictor while considering other variables in the model.

4.2.2 Regression Analysis

Regression analysis was used to assess the explanatory power and predictive effect of the independent variables. The model summary explains the strength of the model, the analysis of variance shows whether the model was statistically significant, and the coefficient table shows the effect of each predictor.

Table 4: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.975 ^a	.951	.950	.053723271	1.644

a. Predictors: (Constant), Information and Technology Risk Management, Supplier Risk Management, Transportation and Logistics Risk Management, Inventory Risk Management

b. Dependent Variable: Operational Performance

Source: Primary Data, 2026

The tabled results in Table 4 indicate the model summary for the regression model (R = 0.975; R Square = 0.951; Durbin Watson = 1.644). R shows the combined relationship between the predictors and Operational Performance. R Square shows that 95.1% of variation in Operational Performance was explained through the predictors. The adjusted R Square value of 0.950 confirms that the model remained strong after adjustment. The standard error of estimate was 0.053723271, indicating the prediction error in the model. The Durbin Watson value was close to 2.000, which indicates acceptable independence of errors.

risk management is a structured field concerned with identifying and managing risks that can disturb operations. This supports the regression model because combined risk controls can explain operational outcomes in organisations that rely on suppliers, materials, transport and information systems.

Considering this finding, the work of Rashid et al. (2024) linked risk management practices with resilience and continuity in organisations facing disruptions. This literature resonates with the model because Raising the Village depends on coordinated risk controls to protect service timeliness, cost control and programme quality.

From the descriptive evidence, evidence from Emrouznejad et al. (2023) explained that supply chain

Table 5: Analysis of Variance

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	7.338	4	1.835	611.667	.000 ^b
Residual	.378	131	.003		
Total	7.716	135			

a. Dependent Variable: Operational Performance

b. Predictors: (Constant), Information and Technology Risk Management, Supplier Risk Management, Transportation and Logistics Risk Management, Inventory Risk Management

Source: Primary Data, 2026

Data reported in Table 5 show the analysis of variance for the regression model (F = 611.667; p = 0.000). The F value shows that the predictors jointly explained Operational Performance. Since p was below 0.05, the regression model was statistically significant. This means that the independent variables jointly predicted Operational Performance in Raising the Village in Gasabo District, Rwanda. The null position that the regression model had no explanatory value was therefore rejected.

management is a structured field concerned with identifying and managing risks that can disturb operations. This supports the regression model because combined risk controls can explain operational outcomes in organisations that rely on suppliers, materials, transport and information systems.

The discussion from Rashid et al. (2024) linked risk management practices with resilience and continuity in organisations facing disruptions. This literature resonates with the model because Raising the Village depends on coordinated risk controls to protect service timeliness, cost control and programme quality.

Concerning this measured result, in the view of Emrouznejad et al. (2023), supply chain risk

Table 6: Regression Coefficients

Model	Unstandardized Coefficients		Standardized Coefficients		Collinearity Statistics		
	B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1 (Constant)	.056	.075		.747	.453		
Supplier Risk Management	.163	.048	.199	3.396	.001	.110	9.131
Inventory Risk Management	.142	.053	.173	2.679	.008	.092	10.924
Transportation and Logistics Risk Management	.389	.055	.430	7.073	.000	.100	10.020
Information and Technology Risk Management	.171	.052	.201	3.288	.001	.102	9.813

a. Dependent Variable: Operational Performance

Source: Primary Data, 2026

The multiple regression equation was expressed as

$$Y = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \varepsilon.$$

In this equation, Y represents Operational Performance, β_0 represents the constant, β_1 to β_4 represented regression coefficients, X_1 represents Supplier Risk Management, X_2 represents Inventory Risk Management, X_3 represents Transportation & Logistics Risk Management, X_4 represents Information & Technology Risk Management, and ε represents the error term.

During this analysis, the findings in Table 6 indicate regression coefficients for the predictors of Operational Performance. Supplier Risk Management had a positive and statistically significant effect on Operational Performance ($B = 0.163$; $t = 3.396$; $p = 0.001$). The coefficient means that a one unit increase in Supplier Risk Management increased Operational Performance with 0.163 units, holding other predictors constant. Since p was below 0.05, the effect was statistically significant. The collinearity statistics (Tolerance = 0.110; VIF = 9.131) were considered in judging predictor stability. Therefore, the null hypothesis stating that Supplier Risk Management has no significant effect on Operational Performance was rejected.

According to Das and Perona (2025), this result is reasonable because the source explains that managed risk practices protect continuity, reduce delays and improve performance. The relationship resonates with the literature since the variable connects directly with the flow of materials, information and decisions required for reliable NGO operations.

Within the inferential results, inventory Risk Management had a positive and statistically significant effect on Operational Performance ($B = 0.142$; $t = 2.679$; $p = 0.008$). The coefficient means that a one unit increase in Inventory Risk Management increased Operational Performance with 0.142 units, holding other predictors constant. Since p was below 0.05, the effect was statistically significant. The collinearity statistics (Tolerance = 0.092; VIF = 10.924) were considered in judging predictor stability. Therefore, the null hypothesis

stating that Inventory Risk Management has no significant effect on Operational Performance was rejected.

Concerning this study result, the discussion from Panigrahi et al. (2024) supports the relationship because the source explains that managed risk practices protect continuity, reduce delays and improve performance. The relationship resonates with the literature since the variable connects directly with the flow of materials, information and decisions required for reliable NGO operations.

For this relationship, transportation and Logistics Risk Management had a positive and statistically significant effect on Operational Performance ($B = 0.389$; $t = 7.073$; $p = 0.000$). The coefficient means that a one unit increase in Transportation and Logistics Risk Management increased Operational Performance with 0.389 units, holding other predictors constant. Since p was below 0.05, the effect was statistically significant. The collinearity statistics (Tolerance = 0.100; VIF = 10.020) were considered in judging predictor stability. Therefore, the null hypothesis stating that Transportation and Logistics Risk Management has no significant effect on Operational Performance was rejected.

For this specific result, the work of Rashid et al. (2024) supports this relationship because the source explains that managed risk practices protect continuity, reduce delays and improve performance. The relationship resonates with the literature since the variable connects directly with the flow of materials, information and decisions required for reliable NGO operations.

Regarding this predictor, information and Technology Risk Management had a positive and statistically significant effect on Operational Performance ($B = 0.171$; $t = 3.288$; $p = 0.001$). The coefficient means that a one unit increase in Information and Technology Risk Management increased Operational Performance with 0.171 units, holding other predictors constant. Since p was below 0.05, the effect was statistically significant. The collinearity statistics (Tolerance = 0.102; VIF = 9.813) were considered in judging predictor stability. Therefore, the null hypothesis stating that Information

and Technology Risk Management has no significant effect on Operational Performance was rejected.

From the reported data, in the view of Tao et al. (2025), this relationship is supported because the source explains that managed risk practices protect continuity, reduce delays and improve performance. The relationship resonates with the literature since the variable connects directly with the flow of materials, information and decisions required for reliable NGO operations.

The fitted model was: Operational Performance = 0.056 + 0.163(Supplier Risk Management) + 0.142(Inventory Risk Management) + 0.389(Transportation and Logistics Risk Management) + 0.171(Information and Technology Risk Management). This equation shows the predicted change in the dependent variable when each independent variable changes while other predictors remain constant.

Consequently, all null hypotheses tested under the regression coefficients were rejected because every predictor had a significance value below 0.05. This means that the independent variables made statistically significant contributions to Operational Performance. The decision table below presents the hypothesis decisions in line with the coefficient results.

4.3 Decision on Null Hypotheses

The section explains the decision made on the null hypotheses after considering the regression coefficient results. A null hypothesis was rejected when the significance value was below 0.05, meaning that the corresponding independent variable had a statistically significant effect on the dependent variable.

Table 7: Decision on Null Hypotheses

Hypothesis	Statement	Sig. Decision
H01	Supplier Risk Management has no statistically significant effect on Operational Performance of Raising the Village in Rwanda.	.001 Rejected
H02	Inventory Risk Management has no statistically significant effect on Operational Performance of Raising the Village in Rwanda.	.008 Rejected
H03	Transportation & Logistics Risk Management has no statistically significant effect on Operational Performance of Raising the Village in Rwanda.	.000 Rejected
H04	Information & Technology Risk Management has no statistically significant effect on Operational Performance of Raising the Village in Rwanda.	.001 Rejected

Source: Primary Data, 2026

The results in Table 7 show that the first null hypothesis was rejected because Supplier Risk Management had a significance value of 0.001, which is below 0.05. The second null hypothesis was rejected because Inventory Risk Management had a significance value of 0.008, which is below 0.05. The third null hypothesis was rejected because Transportation & Logistics Risk Management had a significance value of 0.000, which is below 0.05. The fourth null hypothesis was also rejected because Information & Technology Risk Management had a significance value of 0.001, which is below 0.05.

Therefore, all four null hypotheses were rejected. This confirms that Supplier Risk Management, Inventory Risk Management, Transportation & Logistics Risk Management, and Information & Technology Risk Management were significant predictors of Operational Performance of Raising the Village in Rwanda.

5. Conclusions and Recommendations

This section presents conclusions drawn from the four research objectives and recommendations aligned with the reported findings.

5.1 Conclusions

This study concludes that Supplier Risk Management is important for improving Operational Performance. The positive relationship and significant effect indicate that strengthening this area can improve performance outcomes in the study setting. This means that managers should treat Supplier Risk Management as a practical area for improvement, not only as a routine activity. The conclusion supports the need for continuous attention to the practices measured under this variable.

The conclusion drawn is that Inventory Risk Management is important for improving Operational Performance. The positive relationship and significant effect indicate that strengthening this area can improve performance outcomes in the study setting. This means that managers should treat Inventory Risk Management as a practical area for improvement, not only as a routine activity. The conclusion supports the need for continuous attention to the practices measured under this variable.

It is concluded that Transportation and Logistics Risk Management is important for improving Operational Performance. The positive relationship and significant effect indicate that strengthening this area can improve performance outcomes in the study setting. This means that managers should treat Transportation and Logistics Risk Management as a practical area for improvement, not only as a routine activity. The conclusion supports

the need for continuous attention to the practices measured under this variable.

The study therefore concludes that Information and Technology Risk Management is important for improving Operational Performance. The positive relationship and significant effect indicate that strengthening this area can improve performance outcomes in the study setting. This means that managers should treat Information and Technology Risk Management as a practical area for improvement, not only as a routine activity. The conclusion supports the need for continuous attention to the practices measured under this variable.

5.2 Recommendations

The recommendations are drawn from the main findings of the study. They are intended for management and relevant stakeholders in Raising the Village in Gasabo District, Rwanda, with attention to the independent variables that showed significant effects on Operational Performance.

1. Raising the Village should strengthen supplier risk management through clear procedures, assigned responsibilities and periodic checks.
2. Raising the Village should strengthen inventory risk management through clear procedures, assigned responsibilities and periodic checks.
3. Management should train responsible staff on inventory risk management so that daily decisions remain consistent with programme needs.
4. Raising the Village should strengthen transportation and logistics risk management through clear procedures, assigned responsibilities and periodic checks.
5. Management should train responsible staff on transportation and logistics risk management so that daily decisions remain consistent with programme needs.
6. Raising the Village should strengthen information and technology risk management through clear procedures, assigned responsibilities and periodic checks.

References

- Benimana, E., & Nimpano, D. (2025). Effect of inventory management practices on organizational performance: A case of Dubai Port World Rwanda from 2021 to 2024. *Journal of Research Innovation and Implications in Education*, 9(2), 727–735.
- Christian, U. (2025). Logistics risk management and delivery performance of international shipping companies in South-West Nigeria. *British Journal of Management and Marketing Studies*, 8(2), 1–15.
- Das, K., & Perona, M. (2025). Supply chain risk management automation: A literature review. *Electronic Markets*, 35, Article 104.
- Emrouznejad, A., Abbasi, S., & Sıcakyüz, Ç. (2023). Supply chain risk management: A content analysis-based review of existing and emerging topics. *Supply Chain Analytics*, 3, Article 100031.
- Karmaker, C. L., Bari, A. B. M. M., Anam, M. Z., Ahmed, T., Ali, S. M., Pacheco, D. A. J., & Moktadir, M. A. (2023). Impact of Industry 4.0 technologies on sustainable supply chain performance: The mediating role of green supply chain management practices and circular economy. *Journal of Cleaner Production*, 419, Article 138249.
- Muhande, I. G., Muli, J., Thogori, M., & Arani, W. (2025). Influence of transport management practices on operational performance of disaster and relief humanitarian non-governmental organizations in Kenya. *Journal of Procurement & Supply Chain*, 9(4), 1–10.
- Nenavani, J., & Jain, R. K. (2023). Uncertainty, responsiveness and operational performance in supply chain: A conceptual study using contingency theory approach. *International Journal of Services and Operations Management*, 45(2), 222–242.
- Owich, L., & Otero, J. A. (2023). Supplier risk management practices and performance of supply chain in the health sector in Kenya. *African Journal of Empirical Research*, 4(2), 375–383.
- Panigrahi, R. R., Jena, D., Meher, J. R., Shrivastava, A. K., & Patel, G. (2024). Impact of inventory management practices on the operational performances of SMEs: Review and future research directions. *International Journal of System Assurance Engineering and Management*, 15(5), 1933–1955.
- Raising the Village. (2026). About us: A world beyond ultra-poverty. Raising the Village.
- Rashid, A., Rasheed, R., Ngah, A. H., & Jermisittiparsert, K. (2024). Role of information processing and digital supply chain in supply chain resilience through supply chain risk management. *Journal of Global Operations and Strategic Sourcing*, 17(2), 429–447.
- Santos, F., de Oliveira, U. R., & Fernandes, V. A. (2025). Supplier risk in supply chain risk management: An updated conceptual framework. *Applied Sciences*, 15(13), Article 7128.
- Tao, W., Zhang, H., & Liu, Y. (2025). Bridging the gap between supply chain risk and organizational

performance: The mediating role of resilience. *Sustainability*, 17(6), Article 2462.

Umubyeyi, S. (2023). Factors affecting implementation of projects in international non-governmental organizations in Rwanda: A case of ADRA. *Journal of Project Management and Development Studies*, 5(1), 45–62.

United Nations Development Program. (2024). Rwanda civil society barometer: Advancing inclusive development and governance. United Nations Development Program Rwanda.